

Notes from the Owners of HALE KAI

Welcome aboard **HALE KAI!** Here is a list of the primary reasons we selected the Hunter 41 DS:

- **3 Cabins** – Three staterooms allow everyone, three singles or three couples, to have nice privacy and a quiet place to sleep uninterrupted. (The dinette converts to a spacious very comfortable double, if a fourth sleeping area is needed.)
- **Fast** – **HALE KAI** cruises at 8 knots under power and sails like a dream with little effort.
- **Ease of Handling** – Two people can easily handle Hale Kai. The in-mast furling system and everything leads aft, are reasons why sailing this boat is easy and fun.
- **Deck Salon Design** – The raised salon provides vastly improved headroom (7'1"), convenient visibility, and abundant light. You can easily see outside while cooking, or read without lights on a cloudy day!
- **Spacious Cockpit & Rail Seating**– Everyone on board can sit comfortably in the cockpit.

In an effort to enhance the cruising experience HALE KAI was carefully outfitted. The galley is equipped for gourmet cooking. The dodger fully covers the cockpit and helming area for comfort. The list goes on and on: inverter, feathering prop, a quality Bose DVD sound system, comforters, hi-tech navigational system with AIS capability, plus many "little touches").

In addition to the basic design features, we have done several upgrades and continue to maintain all systems on the Hale Kai to keep her like new. To list just a few of the tasks that were taken on:

- Replaced RayMarine Radar and Main instrument panel in at the helm. It is touch enabled and works like any smart phone or tablet.
- All new closed cell batteries (both and house and starter batteries)
- Added a battery alarm to prevent low battery issues
- Replaced wind meter
- Replaced cockpit stereo system with BlueTooth enabled device
- Rerouted the forward shower drain to remove any standing water
- Replaced all the head hoses
- Performed 5 year maintenance on Webasto heater
- Retrofitted the Windlass for smoother operation
- Redid the anchor markings
- Refurbished the dodger stitching
- New attachment on the cockpit table
- New skid strips on galley stairs to prevent slipping

Information about boat features is provide in two ways. The first is a checkout guide for step-by-step instructions on how to operate the key systems on the boat. Your checkout captain will go over these with you prior to departure. The owner notes are more detailed explanations for all the features on the boat.

We recommended that you familiarize yourself with both of these documents.

We would appreciate, and thank you in advance for following some basic rules, No pets and No smoking.

We hope you'll love HALE KAI as much as we do and we thank you for taking special care of her. Please do let us know if there is anything we can do to improve the experience for future guests – we appreciate hearing that worked well and suggestions for improvements.

Happy Sailing,

Nick Duckstein, Jill Bargones, & Susan Norton

HALE KAI Owner Notes

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1. Anchors

HALE KAI is equipped with two anchors, one forward (44# Delta with 100' of chain & 200' Rode) and a Danforth in the port cockpit locker along with 25' of chain and 200' of rode. The primary chain is marked with yellow poly line threaded into the links every 30 feet up to 90 feet. The rode is labeled each additional 30 feet.

The scope to use in the islands is 4-to-1 for the highest water depth you'll encounter in the spot where you choose to drop anchor. Check your tide data to know how much water you may lose and how much water you will gain as the tide floods in and ebbs out during your stay. Since most coves are 15'-30' deep, expect to pay out about 60'-120' of rode. After you have paid out the suitable amount of rode, 2 minutes of reverse (in idle speed reverse) sets the anchor and tests its holding power. (Note other boats and points of reference on land. Are you moving? If not after 2 minutes, you've set your anchor successfully.) If you wish to sleep even better, throttle up to about 1500 RPMs in reverse for another 30 seconds to prove to yourself that the anchor is set well!

For storm conditions (sustained winds of 25+ knots), extend your scope to 7 or 10-to-1, provided you have room to leeward. Otherwise, set two bow anchors (using the secondary anchor, chain and rode) in a v-type pattern for extra holding power.

The stern tie line is a 600-foot reel of line for stern ties in the aft starboard swim deck locker. (Please do not cut the line; it is all needed for certain places in Desolation Sound.)

2. Anchor Windlass

Power operating the Windlass is received from the engine start battery. **Always operate the windlass while the engine is running!** Otherwise, the windlass will drain the start battery. The ON-OFF switch is located on the Main Control Panel (DC Side). The up-down controller for the windlass is located on the forward deck aft of the chain locker. If the breaker is tripped, the windlass circuit breaker is located on the battery switch panel under the chart table seat.

a. Deploying the Anchor

With an electric windlass, it is important to deploy the anchor into the water by hand. Pay out enough slack in the chain so that you can hand-deploy the anchor into the water about one foot below the water surface. (By having the anchor slightly in the water, the water will buffer that troublesome "pendulum" action that causes a partially deployed anchor to swing and ding the bow before you get it all the way into the water with a windlass controller that you're not familiar with.) Once the anchor is in the water, use the electric

windlass to lower the anchor to the bottom of the bay and deploy the desired amount of scope.

Once you have let out enough line to achieve the desired scope, tie off the line at the cleat in the anchor locker. You may need to let out some extra slack from the windlass to do this.

b. Retrieving the Anchor

When retrieving the anchor, never use a windlass to pull the boat forward to where the anchor is set. The windlass is not designed to handle that kind of load and doing so would cause serious damage to the attachment base. Doing so would also cause a large draw on the batteries. Instead, head the boat under power toward the anchor while using the windlass to take up the slack in the chain.

Also, when retrieving the anchor, only retrieve it up to where you can see the anchor about one foot below the water (again to buffer any possible “pendulum” action if the anchor were just out of the water). **Then, by hand, retrieve the anchor from just below the water onto the bow roller.** This prevents possible pendulum action, plus, if the anchor gets hung up on the bow roller and you continue to press the “up” button on the electric windlass, you will probably damage the attachment base. **DO NOT** use the windlass power to take up the last few inches of slack. Just take the extra chain and snug it up and hand set the chain back onto the gypsy.

Take your time, the anchor chain dropping off of the chain wheel sometimes bunches up under the windlass and you might need to push it down several times (with your foot or a mop handle) to the bottom of the chain locker to prevent the chain from jamming in the windlass.

c. Securing the Anchor

Once the anchor is on the bow roller, be sure to secure the anchor with the “keeper” line. Snap the devil’s claw or stopper through a link in the chain nearest the anchor, then lead the line straight back and around the drum angling the line to the port bow cleat. Secure tightly with a standard cleat knot. (The chain on the chain wheel on the windlass should not be the only thing keeping the anchor from unexpectedly returning to the sea bottom!) After securing the anchor with a line, immediately switch the windlass breaker “off” at the Main Control Panel to prevent draining the engine start battery.

3. Barbecue

To use the BBQ:

1. Make sure the BBQ regulator switch is in the off position (out).
2. Open the propane locker located on the port side off the stern swim platform.
3. Make sure the small valve below the solenoid in the propane locker is open. When open, this directs propane to the BBQ. Turn valve counter-clockwise to open. See Figure 1.
4. Turn on the propane solenoid switch in the galley.
5. The BBQ's regulator is the control. Turn the control to the "on" or "light" position, and with the LID OFF, light the burner. (With the lid on, the BBQ tends to be hot and cook quickly, so tend your meat often.)
6. Once the BBQ is lit, turning regulator knob counterclockwise will lower temperature and clockwise raise it. Turning it all the way clockwise turns it off.



Figure 1 Small valve below solenoid in propane locker.

When finished with BBQ:

1. Turn the solenoid switch in the galley off.
2. Turn the blue BBQ regulator switch to the off position.
3. Turn the switch in the propane locker to the off position by turning it clockwise.

As a courtesy to the next guest, please use the wire brush attached to the BBQ to clean it after use

4. Batteries & Charging

For normal operations, leave the battery switches “on” all the time. A battery combiner isolates the start battery assuring all batteries are charged, while protecting the engine start battery from being drawn down by house usage. The House bank has three sealed deep-cycle batteries for house services

Battery voltage can be checked on the electrical panel. You should try not to discharge below 11.0 volts before re-charging the batteries by (1) running the diesel or (2) plugging into shore power with the charger breaker “on”.

CAUTION: Never turn a battery switch to “off” while the engine is running! This will blow the diodes on the alternator, and your batteries will no longer charge.

5. Berths

Hale Kai is most comfortable for 6 people, but will sleep a maximum of 8 - two in the forward cabin, two in each of the aft cabins, two in the dinette area which can convert to a double.

Converting the Dinette into a Double Bed:

1. Remove the bedding and bi-fold pad from under the dinette portside bench. This pad is a different thickness than the other cushion benches and compensate for the height difference between the benches and the table.
2. Undo the 4 clips under the table connecting the table leaves. Pull apart the leaves and remove the center leave, placing it inside its protective sleeve (under the bench across from the dinette). Push the 2 outer leaves together, clipping them together underneath.
3. Loosen the 2 large screws on the 2 pedestals. Maneuver the table downward, the back edge of the table will rest upon the back bench. The table will be 1-2 inches above the surrounding benches.
4. The bi-fold cushion will fit snugly on the table top. Because the bi-fold cushion is 1-2 inches thinner than the corresponding cushion, it will lay flush on top of the table (which is 1-2 inches above the benches).

6. Bilge pumps

Please check the bilge each day, morning and evening. It is accessed by lifting the floorboard under the dinette. Please note that the refrigerator drains into the bilge, so most of the water that accumulates in the bilge is from melting ice and condensation.

There are three bilge pumps:

- (1) One **electric on-demand** bilge pump is controlled at the electrical panel. Push the breaker on to turn it on; push it again to turn it off.

- (2) The second bilge pump is **hot-wired** to the batteries with a float switch high in the bilge. (If it goes off, you should investigate why. There may be a slow leak.) It will shut off automatically when there is no more water in the bilge.
- (3) The third is a **manual emergency** bilge pump. The manual bilge pump is located on the port side of the cockpit, just behind of the wheel under the moveable seat. The handle is in the port cockpit locker snapped to the bottom of the locker.

7. Dinghy

Hale Kai has a new (2016) 12-foot Azzurro Mare AM365 inflatable dinghy with two hard seats, oars and a Honda 2HP outboard engine. (See “Outboard” section.) The pump is located in the portside cockpit locker.

Towing works best when the dinghy is brought close to the boat – only have about 4 or 5 feet of painter line from the stern cleat to the bow of the dinghy. This lifts the bow slightly out of the water and reduces drag so you go faster, and lessens the chance of wrapping the painter around the propeller. Tie the painter off twice – once at a cleat with a standard cleat knot, then the bitter end to the stern rail.

Please take special care when beaching the dinghy, it has a soft bottom. Most of the beaches you will land at are strewn with barnacle-covered, bottom-slicing rocks. When approaching the shore, weight the dinghy aft by leaning or moving the crew toward the back of the dinghy. Then offload everyone over the bow. Lift the dinghy above barnacle height using the hand lines on either side, and set it down gently on the beach. Also remember to secure the painter under a rock or to a large driftwood log – we have very large tidal fluctuations (so your dinghy won't float away).

8. Dodger & Bimini

Our Dodger and Bimini not only protect the crew from the weather when in the cockpit, but have stainless steel grab handles for safety. The center plastic window panel can be opened on hot days to get a refreshing breeze. Please don't attempt to remove the dodger.

The dodger's plastic “glass” is vulnerable to scratching from salt crystals, especially after sailing into a challenging breeze. When salt spray on the glass dries, tiny salt deposits are left behind and tend to obscure your vision. Please avoid directly touching the glass with a damp rag or sponge. Salt does dissolve in water, but not as fast as you might think. The salt crystals remain un-dissolved for several seconds. It's like rubbing the glass with sand paper! To clean, please use generous amounts of fresh water from a pan from the galley

and “flood” the glass to dissolve the salt crystals away. (Better yet, wait until you’re at a dock where you can hose off the salt crystals. If the dodger glass is really clear, you can thank previous guests for their diligence. And we thank you too!

CAUTION: *We have found that most spray sunscreens react chemically with the plexiglass. So please spray any sunscreen downwind of the dodger glass. And please don’t lean against the dodger with sunscreen on your back and shoulders. Once that chemical reaction takes place, the glass is ruined and must be replaced(at a cost of around \$400).*

9. Electrical Panel

Most switches at the panel board are self-explanatory, but some circuits are unique.

A/C (120V) Power. The A/C outlets will only function while connected to shore power OR, when not connected to shore power and the inverter button is pressed “on” (converting 12 volt house battery to A/C). A/C outlets will only work when the A/C Outlets breaker is in the “on” position. Hale Kai is not set up for air conditioning even though the A/C panel shows a second line for it.

Reminder: Using A/C power off-shore (i.e. microwave, DVD Player, etc.) uses the house battery. Please monitor the house battery charge level when using these systems.

IMPORTANT: *Circuit breaker will trip when more than 30 amps are used on board. See “Shore Power A/C Circuit Breaker section.*

Battery Charger. The Battery Charger breaker switch must be turned “on” for shore power to charge the batteries. There is a 90-second delay from the time you flip the breaker “on” to when the red light on the electrical panel comes on (indicating that you’re charging and A/C power is available). Wait for the red light before using A/C power. And, the A/C Outlets breaker switch must be “on” for the plugs to be live.

Inverter. The inverter is located to the left of the DC panel. Press it “on” (a light comes on) and “off” when it’s no longer needed. Again, the A/C Outlets breaker switch must be “on” for the plugs to be live. (**Do NOT use the inverter while connected to shore power.**)

Chart Plotter, AIS & Autopilot. The Chart Plotter, AIS and Autopilot require that you turn on the VHF, Autopilot and GPS panel switches for all of the electronics to operate.

Cabin Lights. Once you have turned on the circuits at the electrical panel labeled “cabin lights” and “courtesy lights” the overhead and courtesy lights are controlled by rocker switches in each

cabin. The florescent panel lights also have on/off switches on each light so you can reduce the light to preserve power. All other cabin, head and navigation station lighting have individual on/off switches on each fixture.

Water Pump: The water pump switch is located on the DC panel. The fresh water system has two 50 gallon tanks and two fresh water fills located on the port and starboard sides. It is set up to draw water evenly between tanks. The gauge over the chart table will reflect the water level of each tank.

Shore Power A/C Circuit Breaker: This box is located in the starboard rear berth, on the rear wall. It rarely trips, but if it does, just turn it back on.

IMPORTANT: *This circuit breaker will trip when more than 30 amps are used on board. This is labeled “Shore Power Reset.”*

Running & Steaming Lights. *Please be advised that night passage making is not permitted under terms of your charter agreement with San Juan Sailing. Only use in cases of reduced visibility (like fog or on the rare days in the Pacific Northwest when there’s heavy overcast).*

Anchor Light. Should be on all night in an anchorage.

10. Electronics

The radar/chart plotter/GPS, depth sounder, wind instrument, and autopilot are all RayMarine products. All manuals are on board for your reference.

Cellular Telephones. *HALE KAI* is equipped with two 12-volt cigarette lighter type outlets that may be used for recharging your cellular telephones. The outlets are on the DC Panel with covers.

Depthsounder. Power on by flipping “on” the breakers labeled GPS and Autopilot

The digital depth sounder will not give accurate readings beyond 400’. In deeper water, the sensitivity on the unit increases as the transducer tries to get some reading back. Consequently, you will receive many false readings caused by currents, changes in water temperature, fish, and seaweed. Use the depth sounder only as an aid to navigation in shallow water.

IMPORTANT: *The key to avoiding rocks is NOT the depth sounder – but knowing where you are at all times. (Rocks are the greatest navigational and safety hazard in the islands – but they are all clearly marked on the charts.)*

We do not recommend using the depth sounder's alarm during night. Besides a fairly high battery drain, it's likely to sound at inappropriate times such as late at night while fish are passing beneath the transducer. (Instead, consult the onboard tide data to determine whether you're anchored in a safe location, considering how shallow your depth will become when the tide ebbs out of your anchorage in the middle of the night.)

Radar & Chart Plotter. *HALE KAI* is equipped with a RayMarine Radar and a color E120 chart plotter at the helm. (The chart plotter may be used without the radar to minimize battery drain.) GPS input to the Chart plotter comes from a receiver antenna mounted on the stern. To start the Radar/Chart plotter, turn on the electrical panel switches labeled GPS & Auto Pilot. Then, press and hold the power button at the lower left corner of the unit until it beeps and turns on the display. You then use the power switch to toggle between Standby and Transmit for the radar (if you need it). If you plan to save electricity and use the chart plotter only, toggle to Standby. The unit will start up in its last pre-shutdown mode (Radar only, Chart only, or Radar Overlay screen). Use the "Page" key located at the upper right corner of the unit to change modes (using the soft keys at the bottom to select Chart or Radar). To shut down the unit, press and hold the power key (red button, lower left) for 3 seconds.

We recommend that in addition to using your PRIMARY navigation aids – namely, the Mapttech waterproof chart book or the roll charts (with the most active "killer rocks" marked in red) – up in the cockpit while underway, you also utilize the chart plotter for added safety. It helps you to see if you are where you think you are on the chart book or paper charts. If someone asks, "Where are we?" Within 3 seconds, you need to be able to point to the chart and show them the vessel's precise position. If you can't, you're in danger of hitting a rock.

The only time when the chart plotter becomes your primary navigation tool is when you're in a "tight spot" like going through a narrow pass or approaching the entrance to a secluded cove. (With the chart plotter, you can "zoom in" to make something that's the size of a dime on a paper chart into the size of a paperback novel or larger on the screen. You can see more detail and, importantly, any hazards in the area. Your boat's position on the chart plotter is accurate to within 3 meters – about 10 feet.)

You should have little need of the radar except for the highly unlikely event that you are suddenly enveloped by fog, which is rare in this area. The fog that we've encountered in the islands usually forms in the wee hours of the morning and burns off by mid-day. So if it's a little soupy after breakfast, we put on an extra pot of coffee until it lifts. Never depart from a safe location into the fog! To do so, even with radar, would be contrary to prudent seamanship. FYI – Fog becomes "reduced visibility" when you can see ¼ mile (about 4 football fields) in all directions. It is safe to proceed CAREFULLY in reduced visibility using your radar to "see" beyond the haze, but be sure to look up from the screen about every 10 seconds and use your eyes to scan the horizon forward, behind, and side to side.

A motor yacht, tanker or freighter traveling at 20 knots takes only 39 seconds to travel ¼ mile! You need to see these fast-moving vessels sooner-rather-than-later so you can prepare, if indicated, to quickly take evasive action to avoid an impending collision.

Knot meter. Power on by flipping “on” the breaker labeled “GPS & Autopilot” on the DC panel. Speed is indicated in knots or nautical miles per hour. (For comparison, 7 knots is approx. 8 statute mph.)

If the digital knot meter shows a reading of “0.00” while underway, the knot meter-impeller is most likely clogged with a piece of eelgrass. Sometimes it will float off overnight. You can also try removing it by traveling for a short distance in reverse. The impeller is located beneath the most forward salon sole board. (It’s not recommend that you try to remove the impeller to clear it, unless you are VERY experienced in such things. An open hole in the hull is a scary situation, and if not plugged quickly, it can jeopardize the boat and the safety of your crew.) If the knot meter is temporarily “out of service”, the GPS input to the chart plotter provides an alternate and quite accurate speed indication called SOG (speed over ground).

VHF Radio. The Remote Access Microphone (RAM), when plugged into the outlet on the cockpit pedestal, controls all radio functions of the unit mounted above the nav-station from the steering station. The VHF at the nav-station is turned on (after the VHF Radio breaker on the electrical panel is “on”) on by holding down the volume knob (upper right corner) for 3 seconds. There is also a “PWR” switch on the RAM to turn on the system at the helm. We find this very convenient while entering and leaving moorings.

To listen to the weather reports (should be done in the morning before you head out and ½ hour before your final destination), push the “WX” button on the radio. Scan the weather channels for the one with the best reception before sailing in the morning and prior to anchoring for the evening. This is generally a light wind region but weather changes can be sudden. Listen for the “inland waters of western Washington” Both cover the San Juan Islands and the Canadian Gulf Islands. You will also hear “Strait of Juan de Fuca” (south of the San Juans), “Georgia Strait” (north), and “Rosario Strait” (runs through the eastern part of the San Juans).

You should monitor channel 16 (the hailing and distress channel) during your cruise. You may save a vessel or a life. You may hail vessels on channel 16, but after establishing contact on channel 16, ask the skipper of the other boat to switch to working channels 78, 79 or 80. San Juan Sailing monitors channel 80 during office hours (closed Sundays). If you need a review of VHF radio protocol, you’ll find information located in the onboard Charter Guest Reference Notebook. (By phone you can reach the San Juan Sailing office at -800-677-7245 or SJS’s owner, Roger Van Dyken, at 360-224-4300 on cell or 360-354-5770 at home.)

In case of a distress where you can no longer stand by the radio to pass your mayday, use the red distress button on the radio. First flip up the cover, then press the button. GPS input is automatically coded into your signal.

11. Emergency / Safety Equipment

First Aid Kit: A complete first aid kit is located in the forward berth mirrored cabinet. Please note any usage of these items so they may be replaced for the next Guest.

Flares. Visual day/night distress signals (flares) are located in the companionway compartment at the top of the steps

Fire Extinguishers: There are three ABC-rated fire extinguishers on board. They are located:

- (a) under the galley sink
- (b) in the companionway compartment at the top of the steps.
- (c) in the port aft cockpit locker.

All are ABC fire extinguishers which are effective against electrical, grease, wood, and fuel fires. If you have a fire at the stove turn off the gas solenoid switch on the end of the galley counter across from the chart table.

Emergency Tiller. It's a black metal pipe, with an "elbow" bend in it. It's located in the port cockpit locker. The rudder post attachment point is under the helmsman seat. (remove the cover, and insert tiller).

12. Engine & Handling

Reverse. *HALE KAI* “walks to port” (i.e. prop walk) very slightly because she is equipped with a MAX-Prop. (Be sure to hang on tightly to the wheel in reverse. If not, water pressure on the aft edge of the rudder will slam the rudder over to one side or the other. And that’s very hard on the steering mechanism.)

Forward. *HALE KAI* has a large and deep rudder. So she’s very quick on her feet and turns in a narrow radius. Very small rudder adjustments will easily change course.

Docking. *HALE KAI* carries momentum well, so your final approach and turn in toward your slip can usually be done with the shifter in neutral...you’ll certainly need no more than “idle speed forward” (unless there are high winds).

Never turn off the engine until the vessel is securely tied at the dock. Remember, you’ll need to use your engine – in reverse – to stop the boat. It’s very difficult and often impossible for people holding lines to stop the forward momentum of a vessel as heavy as a cruising sailboat.

When coming into our docks in high winds or if you’d just like a little assistance upon arrival, simply hail “San Juan Sailing” on VHF channel 80. We’ll be glad to offer some “coaching” and/or catch your lines. In fact, most marinas in the islands will help you if you hail them and ask for assistance. Asking for docking assistance, especially in windy conditions or with an inexperienced crew, is a sign of prudent seamanship.

a. Starting.

1. Check the oil level. **The dipstick is accessed thru the starboard side of the engine.** The starboard side of the engine is accessible through the hatch in the hall entry of the starboard berth where you will find the oil dipstick. **Do not overfill.** Use the onboard spare oil to add no more than a cup at a time. Then, after waiting about 2 minutes for the oil to trickle down to the pan, check the level again. Overfilling is a bad thing to do to a diesel. The excess oil will escape somehow, perhaps by blowing the head gasket. Also, if the dipstick indicates no oil the first time you check it, reinsert and try again - the correct level will show when the air lock bubble is broken. Expect the oil to be blacker than that of a gasoline powered automobile engine...this is normal for a diesel after only a few hours of operation.
2. Check the coolant level...anywhere between the two lines (high and low) on the overflow reservoir is “good”.
3. **To access the forward components of the engine;** (belt, alternator, impellor) the companionway steps unit will lift out vertically using the handholds on the sides and moved to port on the galley side. While you have access to the front of the engine, check for belt tightness and leaking fluids. **The aft end of the Yanmar transmission and prop shaft** are accessible when the vanity just inside the starboard cabin is lifted and placed on the bunk.
4. Run the blower for 5 minutes before starting the engine.

5. Look over the stern for kelp, logs or branches that could foul the propeller.
6. **Make sure the gearshift is in neutral.** You can confirm this by pushing in the black button on the throttle/gearshift.
7. Insert the key and turn it clockwise, to the first click. You should hear an alarm, which indicates low oil pressure.
8. Turn the key further clockwise to start the engine. Expect the engine to start in 5 seconds or less. If the engine doesn't start after 10 seconds of cranking, turn key counter clockwise to the off position. Wait 15 seconds and try again.
9. **After the engine starts, release the key, check for water gurgling out the exhaust. Look over the starboard stern to verify that water is coming out. You can increase the RPM's while in neutral by pushing in the black button & slowly pushing the throttle forward.**
10. While the engine warms, check your fuel level. The fuel gauge is on the key panel.
11. **Please allow 5-10 minutes of warm up before placing a load on the engine.** It is very hard on a diesel to be placed under load when cold.
12. Whenever the engine is started to recharge batteries or provide hot water when anchored, run the engine for at least 15-20 minutes before turning it off as it must be hot enough to evaporate any water remaining in the cylinders.

b. Proceeding in Forward / Reverse

Bring the throttle to the neutral position, which is angled slightly back instead of a straight-up position. Now you may engage forward gear by pushing ahead on the throttle or reverse gear by pulling back on the throttle. To keep the transmission “healthy”, please pause 2 seconds (say “one and two and”) in the neutral position when shifting from forward to reverse and vice versa.

c. Operation

54 HP Yanmar Diesel 4 series engines are very reliable. Cruising speed is **7.5-8 knots** at **2800 RPM**. Fuel consumption is approximately 1 gallon/hour at 2800 RPM.

Please do not exceed 3000 RPM because it's hard on the diesel and fuel consumption goes WAY UP (at very little increase in actual speed). We find the engine will have least vibration at 2800 RPM...and at some points below 2800 RPM. (6-7 knots at 2200-2500 RPM – economy cruise speed at less than ¾ gallons per hour.)

To avoid the possibility of sucking air or sludge when the fuel level approaches 1/4 of a tank, refuel when the fuel drops below 1/2 full and before it reaches 1/4 full.

Engine Overheat. If the buzzer sounds while the engine is running, about 999 times out of a thousand it's no more serious than eelgrass plugging up your raw water strainer. The best upfront solution to this problem is prevention—keep an eye peeled for eelgrass mats, especially along those “soapy” looking tide and eddy lines in the water. And don't run

over it. When eelgrass gets sucked into the engine cooling water intake, it jams at the raw water strainer.

Clearing eelgrass from the raw water strainer can only be done when the boat is stopped and the engine turned off. The strainer is located under the galley floor. To clean a strainer, first, make sure that the seacock (water supply valve) is in the CLOSED position. Failure to close the intake of seacock could result in a flooded boat. Prior to unscrewing the encasement place rags nearby to clean up the sea water that you will spill and will run into the bilge. Next, unscrew the plastic encasement (Raw Water Strainer) that houses the screen. Remove any objects collected inside and wash the screen. **When replacing the cleaned screen and encasement, be sure the “gasket” is in place, and the encasement tightly closed.** Then open the seacock and check for any leaking before starting the engine.

NOTE: BEFORE STARTING THE ENGINE BE CERTAIN THE SEACOCK IS OPEN AND AFTER STARTING THE ENGINE CHECK AGAIN THAT WATER IS EXITING THE EXHAUST!!

If upon restarting, the engine overheats again, check the seal between the strainer, the rubber gasket, and the lid. If the strainer is drawing air, it won't draw water. If needed, open and then retighten the lid on the strainer...and check to make sure the rubber gasket is in place in the lid (and not lying in the bilge.)

If the above fails to solve the problem, call San Juan Sailing for assistance.

There may be other reasons you hear the buzzer. If you lost oil pressure, the oil icon warning light will light up, so check which light is showing red. If it's the oil light, shut down the engine, check the oil level, and contact San Juan Sailing. The alarm buzzer is more likely to indicate engine overheating, and the temperature icon light will light up. Before you shut down the engine, check for water gurgling out the exhaust. If you have a “wet exhaust”, check the coolant level in the overflow reservoir bottle and if none is seen, add enough to reach the top level line on the bottle. (ONLY AFTER THE ENGINE COOLS DOWN, you might remove the cap on the engine block and add coolant.) And check the bilge for a light green liquid. If found in the bilge, call San Juan Sailing. If the coolant reservoir bottle is full, check to see if the engine threw a belt. Without a belt on the raw water pump, the coolant won't circulate and cool the engine. (Replacement belts are located in the engine spares kit.) One other possibility is that the impeller in the raw water pump has failed. While they are replaced each spring with a new one, it's still possible that a hard object may be drawn in and break off an impeller blade. (A replacement impeller is found with the engine spares.) Call San Juan Sailing if you suspect you have an impeller problem.

d. Engine Shutdown

Remember--do not shut the ignition key while the engine is running! (This can damage the diodes on the alternator, and the batteries will no longer charge. If you accidentally do this, turn the key back to the “on” position as soon as possible.) Instead, first bring the engine to idle and the gearshift to neutral. Allow the engine 5 minutes to cool down. Then push the fuel cutoff button

located next to the key. After the engine stops, turn the key to the “off” position (turn it counter-clockwise) and remove key.

13. Fuel Tank

HALE KAI has a 50-gallon fuel tank. The engine consumes about 1 gallon of diesel per hour.

Please be very careful when fueling. Never allow maximum flow from the filler hose. If you do, the fill tube will surge and diesel will spill from the vents onto the side and onto the deck. It takes only a few drops of diesel fuel in the water to create a sheen and subject you to a Coast Guard fine. Fill slowly and carefully. Check the side vent and, with dish washing soap, wipe up any excess fuel to avoid yellowing the hull and stern and polluting the water. Also be very careful of drips when removing the hose. Diesel and shoe bottoms are a very slippery and dangerous combination. After wiping, please use soapy water to scrub down any drips so it does not stain the fiberglass.

Put your ear down to the fill hole and listen to the diesel flow. When the pitch changes and gets higher and higher, the tank is likely full and you’re now filling the hose between the tank and the fill hole. Avoid a fuel spill – STOP! Check the fuel gauge. If the gauge is not on “F”, continue filling. When you think you’re finished fueling, check the fuel gauge one last time to make sure it’s reading “F”. That way, San Juan Sailing will not charge you a \$50 fueling charge (plus the cost of fuel).

Note: Unlike automobile fuel gauges, fuel gauges on boats are notoriously inaccurate, especially on the low end. Therefore, whenever the fuel level drops below ½ full, you should refuel at your next opportunity. NEVER let the fuel level fall below ¼ full or you’re in danger of running out of fuel. (Towing and the cost of a mechanic to bleed the air from the fuel lines is an expensive proposition for a charter guest.)

14. Head & Holding Tanks

HALE KAI has a 35-gallon holding tank that will need to be emptied several times per week to avoid leaking sewage or, worse yet, an exploded holding tank...a real “vacation ruining” event! (San Juan Sailing staff will discuss holding tanks, overboard discharge and pump-out stations upon your arrival.)

The fresh water electrical heads aboard are easy to use but also easy to overuse. Wet the bowls very briefly before use with the “fill” side of the adjacent rocker switch, using minimal water. In this way we conserve water and room in the waste tank. Sometimes circumstances require that more water be placed in the bowl prior to use.

Use your judgment with regard to waste tank capacity and your cruising itinerary. When we plan to spend more time at anchor, we're inclined to dinghy ashore if sanitary facilities are available there. At the dock, of course, we pump out whenever possible or macerate when appropriate.

If you pump out the holding tank at a shore facility, please fill it with about 5 gallons of fresh water through the deck fitting to rinse, and then pump it out again. Thank you!

Offshore sailors have a rule: "Never put anything down a marine toilet that hasn't been eaten first." And that, of course, includes feminine items. In fact, offshore sailors do not even put soiled toilet tissue down a marine head. They simply deposit soiled toilet tissue (and feminine items) in a receptacle such as a waste basket with a liner bag or a zip lock baggie, but not down the toilet. We and San Juan Sailing highly recommend you follow this rule. And since we've been recommending this, we've had almost no incidents of plugged heads!

In the event that your cruising takes you to an area where the **macerator** can be safely and legally used, **make sure that the macerator through hull is open before dumping waste.** To use the macerator, you must turn the macerator switch on at the panel and then push over the spring loaded toggle switch to activate the macerator pump. While the macerator is pumping, you will hear it running. At the point when the pump empties the waste tank, you will then hear a change in the pump sound to a higher frequency. Continuing to operate the macerator pump when the tank is empty will likely damage the pump. **It is very important to close the macerator through-hull valve following evacuation of the waste tank. Failure to do so will simply fill the waste tank with seawater.**

15. Headroom

The HALE KAI Deck Salon offers comfortable 7'1" headroom with extra viewing and light.

16. Heater

The diesel-fired Webasto air hydronic cabin heating system will make the interior "toasty" within 10-15 minutes. The heater control is located left of the Navigation Station. The rocker switch is an on/off switch. Rotating the dial to the right starts the unit and raises the temperature setting. There are individual fan controls in each cabin of the boat that will allow you three settings: high fan, low fan, or off. Note: It takes about 5 minutes for the heater to "cycle up" and get hot. Turning the dial all the way to the left turns off the unit, however the fan will continue to run for about 5 minutes while the unit is cooling down and cycling off. The heat is dry, comfortable, and on those rainy days or cool evenings, makes a huge difference in cruising comfort!

When it's cool, we recommend warming the boat before turning in for the night, with the last person to go to bed instructed to turn the diesel heater off before retiring. (Otherwise, the boat will get too hot and the electric fan in the diesel heater will drain the house batteries. The comforters will keep you warm in bed.) Then, the first one up in the morning can simply turn the cabin heater back on.

17. Inverter

When not on shore power, A/C power may be enabled by pushing the Xantrex button next to the DC panel. A red light comes on. Then, flip the "Outlets" breaker switch on the A/C electrical panel "on". **Never use the inverter when connected to shore power.**

18. Keel Depth

HALE KAI has a deep fin lead keel and draws 6'6" ...so figure on 8 feet to be on the safe side.

San Juan sailing strongly recommends that you always maintain a minimum of 10'-12' under the keel at all times, both underway and at low tide on anchor.

19. Outboard (Padlock combination is 4050)

HALE KAI is equipped with a 4-stroke Honda 2 horsepower outboard. This brand and size has proven to be a practical and VERY reliable dinghy outboard.

DO NOT add any oil to the gasoline mixture – it uses just straight gasoline. The fill cap is located at the top of the engine.

*As a courtesy we have an additional red spare gasoline container tied into your dinghy. **WARNING** – Gasoline fumes are explosive and a very dangerous fire hazard if stored on a boat. Keep the spare gasoline container in the dinghy and tied to the transom so it stays upright. NEVER store the spare gasoline container in a locker, lazarette, or any other storage area on your vessel.*

The outboard is light so it's easy to transfer from the stern rail outboard mount to the dinghy transom (and vice versa). PLEASE do not cruise with the outboard on the dinghy. It will no longer work after saltwater gets into or even near the intake of the carburetor. If this happens, you will have to condition your rowing muscles until you get back to Bellingham). We also recommend taking the outboard off the dinghy at night. We have actually had dinghies deflate in the cool of the night and had wind waves or powerboat wakes flip the dinghy over. It's a disturbing sight first thing in the morning to see your

outboard propeller sticking straight up, with the motor under the water. At that point it's nothing more than a very ineffective \$900 anchor. And we do not want to have to sell you a non-working outboard after it has been submerged!

a. To Start.

1. Push the fuel valve lever (starboard aft corner of the outboard) aft to the “On” position.
2. Pull out the choke switch (starboard forward corner of the outboard).
3. Open the air vent on the top of the fuel cap (top of outboard) by turning counter-clockwise about 3 full turns.
4. Make sure the black U-shaped kill clip (with the red lanyard) is clipped into the red shut-off knob (port forward corner of the outboard).
5. Turn the handle throttle ¼ turn counter-clockwise.
6. Pull the rip cord until it starts. (You shouldn't have to pull it more than 5 times.)

b. While Running.

1. Push the choke back in shortly after the engine starts (after about 10 seconds).
2. There is no transmission--just throttle up to go forward and throttle down to stop. If you want to go in reverse--just swivel the outboard around 180 degrees.

c. To Shut Off.

1. Shut the outboard off by pushing in the red shut-off knob (where the kill clip is clipped in). Or just pull the red lanyard until the clip pops off.
 2. To avoid prop damage, shut the outboard off and raise it out of the water before you reach the shore. Pull the outboard forward and out of the water until it clicks at stays in place.
- To put the outboard shaft back in the water, release the stainless steel lever on the starboard side of the shaft.

d. When Not in Use.

1. Put the outboard back on the outboard mount on the stern rail and tighten both braces.
2. Push the fuel valve lever forward to close (starboard aft corner of the outboard).
3. Close the air vent on top of the fuel cap (top of outboard) by turning it clockwise.
4. Secure the outboard further by tying the safety lanyard to the stern rail.

e. Troubleshooting.

If the engine won't start, review steps 1-6 above to make sure you've done all 6 steps. There is a spare spark plug and spark plug wrench in the tool box in case the engine won't start or is running

rough. (A new spark plug solves myriad outboard problems. If you use the spare spark plug, notify your check-in skipper upon your return so a new one can be placed aboard for future guests.) If the outboard is running and you're heading toward shore, and the engine suddenly quits, it's usually that someone has forgotten to vent the fuel cap. If the engine is running fine but the propeller isn't moving, the shear pin is probably broken – just take the cotter pin out to remove the propeller and replace the broken shear pin (a spare pin is located forward of the shaft under the handle grip) and put the propeller and new pin back into place.

20. Refrigerator/Freezer

The well-insulated Refrigerator (3.5 cu. ft.) must be turned “on” at the electrical panel. The temperature thermostat control dial with 1 through 7, (7 being the coldest will probably freeze lettuce) is located inside the refrigerator, along the aft edge.

The separate Freezer (2.1 cu. ft.) must also be turned “on at the electrical panel.

We recommend running the refrigerator at all times to avoid it becoming smelly. You may want to turn the thermostat down to “3” (the medium setting) at night. This will help conserve house battery power. Then turn it back up to “5” or “6” during the day.

21. Sails

Mainsail. The main has an in-mast furling system.

With an in-mast rig, in normal conditions, it's recommended that the **head** sail be deployed first (while underway). The mast bows slightly aft at the top. By deploying the head sail first, the pressure of the wind in that sail tends to straighten up the mast. This makes it easier for the main to deploy from within a plumb mast. So provided that the wind is less than 20 knots, steer to a course of approx. 60 degrees to the wind (close reach). Deploy the head sail first. Now you may throttle down and place the engine in neutral, sailing on the head sail alone. Shut down the engine. Now you're ready to deploy the main.

If you're in high wind (20+ knots) conditions, you may prefer to deploy the mainsail head-to-wind instead. That's okay but in this situation, deploy the main first. (Since you're in high winds, only partially deploy the main so it's in effect “reefed”.) Once deployed, fall off and begin sailing...just like you would on a vessel with a conventional main. Then partially deploy the head sail. Be conservative with the amount of sail you deploy in high winds. If you've been too conservative, you can easily deploy more sail area while sailing.

a. Deploying the mainsail:

1. The mainsail does not cooperate when the boom is pulled down tight, so give it a little “play”. Loosen the boom vang by pulling out about a foot of line (then close the rope

- clutch) and loosen the main sheet by pulling out about 3 feet of line (then close the rope clutch).
2. The “outhaul” line is what pulls out the main. Pull the outhaul by hand. Be careful not to force the outhaul or you will do damage to the rigging and the sail. If it does not respond to moderate force check for the hang-up. (Most rope clutches provide one-way stops, so you don’t need to open it when winching in.)
(Note: Make sure the furling line cam cleats are completely released during the unfurling operation.)
 3. For control, keep slight tension on the “main furler” line while pulling in on the outhaul until the main is partially or full deployed (depending on the wind and your preference). The wind pressure on the main (remember you should about 60 degrees into the wind on a close reach) will actually help the main to deploy.

b. Reefing & Furling the mainsail:

You have infinite reef points with an in-mast furling main. You can deploy as little or as much sail area as you determine is appropriate for wind conditions you encounter. And you can reef an in-mast mail while sailing and from the safety of the cockpit!

When you need to reef or furl the main, it’s best to allow the sail to fill slightly to starboard with the wind just over the port bow. This angle allows the sail to furl in over the rounded part of the furling slot (starboard side of the slot) and assures a better wrap with reduced chances of jamming. In order to avoid jamming, do not allow the main to luff much during this procedure. For best furling, and to avoid sail snarling, the main should be furled with the boat tight against a port side wind, not directly into the wind. In a steady breeze, one person can set the autopilot, adjusting to assure the relative breeze is appropriate, and handle the furling line.

Reefing or furling works best when a slight drag is placed on the outhaul to assure some tension on the sail as it disappears into the mast. Simply allow the outhaul to slide through a light grip will do the trick. It’s also possible to take a single wrap around the starboard cabin top winch with the outhaul line to produce some drag and a smooth wrap. It is also important to make sure the boom vang and main sheet are eased to assure a smooth wrap of the sail in the mast. The first time you furl the main, you may want to have one person handle the furling loop and another to guide the outhaul tension. It takes a bit to get used to. Also, be aware that re-tensioning of the main halyard may be necessary from time to time if you find the lower luff at the sail’s tack will not wrap into the furling slot. If you have difficulty in beginning the furling of the main, check to make sure the lower luff is in the slot. If not, try tensioning the main halyard just a bit.

Hale Kai will sail well with minimal weather helm in a 18-20 knot breeze under full sail. However, we recommend furling sooner rather than later as the wind rises.

The furling line is a spliced loop. If the loop becomes bound in the furling drive pulley, make sure there are no binding points on the outhaul or sail then the drive pulley can be turned with gentle pressure on a winch handle inserted in the furling drive pulley at the mast. Please do not force furling. If you have a problem check to make sure the outhaul line is completely free, the halyard tensioned and the sail under some wind pressure from the port side.

When reefing from the mast don't forget to set the selection lever on the mast-mounted furling drive pulley to the "ratchet" setting. This allows you to furl the main in but doesn't allow the sail to unfurl when tension is placed on the outhaul when the sail is tightened for reefed sailing.

Attention should always be paid to the neatness and spiral of the sail wrap inside the mast. If there's **any** sign of binding or doubling of the sail as it enters the mast, pull it out a little way using the outhaul and refurl. Never use a winch on the jib furling line, as it may damage the furling unit.

***IMPORTANT:** Be sure to keep plenty of tension on the outhaul in order to get a nice tight wrap of the mainsail inside the mast. The wind will help you get a nice tight wrap. Remember, if you furl the main without any wind pressure on it (if you're head-to-wind in high winds or if you simply becalmed), tension on the outhaul line is the **ONLY** force that will get you a nice tight wrap inside the mast. And a loosely furled main inside the mast could mean a tough next deployment or, in the worst case, a jammed main.*

Now that you're just sailing on a close reach on the head sail only, it's time to start the engine and shift into forward in order to maintain your course of 60 degree off the wind. While holding course, furl in the head sail. And motor in to your anchorage or marina!

HALE KAI has a new 3-bladed "Maxprop" for sailing efficiency, gaining you an additional 0.25- 0.5 knots under sail. Enjoy!

22. Shower, Hot Water & Shower Sump Pump.

Hot water is stored in an insulated tank. It takes about 20-30 minutes of running the engine under load to get the water hot. When using onshore power, you can heat your water electrically by turning the "water heater" switch on the A/C panel to the "on" position. It takes about an hour to heat the water electrically.

CAUTION: The engine heats water to scalding temperatures! So please BE CAREFUL!

After pushing the “sump pump” breaker to “on” at the electrical panel, the pump is controlled by a toggle switch. In the forward shower, the switch is located on the starboard wall (behind the door above the head flush button).

Experienced cruisers know the sailor’s shower: get wet, turn off the water, soap up, rinse off. (If the shower basin overflows, you’re using too much water.)

On warm, sunny days, an alternative to the below decks shower is the swim platform shower (with hot and cold water) located next to the swim ladder. This is also a good way to rinse off salt after swimming or dirt after going ashore.

23. Spares

HALE KAI is equipped with tools, engine and general spares. They are located in the most-forward compartment under the forward cabin bunk. You may need to turn the tool bags and plastic container sideways to get them in and out. The liquid spares oil, coolant etc. are in the port aft locker.

24. Stove/Oven/Microwave

The gimbaled propane stove has three burners and an oven. Propane is a hazardous gas, and requires caution. For your safety, please follow these procedures

a. To operate the stove:

1. Make sure all stove control knobs on the stove are in the “off” position.
2. Open the faucet-like hand valve at the propane tank all the way open.
3. Open the tiny hose valve located on the gas intake into the boat. It is located between the two tanks. This is easiest seen and done by first removing the tank that is NOT hooked up from the swim locker. **This nob can be left on for the duration of the trip.**
4. Turn the electric solenoid switch located at the end of the counter on the side to “on”. A red light will appear.
5. **To turn on the stove** push the burner control knob in and turn to the left to the ignite position and depress the red button on the left. The burner should light after depressing the button several times. Hold the knob in for 3-4 seconds (warming a thermal couple) and release. You may then operate the knob like a normal stove.
6. When finished with the stove, shut off the burner(s), then shut off the solenoid switch. (What little propane remains in the line from the tank to the galley is insignificant, and even if this tiny amount of propane were to leak into the cabin, it would not cause a problem.) No need to shut off the propane tank during the day.

7. At night, it's recommended that you turn off the propane tank with its faucet-like hand valve. That way, should the solenoid valve fail, there's no chance that propane will leak into the vessel. (Since propane is a deadly gas, you'll sleep much better!) Then, the first one up in the morning can go out to the tank and turn it back on to start the water boiling for the coffee!

b. To operate the oven:

With a few exceptions, these are the *same* steps as documented on the inside of the oven door. We found errors on the oven door and corrected them here.

Note: First check to be certain nothing flammable has been stored in the oven.

1. Ignite the right top burner for 1 minute. This will enable the air in the system to be bled.
2. Turn the thermostat knob from "OFF" to "PILOT ON" position.
3. Push in the safety button located next to the thermostat knob.
4. With the safety button pushed in, light the oven pilot with a match or lighter.
5. After the pilot is lit keep the safety button pushed in for 10-15 seconds.
6. Release the safety button and turn the thermostat knob to the desired setting. The oven burner will ignite in about 1 minute.
7. If the pilot goes out, turn the thermostat to "OFF" and wait 5 minutes then repeat steps 2-6.
8. When finished with the oven, shut off the burner(s), then shut off the solenoid switch (this is the same instruction as above when finished with the stove).
9. At night, it's recommended that you turn off the propane tank with its faucet-like hand valve. That way, should the solenoid valve fail, there's no chance that propane will leak into the vessel. (Again, the same instruction as above when done with the stove at night).

c. To operate the microwave:

1. When you have shore power to Hale Kai, first flip on the microwave breaker on the A/C panel. The operation is like most microwaves you have used in the past. If you would like more detail you can search out the manual in the blue Hunter bag in the drawer under the starboard settee across from the dinette.
2. If you are at anchor and wish to use the microwave the inverter can be activated. The performance of the microwave is less than on shore power and the benefit may not be worth the drain on the house batteries.

Please note that the propane tanks both are located in the port aft propane locker below the BBQ which is vented and isolated from the rest of the boat. Any leaks there will move down, out, and away from the boat.

While the propane tank normally lasts for 4 weeks or more, San Juan Sailing's staff tops them off every 2 weeks...so you'll have plenty for you cruise!

If cooking underway, gimbale the stove by adjusting the lever below the stove. Then if the boat heels, hot liquids and foods will not readily slide off of the stove.

When cooking at a dock or in a quiet anchorage, lock the stove in position. That way, if someone leans on the stove or grabs the oven handle, it won't tip and spill pot/pans on the cooktop.

25. Water Pressure & Tanks

The fresh “water pressure” switch is located on the D/C electrical panel. Push the breaker “on” to activate the pump. The water tank level indicators are located to the left of the panel and labeled 4 & 5. Push each button to activate the indicator lights to provide you with the water level of each 50 gallon tank.

The tanks are drawn evenly with your use of water so no water management is required on your part. Our recommendation is to at least start thinking about filling the water tanks when they become half empty.

26. Entertainment Systems

BOSE 3:2:1 System: – The remote controls for the Bose System and the TV are located in the starboard cabinet nearest the entertainment system. There is also a small collection of DVD’s for your enjoyment. To play a DVD turn on the TV by depressing the round button, then select the DVD/CD setting on the Bose and you are set to go. The volume and the movie are controlled by the Bose remote control. A CD can also be enjoyed with the same setting.

You will notice above the Bose consul an MP3 connector cable for your iPod, iPhone or other MP3 device. Select Aux on the remote and you are ready to enjoy your music.

Cockpit Stereo System: - The separate Cockpit Stereo System provides you with the ability to listen to the radio or use your Bluetooth your music device. To use the system, which is located between the knot meter and the depth sounder in the cockpit, depress the plastic lever at the bottom the unit is located in the chart table on float. You can also control the system at the unit. The operation is simple and like most systems you have used on other boats.

Enjoy your vacation aboard *Hale Kai!*

* * *

27. Appendix A: HALE KAI - Hunter 41 Deck Salon Specs:

Year: 2008

LOA: 40' 4"

LWL: 35' 6"

Beam: 13' 3"

Draft: 6' 6" Deep Fin Lead Keel

Displacement: 19,400 lbs. (dry)

Mast height above WL: 63' (with antenna)

Fuel: 50 gal.

Water: 100 gal. Water Heater: 11 gal.

Holding Tank: 35 gal. Gauge shows level. Macerator: yes

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