



# OWNER'S NOTES

*Revised February 3, 2025*

## Table of Contents

1. Welcome Aboard .....	3
2. Vessel Specification & Information.....	4
3. Fuel Consumption and Range .....	6
4. Through hull Diagram .....	7
5. Nuances.....	8
6. Emergency/Safety Equipment .....	9
7. Being Whale Wise .....	10
8. Anchors and Windlass.....	12
9. Barbecue .....	14
10. Batteries, Charging, Inverter, and Generator .....	15
11. Berths and Bedding.....	17
12. Bilge Pumps.....	18
13. Bow Thruster.....	18
14. Dinghy and Outboard.....	19
15. Dodger, Bimini and Cockpit Enclosure.....	22
16. Electrical.....	22
17. Electronics and Instruments .....	24
18. Engine.....	28
19. Entertainment System .....	32
20. Fuel.....	33
21. Generator.....	33
22. Heads and Holding Tanks.....	35
23. Heating/Cooling (Cabin).....	36
24. Lighting.....	40
25. Refrigerator and Freezer.....	40
26. Sails and Rigging.....	40
27. Showers and Sumps.....	41
28. Stove, Oven and Microwave .....	42
29. Water .....	43

## 1. Welcome Aboard

We welcome you aboard **STARHAVEN**, our beautiful 2022 Beneteau Oceanis 40.1. We purchased her in 2025 with a vision of creating a home for unforgettable sailing adventures on the water, a vessel worthy of the stunning Pacific Northwest we call home.

**STARHAVEN** represents far more than a sophisticated sailing platform. She embodies our passion for exploration, our respect for the marine environment, and our commitment to sharing the joy of sailing with fellow adventurers like yourself. Every system, every detail, and every corner of this boat has been thoughtfully maintained and continuously upgraded to ensure your comfort and safety.

### What Makes STARHAVEN Special

**STARHAVEN** is a modern performance cruising sailboat that excels in all conditions. With her sleek hull design, powerful sail plan featuring a 105% genoa and Code Zero, and responsive twin rudders, she's equally at home in light airs or blowing conditions. Whether you're exploring the San Juan Islands, cruising the Georgia Strait, or venturing further afield, **STARHAVEN** delivers a sailing experience that balances excitement with comfort.

Her well-appointed interior provides genuine comfort for extended cruising—spacious queen berths, a genset, a fully equipped galley, comfortable saloon seating, and clean modern systems. This is a boat that rewards good seamanship and rewards sailors who take time to understand her capabilities.

**STARHAVEN's** interior is important to us. Please clean or remove shore shoes before entering the salon, wipe up spills promptly, keep the galley and heads organized, handle all systems with care, and report any issues immediately to the San Juan Sailing & Yachting team. We also ask for a smoke-free environment onboard.

May you encounter fair winds and following seas. We look forward to hearing about your adventures aboard **STARHAVEN**.

**Bon Voyage!**

*Tatiana & Christian Maier*

*Owners, STARHAVEN  
Seattle, Washington*



## 2. Vessel Specification & Information

<b>Vessel</b>	Name	STARHAVEN <i>(formerly Marie Katherine)</i>	
	Home Port	Seattle, Washington	
	Make / Model	Beneteau Oceanis 40.1	
	Year	2022	
	Hull Number (HIN)	BEYGN144H122	
	USCG Official Number	1322236	
	MMSI	368240540	
<b>Dimensions</b>	<b>Length Overall (LOA)</b>	<b>42'3"</b>	<b>12.87 m</b>
	Hull Length	39'4"	11.99 m
	Length Waterline (LWL)	38'5"	11.70 m
	Beam	13'9"	4.18 m
	<b>Draft from DWL</b>	<b>7' 1"</b>	<b>2.17 m</b>
	<b>Air Draft (Bridge Clearance) from DWL</b>	<b>60' 2"</b>	<b>18.33 m</b>
	Displacement	17,604.00 lbs	7,985 kg
	Ballast (cast iron)	4,425.00 lbs	2,007 kg
<b>Engine &amp; Genset</b>	Make / Model	Yanmar 4JH45 (direct shaft)	
	Type	Diesel (4-stroke, 4-cylinder)	
	Rated Power	45 HP / 33.1 kW @ 3000 RPM	
	Alternator	12V / 125A	
	<b>Fuel</b>	<b>52 gal</b>	<b>195 liters</b>
	<b>Cruising Speed</b>	<b>7 kts @ 2500 RPM, Fuel 0.90 gal/hr</b>	
	Generator Make/Model	Fischer Panda 8000i	
	Generator Output Rating	6.0 kW, 120V/60A	
<b>Electrical</b>	Engine Start	1 x Renology 12V 100Ah	
	House Bank	4 x Renology 12V 100Ah (400Ah total capacity)	
	Thruster Bank	2 x Excide EP450	
	Generator Start	1 x Excide EP450	
	Inverter/Charger	Mastervolt 12/2000W (AC output 120V/60A)	
	AC Shore Power	1 x 50A 125/250V inlet	
	USB Ports (8 total)	5V DC / 2.1-2.4A / 10-12W	
<b>Anchor</b>	44# Delta FastSet	375 ft, 3/8" chain	Marked at 50' intervals

<b>Water System</b>	Fresh Water Capacity (2 tanks)	149 gal	564 liters
	Hot Water (AC/Engine heated)	11 gal	40 liters
<b>Waste System</b>	Holding Tank (aft cabin)	21 gal	80 liters
	Holding Tank (forward cabin)	13 gal	50 liters
	Discharge	Gravity overboard discharge	
<b>Galley</b>	Fridge Capacity	6.36 cubic feet	180 liters
	Freezer Capacity (3-star rated)	0.35 cubic feet	10 liters
<b>Rig &amp; Sails</b>	Rig Type	Fractional Sloop (9/10s)	
	Total Sail Area (Main + Genoa)	790.18 ft <sup>2</sup>	73.41 m <sup>2</sup>
	Sail Area: Main	401.75 ft <sup>2</sup>	37.32 m <sup>2</sup>
	Sail Area: Genoa (105%)	388.43 ft <sup>2</sup>	36.09 m <sup>2</sup>
	Sail Area: Code Zero	658 ft <sup>2</sup>	61.10 m <sup>2</sup>
<b>Performance Ratios</b>	Sail Area / Displacement	17.73	
	Ballast / Displacement	23.24%	
	Displacement / Length	149.89	
	Comfort Ratio	22.67	
	Capsize Screening Formula	2.06	
	Hull Speed (Theoretical)	8.31 knots	
	Pounds per Inch Immersion	1,880.62	
	Speed Number (S#)	4.21	

**U.S. Customs Re-Entry Decal** – Located on the port side of the starboard helm binnacle.

**Vessel Official Number - 1322236** (same number as shown on the Coast Guard Certificate of Documentation found in Section 5 Documentation of the Charter Guest Reference Manual (white binder). Starhaven's number is located on a bilge stringer behind the mast post. Look for 3" high characters on the aft stringer.

**Coast Guard Boarding Document** – Refer to the Charter Guest Reference Manual (white binder), Section 5 Documentation. Explains what to expect if you are boarded by the Coast Guard and where to find the information/equipment they may ask to see as part of their safety inspection.

### 3. Fuel Consumption and Range

#### PERFORMANCE DATA BY RPM

Operating Mode	RPM	Speed	Fuel (gal/hr)	Fuel (L/hr)	Range (nm)	Hours	Efficiency
Idle	900	0 kts	0.20	0.8	N/A	N/A	N/A
Low Cruise	2000	5.4 kts	0.60	2.3	468	86.7	9.00 nm/gal
Medium Cruise ★	2500	7.0 kts	0.90	3.4	404	57.8	7.78 nm/gal
High Cruise	2800	7.5 kts	1.20	4.5	325	43.3	6.25 nm/gal
WOT	3125	7.9 kts	2.50	9.5	164	20.8	3.16 nm/gal

★ *Recommended cruising setting - optimal balance of speed and efficiency*

#### FUEL CAPACITY & PLANNING

Parameter	Value
<b>Total Fuel Capacity</b>	52 gallons / 195 liters
<b>Number of Tanks</b>	2 integral FRP tanks
<b>Recommended Reserve (20%)</b>	10.4 gallons / 39 liters
<b>Usable Fuel excluding Reserve</b>	41.6 gallons / 156 liters
<b>Range excluding Reserve @ 7 kts</b>	324 nautical miles

#### FUEL CONSUMPTION BY DISTANCE

(At optimal cruising: 2500 RPM, 7.0 knots)

Distance	Fuel Required	Time Required
10 nm	1.3 gallons (4.9 L)	1.4 hours
25 nm	3.2 gallons (12.2 L)	3.6 hours
50 nm	6.4 gallons (24.3 L)	7.1 hours
100 nm	12.9 gallons (48.7 L)	14.3 hours
200 nm	25.7 gallons (97.3 L)	28.6 hours
300 nm	38.6 gallons (146.0 L)	42.9 hours

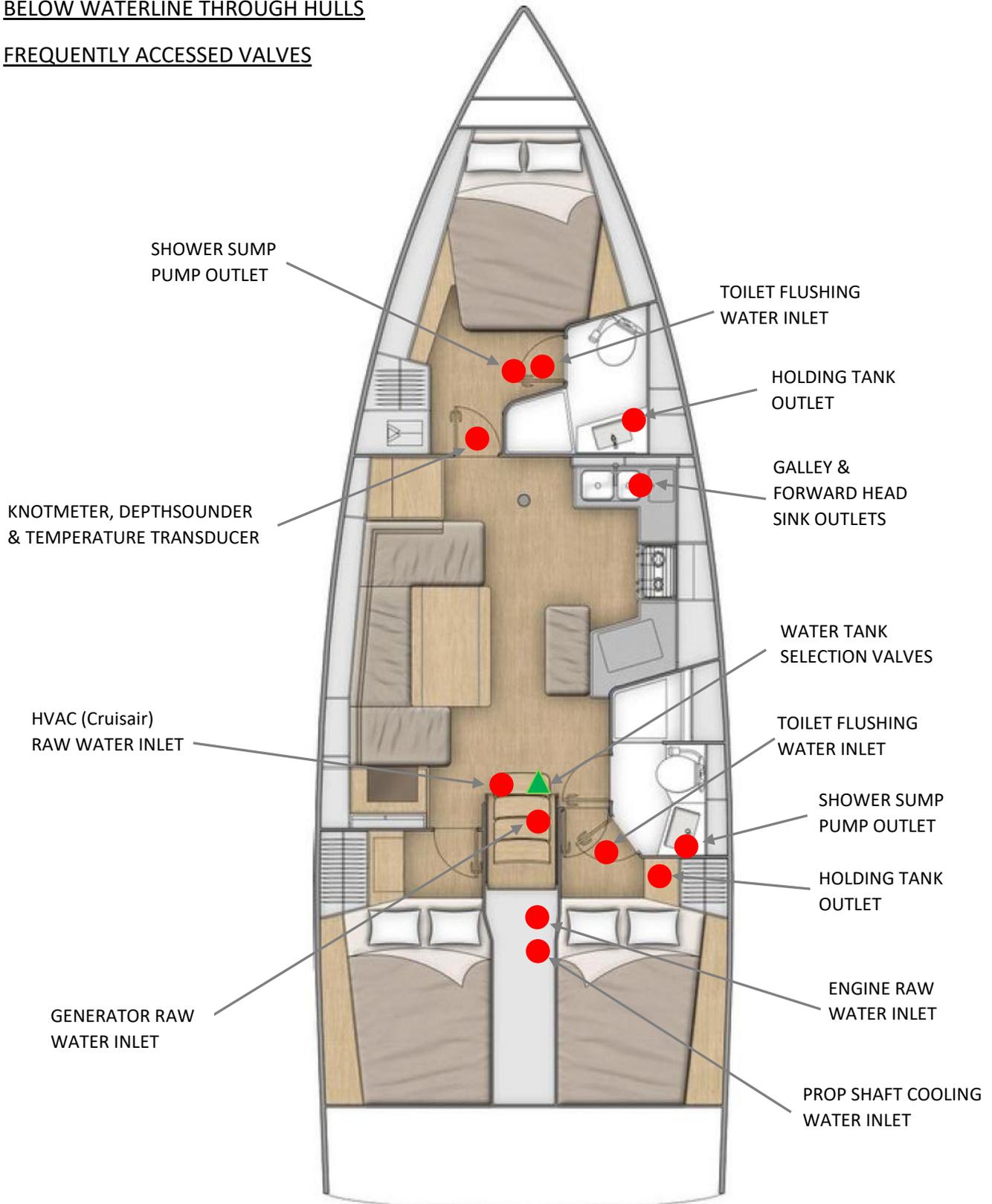
#### FUEL PLANNING RECOMMENDATIONS

- **Always maintain 20% reserve** for emergencies and safety margin
- **Optimal cruising at 2500 RPM** provides best balance of speed and efficiency
- Consider sea state and wind conditions - fuel consumption increases in rough seas
- Running at lower RPM (2000 RPM) provides 50% longer range but 23% slower speed
- Full throttle (WOT) should only be used briefly for emergencies - reduces range by 60%
- **Conservative passage planning:** Use 1.0 gal/hr for estimates

### 4. Through hull Diagram

● BELOW WATERLINE THROUGH HULLS

▲ FREQUENTLY ACCESSED VALVES



## 5. Nuances

There are a few things about Starhaven that are not 'typical'. These are the things that may require special attention.

### Bow Thruster

Fold-a-way type. You may not be familiar with this type, but it is becoming more common on newer boats. See the Bow Thruster section of these notes for operation details.

### Twin Rudders

Starhaven has twin rudders which are located at the port and starboard aft corners of the stern. When underway, the twin rudders give Starhaven excellent turning ability in both forward and reverse. Starhaven will maneuver as well as or better than any other modern single-rudder sloop. There is one nuance of this configuration that must be anticipated when maneuvering in tight quarters, and that is the **initial** lack of prop wash on the rudders when initiating a turn from a standstill. Starhaven will briefly move straight forward (about 3') until:

- a) The twin rudders respond to the water flow due to the forward motion.
- b) As the rudder on the inside of the turn swings toward the prop wash, it will quickly tighten the turn radius.

Refer to the Engine section of these notes for further maneuvering information.

### Salon Settee Bench Seat

The settee seating bench pulls out into the salon to create more leg room under the salon table. To do this, open the bench top and unscrew the black securing screw knobs on both sides (see photo on right). You can then gently slide out the bench. Please retighten the screws down so that the bench seat is stable. We find that during the day, having the bench tucked under the salon table makes maneuvering through the salon and galley much easier.

Securing  
Screw Knob



### Swim Step

Starhaven has an electrically operated swim step that makes getting in and out of the dinghy much easier. The controller for the lowering/raising the swim step is located forward of the port helm on the base the cockpit seat.

Lowering:

- a) Release the slide lock on the port side of the swim step.
- b) Press the down arrow on the controller to lower the step.

Raising:

- a) Check that the slide lock on the port side is not sticking out.
- b) Check that the ladder is secured in the black clips so it won't fall.
- c) Raise up all the way to the home position.
- d) Relock the pin on the port side to secure.

**Deck Caps**

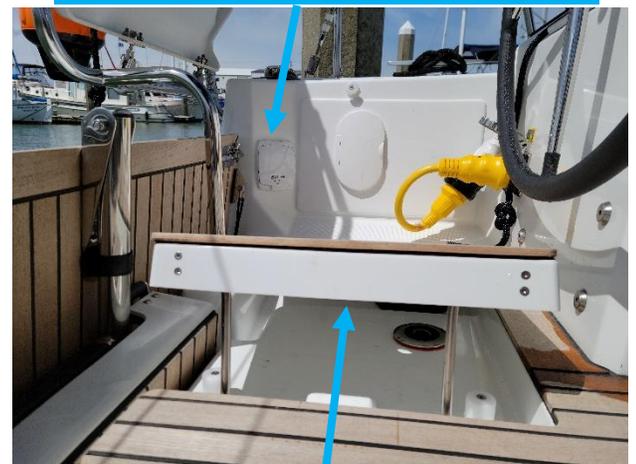
The deck caps and base fittings on Starhaven are somewhat delicate and can easily be damaged if over-tightened. Please do not use a winch handle as the inherent leverage applies too much force. Please only use the short, black deck cap key which is conveniently stored in the cockpit table. There is a spare located in the chart table.

**6. Emergency/Safety Equipment**

You are not likely to need many of these items but must know their location.

- **Bilge Pump (Manual) and Handle.** Located behind the port helm at floor level. Handle is clipped to the underside of the leveling floor platform behind the port side below helm. Note: if water rises above the salon floorboards, you can use shower sump pumps also in emergency.
- **Carbon Monoxide Detector:** Mounted on the ceiling outside aft starboard cabin door.
- **Cushions.** In case of Crew Overboard, throw anything that floats, quickly.
- **Emergency Tiller.** Long curved pipe mounted in clips inside the aft middle cockpit floor locker between the helms.
- **Fire Extinguishers (3):** Salon cubbie under nav ta; in cabinet forward of the settee; port cockpit locker.
- **First Aid Kit.** In aft head vanity cabinet.
- **Flare (Electronic) and Folded Plastic Distress Flag.** In green mesh bag in seat under nav station seat.

Manual (Emergency) bilge pump.



Bilge pump handle clipped to underside of the leveling platform.

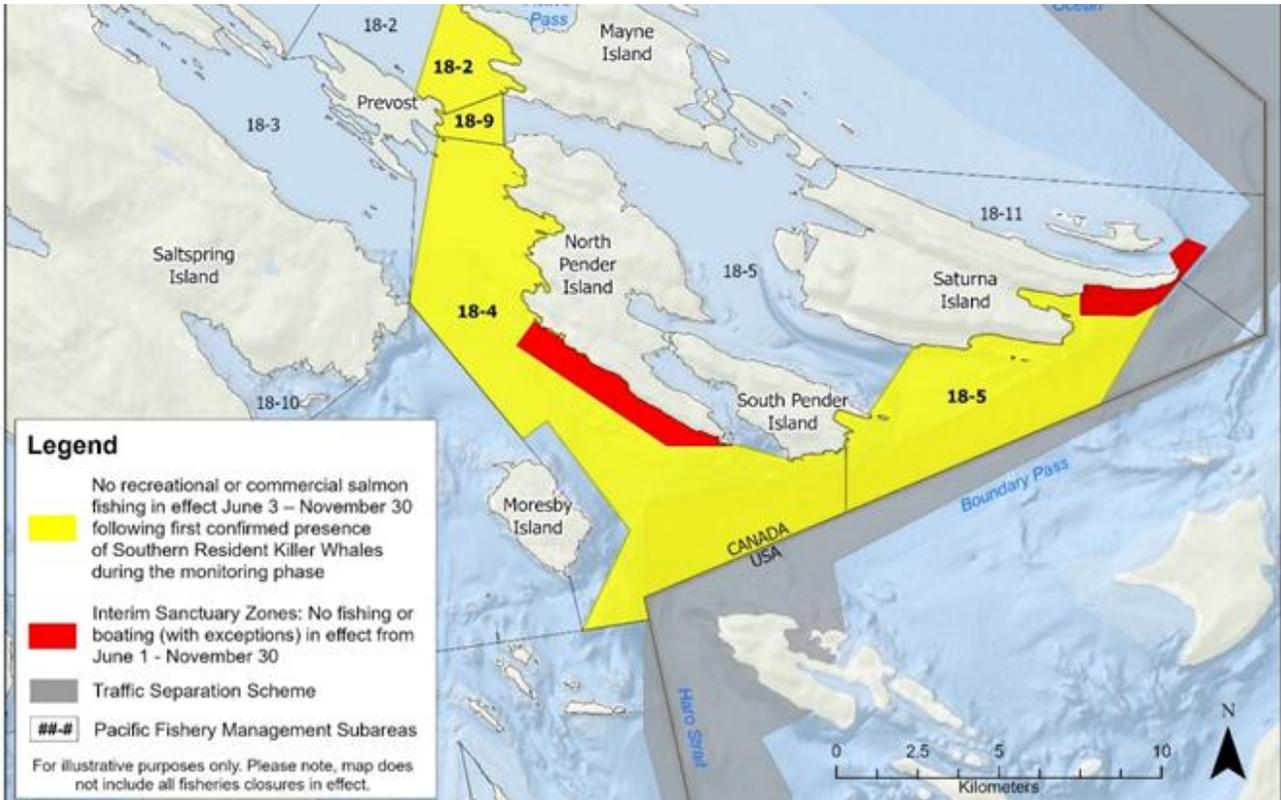
- **Flares (Pyrotechnic - 3).** In green mesh bag under nav station seat.
- **Flashlights 1 & 2.** Nav station and companionway
- **Flashlight 3 (Searchlight).** Shelf above nav station.
- **Horn, handheld.** In green mesh bag under nav station seat.
- **Lifesling,** port stern pulpit. Please review the cartoons on the face of the case for procedures. The lanyard is secured to the boat so that tossing the floating harness allows it to tow behind the boat like a ski tow rope. Circling the person overboard will draw the recovery line near them.
- **PFDs – Inflatables (5).** Located in the stateroom lockers. NSO: please check for “green” visible at bottom of clear canister before each cruise. That verifies the auto-inflate function when immersed. We wear these at all times when working the deck and often in the cockpit.
- **PFDs - Foam Vests (3).** Located in the stateroom hanging lockers.
- **Radar Reflector (tube style).** Port shroud above first spreader.
- **Tapered Plug, Universal Foam Orange StaPlug.** In green mesh bag under nav station seat.
- **Tools:** under nav station seat
- **Spares:** under nav station seat
- **VHF Radios:** Channel 16 is for emergencies. The B&G VHF base unit is located at the nav station along with a handheld wireless unit to use at helm. Make sure the wireless unit is stored in the induction charging cradle when not in use. The cradle is located under the chart table on the outboard side.
- **Windlass Clutch Release/Tighten tool (Use a winch handle).**

## 7. Being Whale Wise

Our resident orca whales are a wonderful part of the local family. But they are having a difficult time surviving due to declining salmon runs. These whales use echo location to find and catch their food and noise pollution from boats and ships makes it harder for them to thrive. In an effort to decrease human impact both the Canadian and US governments have implemented new rules. We provide a summary of these rules in the packet you receive when you arrive and more information in section 10 of the white reference book onboard Starhaven. Here is a summary of the rules in Washington State and in BC:

**Washington State:** In an effort to reduce boat-related noise, which negatively affects the southern resident orca's salmon foraging behavior and success, Washington State made some rule changes, effective January 1, 2025. Vessels are not allowed to approach within, or intentionally position themselves to become within, 1000 yards of a southern resident orca. If you find yourself inadvertently within 1000 yards of a southern resident orca, you must reduce speed to less than 7 knots and proceed as directly as possible to a distance that is more than 1000 yards away. However, if you find yourself inadvertently within 400 yards of a southern resident

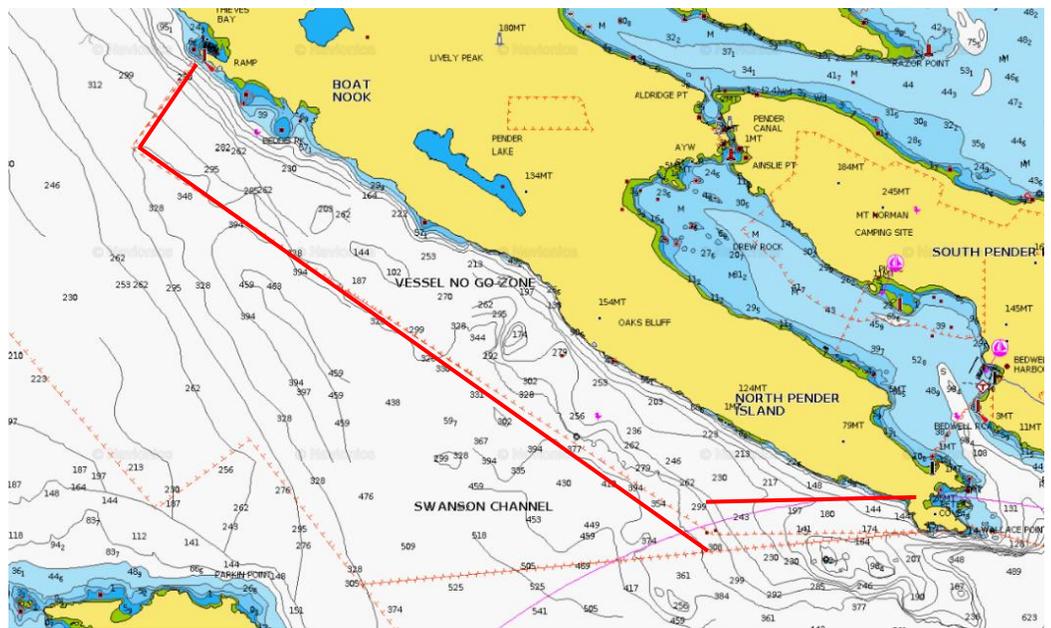
orca, you must disengage your transmission and wait for the orca to move away. Exceptions will be made where safety or rules of navigation do not allow compliance. Since most of us would not be able to distinguish a southern resident orca from a Biggs orca at any distance, let alone 1000 yards, please assume any orca you see is a southern resident.



**British Columbia:** In Canada they have gone a step further by creating some zones where boats are not allowed to further improve the environment for whales. Those zones are red on the diagram below.

And here is an example of what they look like on Starhaven's chart plotter(s). The red lines have been added to help point out the dashed lines, which are what you will see on the plotter.

Note this zone is just to the west of Bedwell Harbour, so on your way in or out of there be sure to avoid this area.



## 8. Anchors and Windlass

### Highlights

- Windlass breaker switch is labeled and located in the aft, port cabin at the base of the berth. Look for the yellow tab reset. Breaker is reset/on when yellow tab is vertical.
- Windlass remote controller located in the anchor locker, aft end in storage bracket. See photo on right.
- Engine must be running for windlass to operate.
- **Primary Anchor chain length markings: 300' of chain marked with 1 piece of green line at 50' intervals and 1 piece of yellow line in the middle of the 50' sections (ie. at 25', 75', 125', etc.).**
- Windlass clutch release/tighten tool (looks like a winch handle) is located in chart table. If the windlass slips when raising the anchor, the clutch may need to be tightened. In an emergency, if the anchor needs to be lowered quickly the clutch can be loosened. Keep enough tension on the clutch so the chain pays out at a controlled rate – keep an eye on the chain pile and be prepared to tighten the clutch if a knot of chain is pulled up.
- The windlass gypsy is not designed to hold the boat while anchored, so please use the snubber line with shackles on each end (stored attached to the anchor chain and the securing bale on the bow sprit – see photo on right) to hold the chain while setting the anchor and while anchored.
- Please avoid chipping the bow with the anchor by using caution and slowly raising/lowering the anchor when it is out of the water.
- Turn ON the Anchor light overnight. Breaker switch is labeled and located on the DC panel at the nav station.
- Secondary/Spare anchor is stowed in the aft middle cockpit floor locker between the helms.



### Details

Primary Anchor – 44# Delta FastSet mounted on the bow. 300' of chain marked with 1 piece of green line at 50' intervals.

Secondary Anchor – 50' chain and 200' nylon rope.

**Note:** There is a second windlass controller with chain counter at the starboard helm station. It is not practical to bring the anchor in from this position since the chain will pile up and the windlass will jam. However, it is possible, although not recommended, to let the anchor out using this controller. Obviously, the anchor would

need to be untied and lowered into the water by hand first to avoid swinging into the bow. The power to this controller comes from the windlass breaker, not the instrument breakers.

#### To Deploy Main Anchor:

- 1) We check tide tables to determine current water level and amount of rise and drop while anchored.
- 2) Weather (ch 4, "Northern Inland Waters" or ch 7) helps select a safe anchorage.
- 3) The windlass circuit breaker is in the port, aft stateroom at the foot of the berth.
- 4) Normal for the islands is a 4 to 1 scope, bow to bottom (add 5 feet to depthsounder reading: 4' freeboard and 1' for transducer below waterline). In San Juans, anchorages are often about 20'-35' bow to bottom, so we often deploy about 100' chain—hence the 10' marker at 100'.
- 5) To avoid hitting the hull when initially lowering the anchor, we do the following to prevent the anchor from swinging as it travels over the roller: Push the anchor forward keeping the shank *level* before gradually allowing the shank to rise as we ease it forward slowly into the hanging position (no swing!). Reset the chain counter at the helm station (if so desired).
- 6) Lower the anchor to approximately the number of feet on the depthsounder so the anchor is on the bottom by pressing the down switch. To loosen, pull aft, then use a pulsing motion to moderate gravity descent.
- 7) A signal to the helmsman prompts reverse at idle speed while deploying rode to the desired scope.
- 8) We then allow the anchor to set and to stop the boat while it continues in reverse, idle speed. We then line up objects on shore to determine if we are holding, staying in reverse at idle for about one minute.
- 9) Finally, we reset the snubber.
- 10) Then ease the windlass so it is not under strain.
- 11) If stronger winds are forecast, we test with RPM at half the projected windspeed (1,000 rpm for winds to 20 knots; 1,500 rpm for 30 knots, etc), *after* setting snubber. (We check movement shoreside, not the significant prop current going by the chain.)
- 12) In storm conditions (or storm forecast), you can increase scope if there is adequate room to leeward.
- 13) The secondary anchor is available for additional holding power if a storm is anticipated, but best if set before the storm hits.
- 14) If anchored in a small cove, you may wish to deploy a line ashore. 250' floating polypropylene on a reel resides in the stern cockpit table locker. Deploy the swim step; use the mop handle as an axle through the reel; secure the mop handle so the spool doesn't move. Deploy the line with the dinghy while the spool unwinds. If sufficient length, bring the line around a secure shore object and back to the boat to a transom cleat for ease of retrieval.

To retrieve the anchor:

- 1) Start the engine, given that the windlass draws from the engine start battery. Ensure that the windlass breaker is turned on.
- 2) Start raising the chain, assuring the chain is vertical during retrieval—this avoids either towing the boat or dragging the chain against the hull. Into a breeze, we engage forward gear as needed, but exercise care that we don't overrun and drag the chain against the hull.
- 3) A mountain of chain under the windlass can jam it and in rare cases cause a wild gravity runout of rode. If that happens, stand clear for safety. We avoid that chain "mountain" by "lifting" the chain forward in the well as it is retrieved, using the mop handle. We help lift the chain with the mop handle and pull it forward as another crew feeds it by pressing the "up" switch, 2'-3' at a time. Important for the initial chain retrieved. Last 50' can stack under windlass ok.
- 4) As the length of chain remaining approaches the water depth, the sound of the windlass laboring alerts us to immediately stop. Sometimes a brief pause will cause the anchor to break free, given the 90-degree angle of pull. A brief tap on the button, if laboring, says to break out the anchor with the engine in idle forward, not with the windlass.
- 5) To nest the anchor without chipping the hull, the anchor may need to be swiveled. We use the windlass to bring the anchor shank up and over the bow roller in one continuous motion, then nest the anchor by hand.
- 6) After nesting, with a slight *slack in the chain*; we secure the anchor once again with the snubber on the snubber. As noted, the chain is only "unsnubbed" when it is moving in or out.
- 7) Make sure windlass remote is fully in the locker clipped in its bracket *before* closing the anchor locker lid.
- 8) Windlass breaker normally remains "ON". Good in case of emergency deployment.

## 9. Barbecue

Highlights

- BBQ has its own dedicated propane tank mounted below the BBQ on the starboard stern rail.
- Please clean grill (using the brush attached with wire lanyard) when finished cooking.
- Always turn the regulator and tank valve OFF after use.

Details

To operate:

- Open the hand valve on the propane tank.
- Use one of the BBQ lighters to stick in the hole on the right to light the flame. See photo above.



- Push in the regulator (black) and turn counter clock wise to “high”.

When finished cooking:

- As a courtesy, please clean the grill after each use to prevent grease and grime buildup. To do this, run high heat for 8-10 minutes and then when cool, use the grill brush to remove food particles.
- Turn the regulator clockwise back to the off position.
- Turn the tank hand valve off.

## 10. Batteries, Charging, Inverter, and Generator

### Highlights

- Please keep batteries above 12.2V at all times. 12.8V is fully charged (with all loads turned OFF – including the fridge and when not charging).
- You can check battery status on the NAVICOLOR display (located at the nav station). See photo on right. Turn on the display by pressing the raised plastic vertical bar located just above the power icon on the left side of the unit next to the left arrow (note that the tab is dark colored and does not show up in the photo). Select the battery page (press the battery icon key lower right corner). Select each individual battery to view its voltage.
- When charging, battery voltages will read above 13V.
- Ensure batteries are charging when connected to shore power. See Charging/Inverting details below.
- When underway the engine is automatically charging all batteries.
- Caution is needed when inverting and using 120V power. Only low draw (wattage) items like phone charging or computers. High wattage items like microwave oven, hair dryers and electric heaters will quickly drain the house batteries.



### Details

#### **BATTERIES:**

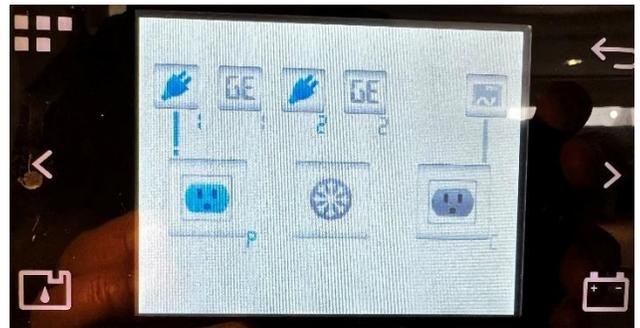
Starhaven has dedicated house batteries, engine/windlass and generator start batteries, and bow thruster battery. All batteries are charged automatically when connected to shore power or while the engine or generator is running.

The battery disconnect rotary dial switches are located the in port, aft stateroom on the foot of the berth platform. The battery switches are all normally left on. It is possible to accidentally kick a switch to the off position, so always check these switches first if you don't have power to a system.

## CHARGING/INVERTING

### Charging – Shore Power

- First, connect the 30Amp shore power cord to Starhaven's shore power receptacle below the port helm, then connect the other end of the cord to the 30A receptacle on the dock and flip the breaker on.
- Verify the vessel is charging by turning on the Navicolor controller at the nav station (touch the screen or press the power key on left side middle) and opening the Home page (press the Menu icon, upper left corner), then touch the "Cord Plug" icon.
- The next screen shows the status of the vessel's AC power connections (see photo on right). On the left side of the display you should see cord plug above linked to the outlet below. If not, see next bullet item below.
- Touch the "outlet" icon. The next screen shows another "Cord Plug" icon on the left and a "disconnected" symbol icon in the middle. The "cord plug" should be highlighted with red lines at the top and bottom of the icon. The voltage at the top left of the display should read between 110V and 120V. If the "disconnected" icon shows red lines then touch the "cord plug". From the port aft cabin you will hear a click as the contactor engages and energizes the outlets and the battery charger.
- Now go back to the "power connection status" page (photo above). The "Cord plug" will be linked to the "outlet".



### Charging – Engine

- All batteries are automatically charging when the engine is running.

## Inverter

- If 120V power is needed for low wattage devices when shore power is not available, the Inverter can be turned ON.
- The inverter powers the 120V outlets including the MICROWAVE OVEN.
- Make sure Inverter breaker is on (port, aft stateroom on face of berth)
- At the Nav Station, press the power button on the MasterVolt controller. See photo on right.
- Please turn the inverter OFF when not in use.



## BOW THRUSTER:

The bow thruster has its own battery bank located under the v-berth.

## GENERATOR:

The generator can produce 120V AC electrical power when you don't have access to shore power to allow use of the Cruisair heating/cooling system as well as charge the batteries. Refer to the Generator section of these notes for operating details.

## 11. Berths and Bedding

Starhaven has three cabins with queen size beds, hanging lockers and storage areas. There are ample sources of lighting in each berth. All hatches come equipped with sliding pull-out covers and sliding pull-out screens.

The forward cabin has its own private head with separated shower. The starboard cabin has its own door to the aft head for additional privacy and convenience.

The settee also converts into an additional sleeping area. See photo of completed setup on right. See "Nuances" at the beginning of these notes for instructions on how to move the bench seat.

- The filler cushion is stored in the forward cabin in the starboard side bulkhead.
- The shorter "legs" for lowering the table are stored in the salon, port side forward end in the top-access cubby behind the settee seat.



## 12. Bilge Pumps

### Highlights

- Emergency Bilge Pump (manually operated): located behind the port helm near floor level. The pump handle is clipped to the underside of the small cockpit floor hatch, aft end port side below helm.
- Electric Bilge Pump: Has an automatic float switch. The pump is located in the bilge under the center of the salon, forward end. Check the strainer on the pump inlet for any clogging debris and remove if needed. **Note: On the DC panel at the nav station, the Bilge Pump icon must be illuminated red to be set for AUTO operation (see top photo on right). Pressing the icon a second time will override the auto setting and turn on the pump continuously (the rotating pump icon and the ON light will both illuminate when the pump is turned on manually – see bottom photo on right).**
- There is a second high-volume electric float-switch bilge pump that is wired directly to the house batteries (ie. It is always powered – there's no switch on the DC panel).
- Please visually inspect the bilge each day, which is accessed by lifting the floorboard in the center of the salon, forward end. The refrigerator drains into the bilge, so most accumulated water is from melting ice and condensation. The intake tube is at the lowest point in the bilge.



Note: in emergencies, the shower sump pumps (black buttons inside each shower) can be turned on if water rises into the heads. And overflows into the shower basins.

## 13. Bow Thruster

### Highlights

- Fold-away type with drop-down deployment.
- Engine must be running to activate the thruster controller.
- Bow thruster is powered by its own 24V battery bank located near the bow under the berth.
- The thruster controller is located at the starboard helm. After starting the engine, deploy the thruster by pressing and holding both ON buttons for 2 seconds. The yellow light will quick flash for about 3 seconds while the thruster is deploying. The yellow and green lights will turn solid when thruster is ready for use. See top photo on right.



- The thruster will retract automatically if not used for about 5 ½ minutes. The red light will turn on while retracting. See bottom photo on right. You will need to press the two ON buttons again to re-activate the thruster.
- Use minimally, in short 5 second bursts. Continual use will overheat the thruster. It will shut down and not restart until cool – 10-15 minutes!
- Most of the vessel maneuvering should be done using the engine and rudder. The thruster is meant to be used for small corrections during your final approach into the slip or emergency situations to keep from hitting another vessel or dock.



*Caution: the bow thruster is very powerful, designed to push into a 30 knot sidewind. It will rotate the boat on its keel and can swing the stern sharply into the dock. Please position a crew with fender between stern and dock when departing and arriving until you get a feel for it.*

## 14. Dinghy and Outboard

### Highlights

- 10' fiberglass hulled Kachemak dinghy and a 2.3hp Honda outboard.
- Tow the dinghy 6' off stern using the port cleat (the side away from the diesel exhaust). Use a proper cleat hitch and for peace of mind tie off the painter's bitter end to base of the stern pulpit. In very rough conditions, towing the dinghy from the low side makes it unlikely the dinghy will flip in the wind and waves.
- Do not tow with outboard attached to dinghy or leave on the dinghy overnight.
- Inflatable tube air pump – located in the starboard cockpit locker.
- The 2.3hp Honda outboard is air cooled 4-stroke and takes straight gas.
- The spare 1-1/4-gal red gas can is filled 2/3 full (for expansion in hot weather) by our staff. We will top it off when you return the boat, no charge. We stow it in the dinghy, tied to the transom. For safety, please *never* store gasoline in a compartment on board Starhaven.

### Details

#### Towing the Dinghy

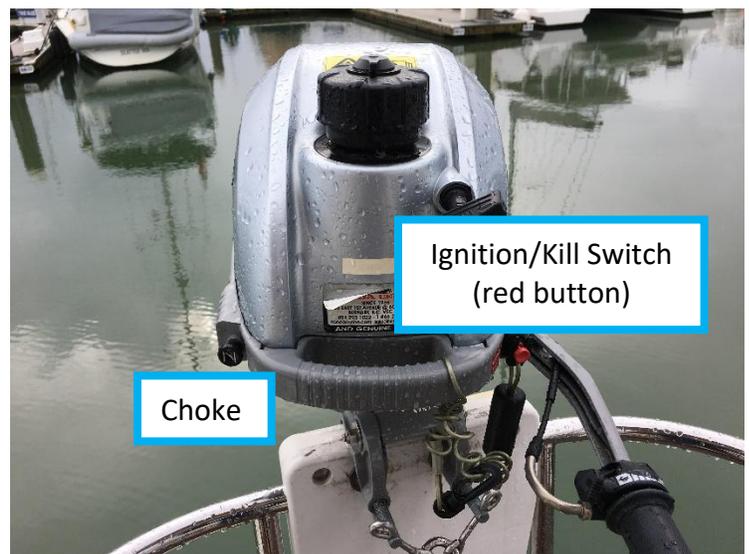
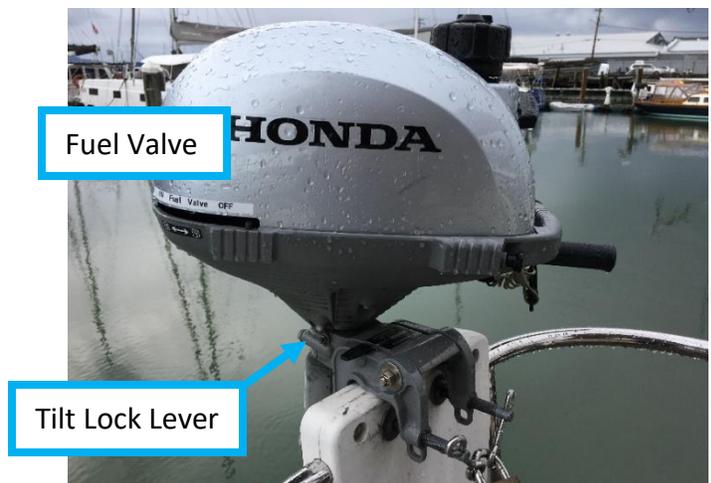
Always remove the outboard motor dinghy before towing. We leave the red spare gas can for the outboard engine in the dinghy, tied off to the transom. Towing works best when the dinghy is brought close to the boat with 4-5 feet of painter line between the stern and the towing bridle of the dinghy. This lifts the bow out of the water and reduces drag. To keep the dinghy away from engine exhaust, tie the painter off at the port stern cleat with a standard cleat knot, then attach the bitter end to the stern rail using a rolling hitch or similar secure knot.

### Preparing the Outboard

1. Unlock the outboard (combination is listed on your charter packet) and reattach the lock nearby on the stern rail.
2. Carefully loosen the mounting screws on the outboard bracket keeping one hand on the outboard handle at all times or tie the motor off to a dock line attached to Starhaven. We have actually witnessed a crew member allowing an outboard to flip off the rail and quickly sink into 30 feet of water!
3. Transferring the outboard to the dinghy is best accomplished by having one crew member in the dinghy to receive the outboard from another crew member on deck, rather than a single crew member trying to get off the boat and onto the dinghy with outboard in hand. Although the outboard is relatively light, it should be handled carefully.

### Starting the Outboard

1. Open the fuel valve by pushing the fuel valve lever (starboard aft corner of the outboard) aft to the ON position.
2. Pull the choke all the way out (starboard forward corner of the outboard).
3. Open the air vent on the top of the fuel cap (top of outboard) by turning the indicator halfway between ON and OFF. We have discovered that turning the indicator all the way to ON will sometimes cause the valve to close.
4. Make sure the black U-shaped kill clip (attached to the red or gray lanyard) is clipped into the red shut-off knob (port forward corner of the outboard).
5. Turn the throttle handle to the start position. There is a friction thumb screw that can be tightened to hold the throttle in the start position.
6. **NOTE:** The motor has a centrifugal clutch (no gear shift) – the propeller will spin when the RPM is above idle. Please make sure the dinghy is securely tied to Starhaven as the dinghy will surge forward when the motor first starts up at the starting RPM then will stop when you turn the throttle back to idle RPM after warmed up (about 10 seconds).
7. Pull the starter cord quickly then repeat a few times if needed until the motor starts. (You shouldn't have to pull it more than 5 times.)
8. Slowly push the choke back in shortly after the engine starts (after about 5 or 10 seconds). If the motor starts to run rough, then ease the



choke back out for another 5 seconds and then try pushing back in. Turn the throttle back to idle.

### While Outboard Is Running

1. Keep the red lanyard kill clip connected to your belt or PFD while operating.
2. The motor has a centrifugal clutch (no gear shift) – the propeller will spin when the RPM is above idle - 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 and throttle up. The tiller arm can flip 180 degrees.
3. Note that you will only have steerage when the propeller is driving the boat (throttle above idle RPM).

### Arriving at the Beach

1. Before you hit the beach and while still in a few feet of water, stop the motor 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. Close the fuel valve and vent lever (the motor will leak fuel when tilted if these are not closed. Also, the carburetor will be flooded making it hard to restart the motor).
2. Tilt the motor out of the water by pulling the motor head forward until it stops – you should here a “click” as the tilt support locks in place. Note that the motor is held in the lowered position by friction from a large rubber clip that grips the shaft. Very little force is needed to pull the motor shaft out of the clip.
3. To tilt the outboard back in the water, first pull on the motor head slightly to take the strain off the tilt lock then release the tilt lock by lifting up the black handled lever below the motor head on the starboard side of the shaft.
4. Please do not drag the dinghy up the beach over sharp rocks and barnacles.
5. Secure the painter to ensure the dinghy doesn't float away on a rising tide.

### When The Outboard Is Not in Use

1. Put the outboard back on the outboard mount on Starhaven's stern rail and tighten both bracket screws.
2. Put the combination lock back on the bracket screws.
3. Close the fuel valve and fuel cap vent.
4. Put the blue Honda cover back on the motor head.

### Outboard Troubleshooting

- If the motor won't start, review steps 1-8 above to make sure you've correctly done all 8 steps.
- If the motor is running fine and suddenly quits, then it is often because the fuel cap vent is closed.
- If the motor is running fine but the propeller won't spin with the RPM above idle, then the shear pin is probably broken. Put the motor back on the stern rail bracket, take the cotter pin out to remove the propeller and replace the broken shear pin. A spare pin is located the forward underside the motor head.

### Inflating the Dinghy

If the dinghy needs inflation, use the foot pump. The dinghy has three (3) baffles, each with an inflation valve located on the inside of the boat. Use the black adapter to inflate the main baffles.

The foot pump is held closed with a locking clasp. Release the clasp, insert the appropriate inflation nozzle onto the valve and give a ¼ turn to lock it in place. Inflate the baffle with the foot pump until it is firm. When done, carefully detach the inflation hose. If the valve is still open, press it once to close it.

## 15. Dodger, Bimini and Cockpit Enclosure

The Dodger-to-Bimini overhead connector piece can be removed (un-zipped). The rest of the dodger and the bimini stays in place. If you remove the connector piece, please store the connector piece in a place it won't get damaged, always rolling the material, never folding.

**TIP:** The plastic windows in the panels and on the dodger are vulnerable to scratching from dirt and salt crystals. When salt spray dries on the plastic, tiny salt deposits are left behind and tend to obscure your vision. Please avoid directly touching the plastic 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 plastic with sandpaper! To clean, use generous amounts of fresh water in a pan from the galley or dock hose and "flood" the glass to dissolve the salt crystals away. If the panel windows are really clear, you can thank previous guests for their diligence. And we thank you too!

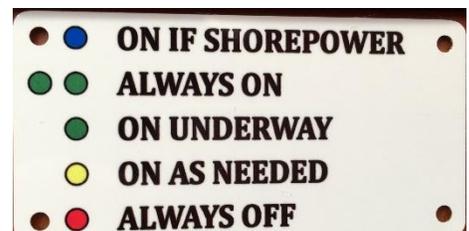
**Caution:** Most spray-on sunscreens and bug-sprays react chemically with the plastic windows. Please inform your crew to spray downwind of all the panels. And please don't lean against the panels with sunscreen on your back and shoulders. Once that chemical reaction takes place, the plastic is ruined.

Thank you for your good care!

## 16. Electrical

### Highlights

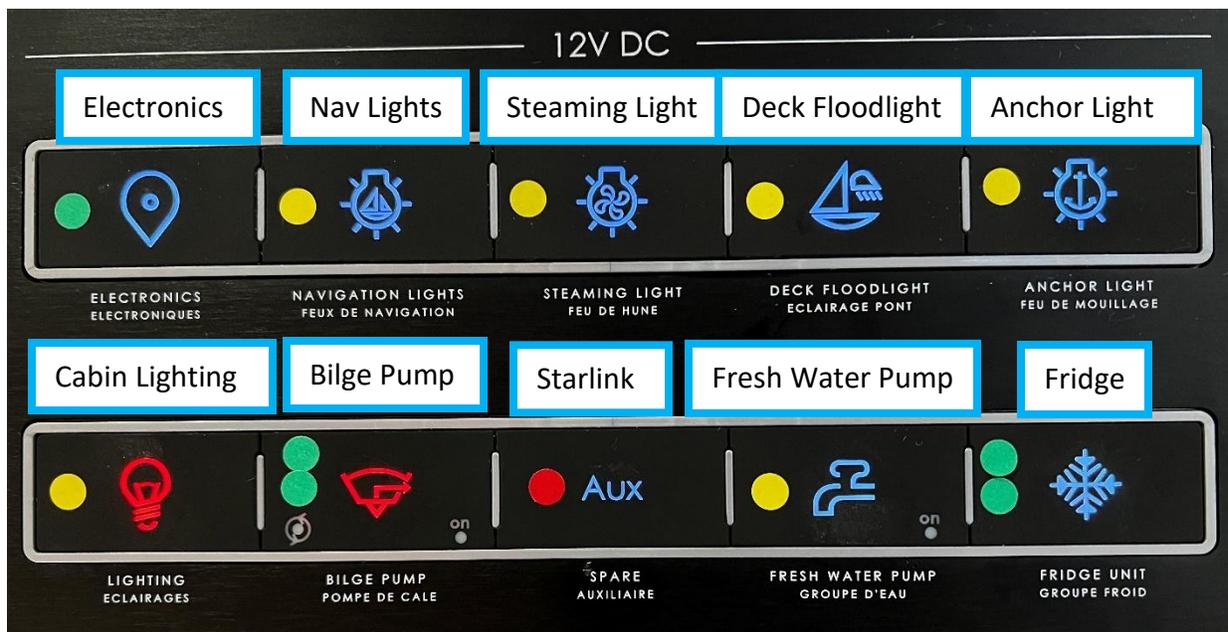
- DC panel located at the nav station. Breakers are turned on/off per the color dot convention shown on right. See photo of panel and description of the breakers below.
- AC panels are located in the port aft stateroom, adjacent to the berth on the outboard side behind the hinged panels. Under normal operating conditions, these breakers remain in the ON position.



- There is a GFCI breaker for the AC outlets located along with the AC panels. See photo on right. If you lose power to the outlets, it may be that the GFCI has tripped and needs to be reset.
- **Shore Power:** The shore power breakers are always left ON. To use shore power, you only need to connect the power cord at both ends then flip on the breaker at the dock pedestal.
- The vessel is wired for 50A service but is set up to use 30A. The shore power cord that is provided on board Starhaven is 30A with a 30A to 50A adapter pigtail so it can be plugged into the 50A outlet located at the port helm of Starhaven.



### Switches and Controls on the DC Electrical Panel



The DC electrical panel is located at the nav station. Here are some things to note:

- **Bilge Pump:** Always leave the bilge pump setting in “Auto.” See Bilge Pumps section of these notes for details on how to set the bilge pump breaker to Auto or Manual. Test the pump daily by switching to “Manual” and listening for the pump to run, then return it to the “Auto” setting.
- **Water Pump:** If you don’t hear the pump start when you turn it ON at the panel, it means that the system is at working pressure – you should hear the pump start again after you use some fresh water. Toilets, showers, and sinks in the heads use the fresh water supply, as does the cockpit shower.

**OPERATING TIP:** When underway and if no one is below decks, we turn the water pump OFF.

- **Lighting:** This switch turns ON/OFF DC power to the LED lights located throughout the boat. It must be “ON” before you can turn on any lights on the boat. See Lighting section of these notes for locations of light switches.
- **Fridge Unit:** We usually leave the fridge switch always “ON”. If the house battery charge level drops to near 12V and you aren't planning to run the engine/ connect to shore power, turn the fridge off. Your provisions will stay cold overnight.
- **Electronics:** Turn this switch “ON” to activate power to the B&G electronics, instrumentation, and multi-function display in the cockpit. This switch also provides power for the radar, depth sounder, and knotmeter.
- **Anchor, Steaming, Navigation and Deck Flood Lights:** When anchored or mooring, turn on the Anchor Light at dusk (located at the top of the mast). When motoring in low visibility, turn on the mast-mounted Steaming Light and Navigation lights. Turn on the deck Flood Light if you must go forward on deck at night.
- **AUX:** Turn Starlink router and dish on, please wait a couple of minutes for the device to boot and to acquire a satellite.

## 17. Electronics and Instruments

### CHART PLOTTER:

#### Highlights

- *Starhaven* is equipped with dual B&G chart plotters at each helm with C-Map charts. These are powered by the Electronics breaker on the DC electrical panel.
- After powered up, the system will return to the last formats / settings selected.
- Please refrain from changing settings beyond the typical functions like chart orientation, radar overlay, AIS overlay, and range.



## Commonly Used Chart Plotter Selections:

### Finding the Navigational Chart:

- From the Home screen (select the “squares matrix” icon at upper left of screen), select "Chart" (upper left corner).

### Zooming in and out:

- You can use the touch screen and tap the “+ and –” icons or “pinch/expand” the screen with two fingers.

### Returning the screen to the vessel's current location:

- When you have panned away from the ship, to get back to its current location, touch the “Clear cursor” box in the bottom right corner of the screen.



### Clearing Pre-existing Waypoints, Routes and Tracks:

- From the main menu screen select “Find...” which will open a screen where you can view, edit, add, or delete waypoints, routes, and tracks. While out cruising, you can create a new waypoint at Maire Katherine's current position or picking a point with your finger or using the cursor. Simply press the “balloon” icon soft key at the lower left of the keypad. See top photo above.

### Chart Orientation:

- When on the “Chart” screen, select Menu (three vertical lines icon in the top right of the screen). Select “more options” then “orientation”. We recommend setting the orientation to Heading Up.

### Display Brightness:

- Quickly press and release the “power” soft key (lower right corner of unit). Select Display Brightness and adjust.

### Course over Ground (COG) Vector/Line:

- The COG line should be on at all times. Select the Home screen (“squares matrix” icon at upper left of screen). Then select Settings – Chart – Extension Lines – Course over Ground.

### Radar Overlay:

- Turn on the Radar: Home screen – Radar – Menu screen – Transmit
- Turn on Radar Overlay on the chart: Home screen – Chart – Menu screen – Overlay - Radar

### A.I.S. (Automatic Identification System):

#### Highlights

- Starhaven transmits her position and data via an AIS signal as well as receives AIS signals from other vessels equipped with AIS transmitters (Commercial vessels are required to have AIS, recreational vessels are optional). Starhaven is only transmitting her position when the VHF base unit radio is ON.
- The chart plotter is tied to the VHF radio or AIS Unit and shows the positions of vessels with AIS as triangles.
- AIS information supplements marine radar, which continues to be the primary method of collision avoidance for water transport.

- AIS requires each vessel to have a 9-digit MMSI (Maritime Mobile Service Identity) number to transmit position and data. Starhaven's MMSI number is 368240540.

### Details

AIS vessels appear on the chart plotter screen as triangles. The triangle points in the direction that the vessel is moving and if you touch the screen over the triangle the system will give you additional information (such as name, size, speed, bearing, etc.) about the vessel. The system also transmits this same type of information about *Starhaven* to other vessels with AIS.

The AIS is an added safety feature which allows large commercial vessels to easily see you and your direction/speed. They may try to contact you via VHF channel 16 to verify your course intent. In addition, AIS allows San Juan Sailing/Yachting to provide faster assistance in case of unplanned maintenance issues as well as alert San Juan Sailing/Yachting of *Starhaven's* return approach. Vessels with AIS can be viewed in real-time through mobile device apps and websites like [www.marinetraffic.com](http://www.marinetraffic.com) that will reveal a vessel's course, speed, track, and other information.

### **AUTOPILOT:**

#### Highlights

- To engage the autopilot, press "AUTO" one time. See photo of controller (located at the port helm) on far right.
- To disengage the autopilot, press "STBY".
- The gyrocompass for the autopilot is located in the salon, on the port side behind the settee seat back (see photo on near right). Make sure that no magnetic (ferrous metal) items are stored nearby.



### **VHF RADIOS:**

#### Highlights

- B&G VHF base unit and wireless handheld.
- The base unit always has power - there are no breakers to be switched on to activate power to the base unit.
- Turn on base unit first then handheld.
- Handheld VHF charges automatically using inductive charging when snapped into the charging bracket located at the nav station below the chart table on the outboard side (see photo on right).



- We recommend that you monitor Channel 16 during your cruise. It is reserved for emergencies and boat-to-boat initial contact. After contact, move to a working channel (68, 69, 72, 74 or 78). We listen to weather channels 1-10 (whichever gives the best reception, normally 4 in the San Juan Islands) before we sail in the morning and prior to anchoring for the evening. Listen for the reports identified as "Northern Inland Waters". San Juan Sailing monitors channel 80 during office hours (closed Sundays).
- **Newer VHF units (including the B&G radios on Starhaven) have adopted the latest channel numbering system** – many of the familiar 2-digit channel numbers like 79 & 80 have changed to 4-digits with the first two digits being 10, (ie. 1079 & 1080). Refer to the new listing in the Charter Guest Reference Manual binder on board, section 7, VHF Procedures & Weather Reporting.



### Details

Listed below are instructions on how to use some common features:

- **Turning On and Off the radios** – Base unit and handheld: press and release power button (lower left). Turn off by pressing and holding the power button for 2 seconds.
- **Silencing a DSC Alarm** – When another boat (or the Coast Guard) sends out a DSC signal on a radio, it will activate an alarm on the radios of all boats in the area. To silence this alarm, press any key on the radio.
- **Changing from High to Low transmit power** – Press the H/L button on the mic. The LCD display shows HI or LO. HI is 25W and LO is 1W. When channel 16 is selected, the unit will automatically switch to Hi power. On the handheld, make a long press of the OK H/L button to change power.
- **To quickly get to channel 16** – press the red 16/9 button. A long press will take you to channel 9.
- **Accessing the weather channels** – Pressing the Sun/Cloud/Rain icon button (below the LCD, left side) will toggle between weather channels and normal channels.
- **Adjusting Volume and Squelch**
  - Press the Vol/Sq knob to toggle from squelch to volume. Turn same knob to adjust level. The volume level is shown on the left side of the LCD and squelch on the right. The active one is bolded.
  - On the handheld, the Vol/Sq soft key is on the right side of the unit.
- **Changing between USA, International & CANADA channel modes**
  - Open the main menu with a long press of the DSC / MENU button (top left).
  - Select RADIO SETUP then UIC then USA, INT'L, or CANADA. The radios should be left in USA mode.
  - The top right corner of the LCD shows the channel mode selected.
- **How to set up and use Channel Scanning**
  - Open the main menu with a long press of the DSC / MENU button (top left).
  - Select SCAN then EDIT MY CHANNELS. Select desired channels to scan.
  - Then go back and select MY CHANNELS + 16.
  - To start scanning, press the SCAN button below the LCD.

## 18. Engine

### Highlights

- Yanmar 45hp 4-cylinder diesel.
- Maximum RPM is 2900. Cruising RPM is 2000-2500. Idle is around 800 RPM. It's OK and in fact preferred to vary engine speed as you cruise. Please try not to exceed the cruising RPM range.

### Details

#### Inspecting the Engine

Engine access is provided by lifting the companionway stairs, which operate on hydraulic lifts – there are no latches, just lift it up, push it down. Side access is provided via hatches in the aft cabins.

We recommend performing the following inspections each morning before getting underway:

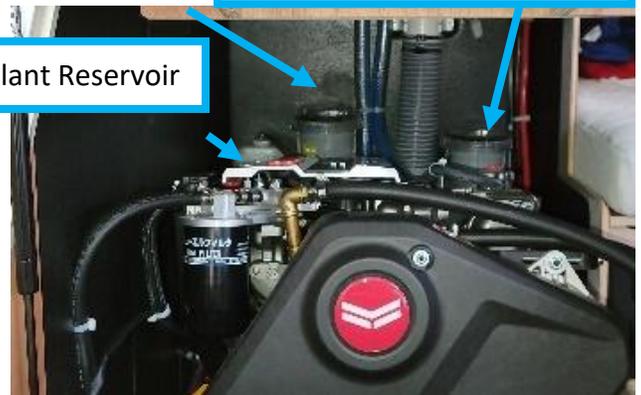
- Look around and below the other fluid leaks.
- Check the coolant level. Anywhere between the two lines (high and low) on the overflow reservoir is where you want to be.
- Inspect the raw water strainer for debris using a flashlight pointed down at the transparent lid. **Unless the strainer is clogged with debris and needs to be cleaned out, do not remove the cap.** If you have to clean out the strainer, make sure the o-ring seal is in place before replacing the cap AND do not overtighten the cap – just enough pressure to seat the o-ring.

Generator Raw Water Strainer

engine for any signs of oil or

Engine Raw Water Strainer

Coolant Reservoir



For longer charters (> 7 days), check the oil level once a week. The dipstick is on the starboard side of the engine and can be accessed from the starboard cabin (look down and to your left). If you need to add oil, there is spare oil stored in the front of the engine compartment. There are two (2) oil filler caps, one on top of the engine and one on the left side near the dipstick. Do not overfill, add no more than a cup at a time and re-check the oil level.

The fuel filter is on the starboard side at the front of engine. On the port side is the raw water pump.

### Starting/Stopping the Engine

- The Yanmar Start/Stop Panel and the Throttle/Shift lever are located at the starboard helm. See photo on right.
- This is a keyless start system. The main battery engine switch, located in the aft port cabin at the foot of the berth, must be in the “ON” position to start the engine. When docked in a marina, or leaving the boat for an extended period, switch the engine battery switch to “OFF” and lock the companionway hatch.

**OPERATING TIP:** In colder weather or when you want to run the engine at a higher idle speed (e.g., to charge batteries), depress the button at the base of the throttle and push the throttle slightly forward. This disengages the transmission and allows the engine to run at a higher idle RPM. We recommend targeting 1000-1200 RPM for warm-up and battery charging.

- Ensure that the throttle/gearshift is in neutral (vertical).
- On the Yanmar Start/Stop panel located on the outboard side of the starboard helm, long press the power button to turn on the ignition (you will hear the ventilation fan start up and the LCD display activate).
- Press and release the START/STOP button to start the engine.
- Listen/look for water discharging from the port aft end of the hull. If water is not in the exhaust, immediately shut the engine down and contact SJS.
- Press and hold the START/STOP button to stop the engine.
- Turn off the Yanmar panel by pressing and holding the power button until the panel beeps and the LCD display goes blank.



### Running the Engine

- Engage forward or reverse gear by moving the transmission directly from Neutral to Idle-Forward or Idle-Reverse (the transmission will click into each setting), pause momentarily, then move the throttle forward/backward smoothly to your desired RPM setting. Engaging the transmission in jerky incremental steps can slip the clutch, causing damage over time.
- To keep the transmission “healthy” when shifting from forward to reverse and vice-versa, pause ~2 seconds in the 12 o'clock neutral position (say “one and two and”) before shifting gears.
- An economical cruising speed of 5-7 knots is achieved at 2000-2500 RPM, which uses about 1.0 gallon of diesel per hour. Please do not exceed 2900 RPM: it’s hard on the engine and fuel consumption goes way up with very little increase in speed. We recommend keeping the engine speed under 2500 RPM for most operating conditions.
- Please refuel when the fuel drops below ½ full and before it reaches ¼ full. The tank holds 52 gallons, so topping up at about 25 gallons is a reasonable exercise and doesn’t take too long.

**SAFETY REMINDER** – Never stop the engine by turning off the battery switch. Doing so will seriously damage the diodes on the alternator, and the batteries will no longer charge.

### **Boat Handling:**

San Juan Sailing offers free handling instruction before you leave for your charter if you'd like to practice with *Starhaven* or just bone up on your boat handling skills. Spending 30-60 minutes practicing getting in and out of the Bellingham marina can be a great experience.

### Operating in Forward

Starhaven has twin rudders which are located at the port and starboard aft corners of the stern. When underway, the twin rudders give Starhaven excellent turning ability in both forward and reverse. Starhaven will maneuver as well as or better than any other modern single-rudder sloop. There is one nuance of this configuration that must be anticipated when maneuvering in tight quarters and that is the **initial** lack of prop wash on the rudders when initiating a turn from a standstill. Starhaven will briefly move straight forward (about 3') until:

- c) The twin rudders respond to the water flow due to the forward motion.
- d) As the rudder on the inside of the turn swings toward the prop wash, it will quickly tighten the turn radius.

Please have the bow thruster controller turned on and be prepared to use it if needed to prevent a collision, or anytime you are turning your bow into a breeze. The breeze will push your bow in the opposite direction you want to go and increase your turning radius. Use the bow thruster in short bursts to decrease your turn radius.

Good technique, especially in breezy conditions and some current, is to give very brief burst of throttle (about 1500 RPM), then quickly go back to idle forward or neutral. This will quickly increase boat speed and therefore steerage without using up precious sea room ahead or behind. Then as you begin to slow down, as long as you still have sufficient sea room ahead or behind, you can repeat the throttle burst as needed.

### Operating in Reverse

Starhaven is a shaft drive. The *Prop walk is moderate to PORT* in reverse. Maneuvering in reverse is a pleasure with the twin rudders. Grip the wheel firmly when in reverse: water pressure on the aft edge of the rudders can abruptly push the rudders over to one side, which can damage the steering mechanism (and your arms).

### Docking

Unless there are high winds, we typically motor in the marina in Idle-Forward, which will produce a boat speed of about 2 knots. About 4 slips from our target dock, we shift to neutral and glide in. Use the engine to stop the boat at the dock, and don't shut down the engine until the vessel is secured at the dock.

In breezy conditions, vary the throttle to maintain a safe boat speed that keeps you in control of maneuvering Starhaven. Into the wind, increase throttle. With the wind, you can likely coast in neutral. In a cross wind keep close to the upwind side of the fairway any vary the throttle as need to maintain about 2kts.

**SAFETY REMINDER:** It's difficult for people holding lines on the dock to stop the momentum of a heavy cruising sailboat. It's also a bad idea to use dock lines on a cleat to stop movement; this can result in a sudden swing of the boat and damage to cleats, boat, and/or dock. And please, no crew should jump to the dock. If you can't step off calmly, back-up and try again.

When coming into our docks in strong winds, or if you'd just like a little assistance on arrival, hail "San Juan Sailing" on **VHF Channel 80**. They'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 is a sign of smart seamanship.

**SAFETY REMINDER** –Whenever you are departing or arriving at the dock have a crew member designated as the "roving fender" teammate. If you are going to accidentally "touch" a boat or other object, lower the fender to the point of contact.

### Using the Bow Thruster

The bow thruster allows you to control bow alignment using short bursts when docking or departing (see **Bow Thruster** section in these notes for details on turning on and operating the thruster).

### Troubleshooting Engine Problems

Yanmar engines are incredibly durable, and you shouldn't have any problems on your voyage. Nevertheless, there are a few things to watch out for.

#### Engine Overheating

If the engine overheat buzzer sounds while the engine is running, it's usually no more serious than eelgrass plugging up the raw water strainer. The solution to this problem is prevention – keep an eye out 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 collects in the raw water strainer.

To clear eelgrass from the raw water strainer, stop the engine, twist off the clear screw-top and extract the eelgrass. Replace the lid and tighten by turning it clockwise until the lid is seated firmly on the rubber gasket. Don't overtighten as the lid can crack. Make sure the lid's threads are not crossed as this can give the appearance of a tightened lid, but the gasket won't seal. Then restart the engine.

If after restarting the engine it 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 steps fail to solve the problem, call San Juan Sailing for assistance.

### Loss of Oil Pressure or Coolant

If the engine loses oil pressure, the warning buzzer will sound. If it's the oil, shut down the engine, check the oil level, and contact San Juan Sailing.

The alarm buzzer is more likely to indicate engine overheating. 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. If none is seen, add enough to reach the top-level line on the bottle. After the engine cools down, remove the cap on the engine block and add coolant. And check the bilge for a light green liquid (coolant). If coolant is found in the bilge, call San Juan Sailing immediately.

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 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.

**OPERATING TIP: Bottom line – you're on vacation!** If the engine is causing you problems, call SJS for assistance. They have repair teams in the Islands to assist you.

## 19. Entertainment System

*Starhaven* is equipped with a FUSION MS-RA70N audio system. Speakers for the FUSION system are in the main cabin and in the cockpit. The audio system can be controlled from the FUSION unit in the main cabin and from the B&G Zeus<sup>2</sup> navigation system located at the helms.



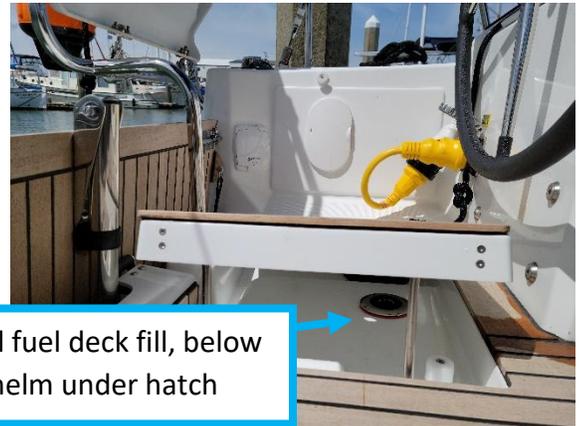
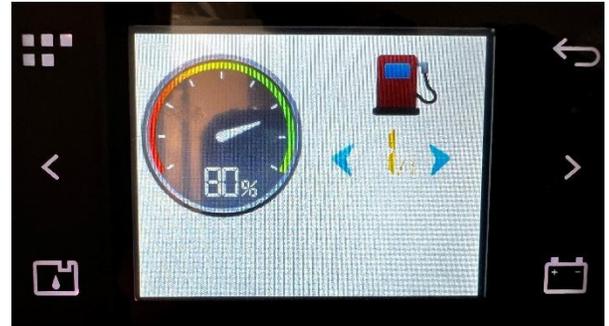
### Sound Zone and Volume Control

- Press the large volume knob. The LCD will show the Below Deck (Salon) and Deck (Cockpit) speaker levels.
- Keep pressing the volume knob to highlight the zone you wish to change. Turn the volume knob to decrease/increase the volume.
- Please be mindful of others around you when using the cockpit speakers. Not everyone will like your music as you do!

## 20. Fuel

### Highlights

- The diesel fuel tank holds 52 gallons.
- Check the fuel tank level on the NAVICOLOR display (located at the nav station). See photo on right. Turn on the display by pressing the raised plastic vertical bar located just above the power icon on the left side of the unit next to the left arrow (note that the tab is dark colored and does not show up in the photo). Press the lower left tank icon and select diesel tank level.
- Refuel when gauge reads  $\frac{1}{2}$  or greater.
- Fuel deck fill is below the port helm. See photo on right.



Diesel fuel deck fill, below port helm under hatch

### Details

#### Fueling:

Please fill very carefully because it is difficult to tell when the tank is full. You need to put your ear to the tank, not fill "too fast", and be prepared to stop immediately when the pitch rises.

Have someone at the nav station monitor the fuel gauge and alert the fueler when level gets close to 95%.

In the starboard cockpit locker, we have rubber fueling gloves. The attendant will give you absorbent pads. Before fueling, we build a fuel absorbent dam fore and aft in case of overflow (reaching for the pads after the spill is too late).

## 21. Generator

### Highlights

- 9000W Fisher Panda generator.
- Powers the entire AC system on board, including battery charging, microwave oven and Cruisair heating/cooling system.
- The generator must be running prior to turning on the Cruisair heating/cooling system.
- Generator is located behind the diesel engine.
- Generator battery switches are located in the starboard aft stateroom at the foot of the berth on the inboard side. See photo of switches on right.



### Details – Starting the Generator

- **Make sure you are disconnected from shore power!**
- Verify that the cooling water intake seacock is open – it's located at the front end of the engine compartment on the starboard side.
- Check the cooling water strainer – it's located at the back end of the engine, up high, on the starboard side.
- Check that the generator battery switches are turned on (located in the port aft cabin, base of berth, inboard side).
- Starting/Stopping the generator and energizing the Cruisair system as well as the AC outlets is all done using the **Navicolor Controller** at the Nav Station.
- From the main menu on the Navicolor Controller, touch the “power cord plug” icon in the middle of the display.
- Touch either one of the “GE” (generator) icons in the top row.
- Touch “Start” in the lower left of the display (see photo on right). The generator takes about 15 seconds to cycle up before starting.
- The cooling water exits the hull below the waterline on the port side near the stern so you won't be able to check for flow. But since you've pre-checked the intake seacock and the strainer you are good to go. If the generator overheats for some other reason, the alarm will sound. Shut down the generator immediately and call SJS.
- Note: The generator also has a backup Start/Stop panel located inside the generator compartment to be used only if the Navicolor controller fails to start or stop the generator.



**\*\*To connect the AC power produced by the generator to the vessel's AC system and the Cruisair Cooling/Heating system, refer to the “To operate on the Generator” sub-section of the Heating/Cooling section below.**

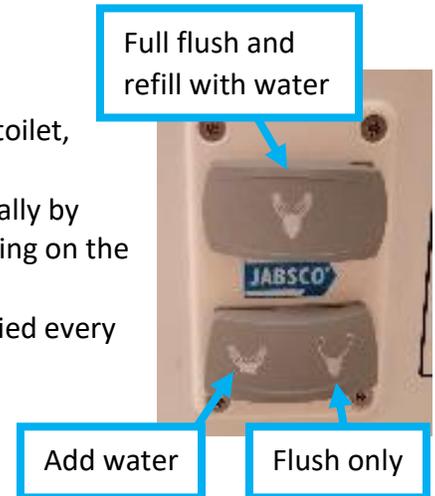
#### **Stopping the Generator:**

- From the main menu on the Navicolor Controller, touch the “power cord plug” icon in the middle of the display.
- Touch either one of the “GE” (generator) icons in the top row.
- Touch the “Stop” icon in the lower left of the display. Takes about 5 seconds to cycle through the shut down process.

## 22. Heads and Holding Tanks

### Highlights

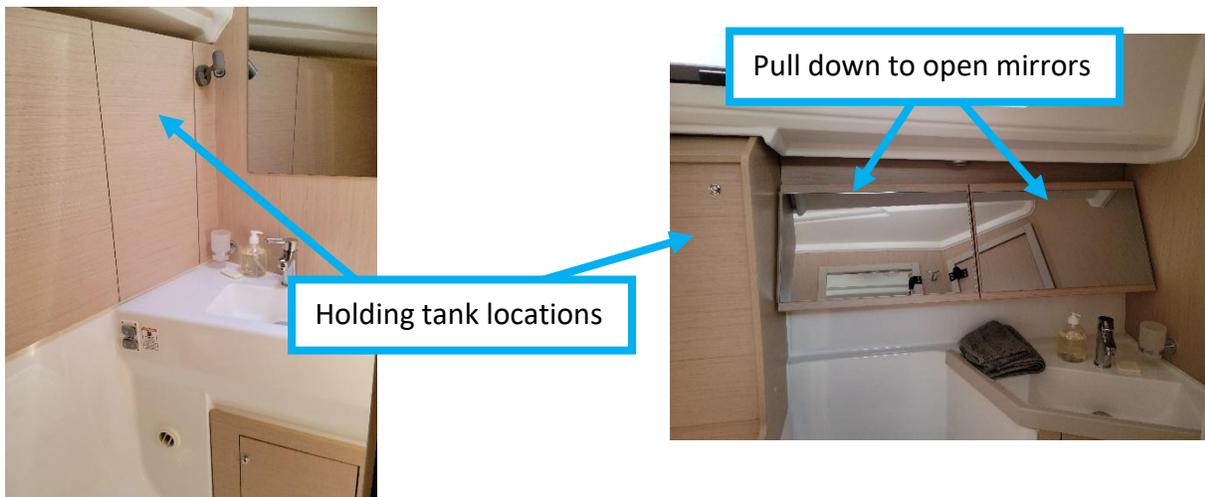
- Only what has been eaten goes in the toilet.
- The toilets use seawater for flushing.
- The toilet discharge hoses do NOT have Y-valves. When you flush the toilet, it goes directly into the holding tanks.
- The holding tanks do not have a level gauges, but can be checked visually by removing the panel above the toilet and looking for the level or knocking on the tank. A flashlight can help to see the level better.
- Holding tanks are 13 gal forward and 21 gal salon and should be emptied every second day.
- The holding tank overboard discharge seacocks have large red "T" handles. See "Overboard Discharge" details below for locations of the valves.



### Details

Please do not put anything in the toilet that has not been eaten. Experienced sailors deposit toilet paper in a wastebasket in Ziploc baggies, not down the toilet because paper tends to clog the hoses. The heads each have their own holding tank, the aft tank holds 21 gallons, and the forward tank holds 13 gallons. If you have four people on board and have 'normal' usage, the tanks will need to be emptied about every other day.

San Juan Sailing staff will discuss holding tanks and pump outs on your arrival. Our one plea is this: please don't over fill the holding tank as leaking sewage is most unpleasant! Thank you.



Please note that in U.S. waters it is illegal to discharge holding tanks overboard. While in Canadian waters outside of bays and harbors overboard discharge is allowed.

## Emptying the Holding Tanks

1. Deck Pumpout
2. Overboard Discharge (**where legal**)

1. Deck Pumpout

The holding tanks can be pumped out via the two labeled deck fittings. The fittings are on the starboard side near the heads. After pumping out the holding tanks, please refill each tank with about 5 gallons of fresh water through the deck fitting to rinse, and then pumpout again. This will help keep the waste system smelling fresh! Thank you!

2. Overboard Discharge (**where legal**)

The holding tanks are gravity drain; there is no macerator pump. They will normally drain in less than a minute (you may hear them finish with a 'whoosh' if the engine is not running). Open the large, red-handled seacocks located as follows:

Aft (salon) Head – Seacock is located in the starboard aft stateroom, inside the base of the closet (lift up hinges hatch cover).

Forward Head – Seacock located below the sink inside the cabinet base.



Please make sure you close the seacock after the tank empties. If left open, then every time the toilet is flushed it will flow straight overboard!

## 23. Heating/Cooling (Cabin)

### Highlights

- Starhaven has two heating systems: a Webasto diesel-fired forced air system, and a Cruisair electric 50A AC reverse cycle combined Heating and Cooling unit.
- Not efficient to run either all night, noise wakes light sleepers.
- **Note that the Webasto heater exhaust outlet is on the starboard side of the hull near the transom. It gets hot enough to melt lines and fenders so please make sure all items are clear of the exhaust!**

### Details

#### **Webasto System:**

The Webasto thermostatically controlled forced air heating system draws combustion fuel from the diesel fuel tank and operates on 12V DC power from the house batteries. In our waters, we use the heater only on cool evenings or to take the chill off in the morning.



The thermostat is at the nav station, to the right and above your head as you sit. See photo above. To turn it on, move the slide switch at the bottom left corner to "Heat", then use the grey UP/DOWN buttons to select the desired temperature. The system takes about 10 minutes to cycle on and produce heat.

### Cruisair System:

The reverse cycle Cruisair Heating & Cooling unit can only be run when you are plugged into **shorepower** (30A or 50A) or running the **generator**.

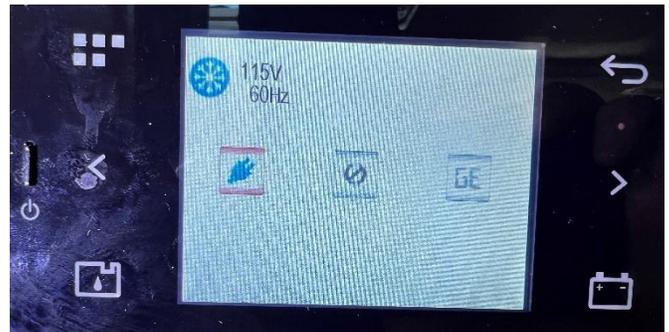
#### To operate on Shorepower (30A or 50A)

This is a 2-step process:

1. Energize the Cruisair system using the Navicolor controller at the nav station (see 1<sup>st</sup> photo below).
2. Use the Cruisair controllers (one at the nav station and one in the port aft cabin) to select mode (heating/cooling/dehumidify), temperature setting and fan speed (see 2<sup>nd</sup> photo below).

Navicolor Controller – energizing the Cruisair system:

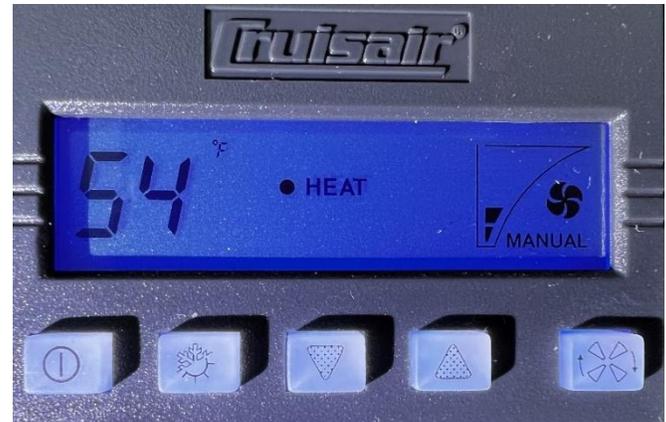
- Open the Main Menu – touch the screen or press the power button (vertical tab) at the middle left side of the unit, then press the Menu (Pages) icon at the upper left side of the unit.
- Touch the "power cord plug" icon in the middle of the display.
- Touch the "heat pump" (wheel-like) icon (bottom row, middle).
- Touch the "power cord plug" icon on the left side of the display (see photo on right). The following actions will be initiated:
  - a) You will hear a "click" sound coming from the aft cabin as the contactor solenoid engages.
  - b) The cord plug icon will be highlighted with red lines top and bottom.
  - c) Both Cruisair controllers will automatically power up.
  - d) The upper left corner of the display will show the Heat Pump icon and the voltage (110-120V).



Cruisair Controllers – turning on the cooling/heating in the two zones on board:

- **Zone 1:** The Controller at the nav station controls the salon vent outlet (silver grille, port side forward of settee, top of cabinet), and the v-berth vent outlet (smaller silver grille, port side top of cabinet adjacent to hanging locker).
- **Zone 2:** The controller in the starboard aft cabin (inboard side) controls both aft cabins (small vertical silver grilles, inboard side of berth on engine compartment wall) and the aft head (lower round white plastic louver, aft side of base of toilet). The upper louver is for the Webasto heat outlet.

- At either controller, press the “mode” button at bottom of the unit (2<sup>nd</sup> from left). 1<sup>st</sup> press is “cool”, 2<sup>nd</sup> is “heat”, 3<sup>rd</sup> is “auto”, 4<sup>th</sup> is “dehumidify”.
- Press the "arrow" buttons (down or up) to select desired temperature.
- Press the "fan" icon (far right side) repeatedly to select desired fan speed or “auto” for system controlled.
- Note that it will take a few minutes for the system to “warm up” and start producing warm/cool air out the vents.



#### Shutting Down the Cruisair System using the Navicolor Controller:

- If you haven't used the Navicolor controller for any other function during the operation of the Cruisair system, you will be able to shutdown the system by simply touching the screen to wake it up, then touching the middle “off/disconnect” icon (circle with a diagonal slash – see 2<sup>nd</sup> photo above).
- If you have used the Navicolor then repeat the following steps:
- Open the Main Menu – touch the screen or press the power button (vertical tab) at the middle left side of the unit, then press the Menu icon at the upper left side of the unit.
- Touch the “power cord plug” icon in the middle of the display.
- Touch the “heat pump” (wheel-like) icon (bottom row, middle).
- Touch the middle “off/disconnect” icon (circle with a diagonal slash – see 2<sup>nd</sup> photo above). You will hear a “click” sound coming from the aft cabin as the contactor solenoid disengages.

#### To operate on the Generator:

- **NOTE : You must be disconnected from shorepower before starting the generator!**
- Starting/Stopping the generator and energizing the Cruisair system as well as the AC outlets is all done using the Navicolor Controller at the Nav Station.

#### Starting the Generator:

- **Make sure you are disconnected from shore power!**
- Verify that the cooling water intake seacock is open – it's located at the front end of the engine compartment on the starboard side.
- Check the cooling water strainer – it's located at the back end of the engine, up high, on the starboard side.
- Check that the generator battery switches are turned on (located in the port aft cabin, base of berth, inboard side).
- Starting/Stopping the generator and energizing the Cruisair system as well as the AC outlets is all done using the **Navicolor Controller** at the Nav Station.
- From the main menu on the Navicolor Controller, touch the “power cord plug” icon in the middle of the display.

- Touch either one of the “GE” (generator) icons in the top row.
- Touch “Start” in the lower left of the display (see photo on right). The generator takes about 15 seconds to cycle up before starting.
- The cooling water exits the hull below the waterline on the port side near the stern so you won't be able to check for flow. But since you've pre-checked the intake seacock and the strainer you are good to go. If the generator overheats for some other reason, the alarm will sound. Shut down the generator immediately and call SJS.



#### Connecting AC Power produced by the Generator, to the Cruisair system and to the to the AC outlets:

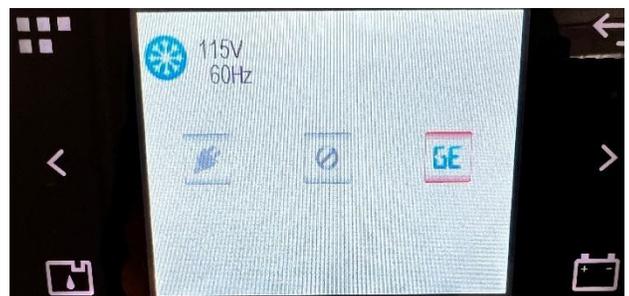
- Press the “back” button (upper right corner of the unit) to return to the previous screen.
- Touch the “heat pump” icon in the middle.
- Touch the “GE” icon on the right. You will hear a “click” sound coming from the aft cabin as the contactor solenoid engages. **The generator should now be powering the heat pump.** In addition, both Cruisair controllers will power up.
- Press the “back” button (upper right corner of the unit) to return to the previous screen.
- Touch the “outlet” icon on the left.
- Touch the “GE” icon on the right – see 2<sup>nd</sup> photo below. You will hear a “click” sound coming from the aft cabin as the contactor solenoid engages. **The generator should now be powering the AC outlets.**
- Press the “back” button (upper right corner of the unit) to return to the screen shown in the photo on right.
- The display will now show the “outlet” and “heat pump” icons linked to the “GE” (generator) icons as shown in the photo on right. The vertical blue lines show power flowing from the generator to the outlets (including the battery charger) and the Cruisair system.



**Operating the Cruisair heating/cooling:** Follow the instructions above under the “Cruisair Controller – turning on the cooling/heating” section.

#### Disconnecting Power from the Generator:

- From the generator connection screen, see photo above, Touch the “outlet” icon.
- From the power disconnect screen, see photo on right, touch the “disconnect” icon in the middle.
- Repeat for the “heat pump” icon.



**Stopping the Generator:**

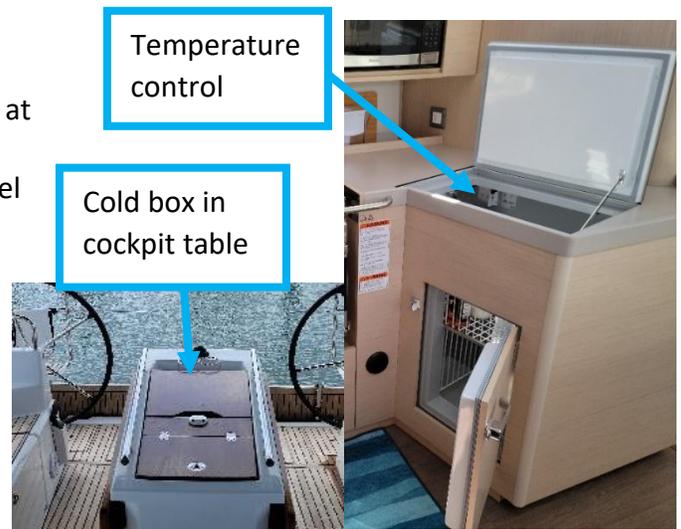
- From the generator connection screen, 2<sup>nd</sup> photo above, Touch either “GE” icons.
- Touch the “Stop” icon in the lower left of the display. It takes about 5 seconds to cycle through the shutdown process.

**24. Lighting**

- Press the LIGHTING breaker on the DC panel at the nav station to activate power to all lights in Starhaven.
- Lights in the staterooms and heads are turned on/off with individual switches or toggles on the light fixtures as follows:
  - a) Salon – there are 3 paddle switches located on the aft end of the galley countertop face (see photo on right).
  - b) Forward head – switch on face of sink cabinet, inboard side.
  - c) Aft head – switch next to toilet above flush controls and a light on the ceiling – press fixture to turn on/off.
  - d) Forward stateroom – white paddle switch on pot side above the black heater outlet.

**25. Refrigerator and Freezer****Highlights**

- Ideal thermostat setting is no. 5 on the dial located at the top back of the fridge.
- Circuit breaker/switches are located on the DC panel in the nav station. They are always ON unless the house batteries do not have sufficient power (below 12.2V).
- Check to be sure there is sufficient battery power to operate the refrigeration equipment all night. Usually there is.
- The cockpit table also houses a small “cold box” for drinks and snacks.

**26. Sails and Rigging****Highlights**

- In-mast furling mainsail.
- Furling 105% Genoa headsail.
- all lines led aft.

## Details

### Important with in-mast furling mainsail:

- Furl the mainsail **on starboard tack or if under power, steer just off of head-to-wind so the boom is on the port side.**
- Ensure that the mainsheet and the boom vang are eased.
- Be sure to have slight tension on the outhaul when furling to ensure a tight wrap inside the mast.
- **Furling must be STOPPED when the reinforced clew triangle (the last 18" of the mainsail) reaches the luff groove. Furling this portion of the mainsail into the luff groove WILL result in costly damage and the mainsail becoming inoperable.**

### General

- Hatches and port lights must be closed while underway.
- Clutches must be flipped up and rotated all the way forward to release the lines.
- The port coachroof winch is electric. It is operated by locking the line in the self-tailer and then pressing the button on the deck beside the winch. CAUTION: Electric winches are extremely powerful – use with due care to protect fingers and rig!
- There is a winch handle stowed in a bin next to the starboard helm (please don't drop these because they are heavy and will damage the gelcoat).
- The engine transmission should be left in neutral while sailing; the propeller will freewheel and may produce an audible sound when sailing at speeds of 5 knots or greater.
- The headsail can be furled on any point of sail.

### Heavy Weather Sailing

- When we need to reef, we generally reef the mainsail, and then the Genoa. If there is still too much sail, reef more of the mainsail, and then more of the Genoa.
- Shorten sail when the boat begins to feel overpowered (in general, if you think you might need to reef, you probably should).
- If there is excessive heel on the boat (more than 10-15 degrees), reducing sail will improve handling performance without sacrificing speed. Use the helm to judge the balance of the boat.

## 27. Showers and Sumps

### Highlights

- Separate shower stall in each head.
- Press on the shower sump pump circuit breaker at nav station, to turn on the shower drain pumps, press the black push button located in each shower. The drain pumps do not have float automatic switches.
- Transom hot/cold fresh water shower.



**Details**

The transom shower features both hot and cold fresh water. To operate, make sure the water pressure switch is on at the DC panel. Pull the nozzle out towards you and toggle the switch up to start the flow of water.

Note: The shower sumps can become emergency bilge pumps if water rises to that level.

**28. Stove, Oven and Microwave****Highlights**

- The stove/oven is a propane-fired appliance.
- The microwave oven is plugged into a 120V outlet in the galley.
- The propane solenoid switch is located in the galley (see photo on right).
- There is a 2.0 gallon steel propane tank in the cockpit floor locker between the helms. The locker is vented overboard for safety in case of a propane leak.
- The San Juan Sailing staff checks this tank and the BBQ tank weekly to assure that you don't run out.
- For safety, we turn off the solenoid switch after stove use.
- If not connected to shore power, the microwave can be powered by the battery inverter. Please only use for short (2-3 minute) cook times or you will rapidly drain the house batteries.
- Caution: propane is heavier than air. If leak is detected, extinguish all flames, and open all hatches and doors.

**Details****Using the Stove Burner:**

- Make sure the propane tank hand valve is open and the propane solenoid switch is on.
- Make sure the gimbal lock at the bottom of the stove/oven is secured. That way, if someone leans on the stove or grabs the oven handle, it won't tip and spill pot/pans on the cooktop.
- Push in and turn desired burner knob while pushing the electric ignitor button. Once lit, keep knob pushing in for a few seconds so the thermocouple can warm up, then release and set desired temperature.
- After you are finished using the burners, turn the flame off and turn the propane solenoid switch off. Then close the hand valve on the propane tank.

**Using the Oven:**

- Make sure the propane tank hand valve is open and the propane solenoid switch is on.
- Make sure the gimbal lock at the bottom of the stove/oven is secured. That way, if someone leans on the stove or grabs the oven handle, it won't tip and spill pot/pans on the cooktop.

- To open the oven, ensure oven door lock is in the open position.
- To light the oven, push in and turn the oven temp knob while pushing the electric ignitor button. Again, allow the thermocouple to warm up before releasing.
- Check to ensure you have a flame and then close the oven door slowly so it is not blown out. Set knob to desired temperature.
- After you are finished using the oven, turn the flame off and turn the propane solenoid switch off. Then close the hand valve on the propane tank.



#### Microwave Oven:

- Mounted in galley on the starboard side.
- If not connected to shore power the microwave can be powered by the battery inverter. Please only use for short (2-3 minute) cook times or you will rapidly drain the house batteries. See Section 6, Batteries/Charging/Inverter/Generator.

## 29. Water

### Highlights

- Two water tanks totaling 140 US gallons: Bow (tank 1) 87 gal, Stbd Stern (tank 2) 53 gal.
- Water Tank Selection Valves are located below the salon floor at the foot of the companionway stairs.
- Water pressure switch is on the DC panel at the nav station.
- Tank level gauge (Navicolor display) is at the nav station. See Details below.
- Deck fill fittings are located on the starboard side – one forward, one mid-ship.
- Hot water tank 11 gallons.
- Hot water is produced by three methods: 1. Shorepower, 2. Generator, 3. Engine.

## Details

### Water Pressure Switch:

Please turn off the water pressure switch when the system is not being used. If one of the water tanks runs dry the pump will run continuously and burn out. You will likely not hear the pump running over the sounds of motoring or sailing.

### Water Tank Level Gauge:

- Check the water tank levels on the NAVICOLOR display (located at the nav station). See photo on right.
- Turn on the display by pressing the raised plastic vertical bar located just above the power icon on the left side of the unit next to the left arrow (note that the tab is dark colored and does not show up in the photo).
- Press the lower left tank icon to select tank levels then select the water tanks. Press the blue arrows to cycle between tank #1 (bow) and tank #2 (starboard stern).



### Water Tank Selection Valves

There are two water tanks on Starhaven totalling 149 gallons. The tank selection valves are located below the salon floor at the foot of the companionway stairs.

#1 valve is the bow tank.

#2 valve is the stern tank (stern tank is located on the starboard side of the vessel).



When both tanks are full at the start of your charter, we prefer to draw from the bow tank first to reduce weight in the bow – leave the stern tank valve closed. Then when the bow tank is nearly empty, switch over to drawing from the stern tank only and close the bow tank valve.

State parks do not have pressurized water to refill tanks, but all points of civilization do. There is a freshwater hose in the starboard cockpit locker to use at for filling the tanks.

### Hot Water Heater:

The hot water heater is located behind the engine.

- It takes about 30 minutes of running the engine under load to get the water hot. CAUTION: Engine heated water may be scalding hot. Please BE CAREFUL!
- When on shore power, you can heat your water using electric coils by turning on the WATER HEATER switch on the AC panel.