

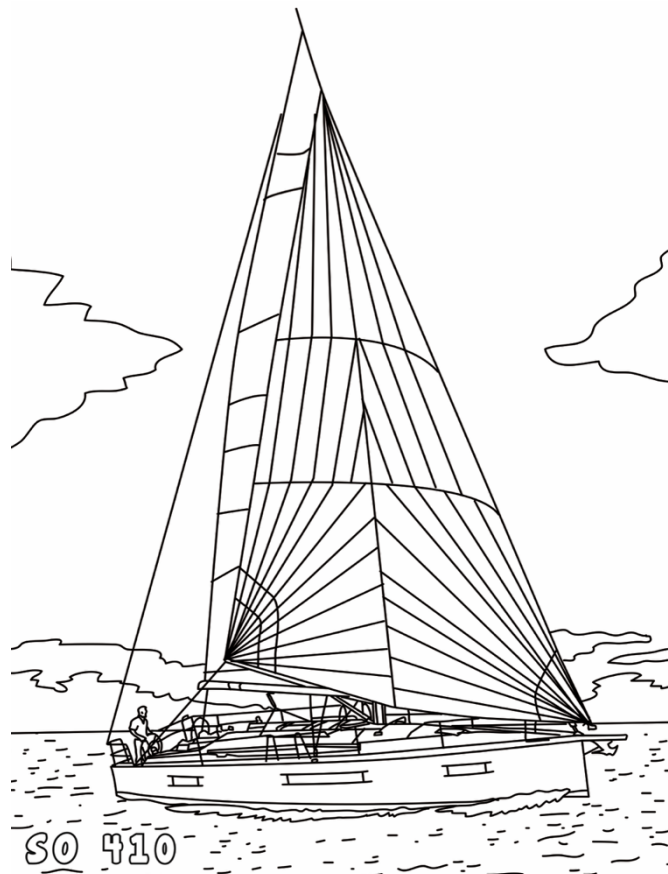
# Welcome Aboard Cascadia.

## 2021 Jeanneau Sun Odyssey 410

- We do have some basic rules we would appreciate you following, mainly no pets and no smoking.
- Listed below are some tips on how to get the most out of Cascadia and her equipment. We sincerely hope you have a great time aboard.
- Have a great time. If you have questions, or feedback, we would love to talk to you. You can reach us at 360-383-6650 (Bill's cell).
- Happy Sailing, Bill Hall and Erin Griffith
- **Maintenance Pro – Epic Yacht Systems – 360-366-8929(office). 360-240-1429 (cell)**

### Cascadia's Specifications:

- LOA: 42'5" (with bowsprit) LWL: 38'4"
- Beam: 13' 1" Draft: 7'1"
- Displacement: 17,417 lbs (dry)
- Mast height above WL: 63' (with antenna)
- Fuel: 52.8 gal
- Water: 140 gal. (2 tanks) Hot water: 10.6 gal.
- Holding: 13 gal. Fwd, 21 gal. Aft
- Engine: 45 hp. Yanmar Diesel



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## 1. Emergencies

- **Fire** – There are three ABC rated fire extinguishers onboard. They are located (a) forward cabin port side on the aft bulkhead behind the door (b) by your feet if you are standing at companion way just under the stairs (c) aft port cabin port side, above hanging locker. All are ABC fire extinguishers. If you have a fire at the stove turn off the gas solenoid switch at the electrical panel. If there is an engine fire use the extinguisher port in the port aft cabin engine compartment.
- **Hitting a Log or Running Aground** – In case of a log hit or running aground, immediately check for leaks in the bilge and then check for cracks in the fore and aft sections of the bilge where the keel attaches to the hull. Also check all keel bolts. Once you are sure no water is entering the hull contact San Juan Sailing at 800-677-7245 and proceed to the nearest harbor and have a professional diver check the hull, keel, prop, and rudder before proceeding.
- **Leaks** – Make sure the bilge pumps are running. Then determine the source of the water, check the prop shaft first and then the through-hulls. You cannot get to the shaft seal easily since the wall between the aft cabins needs to be removed first, but you should be able see water flowing at the back of the engine if the seal is broken. There is a diagram showing the location of the through hulls in the notebook. Get the crew on deck and into life jackets.
- There are two **bilge pumps**. The manual bilge pump is located on the port side of the cockpit, behind the steering wheel on the outside of the combing next to the white speaker. The handle is in the port cockpit locker lid. The electric bilge pumps have automatic float switches but the switch on the electrical panel can be used to power the main pump manually. The float switches and pump intakes are located under the salon sole about 2 feet aft of the mast compression post.
- **Steering Failure** – If the steering system fails there is an emergency tiller in the port aft floor cockpit locker. It fits on rudder post which is accessed through the cap (remove using winch handle) on the floor just behind and each helm station. You will want to reduce sail or power when using this tiller since the rudder is large and the tiller is small.
- **Crew Overboard** – Throw a Type IV PFD or cockpit cushion to the person in the water first. Second, hit the mob button on the chart plotter so you will know where they are. Then use one of the procedures discussed in the skipper's meeting to get back to the person. We keep the LifeSling mounted on the stern rail, starboard side, at all times.
- **Emergency/Safety Equipment Listing** – Refer to next section below.

## 2. Emergency/Safety Equipment Listing

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

**Bilge Pump (Manual) and Handle.** The manual bilge pump is located on the port side of the cockpit, behind the steering wheel on the outside of the combing next to the white speaker. The handle is in the port cockpit locker lid. Note: if water rises above floorboards, can use shower sump pumps also in emergency.

**Carbon Monoxide Detectors.** Saloon – starboard side ceiling just as you walk down companionway.

**Cockpit Cushions.** In case of COB, throw anything that floats, quickly.

**Emergency Tiller.** Long curved pipe in port aft floor cockpit locker (Velcro straps hold into the locker wall) It fits on rudder post which is accessed through the cap (remove using winch handle) on the floor just behind and each helm station.

**Fire Extinguishers (3):** They are located (a) forward cabin port side on the aft bulkhead behind the door (b) by your feet if you are standing at companion way just under the stairs (c) aft port cabin port side, above hanging locker.

**First Aid Kit.** In cubby above nav station.

**Flares (3).** In yellow mesh bag either in cockpit table, center compartment or Port sole locker in front of companionway stair.

**Flashlights.** There are standard mag-lite style flashlights mounted to starboard companion way wall and on the lower shelf at the nav station. There are also 2 rechargeable west-marine handheld spot lights. These are in the cubby above nav station and one is usually plugged into the USB port at the nav station.

**Horn, handheld.** The manual air horn is in yellow mesh bag either in cockpit table, center compartment or Port sole locker in front of companionway stair.

**Lifesling,** starboard stern rail. 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 (5 foam vests, 3 inflatables).** Located in the stateroom hanging lockers. NSO: please check for “green” visible at bottom of clear canister before each cruise. That verifies the auto-inflate function will work when immersed. We wear these at all times when working the deck and often in the cockpit.

**Tapered Plug, Universal Foam Orange StaPlug.** In yellow mesh bag either in cockpit table, center compartment or Port sole locker in front of companionway stair.\

**Tools and Spares.** Tools are located in port sole locker in front of companionway stair. Short term spares (replacement bolts, cotter pins, sail repair, decklids are in plastic bins under the aft end of the settee (under the TV). Long term spares are located under the port side lounge. You need to remove the cushion and slide the wooden seat forward into the galley to access the spares compartment.

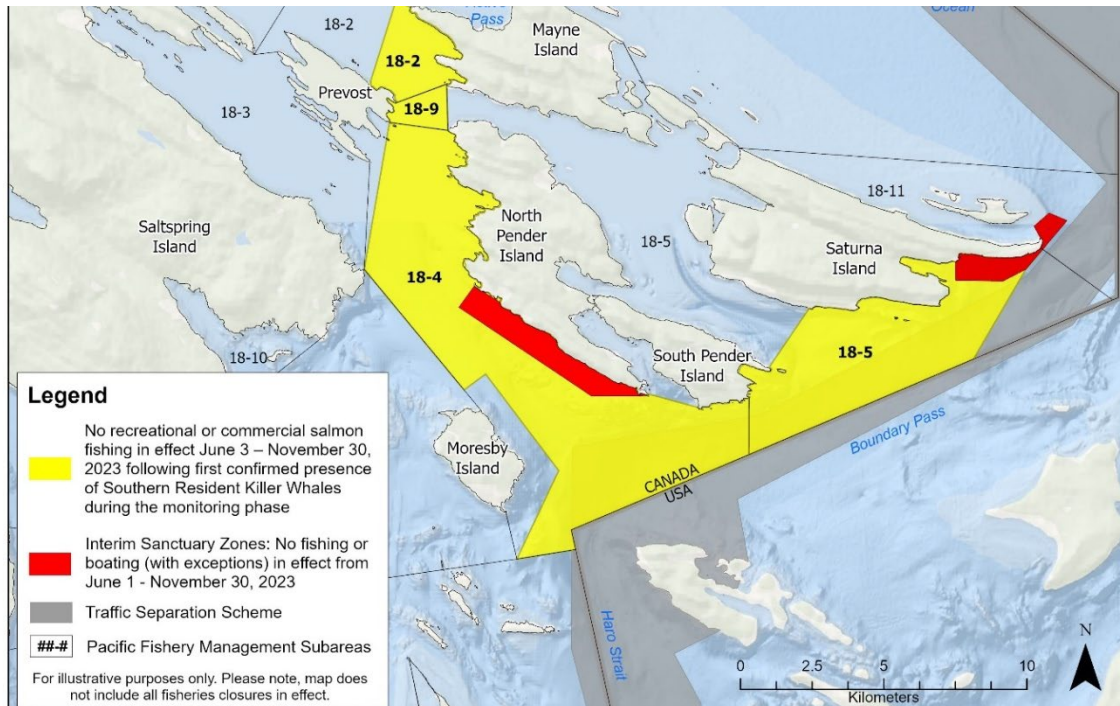
**Windlass Clutch Release/Tighten Wrench.** Bow anchor locker, in black plastic clips.

**VHF Radios.** Channel 16. VHF base unit at nav station and wireless handheld in charging station – upper shelf nav station.

### 3. Being Whale Wise

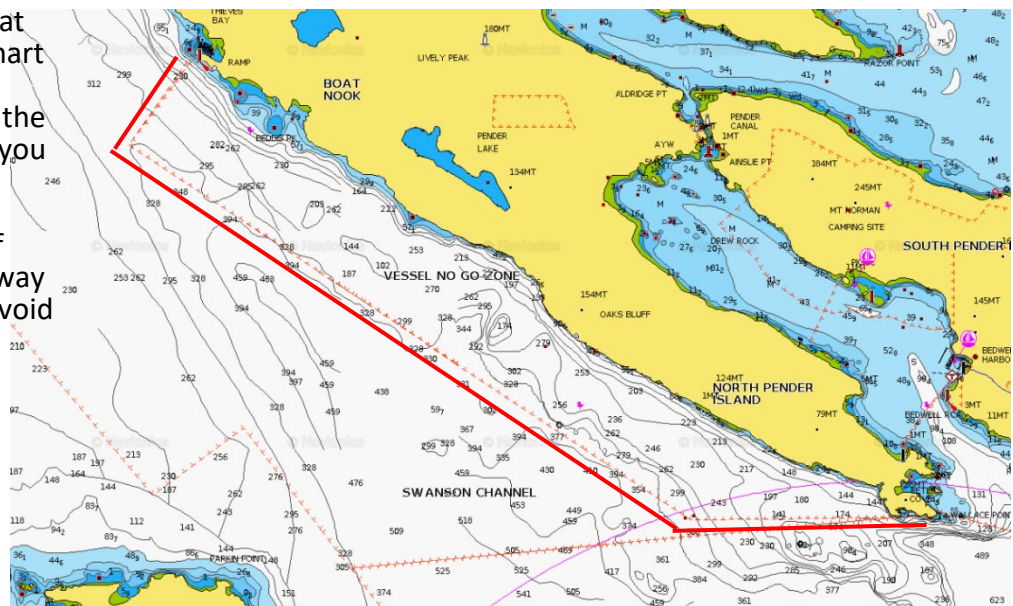
Our local Killer Whales are a wonderful part of the local family. But they are having a difficult time surviving due to declining salmon runs. These whales use echo location to find and catch their food. Therefore, noise pollution from boats and ships make it harder for them to thrive. In an effort to decrease human impact both the Canadian and US governments have implemented rules. We provided you a summary of these rules in the packet you receive when you arrived and there is more information in section 10 of the white reference book onboard Cascadia. In general, stay at least 400 ft. away from the whales. Sometimes they come to you, if this happens shutdown the engine and turn off the instruments (assuming this is safe to do). They can hear the pings of the depth sounder – this is why we have you turn off the instruments.

In Canada they have gone a step further by creating some zones where boats are not allowed. This further improves the environment for the whales. The red areas in the diagram below show these zones.



And here is an example of what they look like on Cascadia'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 is just to the west of Bedwell Harbour, so on your way in or out of there be sure to avoid this area.





## 4. Anchoring – Anchors and Windlass

- Cascadia is equipped with two anchors, one forward (44# Delta with 300 feet of chain) and a Fortress in the starboard cockpit locker along with 70' of chain and 200' of rode. The primary chain is marked with poly line threaded into the links every 25 feet and there are two lines in a row at 100, 200 and 300 ft. The chain counter at the helm is currently inoperable.
- The scope normally used in the islands is 4 to 1, definitely not 7 to 1 (unless conditions call for it, i.e. sustained winds over 25 knots). Most of the anchorages are well protected and popular, so you will likely have someone anchored nearby. After you have paid out the suitable amount of chain, 1-2 minutes of IDLE reverse sets the anchor. Here is an easy formula for how much chain you need out; add the water depth on sounder, plus any tide increase expected during the night, plus 5' (to account for the distance from sounder to roller on bow) and take that total and multiply by 4 (typical example would be 25' of water + 6' of tide increase + 5' = 36' x 4 = 144').
- The electric anchor windlass receives power from the start battery. The circuit breaker for the windlass is located behind the companionway steps in the port quarter berth. Please note the windlass will not run without the engine is running.  
**\*\*\*Trouble shooting tip. If you are trying to use the windlass and hear a clicking sound, but the windlass is not engaging you need reset the interlock between the windlass and the motor. To do this press stop to turn off the motor and then press and hold the power button until the motor fan turns off (~2 seconds). Then reset the black and yellow windlass breaker in the port aft cabin. Restart the engine. The windlass should work normally.**
- The up-down controller for the windlass is secured inside the forward locker. Please do not use the windlass controls at the helm as it is very easy to ding the bow with the anchor; anchoring should be a two-person job! Also, be sure to take the tension off of the windlass by attaching the snubber (located in chain locker) to the chain and a cleat (not the windlass), and then running out more chain until the chain on the drum is slack.
- The handheld windlass controller is in the anchor locker. The windlass controller at the helm station is not operational.



### Lowering the Anchor

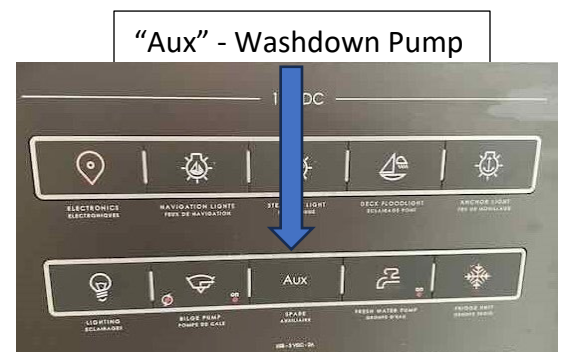
1. Turn on the circuit breaker for the windlass (port aft berth).
2. Untie the line holding the anchor in place.
3. Slowly lower the anchor off the bow roller down to the water to minimize the anchor swinging back into the bow.
4. Lower the anchor until the needed chain is paid out.

5. Attach the snubber/anchor hook (white line with hook) to the chain (the chain hook is usually always on the chain and cleated to one of the bow cleats as a chain keeper)
6. Cleat the chain hook line to either of the fore cleats.
7. Lower the snubber through the bow roller until there is slack between the anchor chain and the windlass.
8. Set the anchor by reversing at 800 RPM for 1-2 minutes, **DO NOT go above 1000 RMP.**
9. Turn off the circuit breaker and turn on the anchor light.



## Raising the Anchor

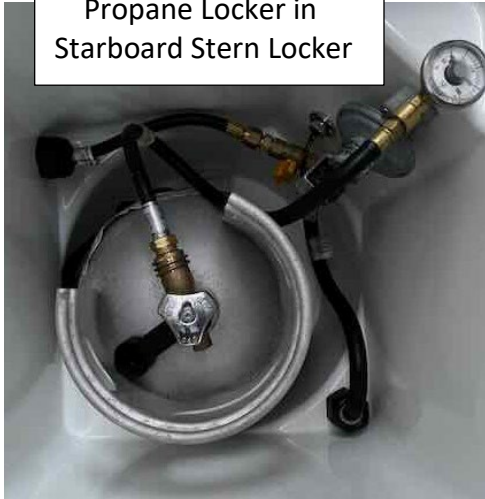
1. Start the engine.
2. Turn on the circuit breaker for the windlass and, if needed, turn off the anchor light.
3. Turn on the wash down pump, "Aux" button located on the main panel.
4. Take in enough chain to retrieve the snubber.
5. When retrieving the anchor, never use the windlass to pull the boat; instead, slowly power toward the anchor while using the windlass (up button on the remote control) to take up the slack. Also, if the anchor is really stuck in the mud you will hear the windlass slow under the load. Immediately stop the windlass and drive the boat forward to free the anchor.
6. Please use the wash down hose to 'wash' the anchor and chain as it is retrieved. This will keep the boat and anchor locker much cleaner.
7. The incoming chain will pile up against the aft end of the chain locker, so the operator needs to reach in and push the pile of chain forward every 20-30 feet of chain using the boat hook. Also be aware the lines used to mark the chain length can catch in the outlet of the windlass and may cause a jam. Just run the windlass back out for a second to clear.
8. Once the anchor is out of the water please bring onto the boat by hand. Please do not pull the anchor up onto the rollers using the power of the windlass, doing so will likely chip the fiberglass as the anchor swings into the bow.
9. Secure the anchor by attaching the anchor hook/line to the chain and securing tightly on a cleat so that the anchor weight is supported by the bungee and not the windlass
10. Switch the windlass breaker "off" to prevent draining the start battery, then turn off the "Aux" seawater pump and anchor light on the main panel.





## 5. Barbecue

Propane Locker in Starboard Stern Locker



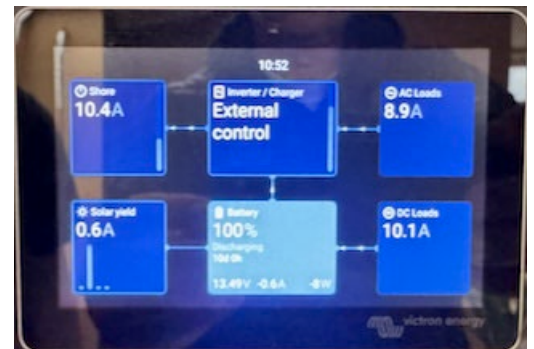
- The stainless-steel propane barbecue is mounted on the port stern pulpit. There is a line plumbed from the main propane tanks inside the propane locker to the BBQ.
- There is a T-valve allowing both the galley stove and the BBQ to use the same propane tank. You will need to turn the valve to be inline with the BBQ line to use the BBQ. Be sure the BBQ controller is off when opening this valve or the tank valve; having it on will cause the safety system in the main tank to engage and severely limit the flow to the BBQ.
- The solenoid in the galley needs to be on for the BBQ to work.
- To light the BBQ push the temp control dial in and push the ignite button on the BBQ. Keep the dial pushed in until the BBQ is fully lit. Then set desired temperature.
- When done with the BBQ turn off this valve; DO NOT RELY ON THE CONTROLLER AT THE BBQ AS THE ONLY SHUTOFF FOR THE PROPANE. Be sure to switch the T-valve back to the off position.
- There is a second propane tank in the starboard aft floor locker.



BBQ Isolation Valve (yellow handle). Shown here in off position. Turn inline to run BBQ.

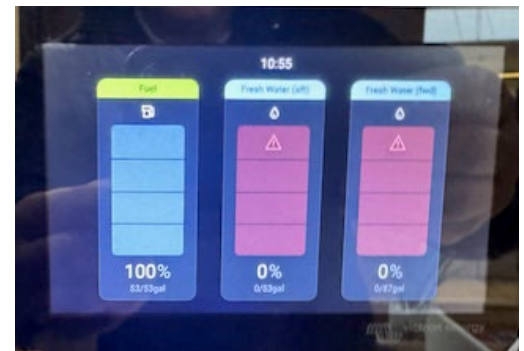
## 6. Batteries/Inverter/Solar

- Cascadia's DC system is built around 2x 330Ah Victron Smart Lithium Batteries (LiFePO4), 660Ah total, 528Ah usable capacity (80%).
- The 660Ah lithium house bank should be limited to 80% depth of discharge to preserve battery lifespan. In other words, once you get down to 20% state of charge (SOC), it's time to run the engine or plug back into shore power. This effectively gives the operator 528Ah to use.
- The system is supported by several charge sources including a 435W solar panel, a high-output 170A externally regulated alternator and a 120A AC shore power charger.
- The engine start battery is a 12V G31 AGM and the bow thruster bank is made up of two 12V G34 AGM's wired in parallel. When on shore power, the AGM banks are maintained by a 30A AC charger. When the engine is running, each AGM battery is charged via a dedicated 50A DC-DC charger from the lithium house bank.



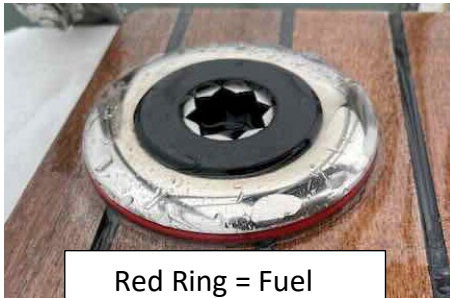
The house batteries are located under the nav seat. The starter battery is under the port aft mattress. The bow thruster battery is in under the front part of the fore cabin mattress.

- Cascadia has a 435 Watt LG solar panel mounted over the bimini. The system is completely passive and can generally keep the house banks charged up with normal use during summer trips. No human intervention is needed for the solar system.
- Battery Monitor –Cascadia has a Victron tank and battery monitoring system. The first screen will show power input and output. If you swipe left you can see fuel and water tank levels. Holding tank levels are not monitored with this system. When the SOC nears 25% it's time to put some juice back into the batteries. At 20% a low SOC warning will display on the Cerbo GX. At 16% an alarm will sound. At 15% lights and everything on the DC panel will turn off. Because lithium batteries have a much flatter discharge curve compared to lead acid, voltage is not a good reference point to determine the SOC of the battery.
- Cascadia has a 3000 watt Victron inverter so 110V power can be used at any time. Be careful as it is easy to draw the batteries down. We suggest leaving the inverter turned off at the multicontrol panel unless you need 110V power; the main risk is running the house batteries low without realizing it.
- You can turn the inverter on and off at the multi control panel. The picture to the right shows the on position. Switch to off when not using. Switch to charge when on shore power.
- The breaker for the inverter is located next to the main breaker panel in the aft port cabin. We generally leave this on. **THE INVERTER BREAKER IN THE PORT AFT CABIN MUST BE ON FOR CASCADIA TO CHARGE BATTERIES WHILE ON SHORE POWER.**
- The fridge, freezer, and Webasto heating system (as well as anything using the inverter –TV, toaster, coffee maker) all have significant effect on the battery life. We generally try get the fridge (and freezer) down to temp on shore power or while motoring to help preserve battery. We typically turn the heating system off at night or set the thermostat at 55 deg
- The house battery banks tend to recharge well with a few hours of motoring each day.



Inverter Breaker

## 7. Deck Fills/Pumpouts



- Deck Fills on Cascadia are color coded with a color ring between the deck cap and the deck and accessed with the winch handle.
- Red – Diesel Fuel (Port Side Aft Seat)
- Blue – Fresh Water x 2 (Starboard Side Aft Seat below pulpit and Starboard side forward of mast.)
- Black – Black Water Waste (sewage) x 2 (Starboard side amidship behind mast and port side amidship.)

## 8. Dinghy - Dinghy and Outboard Motor

- Cascadia is equipped with a 10' Highfield aluminum bottom dinghy and an 8 hp Honda. The dinghy is roomy (easily holds 4 adults) and the outboard is easy to operate. The dinghy tows with the least drag if brought close to the boat – a couple feet off the stern. This guarantees that you won't accidentally wrap the painter around the propeller when you back up! We prefer to tow the dinghy off either aft cleat. (Please do not tow from the aft rail)
- As owners, we would very much appreciate your special care when beaching the dinghy. Beaches in the San Juans are seldom gentle, sandy beaches; often they are rocky and covered by barnacles equipped with extra sharp rubber cutters. So any extra care will be appreciated.
- The Honda outboard has a four-stroke engine, so do not add oil to the gasoline mixture – it uses straight gasoline. The gas tank/fuel line for the outboard are currently stowed in the aft port locker. San Juan Sailing will be sure you have full gas cans which are normally in the port aft locker. This is the only locker where the gas fumes will not get into the boat. Also please do not cruise with the outboards on the dinghy as a large wake or gust of wind can overturn the dinghy.
- The Honda weighs over 100 lbs, so a hoist is installed (and absolutely required) to easily transfer the outboard from the stern rail mount to the dinghy transom (and vice versa).

### Deploying Honda 8hp from Cascadia to the Dinghy

1. This should ALWAYS be done with 2 people in calm conditions. One on Cascadia and one in the dinghy.
2. Make sure one carabiner on blue and orange safety tether is always connected the Honda motor. The 2 other safety tether carabiners will initially be connected to the stern rail of Cascadia.
3. Remove the carabiner from longer of the 3 tethers on the stern rail and attached it to the dinghy on one of the metal d-rings or the metal loop on the transom.

4. You can then detach the carabiner from the shorter tether from the stern rail on Cascadia. (This ensures the motor is always tethered to either the dinghy or Cascadia)
5. Make sure all 3 buckles are clipped on the black nylon motor harness and all straps are cinched tight.
6. Make sure fuel can is in dinghy and full.
7. Connect Forespar hoist carabiner to engine harness.
8. Run Forespar hoist line to starboard aft winch – 1-2 wraps + and one in the self-tailer.
9. Disconnect safety line from Cascadia and connect to Dinghy.
10. Make sure engine lock screws are completely open (or the motor will not fit over the dinghy transom).
11. Use winch and handle to lift motor off stern rail motor mount.
12. Second person in dinghy receives and positions motor.
13. Take line out self-tailer and slowly lower the lifting line using the winch as a brake.
14. Second person aligns motor on dinghy engine mount and tightens screws.
15. Detach hoist carabiner from d-ring on motor harness.

### **Retrieving Honda 8hp from the Dinghy to Cascadia**

1. This should ALWAYS be done with 2 people in calm conditions. One on Cascadia and one in the dinghy (standing on the swimstep is also possible).
2. Connect Forespar lift line carabiner to the motor harness.
3. Run Forespar hoist line to starboard aft winch – 1-2 wraps and one in the self-tailer.
4. Removed the carabiner from the dinghy at attach it to the stern rail on Cascadia.
5. Make sure engine lock screws are completely open.
6. Use winch and handle to lift motor off dinghy motor mount slightly above the stern rail motor mount with person on dinghy guiding motor.
7. The person on the dinghy or swimstep should guide the motor onto the motor bracket on the stern rail.
8. The person on Cascadia takes line out self-tailer and slowly lower the lifting line using the winch as a break with person on dinghy guiding the motor onto the stern rail motor mount.
9. Tighten motor mounting screws.
10. Leave the lifting line carabiner attached to the the motor harness while underway.

### **Dinghy - Honda Outboard Operating Instructions**

#### **Starting the Outboard**

- There is a light on the front of the motor next to the choke. Green light means the oil is good. Red means oil maintenance is needed and you should call for maintenance.
- Pull out the choke switch (starboard forward corner of the outboard).
- Open the air vent on the top of the fuel cap by turning counterclockwise.
- Make sure the U-shaped kill clip (with the red lanyard) is clipped into the red shut-off knob (port forward corner of the outboard).
- Use black transmission lever to choose neutral.
- Turn the handle throttle  $\frac{1}{4}$  turn counterclockwise.
- Pull the cord until it starts (you shouldn't have to pull it more than 3-4 times).

- Engage transmission with black paddle lever. Forward – Neutral – Reverse.

### **Stopping the Outboard**

- 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.
- 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 and stays in place.
- To put the outboard shaft back in the water, release the stainless-steel lever on the starboard side of the shaft.
- Push the fuel valve lever forward to close and close the air vent on top of the fuel cap.

### **Dinghy - Outboard Troubleshooting**

- If the engine won't start, review start steps 1-6 above to make sure you've done all 6 steps.
- There is a spare spark plug and spark plug wrench in with the safety equipment in case you need them.
- 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).

## **9. Dodger, Bimini & Full Enclosure**

- As with all dodgers, please be gentle. If the glass becomes spotted with salt please get a pot of fresh water from the galley sink and "flood" the salt crystals off the plastic. Our dodger has some very handy rails on the back and sides that make staying upright and onboard easier. The connector canvas between the dodger and bimini can be removed by unzipping it. If you do remove it please roll and store it.
- We also have the panels to create a full enclosure around the cockpit. However, when not zipped in place they are a bit bulky to store, therefore we do not have these on the boat for summer charters. If you are doing a spring or fall charter and would like to use them, please let SJS know ahead of your boarding.

## 10. Docking

### Bow Thruster

- The bow thruster is only operational when the engine is running.
- The bow thruster is deployed by pushing the green and red buttons together. You will hear a series of beeps indicating that the thruster is dropping down out of the hull.
- The bow thruster will retract automatically after 6 minutes if not used and you will hear the same series of beeps as played during deployment. (We activate the thruster with a few short bursts to one side or the other if close quarter maneuvering is going to exceed 6 minutes)
- It can be retracted on demand by pressing and holding the red and green buttons until you hear the series of beeps.
- We recommend using the thruster in short bursts of a few seconds.
- If using the bow thruster is planned for docking, we recommend deploying the bow thruster early as it is retractable and takes about 30 seconds to get into maneuvering position. Please do not deploy the bow thruster above 2.5 kts as it has a large surface area once deployed and affect steering. **Deploying the thruster above 3 kts can damage the system** and render it unavailable during docking.



Bow Thruster Controller



### Notes on Docking

- Cascadia has twin rudders, a deep keel, and high freeboard.
- As the prop is between the two rudders there is no propwash, but there is a slight prop-walk to port.
- Cascadia has a standard shaft drive, not a sail drive.
- The high freeboard can result in significant windage at times.
- Throttle control is at the starboard helm.
- We find it helpful to have a spotter at the front of the boat directing the driver, especially when docking to port. Tank 2 "on"
- We find she is easiest to dock bow in with a starboard tie.
- Please remember that the bow sprit protrudes a bit over 2ft past the hull (we have found this can be an issue if there is a high dock locker or transformer on the dock).



## 11. Domestic

### Water System

- Front Tank (1 ?) - 53 gal, Aft Tank (2 ?) - 87 gal
- 
- The water pump and tank selection valves are located in the sole on the port hatch in front of the companion way stairs.
- When the arrow on the dial is inline with the PV pipe the tank is open to the system. When the arrow is perpendicular tank is closed (see zoomed-in photo below).
- We use one tank at a time and then switch the tank when the first is empty. The Victron display at the chart table will tell you the remaining tank volume.



Tank Selection Valves"

Expansion Tank

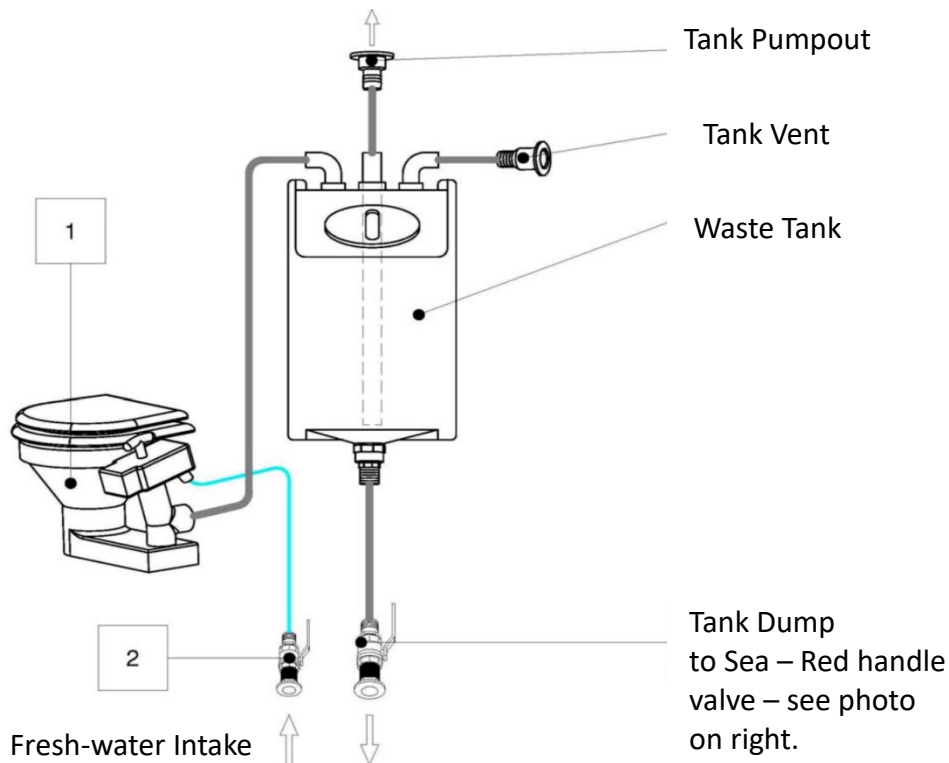
Water Pump



Aft (A) Tank "on"

Forward (F) Tank "on"

### Heads and Holding Tanks

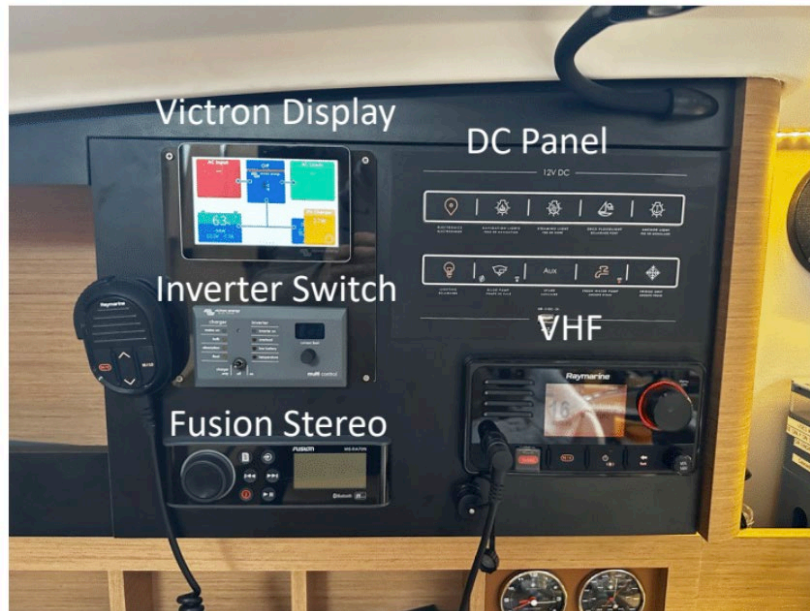


- Please do not put anything in the toilet that has not been eaten. Experienced sailors deposit toilet paper in a wastebasket, not down the toilet because paper tends to clog the system. Both heads have electric auto-flush toilets.
- Each head has its own holding tank, the **aft tank holds 21 gallons and the forward tank holds 13 gallons**. There are Y-valves located in each head under the sink.
- The tanks can then be dumped overboard (if you are in Canada) by opening the drain valves: In the aft head the tank drain valve is under the hanging locker in the starboard cabin and in the forward head it is located behind the hatch under the sink.
- Please note these are gravity drain tanks, there is no need for a macerator. They will normally drain in less than a minute (you will hear them finish with a 'woosh' if the engine is not running); or pump out when in harbor. If you want to pump out the tanks the deck fittings are on the port side. If you have four people on board and have 'normal' usage, the tanks will need to be emptied every other day. If you have more onboard or heavy usage, please dump or pump every day. **There is no level indicator so being 'regular' with your dumping is important.**

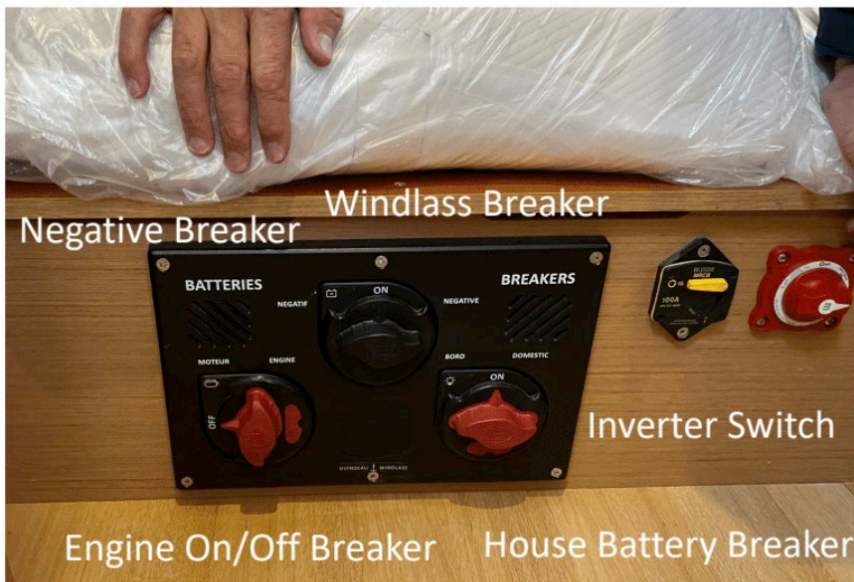
## 12. Electronics

### General Locations

#### Chart Table Controls



#### Breaker Control Panel in Port Aft Cabin




## Port Aft Cabin Controls

- Engine On – Start Battery Switch. Switch must be on to start, run, and charge the starter battery. Please do not turn off while using the engine. Cascadia has push button start (there is no key on the cockpit engine control panel) so turning the engine switch to off on the panel is the only way to “lock” the engine so that Cascadia does not drive away while unattended. Please remember to turn the engine switch to the off position before locking the companionway and leaving Cascadia.
- House Battery Breaker. We usually leave on and control everything at the electrical panel at the chart table.
- Inverter Switch. We usually leave the breaker on and turn the inverter on and off at the Victron panel on at the chart table. THE INVERTER BREAKER MUST BE ON FOR THE BATTERIES TO CHARGE WHILE ON SHORE POWER.
- Negative Breaker. Always leave on.
- Windlass Breaker. We usually leave off unless using the windlass. Note the windlass will not operate with unless the engine is running.

## Circuit Breakers

- Cascadia uses a relay system with multiple circuits and systems controlled with a single DC panel button.
- The entire DC panel folds down to access the DC breakers for each individual circuit.
- If a circuit breaker trips it can be reset by manually pushing the black button corresponding to that circuit.

Location: Chart table (Back of electrical panel)



1. 12 V socket	10. Deck wash pump
2. Hifi & TV Antenna	11. Fridge (Cockpit)
3. Touch screen (Supply)	12. Fridge (Workshop)
4. VHF / AIS	13. Retractable keel
5. Forward shower drain pump	14. Electric windlass (Control)
6. Aft shower drain pump	15. Bow thruster (Control)
7. Forward electric toilet pump	16. Electric platform
8. Aft electric toilet pump	17. Pickups - Electric platform
9. Gas solenoid (US Version)	18. Cabin ventilators



## AC Breakers

- Located in the port aft cabin along the side of the hull behind the cabinet door.
- We leave everything on, and you should not need to access the AC breakers unless you are using shore power, or the inverter and an AC plug/device is not getting power.



## Cabin Outlets and Lights

- There are 2 USB outlets (DC power) in each stateroom and one at the main electrical panel. There is also a USB-A and C outlet on located is on the center consult below the chartplotter. (Please make sure the power button in which will cause the outlet to illuminate)
- There are AC outlets (shorepower/inverter) in the galley by the chart table, in the saloon by the TV control box, in both heads and in each stateroom.
- There is direct and indirect LED lighting in the saloon (switches on the galley island just as you come down the companionway and also on the ceiling in front of the compression post)
- LED lighting is also in each of the staterooms and heads (switches just inside each stateroom and a small round button just below the sink in each head).
- There are underwater LED lights for nighttime critter viewing. The switch labeled "cockpit" is on the center consult below the chartplotter and can switch between blue and yellow lights.



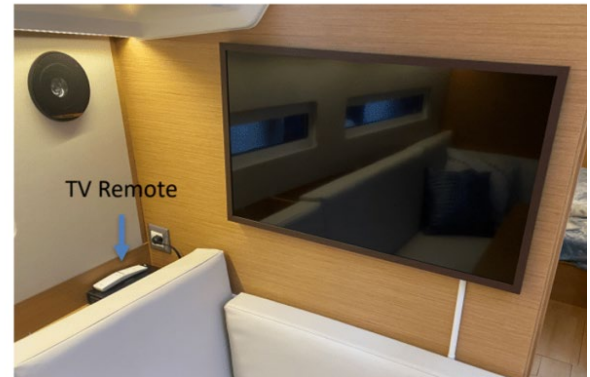
Underwater LED Light Switch - "Platform"

## Wifi/Starlink

- Cascadia is equipped with Starlink with unlimited internet. The system runs on DC power and is always on unless manually turned off by switching off the switch just to the right of the Webasto heater control. (We do recommend turning off Starlink at night or when not needed as it does have a considerable draw (6-7A) on the batteries).
- The password for both systems is Cascadia1234

## TV

- Cascadia has a Samsung smart TV mounted on the starboard aft bulkhead.
- The TV is fixed to the bulkhead and does not tilt or rotate off the bulkhead.
- The TV remote is on the control box on the cabinet shelf above the starboard settee.
- The TV is 110v AC and so you will either need to be on shorepower or use the inverter to operate the TV.
- The TV should be connected to Cascadia Starlink Wifi already, but if not you can access the network settings, connect to either Cascadia Starlink WiFi or Cascadia Wifi.
- We typically use the smart apps on such as netflix, hulu, amazon prime, and disney plus. You will need to use your own login and please remember to log out when your charter ends.
- You can also stream anything from your phone or TV directly to the TV using apple airplay or samsung cast, but this is a bit more problematic with some of the larger 4K video files.



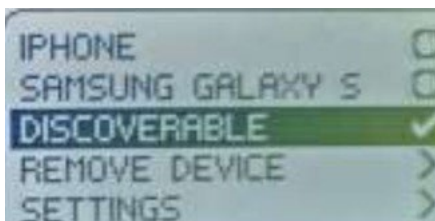
## Fusion Stereo

### Connecting your device via Bluetooth.

- 1.) Push menu button and select BT



- 2.) Push menu button and select discoverable



- 4.) Push volume rocker to adjust the volume in individual zones (Salon and Cockpit)



- 3.) Open Bluetooth settings on *your device* and scan for Bluetooth devices. The stereo should show up on your list of devices as "CASCADIAFUSION." An option should show up on your display asking to pair with the device and confirm pairing code, select "OK". Once paired your song selection and device name should show up on the Fusion display.



## Webasto Cabin Heat

- The Webasto Furnace is diesel fueled (from the main fuel tank) and is mounted in the starboard aft floor locker. The thermostat is located on the cabinet just forward of the main control panel above the fridge. Simply turn on the power switch on (button turns green) the thermostat and set the temperature you want. There is a 2-3 minute delay from when you turn it on to when you will hear the fan running. There is a rotating dial on the controller that is used to adjust the temperature. When you want to turn the heater off you simply press the power button (button will turn white).

Power Button  
(Turns green when on  
and white when off)

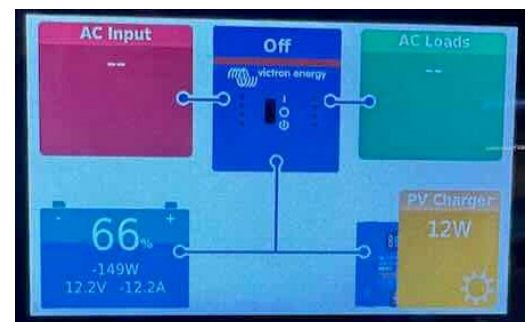


Thermostat Control Dial

## Victron Display

- This is a full touch screen, and you can select any of the menu icons on the screen to select batteries, fuel, or water tank. The unit will display voltage on all batteries (house, start, and bow thruster), voltage to the boat from shore power and solar, as well as fresh water and diesel fuel levels. It will not display black water levels from the heads.

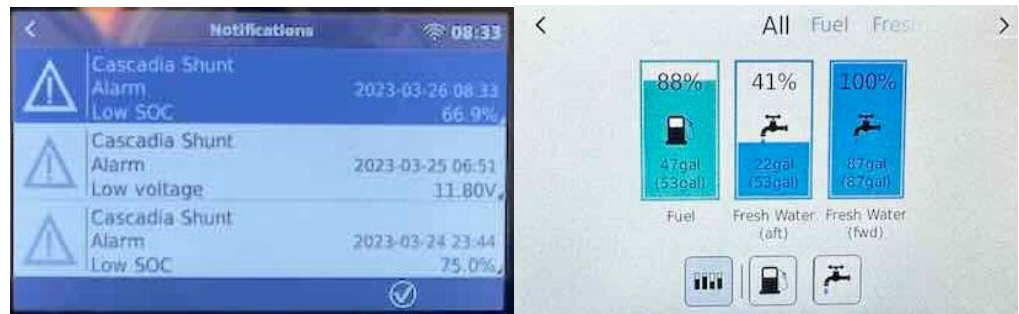
Home Screen



- The first screen will show power input and output. If you swipe left, you can see fuel and water tank levels. Holding tank levels are not monitored with this system.

Alarm Screen

Tank Screen



- The panel will beep and show a “shunt alarm” if power drops below 55% alerting you that it’s time to start the engine or plug into shore power. You can silence the alarm by pushing the “exclamation point in triangle icon”. The alarm will stop when voltage rises to 60%.
- There are multiple pages, minus and settings you can access on the Victron display. We ask that you please use the screen for information only and do not change any settings.

## 13. Engine

### Start

- Visually check the engine, look for fluid or oil under the engine or eelgrass in the strainer. There should be no need to check the oil level unless you are out for more than a week (it is checked every turn-around by our maintenance pro). If you do want to check the oil level the dipstick is easily accessed via hatch in the starboard aft berth.
- Make sure the gearshift is in neutral (approx. vertical).
- Push the On/Off button (bottom right of panel). An audible alarm should come on.
- Press the start button (top right of panel)
- After the engine starts, check for water flowing out the exhaust (aft port side).
- There is no need to warm up the engine, getting out of the harbor will do this.

Tachometer – located right side of Cockpit



### Stop

- To stop the engine press the stop button until the engine stops.
- After then engine stops press and hold the power button until you hear a beep. The blower fan will eventually turn off.

## Cruising Recommendations

- Optimal cruising RPM is ~ 2600 rpm. Please do not exceed 2800 rpm.
- This will typically result in a fuel burn of 1.2 gallons/hr.
- Engine temp typically runs ~ 78-79C

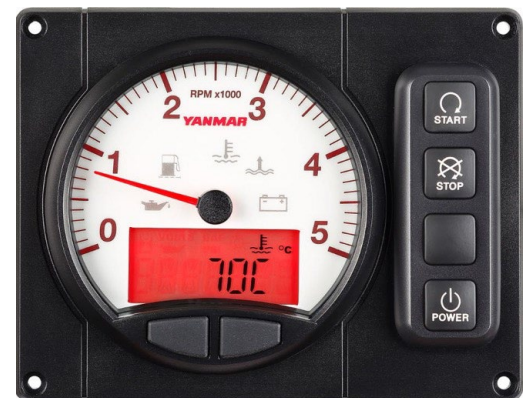
## Fuel Tank

- The **diesel tank feeding the engine and the Webasto cabin heater furnace holds 53-gallons** and sits under the starboard aft cabin berth. The fuel shut-off valve is located on top of the tank. The fuel gauge is located on the Victron display (tank screen) at the chart table.
- The deck fill for the diesel tank is on the port side, aft seat behind the helm. The deck fill has a red ring below the cap and between the deck indicating fuel fill. The cap is access with a winch handle.
- **When filling the tank listen closely and stop as soon as you hear fuel coming up the fill pipe. It will foam out the vent if you go further. The deck fitting for the main tank is on the port side on the aft corner seat.**



## Alarms

Generally, if you are seeing any of these alarms we recommend calling San Juan Sailing or contacting our maintenance pro – Epic Yacht Management.



### Water in Fuel Filter Indicator and Alarm



When the water level in the fuel filter/water separator becomes too high, the indicator will light and the alarm will sound. Drain the water from the fuel filter/water separator. See *Draining Fuel Filter/Water Separator* on page 97.

### Engine Oil Low Pressure Indicator and Alarm



When the engine oil pressure falls below normal, the oil pressure sensor will send a signal to the indicator, causing it to light and the alarm to sound. Stop operation to avoid damage to the engine. Check the oil level and troubleshoot the lubrication system.

### Coolant High Temperature Indicator and Alarm



When coolant temperature reaches the maximum allowable temperature (95 °C [203 °F] or higher), the indicator will light and the alarm will sound. Continuing operation at temperatures exceeding the maximum limit will result in damage and seizure. Check the load and troubleshoot the cooling system.

### Water in Sail Drive Seal Indicator and Alarm



When water is detected between the seals of the sail drive, the indicator will light and the alarm will sound.





### Battery Low Charge Indicator

When the alternator output is too low, the indicator will light. When charging begins, the indicator will turn off.

### Engine Access

Coolant Reservoir



Oil Dipstick

### Starboard Cabin Access



### Companion Way Access (Lift Stairs)



### Port Cabin Access



Engine Raw Water Strainer  
(Lid is hand tightened only –  
please do not use tools to  
tighten)

## 14. Galley

### Cabinetry/Storage on Cascadia

- Cabinet storage on Cascadia is often hidden but is plentiful.
- Almost all cabinets have a small plastic latch to keep them closed.
- The latches are relatively fragile and can be easily broken if a door or drawer is opened without releasing the latch.



Latch Marker Dot

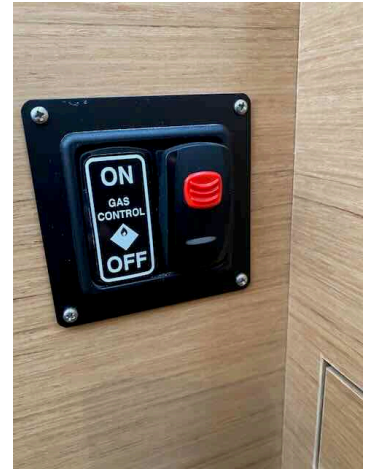


- We have placed a small brown dot indicating the position of each latch so that it is easily found. (This should also help in finding some of the “hidden storage” area



## Stove/Oven

- The solenoid control switch is just in front of the galley sink. Hold the red safety switch down and press in on the top of the button. A green light will turn on when the solenoid is on.
- To light, push and turn the knob you wish to use and light the burner using the automatic igniter.
- Hold the knob in for 10-15 seconds, then release. Make sure that the flame goes all the way around. Reduce any wind that may hinder this.
- If you cannot get it to light, check the valve on top of the connected tank is open.
- When you have finished using the burners, or the stove, switch off the solenoid before you turn off the knob on the stove. This will burn the gas out of the lines, and you can test whether the solenoid is working. If the burner remains lit after switching the solenoid off, you must manually close off the tank in the cockpit.



## Food/Supply Storage



Under Lounge cushion



Under Lounge cushion 2  
– slide wood panel  
forward.



Galley Side Island Drawer



Under Port Sette Cushion

(Remove cushion to access)

Cups/Glassware  
(Cabinet next to Port Lounge)



Plastic Bin Storage Under Sole  
(Next to companion way under rug)



Spice Collection  
(Under Microwave)

Silverware  
(Under Spice Shelf)



Utensils  
(Drawer below Glassware Cabinet)



Plates and Dishes  
(Cabinet Starboard of Oven)



Tupperware/Large Bowls/Brita  
Companionway Side Island Cabinet





Pots and Pans  
(Cabinet below Oven)



## 15. Saloon Table and Birth

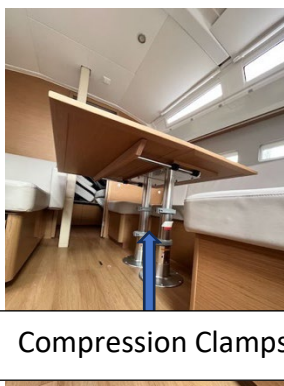
- The Saloon table folds out to double in size and allow you to sit at both the settee and the lounge

Use this cushion for the second half of the mattress for dinette birth conversion.



seat.

- The saloon table can also be lowered to create a double birth.
  - Unlock the 4 compression clamps (2 on each table leg)
  - Push the table height down to match the settee seat level.
  - Use the long cushion in the middle of the settee as the mattress for the birth. There is non-stick on the back of the cushion. (Note the cushion tends to slide around if you are an active sleeper or in a rolly



Compression Clamps



anchorage so use the NRS strap (kept in cubby behind the cushion) around the mattress and table to secure the mattress in place if needed. Please make sure the metal strap lock is between the cushion and table as shown (or under the table as it tends to scratch the table quite badly.)



## 16. Instruments

### Chart Plotter - General

- Cascadia has a Raymarine Axiom 12 pro color chart plotter on a swivel mount on the center console (easily rotated for view at either helm) and an Axiom 9 pro color chart plotter installed at the starboard helm. Both are integrated with the radar and AIS. The 9" plotter is slaved to the larger plotter and will always display the same information.
- We recommend that your PRIMARY navigation tool be the Maptech waterproof chart book or paper charts (both have the most active "killer rocks" marked in red). The best way to stay off the rocks is by knowing where you are at all times. The primary role of the chart plotter is to verify that you are where you think you are. And, when in a tight place it will allow you to zoom in for a better view than the real charts provide.
- To use the plotter the "Electronics" breaker must be on at the electrical panel to power the unit. Then press the power button (right hand side of the 12" plotter and lower right corner of the 9" plotter) and then press "I Accept" to clear the notice.
- The chart plotter is currently configured to show wind, tides and current. It can also be used to control the autopilot. It also shows your course overground vector (Blue Line) with a 30-minute interval.



Center Instrument Console



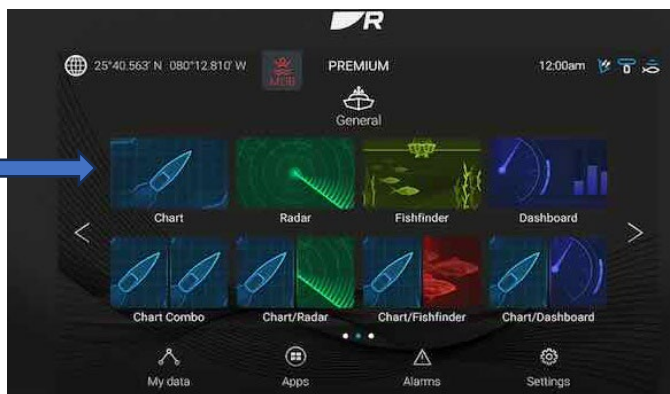
Starboard Helm Station

- After power is applied, the system will return to the last formats /settings selected. The most popular selections for screen formats are accessed by selecting Home, then Favorites, then chose the desired application.
- Please refrain from changing settings beyond the typical functions like chart orientation, radar overlay, AIS overlay and range.
- Commonly used chart plotter selections are detailed below. For a more complete orientation of how to operate and get the most value from a Raymarine Axiom chartplotter, we recommend downloading the user manual for the Raymarine Lighthouse 3 operating system. The manual is also loaded into memory of the plotters if you wish to review something while onboard.

## Commonly Used Chart Plotter Selections:

### Finding the Navigational Chart:

- When you turn on the chartplotter you will see a home screen with options for chart, radar, fish finder (inactive), dashboard etc. Select the chart icon which is typically in the upper left-hand corner of the menu.



### Zooming in and out:

- Once the chart is displayed you can zoom in and out on the screen by either turning the dial on the upper right-hand side of the chart plotter. Left will zoom in, right will zoom out.
- You can also zoom in and out by using the “+” and “-” buttons at the bottom of the screen or by pinching or expanding your fingers on the chart plotter screen in the same way you might on your smart phone or tablet.

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

- To return to the boats current position on the chart press the “boat in cross hairs” Icon at the top of the chart screen. This should be the third icon from the left-hand side of the screen.





General Controls on the Chartplotter:

“menu” three bars – short press gives access to menus for multiple options.

“Boat” – Long press on the boat icon will also give access to multiple menus.

“Home” button above the round dial will take you to the main menu screen.

### Waypoints, Routes, and Tracks:

- **To add a waypoint** long press you finger on the screen where you want to drop the waypoint. This will drop a number for the way point and load a waypoint options screen. If you select the options button a window will load where you can rename the waypoint or give it a different symbol.
- **To delete a waypoint** long press once on the waypoint you want to select. Then press the waypoint again to bring up the waypoint menu. Then choose more options to delete the waypoint.
- **To Manually build a route.**
  - Long press on the screen where you want the route to start. From the pop-up menu select “build a route”. This will drop a green flag at your starting waypoint.
  - Then drop single waypoints along the route you wish to build.



- Once you have dropped all the waypoints you want select the “finish build route” button at the top of the screen.
- From the bottom of the screen, you can then select the “Follow” to start the route, “Route plan” which lets you look at the waypoint details for the route, or “Exit.”



- From the “Route plan” button you can select the three small dots next to the generic route name to rename the route to the desired name.

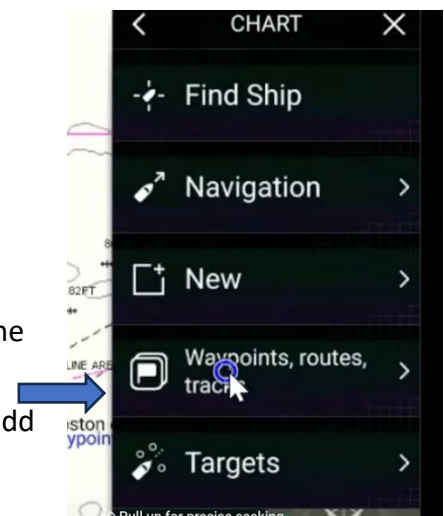


- **To Automatically build a route.**

- Long Press on the chart where you want to go.
- Select More Options
- Select autoroute to here.
- The plotter will then automatically drop waypoints and autogenerate a route to follow to your desired waypoint.
- You will then need to select follow route. Cascadia will follow the route, but you will need to manually steer or use the autopilot on manual settings.

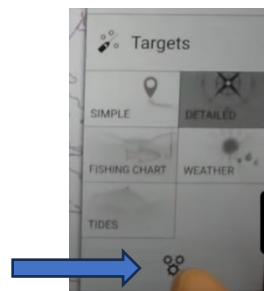
- **To add a Track**

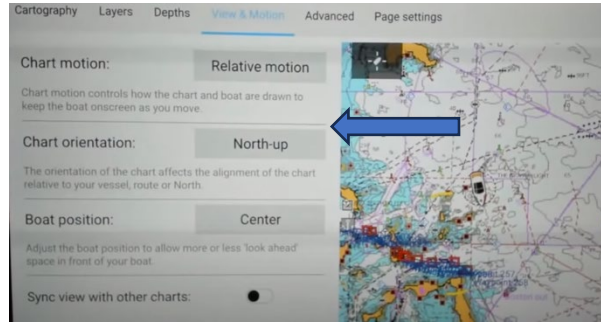
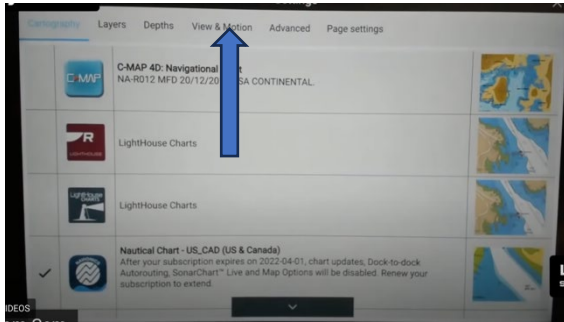
- Long press on the boat icon
- Select “Start track” from pop-up menu.
- Select “OK” at the bottom of the screen.
- The track name will default to “Current track”
- To access more tracks, rename tracks, stop, and delete tracks select the “menu” three bars in the upper right hand side of the plotter screen.
- You can then select “Waypoints, routes, and tracks” to edit or add more tracks.



**Chart Orientation:** To Change between North up, Heading up, or Course up orientation.

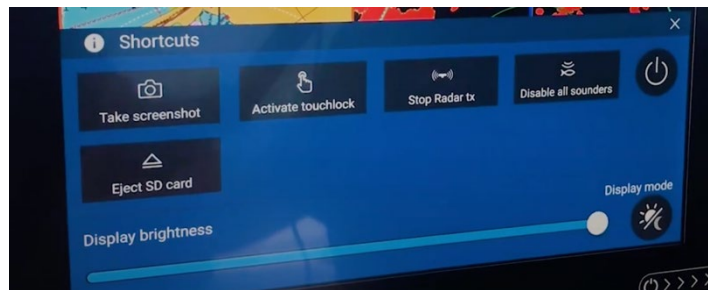
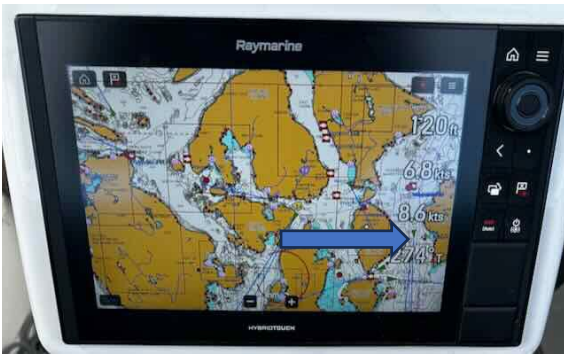
- Select the “menu” three bars in the upper right hand side of the plotter screen.
- Select the 3 gears at the bottom of the pop-up menu
- Select “View and Motion”
- Select either North-up, Heading up or Course up from the Chart orientation tab.





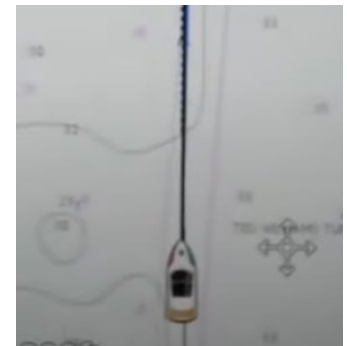
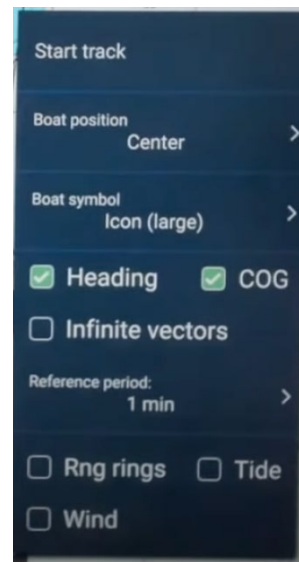
### Display Brightness:

- Short press the main power button on the right side of the plotter.
  - Use the slider bar in the display brightness menu to adjust brightness.



### Course over Ground (COG) and Vector Lines:

- COG line (Blue Line) is always ON by default.
- To modify vectors
  - Long press on the boat icon.
  - Select vector from the pop-up menu.
  - You can add in the heading vector (Black Line), change the vector reference period, or add wind and tide vectors from the menu.



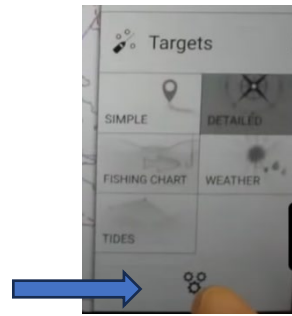
COG – Blue  
Heading - Black

### Displaying and using a Split Screen:

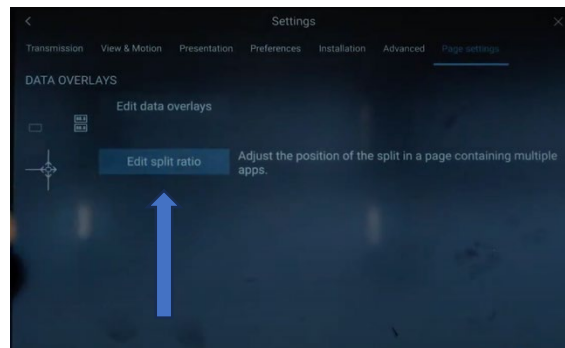
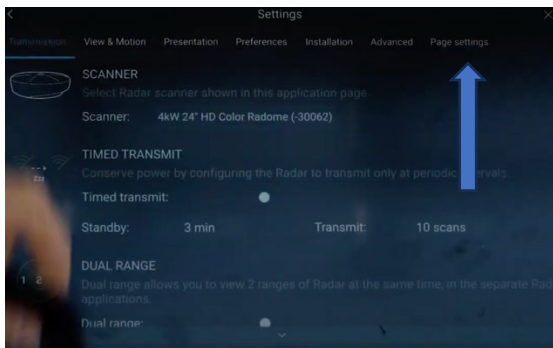
- There are several preloaded split screens available from the home screen when the chart plotter powers up (chart/radar etc.). These can also be accessed by pressing the home button on the left side of the chartplotter.
- You can modify the split screens by selecting “menu” three bars in the upper right-hand side of the plotter screen.



- Then select the three gears.



- Then Select Page Settings.
- Then choose the edit split screen ratios you want.



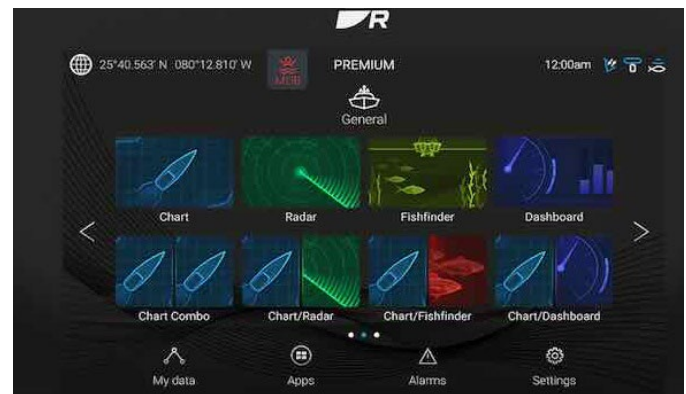
### Radar Overlay:

- To start that Quantum Radar select the Radar button from the initial home screen.

- Press the "Transmit" button at the bottom of the screen.
- To turn off the radar select the "menu" three bars in the upper right-hand corner of the screen.
- From the pop-up window that appears toggle off the transmit function. This will bring you to a Standby pop-up at the bottom of the screen. You can then press "transmit" to resume scanning or "off"

\*\*\* Please note the radar uses a significant amount of battery power. We recommend making sure the radar is off when not in use and especially when not needed while under sail or at anchor.\*\*\*

- To overlay the radar on the chart select the "menu" three bars in the upper right-hand corner of the screen
- Then select the three gears at the bottom of the pop-up window
- Then select Layers at the top of the screen
- You can then toggle on the radar button.
- You can then close the menu to return to the chart which will now display a radar overlay.



**AIS Overlay & Targets:**

- To overlay the AIS (typically already on) on the chart select the “menu” three bars in the upper right-hand corner of the screen.
- Then select the three gears at the bottom of the pop-up window.
- Then select Layers at the top of the screen.
- You can then toggle on the AIS button.
- You can then close the menu to return to the chart which will now display the chart with AIS targets as green triangles.

**A.I.S. (Automatic Identification System):****Highlights**

- Cascadia 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). Cascadia is transmitting her position full time (The AIS unit is wired directly to the batteries and cannot be turned off).
- The chart plotter is tied to the AIS Unit and shows the positions of vessels with AIS as green triangles. Make sure the AIS overlay is turned ON as described above.
- 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. Cascadia's MMSI number is 368194650.

**Details**

AIS vessels appear on the chart plotter screen as green triangles (must have AIS overlay turned ON – see above Quick Notes for how-to). 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 *Vessel name* 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 *Vessel name'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 vessel name, course, speed, track, and other information.

**VHF Radio/Wireless Remote**

- The base unit radio is mounted at the nav station

- A wireless remote mic/speaker for use in the cockpit is in a charging cradle in the cubby cabinet just aft of the VHF mic. (The mic uses a wifi signal from the main VHF. It works best to turn the main VHF on for a minute or two before turning on the remote mic to let the wifi signal start up and then the remote will connect automatically to the network. If it does not power down both units and try to connect again)
- 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 channels 68, 69, 72, 74 or 78. We listen to weather channels 1, 2, 3, 4 or 8 (whichever gives the best reception) 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).

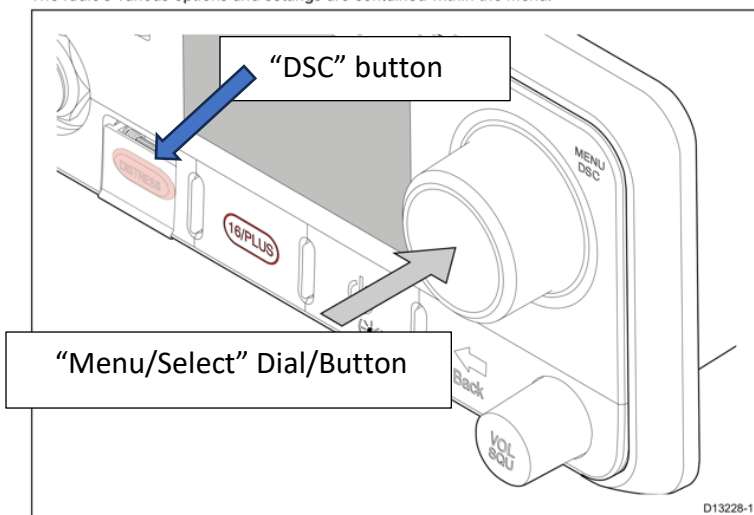


Wireless Remote VHF (handheld unit)



- **Turning On and Off the radios** – the main nav station radio must be turned on manually – press the power button to turn it on. On either radio holding the power button for will also turn them off.
- **Silencing a DSC Alarm** – When another boat (or the Coast Guard) presses the DSC button on a radio it sounds an alarm on all boats in the area. To silence this alarm, press any key on the radio.
- **Changing from High to Low transmit power** – Press the HI/LO button on the mic or remote to switch between 1W (low power) or 25W (hi power).
- **To quickly get to channel 16** or the main radio screen– tap the red 16/+ button. (the + is the 2<sup>nd</sup> priority channel)
- **Selecting Radio Modes.**

The radio's various options and settings are contained within the menu.



- Press in the large "Menu" Dial – this will take you to all menu options, ie. DSC calls, Watch Mode, Weather Mode, Scan Mode, Intercom, and Set up.
- Select the mode you want by turning the dial right or left to highlight the mode you want to access.
- **Accessing the weather channels** – Select Weather Mode from the main menu by highlighting weather mode and pressing once. You can then turn the dial between weather channels (channels 1-10) 4 is the default channel.

- **Adjusting Volume and Squelch**

- Press the Vol/Sq knob to toggle from setting squelch to volume. Turn same knob to adjust either.

- **Changing between International & U.S. channel** – Press the MENU dial, Turn the MENU dial to “Set-up” and press once. Turn the MENU dial to select “Channel Set-up” and press once. Turn the MENU dial to select “Frequency Band” and press once. You can then turn the Menu dial to select “USA” (default), “Canada” or “International”.

- **How to set up Watch Mode.** This will allow you to monitor channel 16, a second priority channel, and the current channel on the VHF. Press the Menu Dial. Select Watch Mode. You can then select your second priority channel

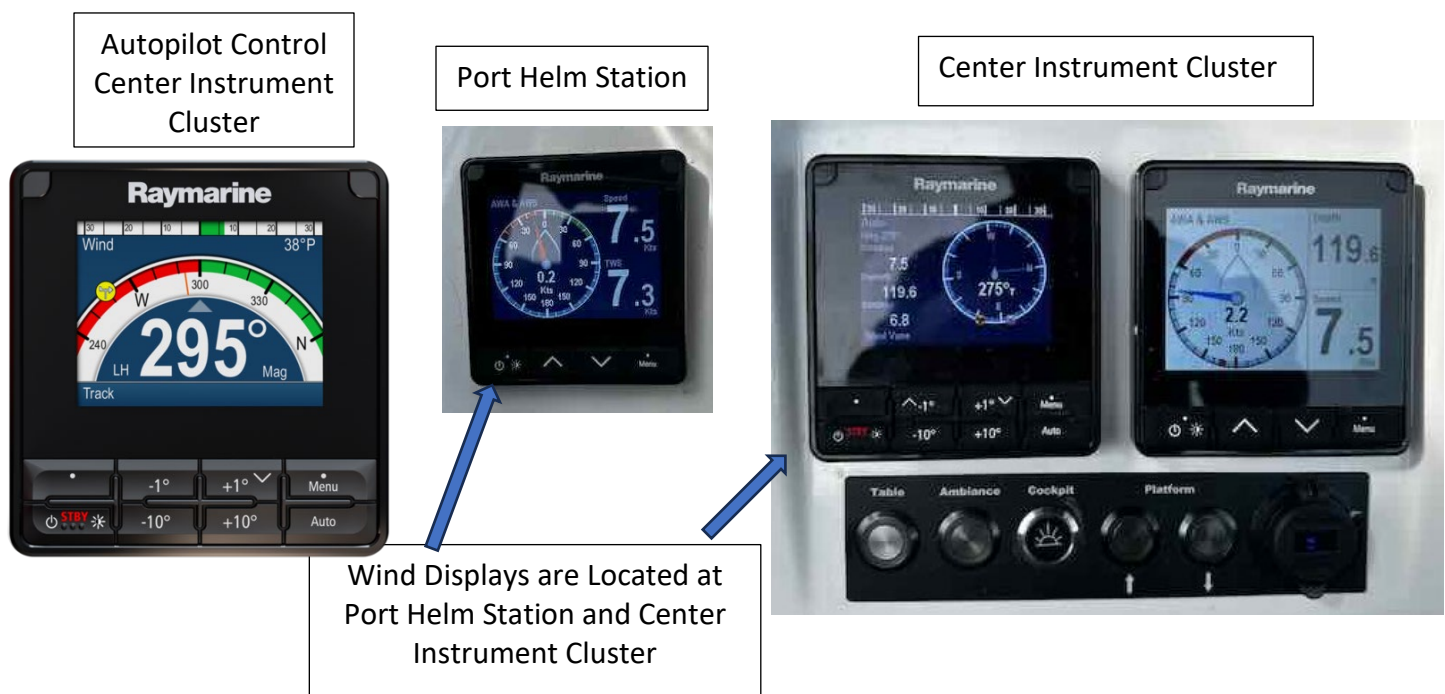
- **How to set up and use Channel Scanning**

- Press in the “Menu” dial to select “Scan Mode” and press once. Then select the setting you want (All channels +16, Saved Channels, Saved Channels +16 or Edit Saved Channels and press once on the selection you want. You can edit your saved channels from the “Edit Saved Channels” menu.

- **DSC -Automatic Distress Button.** This will start an automatic mayday providing your GPS coordinates. To start the mayday press and hold the red DSC button for 3 seconds a countdown will then start. The distress call will continue until answered. To cancel the mayday release the DCS button before then end of the countdown.

- **Newer VHF units 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, (1079 & 1080). Refer to the new listing in the Charter Guest Reference Manual binder on board, section 7, VHF Procedures & Weather Reporting.

## Autopilot and Wind Displays





## Autopilot Control

- To start autopilot steer to the compass course you want to follow.
- Press the “Auto” button – the autopilot will then steer to the compass course you have set.
- To disengage the autopilot press the “STBY” (standby) button.
- You can adjust the course by 1° or 10° by pushing the “+” or “-” 1° or 10° buttons.

\*\*\* Autopilot default is to steer a compass course. The unit can be set to steer a wind course, but we do not find this particularly useful with the variable winds in the San Juans and Gulf Islands. \*\*\*

## 17. Sail Systems

### Operating and Reefing with the Mainsail Furling System

- Ensure the lever on the reefing winch at the mast is in the free position.
- Open the line clutches “Main In” and “Main Out”. This is the endless line that goes around the winch at the mast. Take the “Main out” side of the line and put one wrap around then winch. This will enable you to control the speed of pulling out the sail in breeze.
- Check the outhaul clutch is closed.
- Ensure the boat is pointed into the wind and the vang is eased a little so the boom is horizontal/perpendicular to the mast.
- Open your mainsheet clutches and ease mainsheet a foot or two.
- Pull on the “Outhaul” while you ease the “Main Out” line, always keeping an eye on the mainsail coming out of the slot in the mast and keeping tension on the “Main Out” line (the line can hop off the reefing winch if this is not done).
- When unfurling the main all the way, do not tension the outhaul so that the clew goes beyond the black marker near the end of the boom. Do not open any clutch labeled “Do not touch” as it is the halyard. Releasing the halyard will make it difficult to furl and unfurl the sail.
- Once you have unfurled the main switch the reefing winch lever to ratchet so you are ready to reef if needed without going up to the reef winch.
- In the ratchet position the sail can only go in the mast not out. This can be used to reef the main in heavy wind conditions. Release both clutches beforehand.



- Reefing winch. If the continuous line were to break this can be used to furl the sail back in. Just move the lever to ratchet and use a winch handle to furl the sail.

Unfurling- Open the "Main in" and "Main out" clutches. Keep tension via X2 turns on the winch with the "Main out" line.



Pull on the outhaul to unfurl mainsail always keeping an eye on the sail as it unfurls.



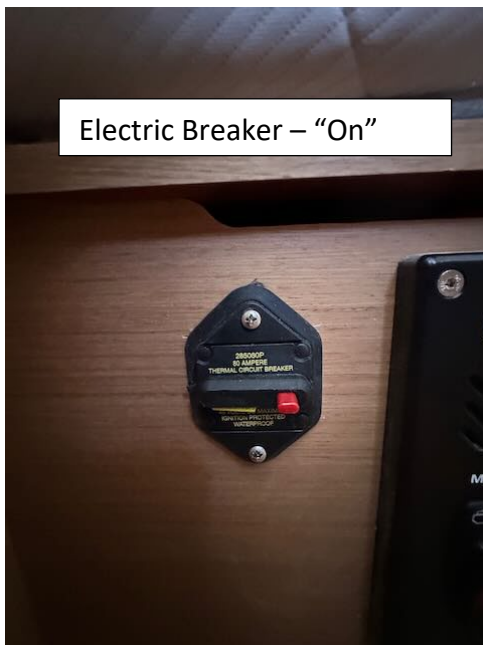
Black marker on boom, do not furl beyond this maker.



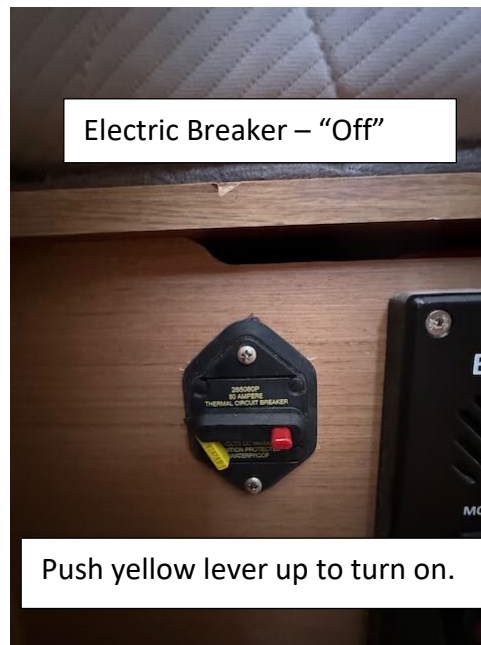
## Operating the Electric Winch – Port Side of Companion Way

- Make sure winch breaker (aft cabin starboard side of main breakers) is on.

Electric Breaker – "On"



Electric Breaker – "Off"



Push yellow lever up to turn on.

- You can use the winch for furling in the jib and furling in and out the main.
- If you are using the electric winch to furl in the main sail you need to run the furl in line around the starboard cabin top winch to maintain a straight path through the furl in clutch or the line will have a very acute angle with the power winch and could break.
- The winch is very powerful and can break lines and tear sails.

- Please make sure line clutches on the main in out furling system, jib sheets, etc. are open and in the correct position before using the powered winch.
- Please run furling lines and other lines to be used on the powered winch by hand and test with the winch handle to make sure there is normal resistance and that the line is responding as you would expect.
- The winch has a fast (button 1) and slow (button 2) speeds.
- Please always exercise caution while using the electric winch.

## Notes on Sailing Characteristics and Reefing

- Cascadia excels in light air with full sails but needs to be heavily reefed and earlier than you would think when the wind kicks up. Sailing upwind she tends to round up easily when overpowered. She is much more forgiving downwind.
- Above 15kts apparent wind we recommend reefing the main well beyond the marked dots on the sail. The main should be reefed until the top is just at the level of the upper spreader. The jib should be reefed until the foot of the sail at the tack is about 2' above the bow rail. This configuration works well up to about 25kts AWS.
- **Note: Cascadia also sails beautifully with Jib alone (including upwind) in higher winds (15kts plus). We find she will still make good speed with very level heel and the crew tends to be much more comfortable. Above 15kts we routinely sail jib alone and reef the jib to crew comfort and heel (this is hands down our preferred method in gusty winds consistently over 15kts).**
- At or above 25kts AWS we recommend furling in the jib and using the above main configuration while motoring. If motor sailing upwind Cascadia performs much better quartering the oncoming waves as opposed to bashing directly into them (the bow tends to climb high on the wave and then she will slap down the other side which is quite uncomfortable).

