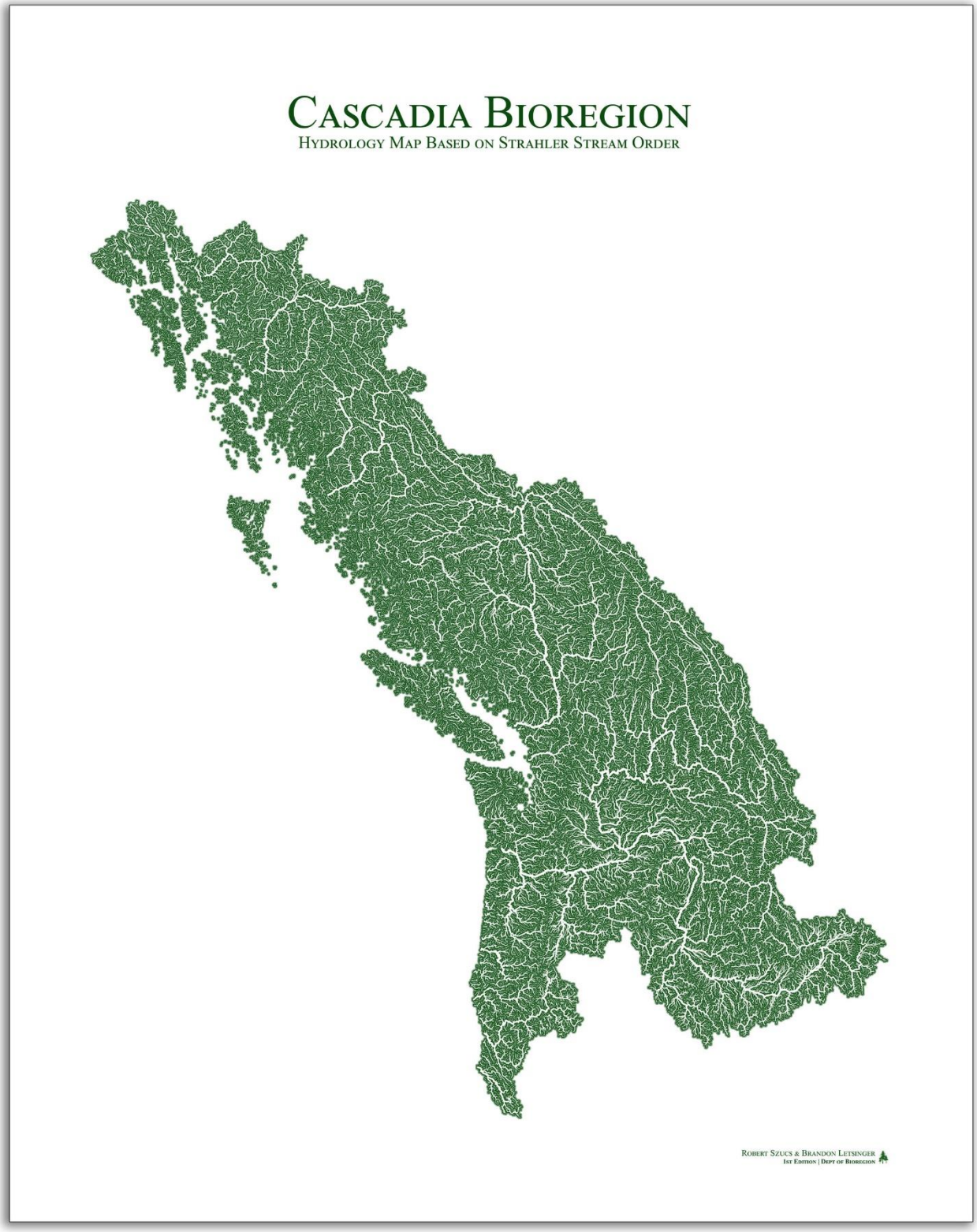
CASCADIA


CASCADIA BIOREGION
HYDROLOGY MAP BASED ON STRAHLER STREAM ORDER
ROBERT SZUCS & BRANDON LETSINGER
1ST EDITION | DEPT OF BIOREGION

WELCOME ABOARD!

Thank you for choosing **Cascadia** for your charter vessel. Cascadia's name originates from the bio-region we love which extends from California through to Alaska.

She's a great boat that we use ourselves personally throughout the year.

All boats have personalities and idiosyncrasies. This guide is intended to cover the basic operation of this Bayliner 4087 and some of the unique features of **Cascadia**. After reading this guide, please give us your feedback for any changes in this manual to help us improve your adventure.

It is invaluable to read this manual BEFORE you venture out.
The full range of systems manuals can be found beneath the aft dinette cushion.

Anacortes Yacht Charters
(800) 233-3004
(360) 293-4555

Coast Guard Call Channel 16
Vessel Name **Cascadia**
Ships Call Sign: **WDP9793**

Contents

General Specifications

LOA	**43' 7"** (including swim step & bow pulpit) LWL 37' 9" **With dinghy and davits you will need a 50 slip in Harbors**
BEAM	**13' 11"**
DRAFT	**3' 9"** (HULL 2' 8") **Please maintain a minimum operating depth of 10 feet**
BRIDGE CLEARANCE	**15' 5"**
WATER	**77** gallons + 11 gallon in hot water tank
FUEL	**220** gallons (110 PORT + 110 STBD)
HOLDING TANKS	**66** gallons (33 gallons (fwd) + 33 gallons (aft))
DISPLACEMENT	26,000 Lbs.

Safety Equipment

FIRE EXTINGUISHERS - 4 Onboard: Please locate them visually so you know where they are in the event of an emergency. One mounted in the galley, one starboard side aft cabin, one port stanchion aft deck, one engine room forward bulkhead.

LIFE JACKETS – 8 adult PFD's, 3 type II youth PDF's--Aft Deck storage compartment. 6 adult PFD's under flybridge seat.

THROW RINGS – 2 mounted -one on rail on upper aft deck and one life ring on lower deck/entrance deck.

EMERGENCY EQUIPMENT (Other) - Life lines, hand flares, flare gun, emergency ladder, light sticks, located in Aft Deck locker. 5 to 1 block and tackle system for use with life also in the Aft Deck locker.

FIRST AID KIT – Stored in the Aft Deck locker.
FLASHLIGHTS / KEYS – Located on the starboard salon shelf.
SMOKE / CO Detectors- one located in each stateroom.

SMOKING / PETS – Cascadia is a smoke free vessel. Thank you for not smoking on board.

Running Safely

General Cautions

The waters of the Pacific Northwest contain many hidden challenges for boat skippers. **Maintain a careful lookout at all times while underway**.

Debris, deadheads, kelp, driftwood, other floating obstacles can appear at any time! With this in mind we ask that you observe a few simple rules of running safely.

Debris will be pushed away from the semi-displacement hull when running slowly. **This is the safest way to navigate**. A careful lookout will help avoid costly damage to the prop and/or shafts and potentially ruin a well-planned and deserved vacation.

- **Always maintain situational awareness, especially when running on autopilot.**
- **Don't run fast directly into sunrise or sunset, as sparkles on the water will hide floating debris.**
- **When running fast, always operate the vessel from the upper helm for best visibility.**
- **Cruising before sunrise or after sunset can be very dangerous and is prohibited.**

Reference Guides

Several reference guides have been placed aboard to help you plan your perfect vacation. These guides include:

- Chapman's Piloting & Seamanship
- Evergreen Cruising Atlas, for Northwest Waters
- Waggoner Cruising Guide
- Waggoner Ports & Passes Tides & Currents book

In Case of Accident

Hopefully you will never be involved in a boating accident but, if you are, remember that you are required to render assistance and file a report….CG-2692 (Rev 4-97) if there is loss of life; serious injury or damage >$2,000. Call AYC immediately.

Towing / Boat US

Cascadia has a BoatUS Towing and Vessel Assist plan, which can be used to provide emergency assistance and towing in U.S. and Canadian waters. Call them on VHF 16 or US (800) 391-4869.

- Account number: **21002159** (Registered under the last name of Martorano)

Engines/Fuel

Engine Specifications

Twin Cummins 6BTA5.9-M2 Turbocharged Diesel – 250 HP each

Idle Speed:	650 to 750 RPM
Displacement Operating Speed:	**1000 to 1200 RPM** (8 knots) 20-24 gallons per hour
Planing Operating Speed:	**1800 to 2200 RPM** (12-14 knots) 28-32 gallons per hour
Maximum RPM:	**2200 RPM**

Fuel Economy

The Bayliner 4087, has a **modified vee** or semi-displacement hull, which can operate in both displacement and planing modes depending on speed.

Overall, the **displacement hull speed offers the most fuel-efficient operation overall**. If the boat is heavily loaded this will be especially true. At these lower RPMs, the engine is working at a more **efficient power band** and consuming less fuel for the amount of speed you're getting, leading to better long-term fuel economy

We recommend operating both engine between 1000 and 1400 RPM (8 knots) burning around 2.5 – 3.0 nautical miles per gallon of fuel.

The faster you go; fuel mileage will dramatically reduce. For example, at planing hull speed of 16 knots 1800 to 2200 RPM you will burn 28-32 gallons per hour.

Fueling

* * * * CAUTION * * * *

Use Diesel #2 Only!

WARNING: The skipper must supervise all fuel filling. Be sure you are putting fuel into the fuel tanks and not into any other tanks. There are multiple fill ports on the boat deck…..two for fuel, two for holding tanks and one for potable water. The deck plates are clearly marked, but exercise caution. Also, be sure you are filling with Diesel, not GAS! Avoid spills; don't trust the fuel gauges entirely and do not attempt to operate the vessel with less than ¼ tank per side.

A fuel manifold is located in the engine compartment and allows fuel to be drawn from either tank to feed either engine or both engines. This is useful in the unlikely event that the fuel in one of the tanks is contaminated and this tank must be isolated. In normal operation all valve handles should be in the "DOWN" position.

Pre-Start

Engine access is obtained by lifting the hatch covers in the main salon, and through the access panels in the aft stateroom & mid-cabin. This access is for checking oil, transmission fluid and coolant levels. Battery access is also available through the mid- cabin (2 access panels). House batteries are located in the aft lazarette.

CHECK OIL: Dipstick marks are separated from full to add by ***2 quarts.*** When the dipstick reads 'add', two quarts are needed. Halfway between would require one quart. Diesel engines are particularly sensitive to overfilling or low oil levels. ***Please be careful***.
The transmission dipsticks can be reached through the rear access panel. The sea strainers can be reached from here as well.

VISUALLY INSPECT belts, hoses, mounts, sea strainers, fuel filters and coolant overflow tanks.

COOLANT: Coolant should be visible in the expansion tanks. If not, you can check coolant tank by removing the cap. Add coolant as required to reach the cold line.

BATTERIES: Ensure battery switches (located to starboard of the lower helm station) are in the "on" position.

Start

Be sure all engines' transmissions are in neutral and throttles in idle position.
The engines will not start unless you are securely in neutral. Note: Engines may be started and operated from either the Bridge station or the lower helm station.

1) Turn key clockwise one click, light will come on indicating preheat is engaged and alarm will sound indicating low oil pressure. Allow up to 30 seconds for preheat (preheat light will turn off), then turn key fully clockwise to engage starter. Engine start should be rapid.
2) Once started, the alarm will stop. Immediately advance throttle to ~800 rpm until warm.
3) **Visually check overboard exhaust for water flow.**
4) Warm engines for approximately 10 minutes at slow speed (~800 rpm) to allow engine to come to operating temperature (~125 deg F) and then apply power as required.
5) Diesel engines use a lot of air. A blower switch is located on the control panel which should be switched on to assist with air exhaust from the engine room.
6) **If an engine warning alarm sounds** (possibly due to low oil pressure or high-water temperature normal readings are 40-60 psi for oil pressure and 185 deg F for water temperature), **shut down the engine immediately**. If it is overheating, start troubleshooting with the sea strainers.

7) **Constantly monitor oil pressure, engine temperature and fuel levels.**

Note: If an engine cranks hard or appears to have a weak battery, a parallel battery switch, located on the instrument panel, can be engaged to allow both engine batteries to assist with engine starting. Repeat steps 1 & 2 for the second engine.

Departure / Running

Departure from Dock

1. Turn OFF all circuit breakers on the AC panel, and the AC power main.
2. Turn shore power breaker "OFF" at the panel on the dock.
3. Disconnect ships power cord from the boat and dock station
4. Stow cords and adapters in the aft lazarette.
5. Power panel: Ensure batteries are charged and 12V DC breakers are "ON".
6. Once power is disconnected inverter should indicate "Inverting".
7. Take the covers off turn on all electronic navigation devices.
8. Turn on **Electronics** switch on the DC panel.
9. Open the VHF radio cabinet on the flybridge and monitor channel 16.
10. Turn on the bow thruster, by pressing both ON buttons simultaneously.

Shifting / Transmission

Get comfortable with the shifter levers positions on the helms. Shifters are in the 1 and 4 position, the throttles are in the 2,3. get comfortable with the feel of this.

1. **Shift only when the engines are at idle** to avoid transmission damage.
2. PAUSE momentarily in neutral when shifting from forward to reverse or vice-versa.

Engine Shut Down

It is important to **idle the engines at least 5 minutes**, after running, to allow cooling of the turbochargers. SEVERE DAMAGE can occur if hot engines are immediately shutdown after running at cruising speed.

Galley

Stove/Oven

Cascadia is outfitted with a propane stove and oven.

Propane is heavier than air and very explosive. Use extreme caution. The propane tank is located in the white locker on the upper aft deck. The propane tanks are filled regularly.

When changing tanks, remember the threads are reversed, or left-hand threads. To loosen, turn CCW and CW for tightening. When tightening, lubricate the threads and be careful not to over-tighten. TEST the system for leaks. With the tank valve OPEN, note the pressure on the gauge. Then close the cylinder valve. **If the pressure reading drops there is a leak in the system!**

1. To Operate:

a) Ensure all burner control knobs are in the "Off" position.

b) Open (CCW) the valve on top of the propane tank

c) Turn the "LP Gas" solenoid switch **on** (located on cabinet between stove and sink).

d) Push and turn burner knob ¼ turn CCW; allow air to purge from line; hold-in and repeatedly push the "burner ignite" button until ignition occurs. Continue holding the burner knob in for a few seconds to allow sensor to register flame. If burner ignite button does not work, burners can be lit with a BBQ lighter.

e) One burner should be lit before lighting the oven to help with gas flow. To light the oven, turn the knob to the desired temperature setting, push in the red "Oven Safety" button and hold a flame next to the pilot light/heat sensor at the end of the burner on the right-hand side. Once it lights, continue to hold the button in for a few seconds. When you release the button, the oven pilot light should stay lit. If not repeat process holding the "Oven Safety" button in longer.

f) It is recommended that the "LP Gas" solenoid be turned off after each use. When your charter is complete, please shut off the propane tank.

Microwave

- Microwave and other plug-in appliances: These are 110 AC powered and operate on shore power or when the inverter is operating. See battery charging/life notes.

Refrigerator

- Refrigerator operates on both AC and DC when off of shore power.

- At anchor, the refrigerator is the biggest house battery drain. Typical usage will drain about ⅓ of the house battery capacity per day.

- The temperature control, on/off is in back of main refrigerator compartment. Start with level 3 and adjust from there.

- At the conclusion of your trip, please leave the refrigerator running, with temperature setting midway and door closed.

Water Systems

Water tank

Cascadia is equipped with a 77-gallon fresh water tank. **Water fill is located on starboard side of the deck, just aft of the "Waste "deck plate.** Be careful when you unscrew fill cap so it doesn't get away from you.

Check the water level monitor located on the electrical panel. Fill the system as required using the hose on board. Run water through the hose prior to filling water tank. Once the tank overflows, recap the tank.

DC master circuit breaker must be switched **on** to use the pressurized water system.
Engaging the **Water Pump** switch will turn on the water pump and activate an amber light on the panel. You will hear the pump running, attempting to pressurize the system. If it does not shut off within 2 minutes it probably cannot establish system pressure. Troubleshooting will be required.

When not using water regularly, for instance at night after showers etc., it is recommended to turn of water pressure switch at DC panel to avoid the nuisance of pump recycling at night.

Hot Water

There are two ways to heat the hot water tank.

1. When plugged in to shore power the hot water electrical heater can be turned on by switching on the hot water breaker on the main panel. Otherwise, cold water will come out of the hot water taps.

2. When motoring the engine cooling system heats the hot water tank.

3. Do not switch the hot breaker on when not connected to shore power. It will cause as severe load the batteries.

The hot water system must have water in the tank or damage to water heater/tank may result.

Showers

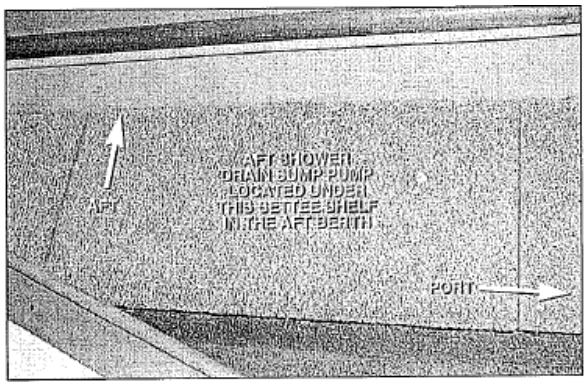
There are three showers on board:

1. One on the aft swim platform.
2. One in the aft cabin.
3. One in the forward head.

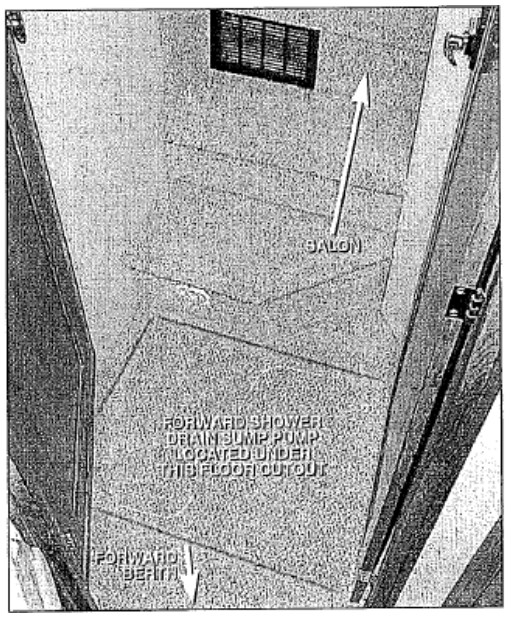
The sinks and showers (“gray water”) drain overboard. The sinks are above the water line and have gravity drains, while the showers are pump-drained. The forward shower drain sump pump is located under the floor cutout at the bottom of the salon in front of the forward berth stairs. The aft shower drain sump pump is located under the carpeted settee shelf on the aft bulkhead in the aft berth. The sump pumps automatically shut off after the shower is drained.

If you do not notice water being pumped overboard, an inspection of the sumps may be required to determine the cause of the problem; most likely hair preventing operation. Simple cleaning should restore operation.

AFT SUMP



FORWARD SUMP



Heating

There are 2 methods of heating the cabin.

- Using the Engine Heat
- Using the Diesel Furnace

Engine Heat

There is a fan that blows through a Red Dot hot water heating system attached to the port engine. If the engine is running, use the switch located on the wall to the left of the stairs into the forward cabin to turn it ON and blow hot air through the cabin.

Diesel Furnace

This boat is equipped with a diesel hot air furnace. The thermostat is located in the main cabin to the left of the VHF radio. A breaker switch is located behind engine room access panel in aft cabin, mounted on port side.

To operate the furnace, the on-off switch is located on the thermostat panel.

To operate the thermostat, turn to the ON position and rotate dial clockwise. Within a couple of minutes, you will hear the furnace kick on. **The diesel furnace will put out a lot of heat at a low setting.**

WARNING: The diesel furnace produces very hot air. It is very important to not block or obstruct the hot air ducts as furnace hot air is up to 180 degrees Fahrenheit. Cabin return air is under the kitchen oven. See that the vents, particularly the main cabin vent by stairway is free of obstruction. The heater burns very hot so start on low setting. You may see smoke for few minutes on starting. There is a clicking ignitor sound that you may hear at night.

If for any reason you smell smoke after initial few moments of operating, turn the furnace off. Call Anacortes Yacht Charters.

Heads/Plumbing

Heads

Cautions when using the Marine Head

Onboard a vessel plumbing is entirely different than that you will find at home. Small hoses transfer waste and reduce it to 1" in diameter. Pamper the marine head and your trip will be much more enjoyable.

Only flush human waste down the heads - period.
Dispose of other items in the trash. **This includes marine toilet paper!**

Never flush tampons, Kleenex, sanitary wipes, hair, makeup remover pads, baby wipes etc. down the marine toilets.

Flushing the Head

The heads are electric and use salt water. It is a 2-step process.

There's a foot pedal to left of toilet

Tap once, to fill the bowl with approximately ¼ gallon of water

Use the toilet and tap foot pedal again. Another, ¼ gallon of water fills tank with little more water, than there's a pause and then the macerator suction pumps evacuates the waste into the waste tanks.

A toilet brush has been installed next to the head to assist with cleaning.

If an odor develops there are supplements on the vessel in the heads that can be added to the marine system, please read and follow the directions. Each of the 2 holding tanks are 33 gal.- approximately 60 uses per head before waste pumping is needed.

WARNING: **Make sure all guests are versed in the proper use of the marine toilet system. Nothing can ruin a trip faster than an inoperative toilet due to being plugged by material that should never have been put there in the first place.**

Holding Tanks

1. The holding tanks are located (1) under the floorboard at the forward end of the aft stateroom and (2) under the mid-ship berth.

2. Note: The “Tank watch” light is on a panel in each head. These lights will alert you when the holding tank is full. **When the “Tankwatch” light comes on the crew should not attempt to use the head “one more time” but use the other head until the full tank can be emptied**. This cannot be overemphasized!! Just “One more use….” can turn into an ugly disaster.

3. To empty the holding tanks: (a) At a marine pump out station…. use the deck plates labeled “waste” at the starboard aft deck, for the aft holding tank; and the starboard mid-ship deck for the forward holding tank. After pumping, following the directions located with the bright orange pump, hose off the deck plates, partially fill the holding tanks with water and empty again to minimize the potential for odors occurring. Finally, flush some deodorant chemical into the tanks to ready for the next use.

4. In open water in Canada the macerator overboard pump is allowed.

Thru-hull Plumbing and Y-valves

1. The marine heads draw salt water for flushing from thru-hull fittings. The valves are open when the handles are pointing up (away from the hull) and ready for flushing. (Valve handles will normally in the open position but should be verified prior to operation of the vessel.) The forward head thru-hull valve is located at the forward end of the engine compartment. The aft head thru-hull valve is located under the aft shelf, on the port side, in the aft cabin.

2. A floor hatch is located at the bottom of the stairs to the forward cabin. Under the floor hatch is access to the Y-valve, shower sump for the forward head and a bilge pump. The seat, to the stern of the aft cabin, lifts up to reveal the aft Y-valve. The valves are labeled with “Overboard” and “Holding Tank”. When placed in the “Overboard” position, black water will be directed overboard from the marine toilets, which is illegal in inland waters in the US.

3. These valves have been permanently fixed in the “Holding Tank” position, which is what a Coast Guard inspection will require. A fine is possible for removing these retainers.

4. To empty blackwater in open water-move the affected 'Y valve to the overboard position. Have a crew member stand at the waste starboard either mid-ship or aft quarter and observe water flow. Go to DC panel and **hold both buttons.** Each tank has 2 buttons. When the observer watching the out flow sees **no more waste, stop pumping** so that pump doesn't get damaged. Repeat procedure for other pair of bottoms /tank.

5. When in USA waters, the skipper must see the valves are in the closed position and zip tie closed.

Forward Y Valve

Bilge Pumps

There are five bilge pumps and two sump pumps on board. Switches for each of the bilge pumps are located at each helm station. The packing glands, where the prop shafts penetrate the hull, should drip slowly therefore automatic operation of the bilge pumps can be expected occasionally.

Continuous operation of one or more of the bilge pumps may indicate a serious problem. Try to trace issue. Please advise Anacortes Yacht Charters of this situation.

Electrical Systems

Operating the Windlass / Anchor / Bow Thruster

The starboard engine must be running to operate the windlass, the dinghy winch or the bow thruster. The starboard engine has a 'beefed up' alternator that charges the batteries, to support these heavy electrical loads

DC or Direct Current (Batteries)

Cascadia has a large house battery bank that allows you to be at anchor for extended periods of time. However, you must monitor your batteries, when not on shore power. Do NOT discharge the house batteries below 12.2v.

With conservative use, you will only need to run the starboard engine (above 1100 RPM) for 1-3 hours to fully recharge the batteries.

The main draw from house batteries while at anchor are refrigeration and water pump. If you intend to use the microwave remember to first start the starboard engine. Monitor your battery usage when not generating.

When on the hook check that you are inverting, or press **Inverter** on the Magnum panel until it lights solid green. When on shore power the inverter should indicate charging, or press **Charger** on the Magnum panel until it lights solid green. You may have to push and hold these buttons to activate them.

Magnum Inverter

Normally, the Magnum inverter will automatically switch on the AC Inverter, when DC battery power is being used. When AC shore power is engaged, the inverter should also automatically start charging the batteries.

You can manually activate the Inverter by pressing and holding the **Inverter** button.
You can also manually activate the Charger by pressing and holding the **Charger** button.
Green lights will indicate activation of each of these functions.

✅ **You don't need to press the "CHARGE" button on the ME-RC to allow engine alternator charging** — the alternator and combiner handle that. The charger function on the Magnum is for **AC power charging**, not alternator charging.

Monitoring Battery Usage

Mounted at the top of the DC circuit panel is a voltmeter, with a switch, to indicate the relative health of the various battery banks. The Magnum inverter also has a digital battery charge display. The useable capacity of a deep cycle battery is 50%. If the batteries get below 12.2, the Magnum may shut down battery use, so you would need to start the starboard engine, to recharge the house batteries.

Do NOT discharge the house batteries below 12.2v.

Fully charged house batteries will read 12.7v or higher.

There are 12 DC batteries on board. 8 House batteries in the cockpit lazarette and 2 engine start batteries which can be combined in parallel when desired through a switch on the upper or lower helm stations. The engine batteries are mounted in front of the engines and can be accessed thru the wall hatches in the mid-cabin and the salon. 2 other batteries are dedicated to the bow thrusters.

Because of the large house battery bank and the large inverter, you may be able to recharge cell phones, run the TV's and use other low demand accessories, even a few minutes of microwave or Keurig coffee maker, while on DC power. Monitor battery health/charge.

While on DC power the AC mains should be in the OFF position. Switches for inverter, accessories and receptacles must be left on the **on** position of the AC panel.

The **DC Master** switch should always be **ON** for any accessories to function (cabin lights, water pressure pump, etc.) AC power is irrelevant to the operation of these items.

The water pressure toggle is on a separate switch on the DC panel. It lights up orange and this is the switch you likely will want to turn off after everyone has retired so the pump quits recycling at night.

The DC battery selector switches are located on the starboard side of the lower helm station.

Helm switches must be turned off at the station that they were first turned on from. Duplicate switches are located at the upper and lower helm. Therefore, if you turn on the navigation lights at the upper helm, you will be required to turn them off at the upper helm.

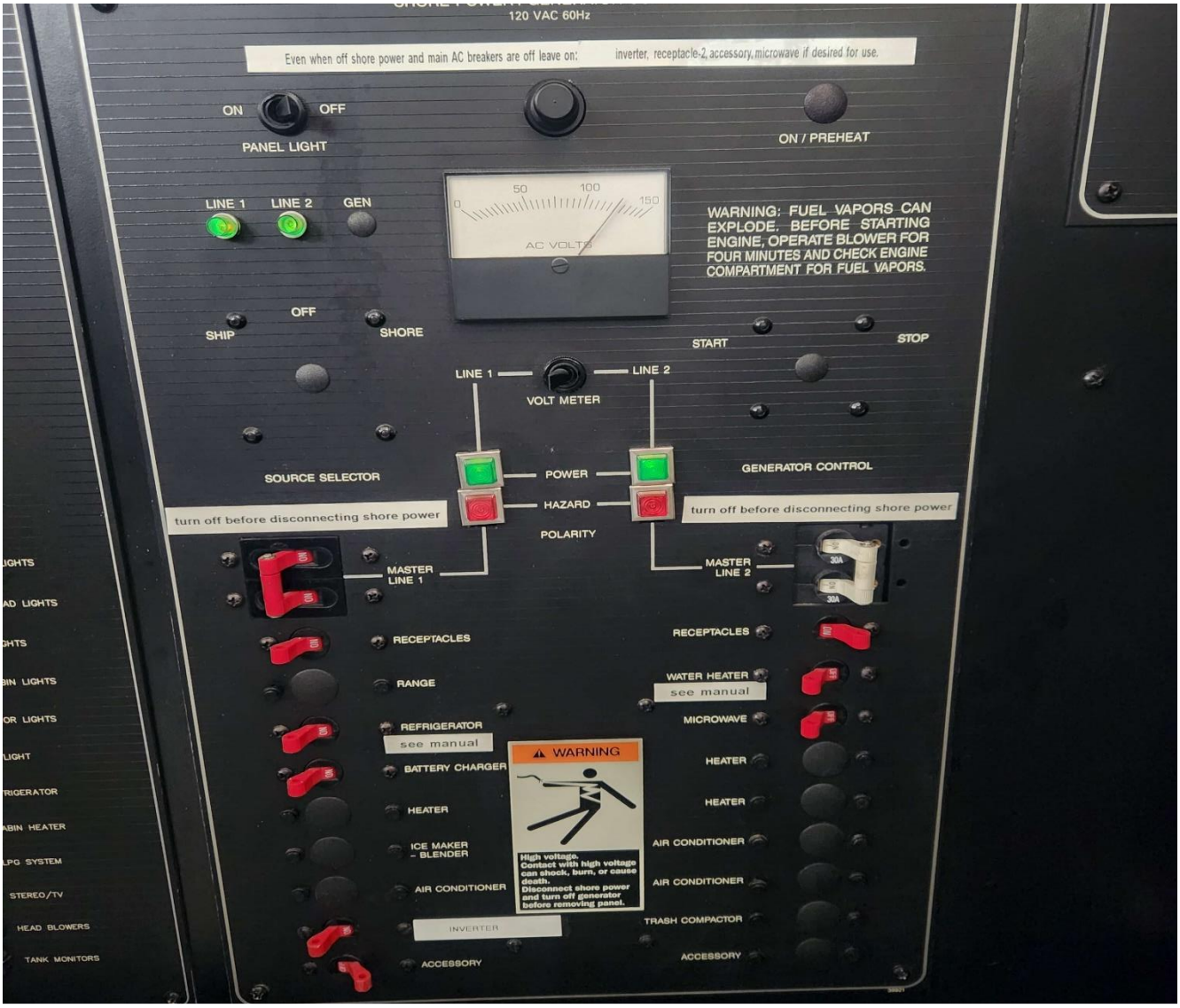
Batteries automatically recharge when the starboard engine is running. No action needs to be taken by the operator.

Charging the house batteries

The house batteries can be charged in two different ways.

1. **Shore powe**r: When plugged in to shore power the Inverter will fully recharge the batteries in roughly 6 hours.
2. **Starboard Engine alternator**: When motoring above 1100RPM, the **starboard engine alternator** charges the batteries. Roughly 1-3 hours of motoring will fully recharge the house batteries.

AC MAIN PANEL
(Note the 2 AC Master Switches)



Shore Power Operation:

When plugged in to shore power the house batteries get charged and the hot water heater can be turned on. The AC outlets in the boat are powered from the shore and normal powered electrical devices can be used without draining the house batteries.

Plugging in to shore power:

The shore power is dual 30 amp with split panel. The shore power cords are normally stored below seat in fly bridge. If you require the splitter, be sure to monitor your amperage to make sure you do not exceed the 30-amp circuit otherwise a trip to the circuit breaker on the dock will be necessary.

The recommended sequence to connect to shore power is the following;

1. Ensure that both AC master switches on boat panel are in in the **OFF** position.
2. Ensure the dock station power station circuit breaker is in the OFF position.
3. Connect the shore power cable to the dock receptacle.
4. Connect the boat side inlet power receptacles.
    a. Insert the power cord and twist clockwise. Tighten the black locking ring.
5. Turn **ON** the dock circuit breaker.
6. Turn ON the AC power master switches on the boat panel.
7. Check the vessels AC panel.
    a. **The red light indicating "Reverse Polarity" should not be illuminated.**
        i. DO NOT USE SHORE POWER IF REVERSE POLARITY IS INDICATED.
    b. If reverse polarity is indicated and you cannot solve this problem. Use DC power only.
8. When line 1 and 2 are activated ("Master" on) they should each read ~115 volts.
9. One by one, turn ON any AC devices you wish to use (e.g. Hot Water)
10. Check the Inverter, which should indicate "Charging".

Disconnecting from shore power:

To disconnect from shore power, follow these steps:

1. Turn OFF both circuit breakers on the AC panel power main.
2. Turn OFF the dock station power receptacle.
3. Disconnect ships power cord from the boat and dock station
4. Stow cords and adapters in the aft lazarette.
5. DC power panel: Ensure batteries are charged and 12V DC breakers are "ON".
6. Once power is disconnected, the inverter should indicate "Inverting" or press **Inverter** on the Magnum panel until it lights solid green.

Electronics

All electronics power on when the Electronics switch is turned on at the DC panel.
Please familiarize yourself with the operation of these devices during fair weather and in familiar water.

VHF Radios

The vessel is equipped with VHF radios at both helms. There is also a portable hand-held VHF for your use as well.

- ICOM IC-M422 Fixed Mount VHF in flybridge cabinet
- ICOM IC-M422 Repeater VHF in cabin helm station
- 1 ICOM IC-M127 VHF portable handset in basket (with charger cord)

Use channel 16 for "hailing" only and switch to another channel to conduct a conversation. The Ship Radio License is: **WDP9793** (required call sign for use in non-US waters)

Navigation

Cascadia is equipped with the following navigation electronics.

- Garmin GPSmap 934xsv GPS / Chart Plotter (lower helm)
- Garmin GPSmap 1243xsvGPS / Chart Plotter (bridge)
- Garmin GHP Reactor 40 Autopilot (integrated)
- Garmin GMR 18 HD3 Radar (integrated)
- Garmin AIS 800 transceiver (integrated)

WARNING: DO NOT USE THE RADAR OR GPS AS YOUR SOLE MEANS OF NAVIGATION. ALWAYS REFER TO THE CHARTS ON BOARD FOR THE AREAS WHERE YOU WILL BE NAVIGATING.

Cameras

Cascadia has 2 cameras integrated into the GPSMap Chart Plotters at the lower and upper helm station.

- Backup Camera (upper helm)
- Engine Room Camera (lower helm)

Activate the cameras, by selecting Vessel➔Video on the respective GPS chart plotter.

Autopilot

Cascadia is equipped with a Garmin Reactor 40 Autopilot, which is integrated into the GPSMap control units. The autopilot can be a very useful instrument; however, it should be used with caution.

1. **Maintain Situational Awareness**
   Even when the autopilot is engaged, always remain vigilant and aware of your surroundings. Keep an eye on debris in the water, navigation markers, other vessels, and changing weather conditions. Autopilot systems do not replace the need for constant monitoring.

2. **Be Prepared to Take Manual Control**
   Autopilot systems can disengage unexpectedly due to various factors, such as system malfunctions or sudden course changes. Always be ready to take manual control of the vessel if necessary. Remember to disengage autopilot before taking manual control!
3. **Regularly Check Course and Heading**
   While the autopilot maintains a set course or heading, periodic checks are essential to ensure the boat is following the correct route. Changes in sea conditions, current, or wind may cause the vessel to drift off course.
4. **Avoid Using Autopilot in Crowded or Busy Waters**
   In busy or narrow waters, it's crucial to maintain manual control. Autopilot systems might not respond as quickly to changes in traffic or obstacles, which can pose a risk in high-traffic areas.
5. **Test and Familiarize Yourself with the System**
   Before relying on the autopilot during long trips or challenging conditions, test the system in calm, controlled environments. Familiarize yourself with the control functions and ensure you know how to disengage the system quickly if needed.

Here are some of the more common autopilot control features.

Feature	What It Does	User Input Required
Set Course	Maintains a specific heading or direction.	Press **"Engage"** to activate the Autopilot. It will maintain the course you are currently running.
Course/Heading Adjust	Fine-tune your course while autopilot is active.	On the Autopilot – press +/- 1' or 10' to adjust. From the GPSMap – select Option / Autopilot
Waypoint Navigation	Steer automatically to waypoints or routes set on your GPS.	• Tap **Nav Info** > **Waypoints** (or **Routes**). Select a **waypoint** or **route**. • Tap **Navigate To** > Choose a method (e.g., **Direct To**, **Follow Route**, etc.). • You will be prompted to steer to the waypoint.
Disengage Autopilot	Turn off autopilot and take manual control of the boat.	Press the **"Standby"** or **"Disengage"** button on the autopilot control head.
Shadow Drive	Automatically disengages autopilot when you steer manually.	Only for emergencies. The autopilot will disengage when you steer manually (i.e. grab the helm). In normal operation you should disengage Autopilot before manually steering.

Fire Alarm

Cascadia is equipped with an automatic Fireboy fire suppression system, in the engine room.
There is no maintenance required for this system. The monitor for the Fireboy alarm is located near the lower helm.

Entertainment

Cascadia is outfitted with the following entertainment systems.

- Starlink Satellite Internet / WIFI
- (3) Panasonic stereos
- (2) Samsung TV's and Samsung Blu-ray players
- (2) Amazon Fire Sticks one for each TV

Starlink Satellite Internet

Cascadia is equipped with Starlink Satellite Internet.

- WIFI Access Point : "**Cascadia-Starlink**"
- Password : "**Cascadia#**"

Note: There is another internal LAN network for the electronics named "Cascadia". This network is intended only for communication of the instruments.

Stereo System

To power on the Panasonic stereo press SRC, source button for 2 seconds. Once lit up, repeatedly press source button to select AM, FM, CD, Bluetooth inputs. Pair your device and the screen will display DEH-X4900BT or DEH-X4700BT

When the radio is turned off, the DEMO mode may continue to flash. To turn off DEMO mode;

- Turn off the radio (off button on top left)
- Press and hold the volume control for a moment, until you get into setup menu
- Scroll System settings to DEMO mode. Turn it off.
- Turn off the radio again (off button on top left)

Anchoring & Windlass

Anchor

A 35-pound Plow anchor is located on the bow roller with 302 feet of 5/16" chain and 15 feet of 5/8" nylon rode. The anchor locker is located behind the hinged mirror at the head of the forward stateroom.

Windlass

The Simpson Lawrence electric windlass is used to raise and lower the anchor. This windlass will exert a maximum force of 1000 pounds and draw 50 amps of DC power during operation.

To prevent draining the house battery, the starboard boat engine must be running when lowering or raising the anchor. Recommend that you have both engines running to enable maneuvering the boat. Extreme care must be exercised to avoid a serious accident while using the windlass.

The Windlass Breaker is on the main electric panel upper right corner. It should be "ON" for the Windlass to work.

Anchoring

Turn Windlass switch '**On**' at main electric panel in salon, upper right corner. Make sure both engines are running as needed for maneuvering and to provide power to the windlass.

Position an operator at the upper helm to maneuver boat per instructions from bow person.

Have the mate at the bow tap the down arrow a few times and gently release the anchor from the roller until weight is on the chain. Lower at will. A scope of 5 to 1 is recommended but at tight quarters and deep depths this may not be possible.

Secure the rode to the cleat aft of roller. Back down engines to set the anchor. Confirm the anchor is set. Secure snubber line - in adjacent lazarette- to bow cleat and tap down button for a second to take tension off of chain and onto snubber line. Snubber works as shock absorber relieving stress to windlass.

Set an anchor alarm on your phone (there are many free apps), so that the skipper sleeps well.

Weighing Anchor

To prevent draining the house battery, the starboard boat engine must be running when lowering or raising the anchor. Recommend that you have both engines running to enable maneuvering the boat.

Turn Windlass switch '**On**' at the main electric panel**.** Engines should both be running. Position helm and bow person. Bow person directs helm person towards the direction that anchor rode lies, helm person takes direction from bow person to maneuver the boat in a straight line with the anchor.

Bow person should watch carefully to ensure that debris is not picked up by the chain which may foul the windlass. Clean and wash the chain as it comes up. There is a bucket in the bow storage locker for this purpose.

If anchor doesn't free itself easily let out 3 to 1 scope and attempt to free anchor free by maneuvering boat in opposite direction of how you set the anchor. If still stubborn, secure the 3 to 1 rode and motor around the anchor in wide circle.

Once the anchor is free, see that the anchor doesn't strike the hull of the boat. A free-swinging anchor can damage gel coat badly. Bring the anchor to the stowed position.

Turn **Off** the windlass switch at the electrical panel.

A spare anchor with rode is in the aft lazarette.

Dinghy & Davits

A 10-foot West Marine dinghy is attached to the rear swim step platform and then connected to an electrically operated Roskelley Olsson davit system.

The remote plug in for davit lowering is on starboard rail in aft deck. The controller for the davit is located in the aft cabin storage box. You will find the inflation pump and hand sump pump in the Lazarette. See that 2 oars are on dinghy. Have life jackets on.

To prevent draining the house battery, the starboard boat engine must be running when lowering or raising the anchor. Recommend that you have both engines running to enable maneuvering the boat.

Lowering the dinghy

First, lean over rear of dinghy and put in plug in the rear of the dinghy. The plug hangs from a string on aft starboard side of dinghy. Plug is placed from outside and does stay in place. Make sure the dinghy is fully inflated before use.

A foot pump is stored in the forward hatch of the dinghy. Another foot pump and bilge pump are stored in the lazarette, as well as extra dinghy plugs.

Begin cranking slowly, lowering the dinghy into the water. Check carefully to ensure that nothing is fouled and the boat can be cleanly lowered into the water.

Once the dinghy is fully lowered, detach the port-side clips to free the dinghy from the swim platform. At that point, the first person may go in dinghy and clear water in dinghy or pump-up dinghy if needed.

Raising the Dinghy

Make sure the starboard boat engine is running, to prevent draining the batteries.

Align the dinghy clips to davit. One person in the boat to connect the dinghy clips. This will be the lift point for raising the dinghy.

Carefully crank the davit noting any resistance or obstructions.

Once aboard, secure the painter, so that it does not foul the propellers.

Once the dinghy is safely secured it should be snubbed close so that it doesn't bang against the boat. It is always safest to secure the dinghy to the boat overnight.

Outboard operation

Cascadia's dinghy is outfitted with a Yamaha 6hp outboard motor. Gasoline is located in the fuel locker directly under the first step as you enter the boat.

Starting the Outboard

To start the outboard, open gas tank breather valve, put safety shut off spacer which is with dinghy keys-in engine-red knob and secure the twisty cord on your wrist.

Pump the gas bulb a few times. Make sure engine is in neutral, put throttle in start position, pull out choke and pull the starting cord.

Once the engine starts, push in choke and turn gas up a bit while still in neutral. Familiarize yourself with the shifting positions on the engine.

Stopping the Outboard

To stop the engine, pull safety spacer from engine.

The painter should be secured loosely and controlled, then release harnesses from the davit system. Dinghy loading and unloading is a place where a lot of mindfulness is needed. Bring crew aboard carefully.

Tilting the Outboard

When coming to shore 'goose' the engine a little and then shut off engine by pulling the wrist safety cord from spacer and tilt engine up fast so as to let dinghy float to shore and not drag the engine on the shore or rocks. But to have this release option and locking of engine in the tilted-up position, the engine must not be locked.

Also, be cautious when reversing, go slow and carefully as the engine can buck up.

Landing the Dinghy Ashore

Please use extra caution when landing the dinghy ashore. The Pacific Northwest has large tides and strong currents. Rocks and barnacles will easily damage a dinghy. Therefore, it is **not recommended to leave the dinghy ashore, for any extended period of time, beyond the immediate dispatching of goods and passengers**.

If you do wish to go to shore for an extended period of time, it is recommended to anchor the dinghy offshore, by following this simple "Anchor Buddy" process.

1. Attach the "Anchor Buddy" shackle to the anchor. This is a yellow bungee cord that attaches to the shackle. Attach the other end of the "Anchor Buddy" to the anchor line.

2. When motoring close to shore, prepare to drop the anchor off the stern. While in deeper water, plan your scope so that your anchor will set well. Drop the anchor from the stern. Once the anchor is down, proceed slowly toward shore paying out line as needed and keep it clear of the propeller. The "Anchor Buddy" bungee will expand and you should feel more and more resistance as you get closer to shore.

3. Move to shore carefully avoiding any hazards and trim up the engines. You can also unload any goods and crew you want to at this time.

4. Have one of your crew grab the forward painter and pull it up the shore above the high tide line. When the dinghy is offloaded, allow the "Anchor Buddy" to contract, pulling the dinghy away from shore, out to safer water.

5. Secure the painter to a solid object. Keep an eye on the dinghy to ensure it is secure. You are now free to explore the beach!

6. To retrieve the dinghy, simply pull on the painter. The "Anchor Buddy" bungee will expand until the boat has reached the beach.

7. Once all personnel and good are loaded, release the forward painter and "Anchor Buddy" will pull the dinghy out to safer water.

Caution: Under no circumstances should you leave the dinghy "beached" ashore. This will cause severe damage to the bottom of the dinghy and possibly the outboard motor as tides and currents drive the dinghy onto the beach.

Miscellaneous

- **2 Headsets** are located on the chart table, to enable communication between skipper and crew.
- **Toolkit & spare parts** are located under dinette settee and aft lazarette.
- **Through hull plugs** are located under dinette settee.

Grill

The Magma ChefsMate stainless grill, is mounted on the transom. Extra propane bottles are located in the fuel locker, directly under the first step as you enter the yacht.

Canvas Care

The canvas enclosures on Cascadia really gives the boat a heightened usability but the zippers and Isinglass are tender. Please be extra careful with these enclosures. There is zipper lubricant on the starboard shelf.

Do not clean the Isinglass with anything but water.

The canvas 'doors' (one on aft deck entrance and one on port and starboard entrance to the bow) can be carefully unzipped and will slide in front of adjacent canvas panel. Be very careful when sliding these doors.

It is recommended to leave the flying bridge windshield in place. However, the windshield can unzip to top of zipper and held up and open by attaching bungees to 'O' rings on windshield canvas. The bungees hang/live on stanchions on fly bridge.

Please be extra careful with the Isinglass. Do not roll it, or allow the canvas doors to “flap” in the wind.

Docking

Cascadia is equipped with a Bow Thruster to make docking easier. Please be familiar with its use. To activate the bow thruster, press both ON buttons at the same time. The bow thruster will automatically turn off after 10 minutes.

When docking, enlist the entire crew to ensure they know the docking plan and remain focused on their particular task, while listening to the skipper for any changes. There are 2 headsets located on the chart table, to enable communication between the skipper and crew.

Pay attention to weather, current and tide conditions and feel free to call the marina or harbor master for docking assistance.

Get familiar with throttles being in 2 and 3 position. Shift from forward to reverse at idle only.
You almost never need throttles in docking unless you are in high winds or currents.

Make sure you have deployed all fenders before you approach the dock. Have the crew ready with bow, stern and spring lines. **You will normally need a starboard-side tie.** Attach starboard stern line first. (**Stern First for Safety First**)

Don't be in a hurry and let the dock come to you. Again, assign the tasks of lines: the order of the lines to be secured and if possible have a roving fender person.

Never use arms, legs to fend off the boat. If necessary use the spare fender in the lazarette as a roving fender between you and boat. Plan ahead and talk through roles and contingencies.

Securing safely to the Dock after your charter

- Once securely moored at the dock, connect the shore power to the AC supply.
- Turn ON both AC master switches on the boat.
- Turn off Garmin Navigation systems and both VHF radios. Secure the radio locker on the flybridge.
- Turn **Off** all navigation Electronics on the DC panel.

When leaving the boat at the end of your charter, please:

- Turn **Off** the hot water heater, Microwave and Receptacles.
- Turn off the stereos and any other electronic equipment.
- Turn off heaters, interior and exterior lights.
- Turn off propane tank (located in the aft locker).
- Unplug any electrical equipment such as coffee maker.
- Close and lock all ports, hatches, and windows.

- Perform a last inspection as you leave the boat, checking for personal gear, locked windows and loose gear onboard.
- Check the tie-up and fenders once again. Look last time for personal gear, remove trash, check lines for last inspection.

Thanks again for choosing Cascadia!