

Notes from the Owner of Mariah - Nordic 42



Mariah is a 2004 Nordic Tug 42, powered by a Cummins diesel engine, with a HP rating of 450 @ 2600 RPM. She can carry 600 gallons of fuel and 200 gallons of water. At a time when we are all conscious of high fuel prices, the Nordic Tug provides a real bargain. According to Cummins Northwest, Inc. data, the 42 Nordic Tug can provide hours of cruising fun at reasonable speeds with very limited fuel consumption.

RPM	SPEED (kts)	Gallons/hour
1200	8.05	2.31
1500	9.4	4.26
1800	10.2	5.82
2200	13.2	12.2

NOTE: All system operation instructions assume you have all AC and appropriate DC circuit breakers powered. **Note:** Red lettering indicates safety items or key operational notes.

These notes are prepared for Quick Reference. Nordic Tugs, Inc. has provided an operation manual for the 2004 model. Much of the information is taken from the Tug Operator's Manual but has been condensed for quick reference. For more in-depth systems information please consult the owner's manuals and component manufacturers' installation/operation manuals that came with the boat. They are large red notebooks located under the hinged instrument panel in the pilothouse. The Owner's Notes assume that the charter guest/operator is experienced and competent in the safe operation of a 36,000 pound, 44 foot powerboat, and knowledgeable of boating rules and regulations. These notes do not attempt to anticipate every situation or occasion that may arise. Chances are good you will never have to accomplish any of the detailed procedures we have included in our notes. (i.e. changing a fuel filter etc). We have included this type of information in our notes to give you the peace of mind in knowing there are instructions in the unlikely event you should need them. These notes are not all-inclusive but should be adequate under most situations. Exercising reasonable care and good judgment in the handling and operation of the boat is the best way to ensure a trouble-free experience. **SHOULD YOU HAVE ANY QUESTIONS REGARDING THE OPERATION OR SYSTEMS ON MARIAH PLEASE CALL ME!** I am very happy to help you out with anything you might need. Call Scott Larson, Mariah owner, at 509-220-8475 😊

Contents

1. Specifications and Vessel Information	3
2. Nuances	3
3. Emergency/Safety Equipment	4
4. Being Whale Wise.....	6
5. Anchors and Windlass	7
6. Barbecue.....	9
7. Batteries, Charging and Inverter	10
8. Berths and Bedding	15
9. Bilge Pumps	16
10. Dinghy, Tender, Outboard and Davit.....	16
11. Electrical.....	23
12. Electronics and Instruments	25
Engine & Getting Underway	32
Preparing for Departure.....	32
Getting Underway.....	35
Returning to the Dock.....	37
13. Entertainment Systems & Starlink.....	39
14. Fuel.....	41
15. Generator	43
16. Heads and Holding Tank	44
17. Heaters (Cabin)	47
18. Kayaks	48
19. Lighting.....	49
20. Refrigerator/Freezer, Ice Maker, Deck Freezer	49
21. Showers.....	50
22. Spares and Tools	50
23. Stove, Oven and Microwave	50
24. Thrusters (Bow and Stern)	52
25. Wash Downs (Sea Water)	53
26. Water (Potable).....	53
27. Windshield Wipers, Washer and Defroster	54

1. Specifications and Vessel Information

Vessel Information:

U.S. Customs Re-Entry Decal – Located next to the entry door, starboard side.

Vessel Official Number - 1150662 (same number as shown on the Coast Guard Certificate of Documentation found in Section 5 Documentation of the Charter Guest Reference Manual (white binder). Mariah's number is located in the engine room. Look for 3" high characters.

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

Specifications:

Year:	2004	Engine:	Cummins 450C Diesel
Make/Model:	NordicTug 42	Fuel: (2 tanks)	600 US Gal each
LOA:	48' 8"	Water:	200 US Gal
Beam:	13' 10"	Holding:	45 US Gal
Draft:	4' 4"	Heads:	2 Vacuflush Freshwater toilets
Displacement:	36,000 lbs. (Dry)	Electronics:	Garmin
Staterooms:	2 doubles		
Forward Stateroom:	Headroom: 7'-3", Berth Dimensions: 6'-5"x5'-5" (head), 6'-5"x4'-0" (feet)		
Guest Stateroom:	Headroom: 6'-2", Berth Dimensions: 6'-5"x4'-7" (head), 6'-5"x3'-11" (feet)		
Salon Headroom:	6'-4"		
Refrigerator:	18"x30"x15"	Freezer:	18"x13"x15" Upper Deck Freezer: 5.4 cu. Ft.

2. Nuances

There are a few things about Mariah that are not 'typical'. These are the things that may require special attention or where it may be best to deviate from customary operating procedures. We have listed some here because we believe they will help you plan your charter.

1. **Checking the oil:** Remember to properly seat all dipsticks after checking oil levels. If not seated, oil will spray out and make a mess.
2. **Securing the tender:** (The 30HP Aldura) When returning and stowing the tender, remember to always install the stabilizer bar and if you anticipate heavy seas attach the two tie down straps on both sides of the outboard. When retrieving with the winch, stop retrieval as the bow just enters the rubber "V" on the winch pedestal. (Inflatable RIB) Ensure the Honda motor is tipped up for launching, transiting, and recovery.
3. **Icemaker:** To save the batteries, turn the ice maker off when anchored. It is very power hungry!

4. **Connecting to shore power:** Always select the shore power position “toggle left” (on the inverter control panel switch at the office station), when shore power is connected. This will prevent battery depletion if shore power fails. Always keep the toggle switch in the shore power position even if shore power is not available. If you need AC power through the inverter, (shore power unavailable), toggle the switch to the right. When AC power is no longer required move the toggle switch back to the shore power position to conserve battery power.
5. **Electric heaters:** Unplug all electric heaters when NOT connected to shore power. If you select the inverter position the inverter will attempt to power the heaters and will deplete the batteries and damage them.
6. **Tender drain plug:** (30HP Aldura Tender) open the drain plug switch on the steering wheel panel when the tender is stowed. (Remember to close it before launching the tender). This will help prevent water buildup and corrosion of electrical components in the tender.
7. **Tender outboard:** (30HP Aldura Tender) Make sure the outboard motor on the tender is tilted full up and steering wheel full left when underway. If not, the lower unit may splash seawater into the tender and can damage the electrical box and connectors. On one occasion a charter guest left it down during rough seas and sea water nearly filled the tender requiring a complete rewiring of the systems. Mariah is designed for a port docking only because of the aft entry via the port side of the extended swim/davit platform. Equally important when in confined areas such as entering a slip, be sure to lower the outboard to prevent a possible collision with another object. Remember use small power adjustments and thrusters when docking.

Note: # 2, 6 & 7 above apply to the Aldura tender that is available for one-way charters to Northern B.C. or Alaska with a turnover to the owner. For local charters there is an aluminum hull inflatable “easy to launch” dinghy available with a Honda outboard motor.

3. Emergency/Safety Equipment

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

Bilge Pumps (3). Activation switches are located in the office station on the tank watch panel. The switches default in the AUTO position unless you manually press down on the toggle switches to activate the pumps. The Pumps are located as follows: Bow – below the hatch in the steps down to the forward stateroom, Midship – engine room, Stern – in the aft cockpit floor locker (Lazarette) beneath the freshwater tank. Note: you can use the gray water sump pump also in emergency.



Carbon Monoxide Detectors. Pilothouse, aft bulkhead center near ceiling. Forward stateroom, on port side of berth base. Galley, on inboard face of peninsula counter.

EZ Docker Mooring Line: Cockpit floor locker (Lazarette) in gray mesh bag.

Fire Extinguishers (5): Salon – on wall next to entry door, Pilothouse – on aft wall, Nav Station – on wall, Engine Room – on forward bulkhead and one unmounted in port aft corner near toolbox.

First Aid Kit. Office Station.

Flares (Pyrotechnic - 3). In green mesh bag in pilothouse on aft shelf and in Aldura Tender.

Flashlights (5). Nav station (2), pilothouse chart drawer, engine room on aft port toolbox, in the office station right side of table next to the power strip.

Flashlight, Spotlight. Pilothouse in tip-up instrument panel compartment.

Horn, handheld. In green mesh bag with flares.

Horseshoe Buoy (yellow life ring), Cockpit, behind stairs to upper deck.

PFDs, Inflatables (4). Located in the forward master stateroom hanging locker. NSO: please check for “green” visible at bottom of clear canister before each cruise. That verifies the auto-inflate function when immersed. We wear these at all times when working on the deck and often in the cockpit. There are additional inflatable vests in the dry box on the upper deck.

Propane Detector. Located in the galley at floor level on the toe kick below the stove. Reset switch is located on the unit.

Tapered Plug, Universal Foam Orange Staplug. In green mesh bag with flares.

Tapered Plugs, Wood. Tied to all below-waterline seacocks and other through-hulls.

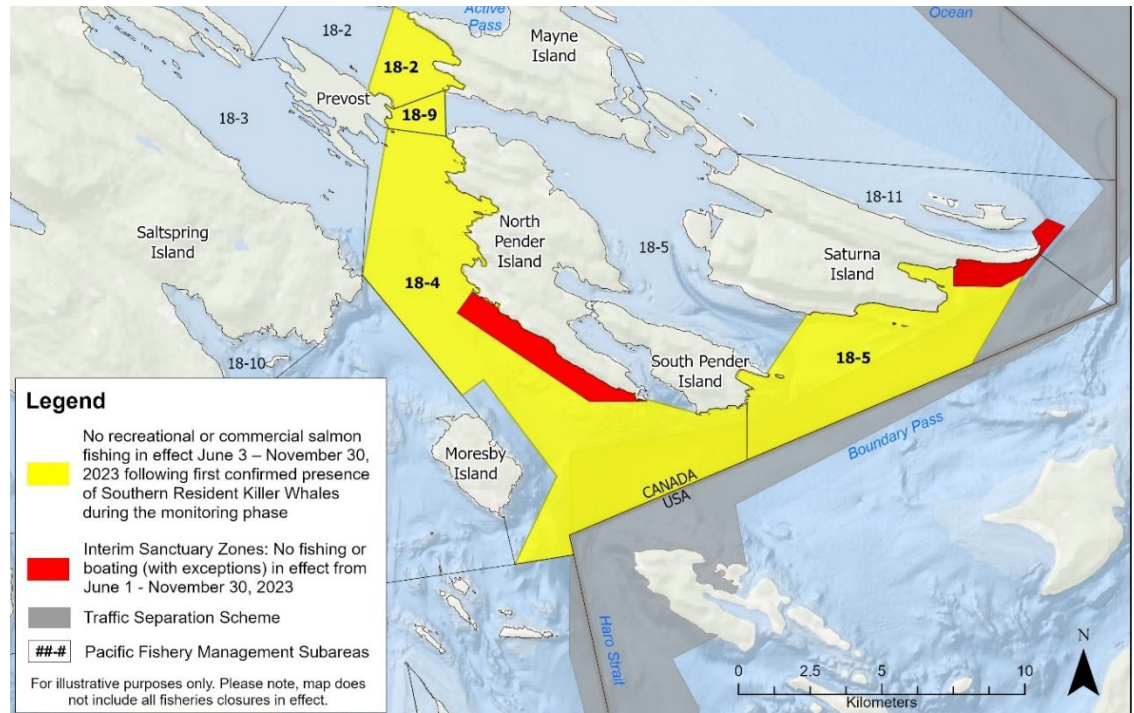
Tools. Engine room port aft and in cabinet forward of the ice maker.

Windlass Clutch Release/Tighten Handle. Pilothouse, aft settee, under riser step.

4. 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

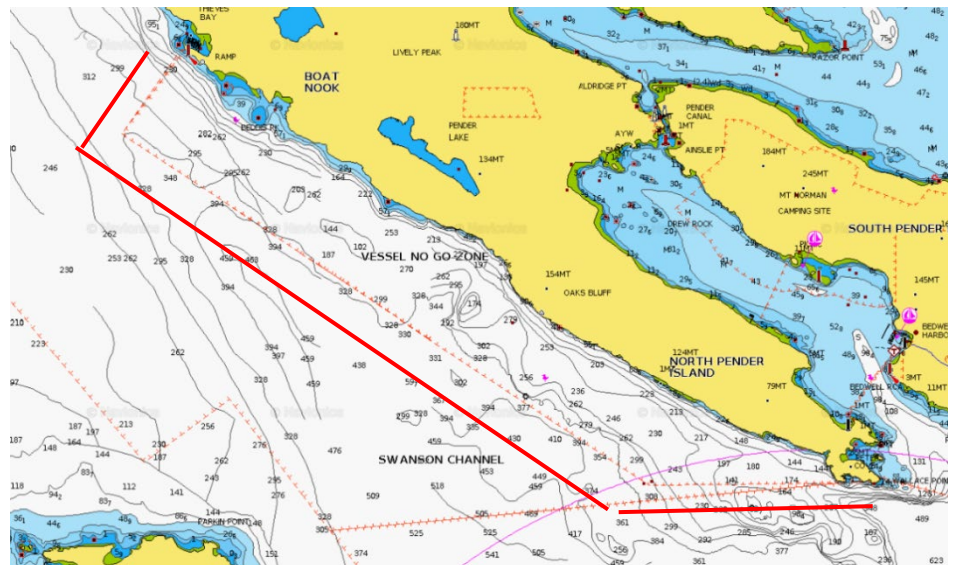
you receive when you arrived and there is more information in section 10 of the white reference book onboard Mariah. In general, stay at least 400 ft. away from the whales. Sometimes they come to you, if this happens shutdown the engine and turn off the instruments (assuming this is safe to do). They 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 Mariah'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.



5. Anchors and Windlass

CHAIN MARKINGS AND SCOPE

- The anchor chain is 510' in length with about 15' of nylon line at the "bitter end". The nylon line is used in case of emergency to release the anchor by cutting the line.
- The chain is marked with 4' segments of yellow poly line woven in the chain at 50' intervals.
- As the anchor enters the water there will be two red markers separated by a white marker between the red markers. This is the indicator that the anchor is entering the water, and you can expect the first single yellow 4' marker at every 50' interval.
- Count the number of yellow indicators so you will know how much chain has been let out. Near the end of the chain at 500', there's a red, then white then red line. You most likely will never use more than 200' unless you are anchoring in water greater than 60'.
- A 3:1 scope is usually sufficient for good holding. Use 4:1 if expecting higher winds or have a less than desirable bottom holding condition. Check the tide tables to know at what point in the range you are anchoring and measure the scope for the high tide.

WINDLASS

- If there is no power to the Windlass, check the two circuit breakers for the windlass. One is located in the master stateroom on the starboard side of the berth —push the breaker back on to reset. The other is on the helm station electrical panel near the bottom of the panel. We like to use this second breaker as a safety switch and turn it on only when we are deploying or retrieving the anchor and then turn it off. This will prevent an unintentional deployment of the anchor that could also cause injury.
- The anchor windlass has foot controls (Up/Down) at the forward end of the deck. There is also a controller on the helm panel, so the anchor can be deployed or lifted at either location.
- If the windlass stops feeding out chain and makes a clicking sound, you need to open the anchor locker (above the master stateroom bed and pull the chain free from below).
- Sometimes when retrieving the anchor chain will fall over on itself and will not allow for a free feeding of chain to the windless when attempting to redeploy.
- The windlass clutch release/tighten tool (looks like a winch handle) is located under the step to the helm station settee, (the seating area in the pilot house). If the windlass slips when raising the anchor, the clutch may need to be tightened. In an emergency, if the anchor needs to be lowered quickly the clutch can be loosened. Keep enough tension on the clutch so the chain pays out at a controlled rate – keep an eye on the chain pile and be prepared to tighten the clutch if a knot of chain is pulled up.

SETTING THE ANCHOR

- The boat should be stopped facing into the wind or current.
- At the bow, detach the "security carabiner pin" from the anchor.
- Ensure that the "Windlass" breaker on the DC pilot house panel is ON.
- Depress the down arrow foot switch (arrow points forward) momentarily to let out about 2' of chain. Gently ease the anchor out on the roller so that gravity can take over.
- Let out the proper amount of rode based on scope desired.

- Put the engine in reverse alternating with neutral in order to slowly back down on the anchor. Have a crew member posted at the bow to visually observe the chain begin to rise or tighten up. At initial indication of the chain rising, go to neutral and let the inertia complete the aft movement of the boat. When the chain is taught and begins to pull the boat forward, put the engine in reverse again but only at idle. Maintain idle reverse to properly set the anchor. If the anchor is set properly the boat will not move further aft. You can verify this by picking a point on the shoreline and lining it up with either of the pilot house doors. If there is no further movement aft at idle reverse you have successfully set the anchor. If there is further movement aft ... reset the anchor or let out more chain to increase the scope. If you are still unsuccessful find another anchorage with better bottom conditions.
- Verify the anchor is set by selecting "neutral" and seeing the boat move forward and the chain angle dropping to near straight down.
- Using the anchor harness line with the stainless chain hook (stowed in the step at the helm settee, or on the Sampson post at the bow), secure the chain in front of the anchor roller with the stainless hook and tie off each end of the line to the port and starboard bow cleats. Let out more chain so that a slack loop is created in the chain between the anchor roller and the place where the hook grabs the anchor chain. This will relieve stress on the windless and ensure additional chain is not pulled from the windless.
- Do an "anchor watch" for the first 30 minutes, observing how the boat swings and how close it gets to other boats and objects.
- The chart plotter has an anchor alarm feature that will provide an aural warning if the boat drifts outside of a predetermined radius. Do to the fact the chart plotters are in the pilot house you may not hear an alarm. We use a free app called "Anchor Pro." You can download it on your phone and take the phone into your stateroom, and it works great!

RETRIEVING THE ANCHOR

- Raise the chain to the point where you can easily unhook the anchor bridle. Release one of the bridle the lines from the cleat and bring it over to the other cleat and remove the bridle and stow it in the settee step at the helm station. Wash the chain and anchor with plenty of sea water as it is retrieved:
 - a) Turn ON the SEAWATER WASH DOWN breaker switch on the DC panel in the office station. It normally should be on to maintain the prime on the pump.
 - b) Retrieve the self-coiling hose and nozzle from the Lazarette. It may already be installed at the bow.
 - c) Connect the hose with the nozzle attached to the seawater receptacle at the bow.
 - d) Start the engine and move slowly toward the anchor.
- At the bow, have a crew member depress the up arrow (points aft) switch to retrieve the anchor.
- If the windlass stops retrieving and the clutch makes a clicking sound simply feed out a couple of feet and then resume retrieving the anchor.
- Use the seawater nozzle to wash the chain and anchor before they reach the deck.
- If the chain tightens and starts to bog down the Windlass, wait until the boat catches up, and then continue. **Don't drag the boat with the windlass. Use intermittent forward thrust.**
- When the anchor is clear of the water make sure it is clean of mud and seaweed. A boat brush and spray nozzle may be used to assist in this task.

- Be careful with the last couple feet to **make sure the anchor is facing the proper direction**. Use short bursts on the windless as the anchor comes aboard. If needed, lift the chain at the bow roller and twist it so as to properly align the anchor for the final retrieval, alternatively you can turn it with the boat hook.
- Reinsert the clip to secure the anchor in the bow roller.
- Release the tension on the chain slightly to take the strain off the Windlass.
- Hook the spray nozzle on a line holder on the starboard forward deck rail. The seawater wash down breaker can remain on to keep the pump primed for the next use.

MOORING BOUY

- You may use one of the bow dock lines to tie to a mooring buoy by using the boat hook to catch the ring on top of the buoy.
- Have the boat move forward while walking the buoy toward the stern where it will be easier to attach the dock line.
- Pull the ring up enough to pass the dock line through the ring twice, back the boat until you can easily tie off to the port and starboard bow cleats.
- A second bowline looped through the buoy ring is advisable as a safety backup.

STERN REEL

- There is 520' of line on a reel that can be used for a stern tie off to an object on shore.
- Use the tender to take the line ashore and loop around your tie off ring or tree, etc.
- Bring the end of the line back to Mariah and tie it to a cleat.
- Pull some extra line from the reel and tie it to a cleat.
- **CAUTION: The reel is not designed to tie directly to shore.**

6. Barbecue

Highlights

- Stainless steel Magnum propane barbecue grill is mounted on the starboard aft railing.
- The propane tank which serves the grill is secured with a line below the BBQ in the aft cockpit. The hose attachment is kept on the tank for convenience during the charter season.
- Please clean grill (using the brush attached with wire lanyard) when finished cooking.

Details

To operate:

1. Remove the cover and store in the cockpit floor locker.
2. Make sure the regulator knob on the grill is in the OFF position.
3. Connect propane hose to the BBQ regulator.
4. Open the lid to the grill. Remove any accessories stored inside.
5. Push and turn the regulator knob counter-clockwise to the high setting.

6. Use the peso electric starter or a BBQ lighter from the galley and confirm that the burner is lit, before closing the lid.
7. Adjust the regulator knob on the grill to the desired heat setting.
8. The BBQ does not require pre-heating. Do not overheat.
9. Do not cook on the high setting with the lid closed.
10. Unless you are searing a steak the low setting works best for general use.

To shut off the grill:

1. Turn the regulator knob on the grill clockwise to the LOCK-OFF position.
2. When cool remove the hose from the grill and coil it in the top of the tank.
3. The grill should be cleaned on a regular basis. Stainless steel exposed to high heat will change color over time. Discoloration of components does not affect the operation or performance of the BBQ.
4. On the front lower outside of the BBQ slide out the grease tray for cleaning.
5. Lift out the cooking grill and the heat plate for cleaning.
6. The exterior of the BBQ can be cleaned with soapy water.
7. Lock the lid of the grill securely with the latches.
8. After cooled off, cover the grill with the canvas cover between use.

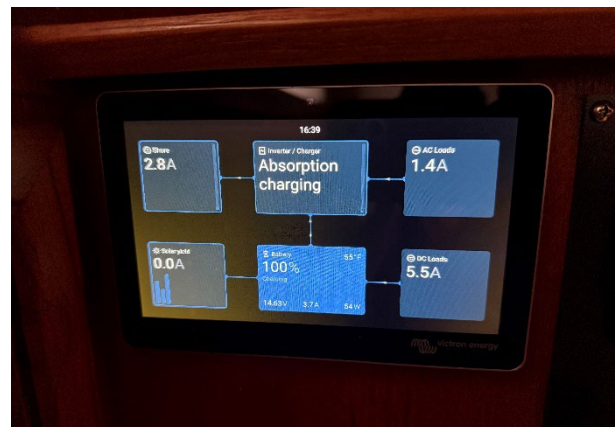
7. Batteries, Charging and Inverter



Office Station

Highlights

- The Victron power management panel is located at the office station. See photo on right. Battery charge level is displayed on the bottom center of the display and measures house battery charge state in percentages of full charge. Charge levels below 50% will damage the batteries, start the generator to recharge the batteries.
- At the bottom left of the battery indicator window, battery voltage can be read. Start the



Panel shows charging from shore power

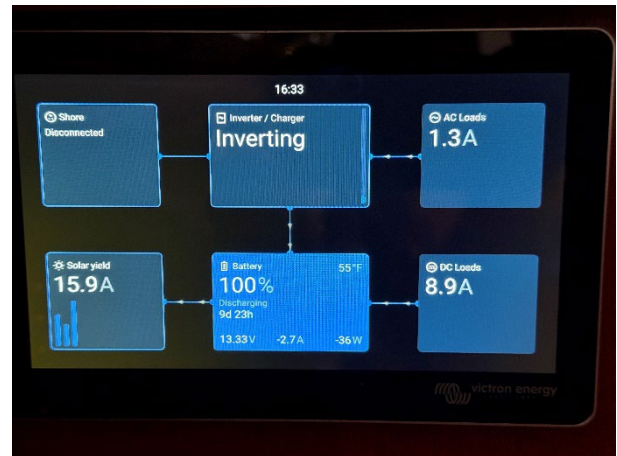
generator if voltage drops below 12.2 volts (50% charge). Alternatively, you can check the DC voltmeter (on the DC circuit breaker panel).

- The Victron panel is linked to the generator auto-start circuit that will automatically start the generator when the battery voltage is low or a large draw-down is experienced. Refer to the Generator section in this document for additional operating details.

- You can view the charging process by following the current flow. Starting on the top left side of the panel is the shore power/generator window indicating amperage going to the charger, and below that is the solar charging window

showing amperage going into the batteries from solar power. The center top window shows the rate of charge. Bulk is maximum charge, Absorption is the next level, and Float is full charge maintenance level. The charger may show "Storage mode" meaning the batteries have been in the "float" mode for a period of time and the charger goes to standby. This will still allow charging from the solar panels and will be indicated with a current flow depiction to the batteries. Note: anytime the charger is energized by shore power or the generator, solar power input is isolated. The upper right window is an AC load display showing current amperage draw coming from either shore power or the generator. The window below on the lower right panel side shows DC load amperage drawn from the batteries. Note: By touching the display and scrolling right will give you a different presentation of the same information.

- Please keep batteries above 12.2 volts at all times. 12.8V is fully charged (with all loads turned OFF – including the fridge and when not charging).
- When charging, battery voltage will read above 13.5 volts.
- Ensure batteries are charging when connected to shore power – see details below in Battery Charging section.
- When underway the engine is automatically charging all batteries.
- At anchor, without the generator running, the house battery bank is ample enough to handle normal DC loads including lights, the fridge, diesel cabin furnace heater and entertainment systems.
- Monitoring of the power demands is required when inverting and using 120V power. You can use STARLINK wifi and watch the TV for about 2 hours without much concern. High wattage items like the microwave oven, hair dryers, coffee maker, and electric heaters will quickly discharge the batteries. Start the generator when using these items rather than run the batteries down 🚫.
- All systems can be operational, and all batteries will be charged while the generator is running. See Generator section of these notes for operation details.



Panel shows inverting from batteries

Details

Victron Inverter

PANEL NOTES:

- The inverter panel (photo on the right) provides a quick view of the two operational modes available. They are CHARGE and INVERTER.
- CHARGE: is active when the toggle switch is position to the left and allows AC power from shore power or the generator to power the boats systems. This toggle should remain in this position unless you need to use the inverter to supply limited AC power.
- INVERTER: Use this feature by moving the toggle switch all the way to the right bypassing the off position. This will enable the inverter to provide limited AC power from the batteries. When no longer required move the toggle switch back to the shore power position to conserve battery charge and be in the proper position for charging the batteries from either shore power or by starting the generator.
- **When shore power is connected, always select the toggle to Shore Power,** because if shore power were to fail with the toggle in the Invert position, you may not be aware of it, and if high load items like portable electric heaters or the coffee maker were on, the inverter would attempt to power these items from the house batteries. This could rapidly discharge the batteries and cause harm.
- **When away from Shore Power and 110 AC power is not required, keep the toggle switch on the Shore Power position at all times unless the inverter needs to be activated as described above.**



Inverter selected for shore power charging



Inverter selected for inverting from batteries

BATTERIES:

Mariah has the following battery groups on board:

- Engine start (2 x 190aH AGM)
- Generator start.
- House (6 x 300 aH AGM) provides 900aH of useable power @ 50% discharge.
- Windlass and Bow thruster.
- Stern thruster

All batteries are charged automatically when connected to shore power with appropriate breakers ON or while the engine/generator is running, or when the sun is shining.

Battery disconnect switches.

The battery disconnect switches are located in the office station on the DC panel.

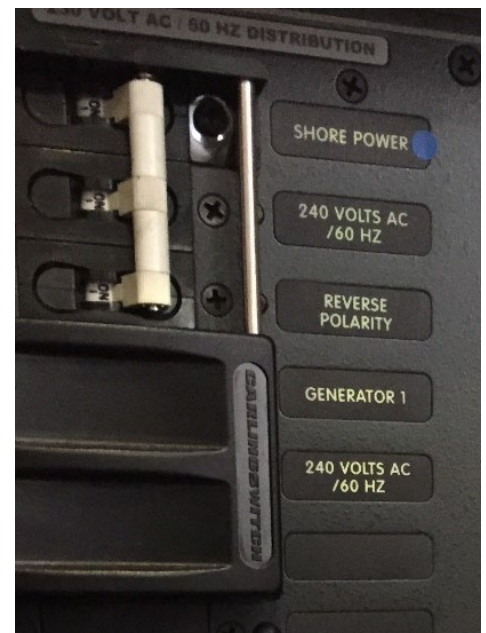
The switches should remain in the ON position. The exception is that in the unlikely event that the engine start battery is depleted the EMERGENCY CROSS CONNECT switch, which is normally OFF, can be turned ON to allow engine starting with the house batteries.

**BATTERY CHARGER/INVERTER:**

Mariah has been equipped with a state-of-the-art Victron power management system which includes a charger and a 2500W inverter. The Inverter control panel is shown in the photo above in the Highlights section. It is located at the office station.

Charging – Shore Power

- Flip off the SHORE POWER breaker on the AC panel in the office station below the pilothouse. See photo on right.
- Connect the 30A shore power cord to the vessel's outlet located just forward of the starboard pilothouse door.
- At the dock pedestal, flip off the breaker then connect the cord. If dock pedestal doesn't have a 30A outlet then grab an adapter pigtail from the blue cord bag in the cockpit floor locker (there's 50A/30A adapters and extensions). Flip on the breaker.
- Return to the boat and turn the AC SHORE POWER breaker on.
- Verify that you have power by looking at the AC voltage gauge on the SHORE POWER OR GENERATOR distribution panel.
- All AC circuit breakers should be ON.



NOTE: 30-amp power may not be sufficient to run all the ships systems and may cause the shore power breaker on the dock to trip. If this happens download the load by turning off some appliances and resetting

the dock side breaker. The inverter/charger will draw the required amount of power (not to exceed 30amps) to power any appliances that are turned on. The remaining amperage under 30 amps will be provided to the charger. The fewer appliances running the faster the batteries will be recharged. If shore power becomes disconnected, you may not be aware of the disconnect because the boat's DC system (lights etc) will still be on, and the batteries will be discharging. To prevent this condition, check the AC panel voltmeter at the office station at least 5 to 10 min. after shore power is applied. See if the meter shows that 110/120 volts are available. If the AC voltmeter is not illuminated, then you have lost AC power. To regain power, download the AC system, turn off the water heater, and any electric heaters. Turn off the Shore Power breaker and go to the dockside power box and reset the dockside breaker. You may also try another outlet in case you have a weak breaker with the first outlet. Return to the boat and restore AC power with the Shore Power breaker. This procedure will be even more important if you are limited to 20-or-15 amps of dockside power, which is common at smaller marinas in Canada. Remember to recheck that AC power is still connected after 10 minutes, if not reduce the load more. The most important thing is to keep the batteries charged. The bottom line is if at any time you need more AC power than is available you can start the generator, which at 11.5 KW can operate all ships systems and recharge the batteries simultaneously. Note: the cloths dryer will only operate from the generator as it requires 240 volts AC. (See generator operation).

SAFETY NOTE: Any time you are connected to shore power ensure the inverter panel toggle switch is in the SHORE POWER position. Failure to do so could rapidly discharge the batteries if the toggle switch was in the invert position and shore power failed. The inverter will attempt to run the entire electrical load including heaters if shore power is disconnected. For the same reason ensure all electric heaters are unplugged before disconnecting from shore power and leaving the dock. If you need heat, start the furnace!

Charging – Engine

- All batteries are automatically being charged when the engine is running.

Charging – Generator

- The Generator will charge the batteries faster than the engine. Refer to the Generator section of these notes for operating details.

Inverter

- If 120V power is needed for **low wattage devices** when shore power is not available and you don't want to run the generator, the battery Inverter can be turned ON at the inverter panel. **Do not attempt to power portable electric heaters through the inverter!**
- The inverter powers the 120V outlets including the MICROWAVE OVEN, Coffeemaker, Toaster, etc.
- At the Victron Inverter panel in the office station, position the toggle switch to the right selecting the AC from batteries position and energizes the inverter.
- On the AC panel in the office, check that the Microwave, Galley Outlets, TV, Head and IceMaker (optional) breakers are ON. These breakers are normally always left ON. STARLINK is an optional breaker and needs to be turned on to power the system and off when not needed to conserve power.
- **Monitor your usage.** If too many appliances are on at the same time, you may trip the Inverter/charger breaker on the AC panel. If this happens, unplug or turn off one or more appliances and reset any tripped breakers on the AC SHOREPOWER panel at the office station.

- **Please turn the inverter OFF when not in use. Do not leave Mariah and go ashore without turning the inverter off. Do this by positioning the toggle on the inverter panel to the (AC from shore power position).**

8. Berths and Bedding

SALON SETTEE CONVERSION TO A BED

- Move the dinette table to the port side of the salon.
- Lift the front side of the settee seat about 6" and smoothly pull it toward the center of the salon. Note that on your right side as you pull out the bed there is a space in the teak trim. That space is the extension limit, the trim board you are pulling on fits into that space. There is also a metal tab that fits into a slot to stabilize the bed. You must get the tab in the slot or the bed will get damaged.
- **IMPORTANT:** On the left side underneath the pullout bed is a SUPPORT LEG. To extend the leg, reach in and you will feel a small lever on the right side of the leg. Pushing on this lever will release the leg and you can place it in position to support the bed. To stow the leg, lift the bed slightly and push the lever again and move the leg to its folded position.
- When the bed is pulled out and the support leg is in place, you can remove the backrest and place it into the space created by pulling the bed out. The backrest is held on with velcro and two slotted pins. Pull out on the bottom of the backrest to release the velcro then lift both sides of the backrest about an inch and pull gently towards you to release the pins. When detached, slide the backrest in along the starboard sidewall of the boat in order to make a wider bed.
- Reverse this procedure to return the backrest to the settee configuration.
- A mattress pad and additional blankets will be stored under the seat cushion in the office station, or under the large settee cushion in storage compartments.
- Advise San Juan Yachting staff if you plan on using the salon settee as a bed and they will provide additional linens.

PILOT HOUSE SETTEE CONVERSION TO A BED

- Remove the small table. Grasp the table and pull up while moving it slightly from side to side. Once free set it upside down on the floor out of the way.
- Both backrests are held in place with Velcro. Remove them and stow the smaller one with the table and place the longer one on the adjacent counter top with the thicker part to the starboard side of the boat.
- There are 2 grey colored spacers in the tip-up step on the settee. Place the spacers under the thinner side of the backrest to make it level with the seat cushion.
- Last step is to lift the aft side of the bottom seat cushion so that the hinged wedge will drop down in place and make the seat cushion level with the backrest providing a continuous level surface for sleeping. Advise SJY staff if you plan on using this settee as a bed and they will provide extra linens etc. A personal sleeping bag would be best for this location.

9. Bilge Pumps

Highlights

- 3 bilge pumps. Lowest is forward.
- Pump switches located in the office station at the forward end on the same panel as the tank gauges (see photo on right). Toggle switches are spring loaded to the Auto position, unless manual override needed. To activate the pumps manually, hold the toggle switch down.
- All pumps are wired directly to the batteries. Can't be accidentally turned off.
- Forward pump located under the center floor hatch in the stateroom.
- Middle pump located in engine room.
- Aft pump located in aft cockpit locker (Lazarette) under the freshwater tank.



10. Dinghy, Tender, Outboard and Davit

NOTE: The Aldura 11' Aluminum tender is only available for prearranged one way charters to Northern B.C. or Alaskan waters with a turnover to the owners. For local charters we have a 10' 2" Kachemak aluminum bottom inflatable RIB.

10'-2" Kachemak Dinghy



There is a 10' 2" Kachemak aluminum hull inflatable dinghy available for local round trip charters. It has a 9.9 HP Honda outboard that has plenty of power to go exploring. It can seat 4 adults. The dinghy is light weight and very easy to launch and recover using the electric winch on the custom swim platform. First remove the full dinghy cover if it is installed by releasing one side or the tie down bungees. The far side bungees will remain attached so that the cover can be placed over the dinghy after it has been brought up on the davit system. The far side bungees can be pulled in underneath with the boat hook and attached to the near side canvas loops to secure the cover. The cover can be stowed in the Lazarette in the blue plastic bin. To launch the dinghy, make sure

the cover. The cover can be stowed in the Lazarette in the blue plastic bin. To launch the dinghy, make sure



the motor is tipped up. Using the remote winch controller (described below with the Tender procedures), feed out about 2 inches of winch line. By releasing the tension, it should be easy to disconnect the turnbuckle with the small carabiner (see red arrow in photo). Leave the carabiner and turnbuckle attached to the winch post. Feed out a loop of winch line until it touches the deck. Push the dinghy aft about a foot and then go to the stern and unhook the stern tie down straps and stow them in front of the motor on the floor by the dinghy transom. Continue to push the dinghy off the mount while a crew member feeds out line with the winch controller. Hold on to the black tie down line as the dinghy enters the water and ensure plenty of slack in the winch line to facilitate unhooking the dinghy. Unhook the dinghy and pull it along parallel with the swim platform and tie it off to the stern of the swim platform with the provided line and bungee cord to make the dinghy more stable for boarding and disembarking. Do not rely on the bungee cords alone! They are used for a quick attachment to Mariah, always follow up with a solid tie down. (Refer to the picture). CAUTION: when boarding the dinghy, do not step on the seats as they are not stable, use the nonskid forward compartment to step on when boarding. To start the outboard, give the fuel bulb a squeeze (it's under the aft seat on the right side) ensure the air vent on the gas tank is in the "on" position. The tank is in the forward compartment. Position the throttle to the start position, then push the start button underneath the tiller throttle control. The engine will start in neutral at the idle speed. Use the shift lever to back up by pushing the lever aft. Bringing it to the forward position requires you to move the shift lever forward past the neutral position for forward operation. Untie the dinghy and push off the stern platform or use reverse. Stop the motor by pushing the red kill button near the tiller handle. To recover, reverse the launch procedure and ensure the motor is tipped up when you are recovering the dinghy. You can pre hook the aft tie down straps once the dinghy bow has touched the V cradle. You can continue bringing in the winch line until the connecting hook rides over the V cradle about an inch above the cradle. At this point reconnect the turnbuckle at the bow and retrieve the winch line to make the turnbuckle snug but not overly tight. This will tighten the aft straps sufficiently to stabilize the dinghy. Ensure the aft straps are tight, if not, tighten them up. There is an owners manual and tool kit in a water tight box stored in the forward compartment should you need

it. NOTE: please remember to fill the gas tank at the end of your charter. Thanks!

11' Aldura Aluminum Tender

LAUNCHING THE TENDER FROM THE DAVIT SYSTEM

1. The Swim platform Davit system is our preferred choice for launching the tender. We prefer it because it's a one-person operation and allows us unrestricted use of the upper boat deck for lounging, and entertaining in the sunshine.
2. The tender is an Aldura 11 foot all aluminum tube style boat. It is virtually unsinkable! It can handle a maximum of four people for a sight-seeing cruise or can be used for a variety of activities for two people including fishing, crabbing, and gathering other meals from the sea. A 30 HP Evinrude ETEC two stroke motor with electric start and trim, power the tender. There are two Scotty electric down rigger mounts for fishing. The tender is also equipped with the following... A fish finder/depth sounder/chart plotter, (stored in the Bose entertainment cabinet), running lights, storage compartments under each seat, built in fuel tank, bilge pump, anchor, and a helm station. The Evinrude outboard uses straight gas from the fuel tank, (NO OIL PRE-MIX). Oil is automatically injected into the fuel for the proper mix ratio. There is an oil reservoir under the engine cover should you need to add oil. Normally the oil will be serviced prior to your charter and will be sufficient for about 25 gallons of fuel burn. A low oil light on the tachometer will illuminate when oil needs to be added. Special Evinrude 2 cycle oil is stored in the spare fluids bin in the forward area of the engine room, and 1QT is under the forward tender seat.
3. To launch the tender:
 - Remove the canvas cover (if installed) by releasing the snaps all around the underside of the rub rail. It is safe for one person of moderate size to get into the tender while it is in the transport position in order to remove the cover and tie down straps. While in the tender reach over the stern and release the 2 tie-down straps. They are tied together with a cord to prevent dropping overboard. You may leave the straps on the surface behind the helm seat. **Ensure that you close the drain plug with the remote switch just left of the steering wheel. Reach down and ensure the plug is seated by pushing in on the plug at the back of the tender. Turn the switch to the closed position and ensure you feel a detectable click as it seats itself. It is normally left open while the tender is stowed to facilitate draining of any seawater or rain that may get inside the tender.**
 - Remove the winch controller (located beneath the TV or in the entertainment cabinet). To activate the controller, press the IN and OUT buttons at the same time for 3 seconds. A red led light will illuminate indicating it is ready for use. If required, replacement lithium batteries #2032 are in the pilot house chart drawer. (Have a crew member operate the controller holding it at all times while you launch the tender as follows).
 - Remove the stabilizer bar by pulling the safety pin and lift up on the bar where it attaches to the tender. Using the winch controller feed out about 3-4 feet of line by pulling out a loop that touches the deck. Do not release the line hook. Lift the bow of the tender and push it along the davit until it starts to tip up and draws the launch line tight. You should now be able to feed out additional



line with the controller and the tender will launch by its own weight or with a slight push. When the tender is completely in the water reach down and release the hook and using one of the black tie off lines on the tender, bring the tender around to the aft part of the swim platform and tie it off from the center of the tender to the center tie off on the swim platform. The permanently tied fenders will protect the tender from banging into the swim platform. Note: The bow of the tender should be facing the port side of Mariah. This will allow passengers to board the tender using the hand- hold on the tender steering console. The ignition key is kept on a float located over the EPIRB antenna next to the salon door. The driver should board first followed by up as many as three additional passengers.

- Make sure the outboard is in neutral, (throttle lever vertical), and the motor lowered to the stop. Turn the key to start. The choke is automatic. Reverse this procedure to recover the tender by offloading passengers and returning the tender so that it is ready to ride up on the davit system. The red line is used to hold the tender perpendicular to the davit in the event of wind or currents making it difficult to start the recovery. Re-hook the winch strap and ensure the center keel of the tender is centered on the davit roller. Have a crew member keep the tender stable (level) as it rides up on the rollers and another person ensuring the keel remains centered on the rollers. Using the winch controller retrieve the tender until it just touches the bow cradle. Do not over tighten the winch strap into the "V" cradle. **Reinstall the tie-down straps if you expect rough seas.** You may leave the canvas cover in the lazarette storage bin during your charter but you will need to **open the drain plug with the switch so that splashed water or rainwater will not fill the tender and damage the electrical systems.** Remember to close the switch before the next launch. When underway, tilt the motor full up and turn the steering wheel full left. This will keep water from splashing into the tender as the boat rolls with wave action during rough seas. When docking or in close maneuvering situations **lower the outboard so that it will allow more clearance on the starboard side.** To raise the motor while in the transport position, push the upside of the trim button on the throttle. Remember to reconnect the stabilizer bar and return the winch controller to the entertainment cabinet.



Proper Tie Down, when expecting rough water.



Proper tender tie-off to stern when boarding.

OPERATING THE TENDER (The EVINRUDE OUTBOARD manual is in the Nordic Tug notebook under the tip-up instrument panel in the pilot house.)

1. **Make sure all occupants are wearing appropriate life jackets. (Coastguard requires life jackets be immediately available). There are 7 inflatable life jackets kept in the master stateroom closets or forward compartment. Never let minors start or operate the tender.**
2. **Check the gas level** by observing the gauge on top of the fuel tank. *Always stop the motor before refilling the tank.*
3. **The Evinrude key is inside the salon door hanging over the antenna of the emergency transmitter or may have been left in the ignition switch.**
4. Start the motor:
5. Check for an indication of water flowing out of the back of the motor.
 - **If after a minute or two no water is coming out, stop the engine** and check the cooling water intake or the outlet hole for obstruction. If there is no obstruction, there may be a water pump failure or blockage in the cooling system, which will cause the engine to overheat--*do not operate the engine.*
6. Operate the motor with the shift/throttle lever by pressing in on the release button beneath the handle and smoothly advance the throttle until it shifts from neutral to forward and then advance the lever for desired speed. Use the same procedure for reverse. Steer with the wheel. Use the power trim as required for optimum performance based on the weight distribution in the tender.
7. To stop, close the throttle, put the motor in neutral and turn the key to off.
8. The fish/depth sounder/chart plotter is stored in the entertainment cabinet. It attaches to the top of the tender steering console and the electrical connection is kept in a sealed box below the steering wheel. Please ensure the box stays dry and return the wire connection to the sealed box and the chart plotter/depth sounder, to the entertainment cabinet when done using these items. They are very susceptible to corrosion from salt water. If you have experienced rain or rough seas, water may accumulate in the tender unless you have the drain plug switch opened. To remove the water, move the drain switch to the open position and water will flow out by gravity. Additionally, you can turn on the bilge pump (push the ON side of the bilge switch and hold it down). Installing the tender cover will keep most of the water out and will protect the inside contents from weather.

When the tender is secured on the davit system it is highly recommended that you open the drain plug with the remote switch on the dash panel just to the left of the steering wheel. Be sure to fully open and or close the switch by feeling the switch snap into the desired position. Should water get into the tender it will flow out the drain hole with no need to check for build up. Note: It is extremely important to not allow the tender to fill with water...the battery and other electrical connections under the helm seat can be damaged by corrosion rendering the chart plotter and other systems unusable. This has occurred several times in the past from charter guests not following these procedures. The resulting damage required complete replacement of the fuse box, wiring, and connectors, so we have added this warning! Note: when closing the drain plug, reach back behind the transom and give the plug and additional push by hand to seat it in place ensuring a proper seal.

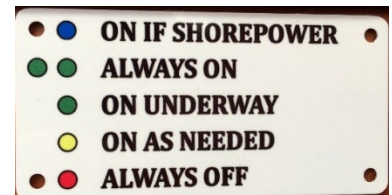
11. Electrical

Highlights

- The AC and DC panel breakers use the color dot convention shown on right. Photos of the panels are shown below.
- With the following 2 exceptions, all of the DC breakers on the primary panel are always on: Bilge Lights and Oil Change Pump.
- Primary shore power breaker is located on the AC panel.
- Main DC breaker is located on the primary DC panel in the office station.
- Refer to the Batteries, Charging, Inverting and the Generator sections of these notes for detailed information on these topics.

DC Sub-Panel (Located in the Pilothouse)

- The TOP DECK FREEZER breaker is for the 12V freezer on the top deck.
- Leave the Video Camera, Freezer, Fuel Transfer, and windless breakers off unless you intend to use them.
- The five guarded breakers on the upper right panel should never be used to shut off the associated equipment damage to the equipment could result! Use the individual component power buttons.



DC Panel: (Located in the Office Station)

NOTES:

- Red flagged breakers stay off unless the system is required....they are (1) oil change pump, (2) engine room lights. The down rigger and spare breakers are not used.
- The two meters are DC amps in use and DC system voltage...if the voltage reads less than 12.1 volts start the generator. The toggle switch below the meters selects the battery systems. The center position is the house battery bank voltage. When the voltage drops to approximately 12.1 volts due to



low charge (or a heavy load) the auto-start feature should start the generator provided the system switch is in the "ENABLED" position.

- The lower right corner panel has a switch that will tie the house batteries to the engine start batteries in the rare chance the engine battery charge was insufficient to start the engine.

AC Panel: (Located in the Office Station)

NOTES:

- The Magnum automatic Generator starting circuit must be armed (enable) to operate.
- The red LED numbers indicate shore power or generator power is connected and indicating AC voltage.
- The top breaker on the left column labeled inverter is also a battery charger. It needs to remain on to be able to use battery power through the inverter to power the 110 volt circuits located on the center column of breakers.
- If the AC loads are too high for the inverter, this breaker will trip and prevent the center column items from being powered from the inverter and will also disable battery charging from the generator or shore power.
- The left and right columns of breakers are systems that can only be powered from shore power, or the generator except for the STARLINK breaker.....remember the inverter breaker must remain on at all times.
- The DRYER will only operate from generator power as it is a 240 volt system.
- The water maker is not installed, so the breaker stays off.
- The Starlink breaker should be turned off when the Starlink is not in use. Using the Starlink requires the inverter be turned on and if left on when not in use will unnecessarily draw power from the batteries.
- NOTE: We have installed solar panels on the pilot house roof. They are completely automatic with no operational controls.



INVERTER/CHARGER

The inverter is intended to provide 110 volt AC power to small appliances when you are away from shore power, or do not want to use the generator. The inverter converts 12-volt battery power into 110 volt AC power. The Victron INVERTER/CHARGER panel is located at the office station directly in front on the right side as you are sitting at the table. While away from shore power, if you want 110 AC power:

1. Turn the Inverter ON at the INVERTER/ CHARGER panel by moving the toggle switch to the right energizing the inverter side of the panel. By doing this the inverter will power selected 110-volt appliances and outlets.
2. Confirm that the following circuits on the AC panel at the office station are ON:
 - Microwave, Galley Outlets, TV, Head, and Ice Maker (if desired).
3. **Monitor your usage.** If too many appliances are on at the same time, you may trip the Inverter/charger breaker on the AC panel. If this happens, unplug or turn off one or more appliances and reset any tripped breakers on the AC SHOREPOWER panel at the office station.
4. **Do not attempt to power portable electric heaters through the inverter!** When AC power is available from shore power or from the generator, the inverter/charger automatically charges the house batteries. However, when leaving the boat, go to the office station and observe the Victron inverter panel and ensure the toggle is moved left to the shore power position. This should be done so if shore power fails, an onboard appliance (e.g. a coffee maker, or a heater) will not draw down the batteries.



12. Electronics and Instruments

Mariah is equipped with the latest Garmin electronic equipment, with Multi-Functional Displays for the Pacific Northwest throughout Alaska. There are three Garmin displays. They include navigational charts, 3-D displays, Fish finder, Radar, Data, Course Deviation Indicators and Waypoints/route capabilities and more. The manual I have created will give you step by step procedures for basic operations and functions. You will use the chart plotters any time you are underway. They are a wonderful tool and confidence builder and should be used in conjunction with paper charts. Most of the time we operate with the center 16" plotter as our primary navigation tool. Your

check-out skipper will show you the basics on the chart plotter probably using the manual I created. Use the electronic manual for more detailed functions if you wish. The electronic manual for all three displays can be found as follows. With any display, press the (HOME) button, then on the lower right side of the display press



the (SETTINGS) button, then scroll up on the menu until you see the (OWNER'S MANUAL), selecting that will display the (Open) prompt and by pressing it you have access to the manual. You can use all three Garmin multifunction displays at the same time. We recommend using the smaller display on the right as a depth sounder and forward-looking sonar in a split display and the left MFD for another chart/radar display on a split screen or however you want! Select the (HOME) button and then either the (PINNED) button or the (Chart) button to make your selection for whatever type of information you would like to display.

- We have produced a Reference Manual (located at the helm) that will lead you through basic operations of the chart plotters using pictures and text. You should find this very helpful to feel confident in the operation of these systems.
- You will use the chart plotters that are commonly called MFDs, (multi function displays) any time you are underway. We have installed 3 MFDs. In the center of the pilot dash is a Garmin 8616xsv 16" display. To the left and right are Garmin 1243xsv 12" displays. All 3 of these MFDs are fully capable of independently providing all the information you need to operate Mariah. With 3 displays you can simultaneously view charts, radar, aft camera, depth sounder, fish finders, and forward-looking sonar and more! They are a wonderful tool and confidence builder but should be used in conjunction with paper charts.

Commonly Used Chart Plotter Selections:

Starting up the Garmin electronics: press the power button on the lower right side of the center chart plotter display and the auto pilot display. The autopilot is between both VHF radios.

Finding the Navigational Chart:

- On startup select the home button to display a menu on the screen bottom. Select "CHART" from this menu and the navigation chart appears.

Zooming in and out:

- You can zoom in or out by using the + or – buttons on the right side of the screen or by pinching two fingertips together to zoom out or spread them apart to zoom in.

Returning the screen to the vessel's current location:

- You can touch the screen with one finger and move to distant locations (called panning) on the chart to look beyond your current view. As soon as you start moving your finger a message pops up in the lower right part of the screen titled "STOP PANNING" When you touch that message box the screen returns to the boat's position.
- **Building a route to a desired destination.**
Touch "Where To"> "Waypoints" > "New Waypoint"> "Use Chart" then zoom in to the boat's position. This will display a North Up presentation where you can use your finger to move the chart around and center the marking symbol on your destination, then press "Set Position". That will place a waypoint that you can edit with a name and symbol. After naming the waypoint press "back" then "navigate to"> "Auto Guidance" and a route will be created for you. Check your route with "Hazard Review", use "Adjust Path" if necessary, then press "Start

Navigation". Clear any warnings with the "OK" prompt, press "Stop Panning". When clear of the congested area or marina engage the autopilot and let it take you to your destination. NOTE: You can press the red "Standby" button on the autopilot at anytime to disconnect the autopilot and manually steer the boat.

Clearing Pre-existing Waypoints, Routes and Tracks:

- From the Home Screen menu (along the bottom of the display), select (Where To), a menu pops up on the right side of the screen, from that menu you can select a variety of options including waypoints, tracks, routes, and others. For example, to delete a waypoint select waypoints on the list, another menu pops up on the right with a list of waypoints on the left. On the menu select (REVIEW). A new menu pops up allowing you to edit, delete, move, or navigate to. Touching the delete button deletes that waypoint. Similarly, the process can be done for routes and tracks by following the menu prompts.

Chart Orientation: North Orientation looks like a chart. For navigation on the chart, I find much easier to select Heading or Course for the chart orientation. That way what you see out in front of the boat is what you see coming toward you on the chart.

- From the Home page select (Options) on the lower right menu, then select (CHART SETTINGS), Then select (MAP ORIENTATION). From the next menu you can choose (NORTH UP), (HEAD UP), or (COURSE UP) after that selection touch the (X Close) button on the lower right screen and that will bring you back to the home page with the chart oriented the way you selected.

Display Brightness:

- From any page momentarily touch the power button and a menu pops up allowing you to change some functions on the display. The first option is (BACKLIGHT) when you touch that you can select from 0 to 100% for a brightness level. Touch the (X Close) button to return to the screen.

Course over Ground (COG) Vector/Line:

- The (COG) Vector/Line is available by selecting Options from the Home Screen, then Layers, then My Vessel, then the 3 dots on the Heading prompt, then Source, then COG and Heading. COG is the blue line in front of the boat symbol. The black line is the boat's heading.

Port and Starboard Recommend Plotter Presentations:

- Underway:
 - Center Plotter: Chart Nav,
 - Starboard Plotter: Split Screen, Standard depth sounder/Forward looking sonar.
 - Port Plotter: Radar, Chart Nav zoomed in, a split screen, or any other choice.
- Departing from and arriving to the slip I suggest the following setup.
 - Starboard Plotter: Video with aft camera view for the intended maneuvering. Select home, then Pinned, then the camera symbol. Ensure the video breaker is on.
 - Port Plotter: Chart Nav, Range set very close in, use what makes sense.

Displaying and using a Split Screen: Ex. Chart zoomed-in on one side and zoomed-out on the other, Chart on one side and Radar on the other.

- You can use a split screen on any of the chart plotters. On the center and right plotters I have created a number of “pinned” chart displays, you can make any number of “Combo” displays by touching the “Home” button then the “Combo button “along the bottom menu” then “Add Combo”. A layout screen pops up allowing you to choose how many ways you want to split the screen from 2 to 6 displays on the screen. After selecting the layout, you can fill the screens by touching a screen to add up to 7 different choices for the number of screens you have selected including Charts, Radar, Sonar, Graphs, Gages, Autopilot and Video Camera. Select the other side of the split screen and populate it the same way. Once you have a number of combos created you can name them and then buy touching and holding a combo selection a menu pops up to let you move it into the “pinned” category for easy access. If you make any changes, please return to my suggested displays for the next charter guest.

Radar Overlay

- From the Home page touch “Home” and a list of charts appear for your selection. One of them is the Radar Overlay chart. Select it and it will fill the screen with a chart and the ability to turn the radar on and overlay the chart. The radar transmit button is now on the upper left side of the display.

AIS Overlay & Targets & Owners Manual

- Pages 21, 22, and 23 of the Garmin owner's manual gives you detailed information on AIS. You can view the manual from the home page by selecting “SETTINGS” then scroll up on the menu to near the bottom and select “OWNERS MANUAL” when the manual pops up select “OPEN” you can search for AIS or any other subject. Mariah’s AIS system is turned on and should remain on.

RADAR

The radar is viewed by selecting a radar display page on any of the Garmin units. To start the MFDs press the power button on the lower right side of the display. When the units power up, the Home Screen appears where you can select various functions by pressing the home button and observing a menu of selections along the bottom of the display like charts, radar, sonar, etc. All three displays are multi functional and can be used as chart plotters or a variety of other options. I recommend using the center MFD as your primary chart for navigating. We like to use the smaller Garmin unit on the right as your sonar and depth sounder. You can select additional presentations on the left MFD as you desire, perhaps a radar display. The Garmin MFDs are all connected to the autopilot, but it is best to navigate with mainly the center display. We recommend for simplicity reasons to use the center chart plotter as the primary unit to interface with the autopilot. There is a notebook in the pilot house that has basic operating procedures for the three multifunction displays “MFD”s The notebook has step by step examples on the basic operations of these systems. If you want more in-depth knowledge each MFD has an electronic owner’s manual.

The Garmin units are linked together so touching any of the power buttons will power up or power down the displays. If need be, you can always contact Garmin Support at (913)397-0872 or (913)397-8200. You will need to give them my email address salarson@methow.com for them to access my account. The center unit is a Garmin 8616xsv and the right and left units are Garmin 1243xsv. All are new for 2024!

VHF Radios

Highlights

- We recommend that you monitor Channel 16 during your cruise. It is reserved for emergencies and boat-to-boat initial contact. After contact, move to a working channel (68, 69, 72, 74 or 78).
- We listen to weather channels 1-10 (whichever gives the best reception, normally 4 in the San Juan Islands) before we sail in the morning and prior to anchoring for the evening. Listen for the reports identified as "Northern Inland Waters".
- San Juan Sailing monitors channel 80 during office hours (closed Sundays).



Details

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

NOTE: Mariah has two VHF radios in the pilot house, they operate similarly. There is also a hand held VHF on the port overhead compartment stored in a plastic waterproof box.

- **Turning On and Off the radios** – Use the Power button.
- **Silencing a DSC Alarm** – When another boat (or the Coast Guard) press 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 in the bottom row and the corresponding power setting will appear 1W (low power) or 25W (hi power).
- **To quickly get to channel 16** – tap the 16/9 button (right side). Holding it in for a second will take you to channel 9.
- **Accessing the weather channels (WX)** – Press the CH/WX button, the large channel select button (lower right) will toggle between weather channels and normal channels.
- **Adjusting Volume and Squelch**
 - There are separate volume and squelch knobs on this radio. One for volume and one for squelch. Adjust the volume as you desire. Adjust the squelch until the background static is eliminated.

Operation

1. Momentary push of the power button will power up the VHF radios.

2. Check the weather channel by pushing the CH/WX button, then you can select a weather broadcast on channels 1-10. Usually select the channel with the best reception or the station that is closest to your location. That could be a Canadian or a US station.
3. Use channel 16 as a hailing channel by pressing the 16/9 button that will switch from the WX stations and allow you to call another vessel. When communication is established agree on a ship to ship channel to continue your conversation so as to not tie up the import channel 16. Channel 16 is where you can monitor safety broadcasts from the US and Canadian coastguards and is for initiating a call with another station. I recommend keeping the left radio on channel 16 to monitor coastguard broadcasts and hailing other vessels. The right radio can be used for ship to ship communications typically on channels 72, 78, 79, and 80.
4. There are 2 transmit power settings selected with the HI/LO button. Always use the low power position (1 watt) when you first transmit. If not sufficient you can go to the HI position (25 watts) but be advised your transmission will have much greater range and can inadvertently clog the frequency over a greater distance than need be.
5. The red guarded "distress" button when pushed will send out an emergency signal with Mariah's location and other information. Do not push this button unless you are truly in an emergency!
6. EMERGENCY PROCEDURES
 1. Lift up the distress key cover, then push and hold for five seconds, until you hear five short beeps change one long beep.
 2. Wait for an acknowledgment on channel 70 from a Coast Guard station. After the acknowledgment is received, channel 16 is automatically selected.
 3. Push and hold PTT, then transmit the appropriate information as follows.

DISTRESS CALL PROCEDURE:

1. "Mayday, Mayday, Mayday"
2. This is the vessel, Mariah.
3. MMSI# 338107452
4. Location (lat long from chart plotter)
5. State the nature of the distress and assistance required.
6. Give any other information which might facilitate the rescue.

Canceling an incoming distress call from another vessel.

The emergency alarm sounds for two minutes, push CLR on the left radio to stop the alarm. On the right radio push any button to clear the alarm. Channel 16 is automatically selected after canceling the alarm. Continue monitoring channel 16 as a Coast Guard station may require assistance from you. Don't operate both radios on the same channel as feed back will make communication impossible.

NOTE: There is a handheld VHF radio in a protective box above the chart table for use when out exploring with the dinghy.

AUTOPILOT

1. To use the autopilot, you must select "Engage" on the overhead panel or on either Garmin MFDs at the helm. Once engaged the autopilot engages with the present heading and holds that heading, the wheel no longer steers the boat. You must select the desired change in heading by pushing the (<1) for 1 degree left or (<<10) for 10 degrees left. The (>1) and (>>10) are for turns to the right. If you are navigating on a route and need to temporarily leave the route to avoid an obstacle, when clear choose a heading back to the route with a mild intercept angle. When the boat is nearly on the route line select engage to resume the route. NOTE: If at any time needed you can disconnect the autopilot by touching the "Standby" button.
2. To use the remote, turn it on with the power button on the right upper side of the remote. PUSH THE RED BUTTON TO ENGAGE HEADING HOLD. To turn right push the >> button for 10 degrees right. For a 1-degree turn push the appropriate < or > for a one degree change each time you push the button. The up and down arrows are not functional. Pushing the red button changes the operation from HEADING HOLD to STANDBY. For other options you can read the manual found in the "chart plotter reference manual" at the helm station.
3. **Caution: If using the remote outside of the pilot house, please use the lanyard and wear it around your neck. The remote costs over \$250 to replace if lost overboard.**
4. After turning the autopilot off or to standby on the overhead panel remember to turn the remote off by pushing and holding the power button on the side of the remote until it shuts down. If you forget, the AA batteries will run down.



Autopilot remote

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

Highlights

- Mariah 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). Mariah is transmitting her position full time (The AIS unit is wired directly to the batteries).
- The chart plotter is tied to the VHF radio or AIS Unit and shows the positions of vessels with AIS as triangles. Make sure the AIS overlay is turned ON in the settings menu.
- 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. Mariah's MMSI number is 338107452.

Details

AIS vessels appear on the chart plotter screen as triangles. The triangle points in the direction that the vessel is moving and if you touch the screen over the triangle the system will give you additional information (such as name, size, speed, bearing, etc.) about the vessel. The system also transmits this same type of information about *Mariah* 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 *Mariah's* return approach. Vessels with AIS can be viewed in real-time through mobile device apps and websites like www.marinetraffic.com that will reveal *Mariah's* course, speed, track, and other information.

CELL PHONES

You can re-charge your cell phones at the 12-volt receptacles located at either side of the helm station. There is a 12v USB plug available.

Engine & Getting Underway

Preparing for Departure

ENGINE ROOM CHECKS should be performed daily, before cruising.

At the office station, turn ON the Engine room Lights. Enter the engine room aft of the galley through a hatch in the floor.

Note: All fluids have been checked by a maintenance professional prior to your charter and it is very unlikely that these fluid levels would require servicing during your charter. However, it is strongly recommended that you do a daily engine room inspection looking for evidence of oil or other fluid leaks.

The following engine room procedure are at your discretion provided you do a daily check for fluid leaks, odors, or anything else that doesn't look right.

Check the oil level in the engine.

There are 2 dipsticks. One on the port and starboard sides of the engine. Either one can be checked. The port side is easier to access. The oil level on the dipstick should be between the hash marks.

If the oil level is low:

- Add oil from the **plastic jug marked (Kirkland 15/40 SAE)**, using the **funnel** found in the replacement fluids bin stored in front of the engine.
- DO NOT OVERFILL THE OIL CAPACITY of the engine. It only takes 2 quarts to fill the oil supply from the lower line to the upper line on the dipstick. You will likely never need to add oil.
- When replacing the dip stick ensure it is properly seated. If not seated, oil will spray out making a mess.

Check the coolant level of the white plastic recovery reservoir mounted on the forward bulkhead in front of the engine. (aka "plastic jug") The jug should be half full. **If the coolant level is low:**

- Add some pre-mixed engine coolant to the recovery reservoir.

- The pre-mixed engine coolant marked 50/50 ENGINE COOLANT is located in the “Replacement Fluids” bin.

Checking the oil level in the generator. The generator has a diesel engine requiring the same care as the main engine. The generator is self monitoring and will auto shut down for a number of reasons and provides a sequence of flashing lights that will identify the cause, (see the owners manual in the pilot house). For this reason, it is not required that you check any of the fluid levels. They will be checked by maintenance crews before and after your charter. However, if during your charter the generator shuts down you can look at the flashing led lights by the generator start switch and determine the cause of the shutdown. If low oil is suspected, remove the rectangular panel on the FRONT SIDE of the generator to access the dipstick. The oil level on the dipstick should be within the hatch-marked area on the stick. **If the oil level in the generator is low:**

- Open the OIL FILL to the side of the dipstick.
- Add oil from the blue plastic jug marked Delo 400 15/40 SAE, using the funnel from the bin marked “Replacement Fluids.” Be careful not to overfill.

Check the coolant level in the generator. The generator’s diesel engine uses coolant just like the main engine. A plastic coolant recovery reservoir (aka “plastic jug”) is mounted on the port side of the generator. Visually check that the coolant level shows approximately 2 inches when the engine is cold and 6 inches if hot. **If the coolant level in the generator is low:**

- Add coolant to the recovery reservoir to the appropriate level, being careful not to overfill—the coolant needs an opportunity to expand.
- Use the pre-mixed 50/50 ENGINE COOLANT located in the bin marked “Replacement Fluids.”

Check the RACOR fuel filters for water or contamination. Few things you do are as important to your safety on the water as having uncontaminated fuel going to the engine! As you enter the engine room look on the aft end of each fuel tank where you will find a RACOR fuel filter for each tank.

Make sure both filters are free of contaminants or water. Look through the glass at the liquid in the bottom of each filter. You don’t want to see contaminants or a separation of fluid in the bottom. (Water is heavier than diesel fuel and will collect at the bottom of the glass bowl if there is water in the fuel.) IF YOU SEE CONTAMINANTS OR LIQUID SEPARATION, you want to remove them without removing all the fuel in the glass bowl:

- With a collection container in place (stored behind the generator), open the black drain by partially unscrewing the valve at the bottom of the glass unit to evacuate just the water or contaminants, and then quickly re-tighten the drain.
- If the vacuum gage at the top of the filter approaches the yellow range at cruise power, the filter should be changed. Please advise San Juan Yachting if you should observe this condition.
- The Generator has two fuel filters. One mounted on the aft port bulkhead and the other on the engine itself. The are changed out each season and require no other maintenance. Spares are available in the spares bin if needed.

Complete a visual check of the engine room for leaking oil, fuel, or coolant, loose items that should be secured, or anything unusual.

Verify that all seacocks are open, especially the **main engine cooling seacock**. They should be in the **open/vertical position**.

Make sure that the **SEAWATER STRAINERS for the engine and generator are free of seaweed or debris**.

The engine sea strainer is a large bronze unit with a glass-enclosed section that houses a strainer. It is mounted aft of the engine near the engine room entrance and is connected to the seacock with a large black hose.

- Using the flashlight, which is stored in an open box on the aft bulkhead next to the toolbox, check to see if the strainer is clear and not plugged with seaweed or debris before every start.
- To clean the strainer, close the seacock (lever horizontal), unscrew the top with the flat bar laying next to the yellow tool box, lift out the basket, swish it back and forth in the orange bucket filled with clean water, and then reinstall it. There is an orange bucket in the lazarette that can be filled with clean saltwater. Use the bucket to prevent dropping the strainer overboard!
- **REOPEN THE SEACOCK!!**
- **Note:** We have rarely experienced the need to clean the strainer. Avoid driving through large patches of sea grass and you should be fine.
- Make sure that the **seawater strainer for the generator is free of seaweed or debris**. Use the same procedure as above. It is a smaller unit similar to the engine strainer and is located on the left side (facing aft) of the generator.
- Remember to **REOPEN THE SEACOCK!!**

When you have completed the engine room checks, turn off the engine room lights at the office station breaker panel labeled BILGE LIGHTS. Failure to do so may needlessly deplete the batteries.

DISCONNECT SHORE POWER

1. At the OFFICE STATION breaker panel, turn OFF the main AC gang breaker labeled SHORE POWER. All remaining AC breakers may be left on.
2. On the dock, first turn OFF the shore power circuit breaker at the pedestal, and then disconnect the yellow electrical cord from the dock power.
3. On the boat, disconnect the yellow electrical cord and store the cord coiled in the cord bag in the Lazarette. *Caution: Always DISCONNECT from the SHORE-END and ---CONNECT from the BOAT-END--- to avoid moving a LIVE cord! Be sure all electric heaters are disconnected!*

TURN ON DC/BATTERY POWER

Battery power should automatically be supplied to the DC systems when you disconnect AC power provided the DC breakers are on. All DC breakers may be left on if there is a green dot next to the breaker. Turn off the following breakers that have a yellow when not being used.

1. ENG ROOM LIGHTS.
2. OIL CHANGE PUMP.

CLOSE ALL PORT HOLES AND HATCHES that might permit water to enter the interior, especially during rough seas and windy conditions.

CHECK AROUND THE BOAT

Review the exterior area around the hull to confirm that there are no obstacles in the water or loose items that should be secured.

Getting Underway

HELM CHECKLIST

Check the fuel level at the “Tank Tender” gauge at the helm, (the key must be on for the gauge to operate) and / or the preferred method is the sight tubes on the fuel tanks. The tanks should be full on day one.

See fueling instructions below if fuel is needed.

Check the water level.

1. Insert the key in the ignition slot and turn to the ON position. Note the water level on the gauge at the office station or the sight tube on the water tank in the lazarette, then TURN THE KEY OFF!
2. See instructions below for adding water, if necessary.

Check that all breakers at the helm station are on except the 3 SPARE breakers and the WINDLESS, FUEL TRANSFER, and TOP DECK FREEZER. These 3 breakers should be on only when you use the system.

- The **TOP DECK FREEZER** is normally used for multi week charters that require more freezer space. You must provide power from the breaker and then use the selector near the floor on the freezer to adjust a temperature setting. Leave the breaker off if not planning to use the freezer.
- The aft facing **CAMERA** is used mostly for situational awareness and when backing up. The camera can be accessed on the right Garmin unit by pressing the “Home” button, then the “Pinned” button and the aft camera icon on the left.

STARTING THE ENGINE

- Make sure that the **shift lever is in the neutral position.**

- **Turn the start key to ON.** An alarm will sound (low oil pressure). Wait for the engines air heater to preheat the air. The voltmeter will drop below 12 volts while the system operates (about 15 seconds). When the voltage returns to 12 volts the preheat cycle is complete. (The oil light may come on but should go out once you start the engine.)
- When preheating is complete, **push the START button while the key is in the ON position** to start the engine. **Note: "Do not crank engine for more than 30 seconds, wait 2 minutes to allow the starter motor to cool down before restart attempt."**
- **Let the engine idle** for about 5 minutes or until the engine coolant temperature gauge reads above 100. **Note: During warm-up at idle, the voltmeter will register about 12 volts. The temperature indicator will not show any indication of heat until the engine has been running for several minutes. Keep the engine below 1000 RPMs for five minutes, as the preheater cycles on and off as needed during this time period. RPMs over 1000 block the preheating function. Note: Normal cruise RPM is 1350. Anything more is inefficient, and anything less is more efficient.**

Turn on the bow thrusters by pushing the 2 ON buttons simultaneously. The amber light between the buttons will come on. Toggle the joysticks momentarily in both directions to ensure that the thrusters are functioning properly.

1. The thrusters are used primarily in maneuvering at or near the dock. In open water while underway, the thruster is not effective.
2. The thrusters will turn off automatically after a period of non-use. Restart in the same manner.
3. The thrusters may overheat and stop after 3 minutes of continuous running. After a brief cool-down period, they will reset. Please restrain your use of the thrusters as long continuous use will reduce their effectiveness due to battery depletion.
4. If a thruster is inoperative, check the large red shut off switch in the lazarette for the (stern thruster) or the red shut off switch located under a panel beneath the mattress in the master stateroom for the bow thruster.

Check wind and current directions.

Use the thrusters to control the movement of the bow and stern while operating the throttle in short applications of forward or reverse, pausing in neutral, as you maneuver in the marina. **Note: when using reverse, the STERN WALKS TO STARBOARD.**

When coming into our docks in strong winds, or if you'd just like a little assistance on arrival, hail "San Juan Yachting" on **VHF Channel 80**. They'll be glad to offer some coaching and/or catch your lines. In fact, most marinas in the Islands will help you if you hail them and ask for assistance. Asking for docking assistance is a sign of smart seamanship.

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

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

Raw Water Alarm

Mariah is equipped with a raw water alarm located at the helm. The alarm will activate a light and a horn when the temperature of the wet exhaust pipe starts to increase toward an unsafe level. This could occur if the seawater intake or the sea strainer become clogged with vegetation or other debris. The alarm will trigger before other indications of overheat occur thus saving costly engine damage. If the alarm sounds and you are not threatened by imminent grounding, shutdown the engine and investigate.

1. Check the sea strainer and clean if required.
2. Attempt to operate the boat at a reduced rpm.

If the alarm continues it may be a failed raw water impeller. This is unlikely as they are replaced annually. However, should it fail, there is a replacement impeller in the spares bin in the engine room. Call San Juan Yachting on your cell phone or VHF channel 80a and request assistance. The tender can be launched and used to tow Mariah if there is no other option.

Returning to the Dock

Fenders out and....

- On docking side of the boat, (port side is only used because of the dinghy outboard)
- At appropriate level for the dock.

The engine cool down period (the last 5 minutes) should be at slow speeds to allow the engine to cool down before shut off.

1. Once docked and the mooring lines are secure, turn off the engine.
2. Shut down the Garmin multifunctional displays by *pressing* the power button on the lower right corner. The Garmin units can be shutdown by pressing either of the power buttons on the lower right side of the display. Please re-place the screen covers on all the screens as direct sunlight can damage them.
3. **Do not shut down electronic equipment ie. Chart plotters etc with the circuit breakers...use the power buttons or damage could occur.**
 - Note: The autopilot wireless remote control is powered with 2AA batteries. There are spare batteries in the chart drawer.

- CAUTION: If using the remote outside of the pilothouse please use the attached lanyard and wear it around your neck. The remote costs over \$250 and could be easily lost overboard.

CONNECTING TO SHORE POWER

8. At the OFFICE STATION electrical distribution panel, make sure the AC gang circuit breaker marked SHORE POWER is in the OFF position.
9. Take the bright yellow electrical cord located in the Lazarette and connect it to the receptacle located forward of the starboard helm door. Line up the prongs, insert the plug, turn it to tighten.
10. Locate the power supply on the dock; making sure that the breaker on the dock is in the OFF position. The yellow electrical cord is 30 amps. Check the amps for the shore power pedestal on the dock, and use an appropriate adapter, if necessary. (a 30 to 20 and 30 to 15 amp adapters are stored in the cord bag in the lazarette. Connect the electrical cord to the dock power source, matching prongs, twisting, and tightening. Then turn the dock power source ON.
11. Return to the boat and turn the AC SHORE POWER circuit breaker to the ON position.
12. Verify that you have power to the main electrical distribution panel by looking at the AC voltage gauge on the SHORE POWER OR GENERATOR distribution panel.
13. All AC circuit breakers should be ON.

NOTE: 30-amp power may not be sufficient to run all the ships systems simultaneously. If the dock breaker trips you may not be aware of the disconnect because the boats dc system (lights etc) will still be on and the batteries will be discharging. To prevent this condition, check the AC panel voltmeter at the office station at least 5 to 10 min. after shore power is applied. See if the meter shows that 110/120 volts are available. If the AC voltmeter is not illuminated, then you have lost AC power. To regain power and download the AC system, turn off the water heater, and any electric heaters. Turn off the Shore Power breaker and go to the dockside power box and reset the dockside breaker. You may also try another dock outlet in case you have a weak breaker with the first outlet. Return to the boat and restore AC power with the Shore Power breaker. This procedure will be even more important if you are limited to 20- or 15-amp dockside power, which is common at smaller marinas in Canada. Remember to recheck that AC power is still connected after 10 minutes, if not reduce the load more. The most important thing is to keep the batteries charged. As the charge level comes up the inverter/charger will draw less power and enable you to turn on other systems like the water heater and / or electric heaters. The bottom line is if at any time you need more AC power than is available you can start the generator, which at 11.5 KW can operate all ships systems and recharge the batteries simultaneously. (See generator operation).

SAFETY NOTE: Any time you are connected to shore power be sure to check the inverter panel and select the toggle switch to the left (SHORE POWER) position. Failure to do so could rapidly discharge the batteries, as the inverter will attempt to run the entire electrical load including heaters if shore power should fail. For the

same reason ensure all electric heaters are unplugged before disconnecting from shore power. If you need heat, start the furnace!

CLOSING THE BOAT

1. Close windows and hatches. Close all shades in pilothouse and both port and starboard sides of boat. (To prevent sun damage to the interior).
2. At the DC POWER distribution panel (Office Station)
 - Ensure the inverter toggle switch is in the shore power position. (Left side)
 - Leave the DC POWER circuit breakers ON except for the red flagged or yellow dot breakers.
 - Turn off the water heater breaker on the A/C panel.
3. Lock the doors.
4. On the dock, check the position of all fenders and see that mooring lines are secure.

13. Entertainment Systems & Starlink

Mariah has a custom Bose Music, TV video, and DVD amplifier with surround sound and Bluetooth capability. Use the Sony DVD player and Sony remote for DVD movies and enjoy the surround sound audio! You must select HDMI 2 as the input on the TV screen to view a DVD. You change the input to the TV by powering up the TV then pushing the home button on the Insignia remote and selecting the gear symbol on the right. The input selection will appear on the left, it should already be set for HDMI 2. Push the center of the remote selector to activate the DVD source. Use the Sony DVD player remote to power it on, open the tray, insert the DVD, close the tray, and your movie will begin to play. Adjust the volume with the white remote for the Bose amplifier.

Wi-Fi On The Go Via Starlink

We have found that some guests like to stay connected to what's happening in the world. As a solution, we've added a high performance Starlink system with mobile data service coverage. It should provide more than adequate data connectivity for any of your smart devices and the entertainment systems on board. You simply connect to the Wi-Fi signal Mariah Starlink (password is (Enjoytheislands) and you can take advantage of this on-board service.

The system is AC powered, so either shore power, genset power or the inverter must be enabled.

Power consumption for full time service will require you to monitor the State of Charge of the inverter battery bank, depending on usage of other AC systems while using the inverter. Or turn the Starlink breaker off (lower right side of the AC panel) when service is not needed. Reminder: service restores about five minutes after boot-up, as the system acquires satellite paths for internet connectivity.

Reports on performance are positive, however there's no guarantee of service, it is a best effort capability. We hope it opens a new window of capability for those that want to stay in touch while cruising the Pacific NW.

Note: In addition to the fact that the STARLINK system requires AC power, when at anchor and AC power is not required turn off the inverter as the STARLINK uses considerable power from the batteries. If you need AC power at night for a CPAP or other device turn the STARLINK system off with the breaker at the office station.

Using StarLink wifi and TV program streaming.

To use the StarLink wifi connection look for Mariah StarLink on your device. The password is (enjoytheislands) all small letters.

- a. First turn on the flat screen TV with the INSIGNIA TV remote, when the screen lights up select the home button on the remote. From this screen you can select a large number of apps and channels by pressing either side of the round selector on the remote. You can use your Netflix or Amazon account to stream movies or go to other channels with the selector to watch news casts weather reports and many other viewing options.
- b. The sound is controlled with the TV remote or by the Bose amplifier. The Bose amp will give you surround sound capability if you want it. To use the Bose system push the white remote PWR button to turn the unit on. Make sure Video 1 is selected on the Bose unit and use the volume control on the white controller. Note; you will need to turn the volume down from the TV by using the TV remote.
The white remote has only two buttons you will use, the PWR button and the VOLUME button as it was previously a Direct TV remote before we installed the StarLink system that allows many more choices for your viewing pleasure.
- c. The StarLink system will give you high speed internet and streaming capability anywhere you cruise as long as there is a clear view of the sky. If you are not connected to shore power you will need to use the inverter to power these systems.
*Remember to turn the inverter off when not required, in order to save battery power.

Streaming music and audio from your personal device

There is a Bluetooth (esinkin) device on the left side of the Bose receiver in the entertainment cabinet. Turn on your device and go to the Bluetooth page, then press the button on the esinkin and it will pair to your device and allow you to listen to your own music or audio channels. Note: use the AUX position on the Bose unit to hear your audio. The AUX position and VIDEO 1 are the only two selections you need to use. Normally keep it in the VIDEO 1 position for all other operations except music streaming from your personal device.

CELL PHONES

You can re-charge your cell phones at the 12-volt receptacles located at either side of the helm station.

14. Fuel

Mariah has two diesel fuel tanks (300 gallons each) located on the port and starboard sides of the engine room, under the salon. The fuel transfer manifold is located in the engine room on the aft bulkhead port side.

CHECKING THE FUEL LEVEL

1. At the "Tank Tender" gauge at the helm, *toggle the switch to port and starboard to check tank quantities*. The ignition key must be on to power the gauges.
2. The most accurate method is to view the sight tubes on the tanks.

FILLING THE FUEL TANKS

The fill caps for the diesel fuel tanks are located starboard and port of the helm station doors. Fill on BOTH sides. *On the starboard side, the WASTE cap is next to the DIESEL cap—DON'T mix them up!* They are marked.

Before you start to fuel:

1. *Make sure the engine is shut down, the furnace is off, all ignition materials have been extinguished, and everyone else is off the boat.* There is a fuel tank vent located just below the fuel tank fill. Usually the fuel attendant has an **overflow device** to attach below each vent to catch any spillage—but if the attendant doesn't, hold an absorbent pad under the vent if you intend to fill to the maximum level. (not recommended)
2. Fueling can be messy: take an absorbent pad, rag, and/or paper towels from the galley to have at the ready. Clean any fuel spill off the deck--- it is slippery and hazardous.
3. Open the DIESEL cap with the spanner wrench/key located in the chart drawer at the helm. There should also be one hanging on an emergency transmitter mounted in the salon next to the entry door. Have a crewmember remain in the engine room and monitor the filling with the sight tube. (Be sure to open the two valves on the sight tube to get an accurate reading, close when done). Fill until you can see no air in the tube and repeat this procedure for the other tank. This will prevent an overfill condition and you will be returning the boat with visually verifiable full tanks as they were when you began your trip.
4. Insert the nozzle into the fill port, and then start the flow. When fueling is complete, remove the nozzle from the fill port, immediately screw the fill cap back in place to ensure no contaminants get into the tank, Use the same procedure for the opposite fuel tank, then return the fuel nozzle back to the dock, and return the key to the drawer in the helm.

SERVICING THE FUEL FILTERS

Few things you do are as important to your safety on the water as having uncontaminated fuel going to the engine! Mariah is equipped with two RACOR fuel filters. (One filter for each tank) and are located aft of each fuel tank in the engine room. A vacuum/pressure gauge is read at the top of each filter.

Check the two fuel filters for contaminants or water as part of the pre-cruising engine room check. If there are contaminants or a separation of fluid in the bottom of the glass collection containers, they should be drained of the contaminants:

- With a collection container (behind generator) in place, open the black drain at the bottom of the glass container by partially turning the valve; *retighten* the valve when the water or contaminants have been

drained and at least 8 oz. of fuel have drained. (8oz will avoid a spill when you change the filter). You may dispose of the drained fuel in the waste oil container found behind the generator.

Replace the RACOR fuel filter if the pressure gauge reads between 7 and 10.

The two RACOR fuel filters located in the engine room have a vacuum gauge read when the engine is running at cruising speeds. The RACOR Company instructions say when the needle on the vacuum gauge reads between 7 to 10 inches (of vacuum) it is time to replace the filter element. The elements are changed routinely, but you never know when water or contaminants will get into the fuel tank, so be prepared to change out the filter if the vacuum gauge is reading between 7 and 10 inches! The **replacement RACOR 2-micron filters** are located in the black plastic bin in the engine room. Labeled SPARE PARTS, AND FILTERS.

1. Change the filter with the reading between 7 and 10 inches of vacuum. If both indicate in this range than change them both.
2. First, drain out a few ounces of fuel using the drain valve and catchment container.
3. Remove the lid of the filter to be replaced by turning/loosening the tall brass nut located at the top of the filter unit. Remove the filter element by holding the molded handles on the filter element and slowly pulling upward with a twisting motion.
4. Replace the black lid gasket with a new black lid gasket supplied with the new filter. Apply a coating of clean fuel or motor oil to this gasket seal prior to reassembly. Insert the new filter (with labeled end up) with a slow downward twisting motion.
5. Fill the filter unit with clean diesel fuel by slowly pouring it on top of the filter element. Clean diesel fuel is located in the "spare parts and filters bin" in the engine room, in a red gallon jug marked "Diesel Fuel".
6. Replace the red O ring on the tall brass nut shaft under the lid with the new red O-ring provided with the new filter element.
7. Then put the lid back on the unit and snugly tighten the brass nut by hand- ONLY.
8. Start the engine and check for leaks. Correct any leaks with the engine off.
9. *Remember to replenish the jug of clean diesel fuel at the earliest opportunity.*

FUEL TRANSFER

At times you may notice the boat is listing slightly to port or starboard. The list may be caused by an imbalance of fuel in the two tanks. You can verify a fuel imbalance by observing the fuel tank sight tubes in the engine room. If one tank has a significant difference in fuel level compared to the other, you can use the fuel transfer system to balance the fuel load. To transfer fuel, you must first turn on the guarded fuel transfer circuit breaker located at the bottom of the helm breaker panel. For example, if the starboard tank level is higher, move the top toggle switch on the fuel transfer panel (near the throttle) to the right and the lower switch to the left. This action will burn fuel from the right tank and return the excess fuel not required by the engine to the left tank. Reverse this procedure if the left tank level was higher. To prevent inadvertent venting of fuel overboard please observe the following guidance.

1. Do not attempt to transfer fuel unless you can see at least a six-inch difference between the tank levels.
2. Check the transfer progress at least every 20 minutes by comparing the fuel tank sight tubes in the engine room.

3. Stop the transfer if you can no longer see air in the sight tube of the tank you are attempting to fill. You may have transferred beyond the sight tube limit and could start venting fuel overboard!
4. Terminate the transfer by moving both transfer toggle switches to the center position and remove power with the guarded fuel transfer circuit breaker. This will prevent inadvertent transfer of fuel caused by bumping the switch.

Note: You can also attempt to equalize the fuel load using gravity by opening both cross-over valves at the forward end of each tank. This is the simplest way but will not allow you to use the fuel as a means to fine tune any listing that may be present.

15. Generator

Mariah has an 11.5 kw Onan generator located in the engine room. You may need to use it if you have overnight anchorages of a day or more and have used the inverter to power AC systems. If you have been connected to shore power or are running the engine 5-6 hours a day, the batteries should be adequately charged. However, if the DC panel voltmeter #2 battery bank (house batteries) gets down to 12.2 volts, and you do not plan to be underway soon, run the generator to recharge the batteries. It is harmful to the batteries to discharge below 12.2 volts.



It is a good idea to start the generator in the morning when using high power items like the coffee maker, microwave, ice maker. If you are cruising in the islands for only a couple of hours before you anchor again, plan on running the generator for at least an hour or more in the morning before you move on.

Note: The generator auto-start feature is normally left on (the Enable position on the white Magnum AUTO GEN START panel in the office station – see photo on right). It will start the generator when the battery level reaches approximately 12.2 volts. Should the generator start on its own, you will need to go to the AC panel in the office station and select the generator gang breaker to “ON” in order to charge the batteries.

Starting the Generator

- The Onan generator control panel is located in the center/right of the AC panel at the office station (see photo above).
- Press and hold the top of the rocker switch in the Start/Preheat position for approximately 10 to 20 seconds. When preheat is complete the engine will start, and you can release the switch.

- If the engine fails to start with the first attempt, be sure that it has stopped completely before re-engaging. *Do not crank the starter for more than 20 seconds consecutively. If the engine fails to start, consult the Operator's Manual under the tip up instrument panel in the pilot house.*
- NOTE: If the generator start circuit is completely inoperable it is most likely because the ON/OFF switch and/or the generator breaker is off. They are both located on the generator itself in the engine room. These switches can easily be bumped when in the engine room and will completely cut power to the starting circuit.
- Let the generator run for 2 minutes to warm-up before adding an electrical load.
- After the warm-up period, turn ON the generator circuit breaker at the SHORE POWER OR GENERATOR distribution panel on the upper left side of the AC panel. Slide the blocking panel up, then move the generator circuit breaker to the ON position. Note: The blocking panel will not allow you to engage the generator unless AC Shore power breaker is first turned off.
- Select the desired circuits which you want the generator to operate and move them to the ON position.
- **Note: The Inverter and Battery Charge breakers need to be ON to charge the batteries. Beware, the breakers may trip if using too many high amp appliances in the galley. The toaster and coffee maker together may trip the breaker and terminate battery charging even when the generator is still running. Check the breakers from time to time when operating galley appliances.**
- Monitor the generator control panel for any faults that may occur and are indicated by a series of flashes in the switch.

Stopping the Generator

- Remove the electrical load –Turn OFF the generator circuit breakers at the SHORE-POWER OR GENERATOR distribution panel at the upper left side of the AC panel.
- Run the generator 1 minute to cool down.
- Press and hold the bottom of the rocker switch in the STOP position until the generator shuts down.

Note: you will need to start the generator if you want to use the dryer as it requires 240-volt power. The washer will work with shore power or the generator.

16. Heads and Holding Tank

Mariah has two toilets commonly referred to as “heads” in the marine world. Each head has its own enclosed shower, vanity, and sink. One is located in the master stateroom and the other across the passageway from the guest stateroom. Both heads use a VACUFLUSH freshwater system, which helps to eliminate odors often emanating from salt-water toilets. The VACUFLUSH system flushes into a 45 gallon holding tank. The holding tank can be emptied at a pump-out station, or can be pumped overboard through a macerator pump, and a seacock in the bottom of the hull, (if you are in a legal zone to do so).

Highlights

- Only what has been eaten goes in the toilet.

- There is a toilet brush next to each toilet bowl. Use liquid dish washing soap and water for everyday cleaning of the toilet bowl. Never use chlorine-based cleaners, caustic cleaners, chemicals, drain openers, alcohol, solvents, etc. in the system.
- The holding tank should be monitored daily. The TANK WATCH monitor panel is located at the office station on the inverter/waste panel directly forward from the seat. The gauge will register the level of the contents of the tank: green for empty, yellow means low, amber indicates mid level, and red means the tank is full—DO NOT ADD MORE. The holding tank capacity is 45 gallons. Please empty BEFORE it's full.
- Emptying the holding tank – see detailed instructions below

Details

Please do not put anything in the toilet that has not been eaten. Experienced sailors deposit toilet paper in a wastebasket in Ziploc baggies, not down the toilet because paper tends to clog the hoses.

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

USING THE HEAD (TOILETS)

- In the head, there are 2 panels on the lower cabinet:
- Check the VACUFLUSH panel to make sure the *green light is ON*—under normal operating conditions the red lamp will light for 1 minute after each flush until the pump recharges the vacuum to proper operating level, then the green lamp will light.
- Check the TANK WATCH panel at the office station daily to make sure the holding tank light is NOT “red” or full. NOTE: The DC Macerator breaker must be on to power the indicator lights. Lift up on the foot-operated lever of the toilet to “Pre-Fill” the bowl if there is not already some water in it. It typically uses one pint of water per flush, but more water can be added if desired by lifting up on the foot lever.
- **DO NOT PUT ANYTHING DOWN THE HEAD THAT HAS NOT BEEN EATEN FIRST.** Please, NO tampons or other feminine products, no hair, no Kleenex, etc. use the wastebasket with disposable plastic bags (under the sink) to dispose of these items. RV or MARINE TOILET PAPER IS THE ONLY EXCEPTION! As it is designed to break up and dissolve in water. Mariah is supplied with this type of paper. Should you run out, please get more at the nearest marine or RV store. It is prudent to minimize the amount of marine toilet paper put in the head. If possible, use the wastebasket. A plugged-up waste system can ruin an otherwise great cruise.
- Step down on the flush lever for 2 seconds to empty the bowl. If the flush lever is accidentally released before waste clears the bowl, do not attempt to flush the toilet again until the vacuum pump stops running (about 30 seconds) and the red light goes out.

EMPTYING THE HOLDING TANK

There are two ways to empty the holding tank:

1. Pump out at a Shore Facility.
2. Where legal, discharge overboard using the macerator pump.

Pump-out at Shore Facility/Cart or Pump-out Barge/Vessel

The WASTE fitting is located just outside and aft of the starboard helm door. Therefore, you will want a *starboard-side* pump out, if at all possible. If you must empty the holding tank from the port side, taking the waste hose through the helm station, please place throw rugs, plastic bags, or paper towels through the helm, including over the thresholds, to protect the surfaces from the dirty pump-out hose and any potential spills.

This can be a messy job—there is a box of disposable rubber gloves and clean-up rags in the engine room.

To empty the holding tank at a pump-out station or at a portable holding cart

1. Locate the deck fitting labeled “WASTE” just outside the starboard helm door.
2. Open the deck fitting with the key located in the helm drawer.
3. Push the pump-out nozzle into the WASTE deck fitting and hold the nozzle securely to create an airtight connection to allow the contents of the waste tank to be vacuumed out of the holding tank.
4. Follow the instructions at the pump out station to pump out the holding tank.
5. To rinse the waste holding tank after emptying:
6. Add a few gallons of fresh water through the WASTE deck fitting with the available fresh water hose from the dock. (DO NOT USE Mariah’s WHITE FRESH WATER HOSE.)
7. Reinsert the pump-out nozzle into the boat’s WASTE deck fitting and pump some more liquid out of the waste holding tank.
8. Repeat this procedure.
9. When the tank has been pumped, check the Tank watch Monitor at the office station to confirm your success; it should show a green light.
10. Carefully remove the pump-out nozzle and place it back on the portable holding cart or the pump-out station.
11. Replace the deck fitting and tighten it down with the key.
12. Return the key to the helm drawer.
13. Wipe up any spills on the deck and throw away the used disposable gloves and wipe up rags.
14. Wash down the fill area on the boat with the fresh water hose.



Discharging the Holding Tank Overboard

This method of discharging the holding tank should only be used in strict compliance with the law. A thorough understanding of the laws and regulations of overboard discharge is mandatory before discharging waste overboard. Generally, outside of harbors and confined areas it is legal to discharge IN CANADA ONLY. Confirm that the SEACOCK IS OPEN BEFORE OPERATING DISCHARGE PUMP (open is the normal position)

1. Open the hatch to the engine room. The macerator is mounted on the center forward bulkhead. The waste seacock is mounted on the hull to the right of the macerator and labeled WASTE. Confirm that the lever is in the **vertical position** to open the Seacock. Open is the normal position.
2. Back at the office station, turn the macerator circuit breaker on and then flip the MACERATOR switch to the UP position. The red light will come on.
3. Watch the tank level monitor to confirm that the tank is empty (green light). Note: it may take 10-15 min. or more to pump out a full tank. If in still water you should see bubbles and material exiting on the starboard side of the hull. This indicates the macerator is emptying the tank even if the light indicates the tank is not empty. The lights can get fouled and give a faulty indication.
4. When finished, flip the macerator switch on the panel to the off or DOWN position.
5. Note: It is easy to forget the macerator is running so keep a crew member there at all times when dumping overboard and when the green light comes on shut down the dumping operation. Sometime material can foul the sensor and prevent the green light from coming on with the yellow light still illuminated. If this happens after 10 minutes of operation, consider the tank empty. After a while the sensor may clear and will then show green.
6. *If after 15 minutes of operation, the tank lights do not indicate the tank is being emptied, there may be a clogged duck bill valve. You may have to use a dump station.*

17. Heaters (Cabin)

There are three sources of cabin heat on Mariah:

- Hydronic Diesel furnace.
- Auxiliary electric heat when the generator is on.
- Small portable electric heaters for use when connected to shore power.

The Hydronic Furnace system is a thermostatically controlled diesel heater.

- The master thermostat is in the salon, on the starboard side of the galley counter just below the countertop. Move the toggle switch to the right and the furnace will start. The circular thermostat has a rocker switch. "O"= off and "I" = on. Make sure it is in the "I" position. The circular control allows you to set the heat to the desired level: the larger white marks indicate hotter, and the smaller white

marks are for more moderate warmth. The furnace will go through an ignition sequence, burn fuel, and heat the water/antifreeze mix. This heated solution is circulated throughout the boat and allows for individual areas and cabins to be thermostatically controlled by their respective control units.

NOTE: the salon thermostat must be turned on for any of the other thermostats to operate thus it's called the master. To turn the heat off in any cabin push the rocker switch to the "O" or OFF position. To turn the system off go to the master and move the toggle switch to the left and the furnace will shut down.

NOTE: THE FURNACE MAY TAKE 10 – 15 MIN. TO HEAT THE WATER BEFORE ANY HEAT ENTERS THE BOAT.

- If the furnace does not seem to be producing heat after 20 min. Check the reservoir located in the false stack on top of the boat deck. If fluid is low add some 50/50 premixed antifreeze found inside the false stack on the boat deck.

AUXILLARY ELECTRIC HEAT (used with shore power or the generator to heat the galley/salon area) The auxiliary electric heater is located at floor level below the refrigerator and is designed to heat the galley and salon area. It requires shore power or the generator.

- Turn ON the circuit breaker labeled COMPARTMENT HEATER at the SHORE-POWER OR GENERATOR distribution panel located at the office station.
- Adjust the thermostat at the electric heater to the desired temperature.

PORTABLE ELECTRIC HEATERS (for limited area heating with shore power or the generator) There are three small portable electric heaters located in each stateroom and the salon. Use these with shore power for area heating. If shore power is available we like to run these heaters in the morning to keep the staterooms dry, especially after taking showers.

18. Kayaks

We have mounted two Wilderness Systems kayaks in kayak cradles on both sides of the top deck for your enjoyment. They should be launched only in calm conditions. The easiest way to launch the kayaks is with two crew members on the top deck. Unhook the top end of both bungee straps and lift the kayak out of the cradle and easing them aft to a crew member in the cockpit while holding on to the 15' lines attached to each end of the Kayak. These kayaks are not very heavy so 2 people should have no problem lowering them down to crew below or alternatively once off



the cradle lowering them directly into the water on the side of Mariah. Whatever way works best for you.

Once in the water, move them aft in order to board from the side of the swim platform. It would be best to have previously launched the dinghy to provide more room for boarding the kayaks. Remove the paddles that are stored in the false stack on the upper deck. Choose an appropriately sized life vest, stored in the dry box on the starboard side of the top deck. The skirt, which is already attached to the cockpit of the kayak will help keep you dry, and it is normally left on the kayaks to prevent water from getting in during storage. To recover the kayaks reverse the launch procedure and place the kayaks in the cradle so that the forward bungee covers the center of the "Wilderness" name on the side of the kayak and the kayak bottom faces away from the boat.

NOTE: if you take the kayaks to shore, please ensure your shoes are clean before getting back in the kayak, as it is very difficult to clean out sand and shell material inside the kayak.

19. Lighting

Highlights

- 7 of the 8 lights breaker switches on the DC panel at the office station are normally left ON. Check that they are all on at the beginning of your charter.
- Lighting switches are on cabinet faces or walls in each living/sleeping area.

20. Refrigerator/Freezer, Ice Maker, Deck Freezer

- When disconnected from Shore Power, make sure the REFRIG breaker switch is ON at the DC/BATTERY POWER panel at the office station.
- The ice maker has an on/off switch inside the door, and a DC breaker. It will operate on shore power or through the inverter. To conserve the batteries, we recommend not using the ice maker when anchored.
- There is also a 5.4 cu. ft. freezer on the upper deck that is typically only used for multi-week charters that require more freezer space. It is powered by a breaker switch in the pilot house labeled "Top Deck Freezer". It also has an on/off temp selector on the forward part of the freezer. If you need to use the freezer on a long voyage, be advised it will deplete the batteries sooner than normal if you are anchored over one day. Start the generator and recharge the batteries when the D.C. voltmeter reads less than 12.2volts. If you do not plan to use the freezer leave the breaker off to prevent excess battery drawdown.

21. Showers

USING THE SHOWERS

The showers work like any domestic shower except that water drains into a small holding tank and then is automatically pumped overboard (grey water). It is advisable to turn on the exhaust fan when showering to remove moisture from the head. The dryer you can keep the inside of the boat, the less likely you will have a mildew problem.

22. Spares and Tools

Spares: Engine Room. Refer to Section 2, Inventory Listing, of the white Charter Guest Reference binder located on board Mariah in the pilothouse for a complete listing of the spares.

Tools: Engine Room.

- 256-piece socket & wrench toolbox (black) located behind port fuel tank
- General purpose toolbox (yellow) behind port fuel tank contains crescent wrenches, screw drivers, pliers, nuts & bolts, hammer hacksaw, clamps, flat bar, breaker bar, wire ties, tape measure.

23. Stove, Oven and Microwave

Highlights

- The stove/oven are propane gas fired.
- If DC power has been turned off and then restored, the alarm in the galley (located at floor level on the toe kick below the stove) will “chirp”. Reset switch is located on the alarm face (see photo on right). Propane is automatically turned off with loss of DC power. You must reset the detector switch by turning it off then back on to turn the gas on.
- The propane solenoid breaker switch is labeled LPG CONTROL and is located on the DC panel in the office station.
- There are two 2.5-gallon steel propane tanks in the cockpit propane locker, under the port helm seat. The locker is vented overboard for safety.
- The San Juan Yachting staff checks these tanks weekly to assure that you don’t run out.
- For safety, we turn off the solenoid switch after stove use.



- Caution: propane is heavier than air. If leak is detected, extinguish all flames and open all hatches and doors.
- The microwave oven is plugged into a 120V outlet in the galley.
- If not connected to shore power the microwave can be powered by the battery inverter. Please only use for short (2-3 minute) cook times or you will rapidly drain the house batteries.

Details

Lighting a Stove Burner:

- In the propane tank locker in the cockpit, check that the tank hand valve is open. **Open the valve slowly so that the internal safety valve doesn't pop up because of a sudden change.**
- At the DC panel in the office station, flip on the LPG CONTROL breaker switch (solenoid valve switch).



- Light a BBQ lighter and hold the flame near the burner edge.
- Push the corresponding burner temperature knob in and turn to the "Light" (flame symbol) position. Note that if the BBQ lighter won't light you don't need a flame...just the spark.
- After the burner lights, hold the knob in for a few seconds to heat the safety "thermocouple", then release.
- Turn the knob to the desired heat level.

Lighting the Oven Burner:

- In the propane tank locker in the cockpit, check that the tank hand valve is open. **Open the valve slowly so that the internal safety valve doesn't pop up because of a sudden change.**
- At the DC panel in the office station, flip on the LPG CONTROL breaker switch (solenoid valve switch).
- Open the oven door and using a flashlight locate the burner pilot at the bottom right side of the oven.
- Light a BBQ lighter and hold the flame near the pilot.
- Push the oven temperature knob in and turn to 300 degrees. Note that if the BBQ lighter won't light you don't need a flame...just the spark.
- After the burner lights, hold the knob in for a few seconds to heat the safety "thermocouple", then release.

- Turn the knob to the desired heat level.

Microwave Oven:

- Located above the stove.
- Check that the MICROWAVE breaker switch on the AC panel in the office station is ON (should be left always on).
- If not connected to shore power the microwave can be powered by the battery inverter. Please only use for short (2-3 minute) cook times or you will rapidly drain the house batteries. Refer to the Batteries/Charging/Inverter section of this document for instructions on how to use the inverter.

NON-STICK COOKWARE

- Do not use nonstick cooking sprays on the nonstick cookware- an invisible buildup will impair the nonstick release system and food will stick in the pan. The nonstick cookware does not need oil. If you prefer oil for flavor, olive oil or peanut oil is recommended.
- Use low to medium heat only. Excessive use of heat will cause pan warping and permanent nonstick coating damage. The non-stick cookware is oven safe to 350 degrees F—but never in the broiler.
- Do not use metal or sharp-edged utensils.
- Clean using mild dishwashing detergent and warm water. Use only nonabrasive plastic mesh pads to dislodge food particles.

24. Thrusters (Bow and Stern)

Highlights

- Bow and stern thruster controllers (joysticks) are at the helm. Press and hold both ON buttons simultaneously until the amber light turns on. Toggle the joysticks momentarily in both directions to ascertain that the thrusters are functioning properly.
- Thruster controllers will turn off after 10 minutes of no use.
- The thrusters may overheat and stop after 3 minutes of continuous running. After a brief cool-down period, they will reset.
- If a thruster is still inoperative after the cool down period, check the large red-knob breakers: Stern thruster in the cockpit floor locker, Bow thruster under a panel beneath the mattress in the master stateroom.
- The thrusters are used primarily for maneuvering at or near the dock. In open water while underway, the thruster is not effective.
- The thrusters are intended to fine tune your docking ability. Prolonged use of the thrusters (especially the aft thruster) can draw down the thruster batteries very quickly. Do your best to get the boat into position with minimum thruster use.

Check wind and current directions.

Use the thrusters to control the movement of the bow and stern while operating the throttle in short applications of forward or reverse, pausing in neutral, as you maneuver in the marina. *Note: when using reverse, the **STERN WALKS TO STARBOARD**.*

25. Wash Downs (Sea Water)

There are deck wash down access ports at the bow on the starboard side of the windlass and also in the cockpit. Salt water is pumped through the self-coiling hoses (kept with the fresh water hose in the cockpit floor locker or may already be connected for easy access), which you can use to clean the anchor and chain, or wash dirt overboard through the deck drains. We will usually keep one wash down hose installed at the bow for convenience in washing down the anchor and chain.

To utilize the system:

- Plug in and twist the hose into the seawater access point.
- Turn on the SEAWATER WASH DOWN breaker switch on the DC electrical panel at the office station.
- Seawater should pressurize the hose and enable you to stand at the bow and use the spray nozzle to clean the anchor and chain as it comes out of the water.
- It is best to spray water on the chain before it gets to the roller so that mud and other debris washes back to the sea and not onto the deck or in the chain locker.
- If there is no water flow, check to see that the seawater seacock, located in the engine room is OPEN.
- Sometimes an airlock will occur preventing the pump to prime itself. Should this occur, try holding the aft wash down sprayer low to the deck and pull the trigger while the pump is running, this will aid in priming the pump.

26. Water (Potable)

Highlights

- The water pump breaker switch is located on the DC panel at the office station.
- There is a single 200 gallon fresh water tank. The tank and shutoff valve are located inside the cockpit floor locker.
- The gauge for checking the water level is located at the office station. The engine ignition switch must be on to power this gauge. You may also check the sight gauge on the tank located in the cockpit floor locker. Just like the fuel tanks, the sight gauge is the most accurate method.
- Water fill deck plate is marked with "WATER" and located on the cockpit floor just outside of the salon door. The deck plate key to open the plate is located in the chart drawer in the helm.

Details

FILLING THE WATER TANK

1. Locate the deck plate marked "WATER" on the cockpit floor just outside of the salon door. The deck plate key to open the plate is located in the chart drawer in the helm.
2. Connect the WHITE freshwater hose (located in the lazarette under the cockpit) to the domestic water supply at the dock. Let the water run through the hose (overboard) for a minute or two to wash any contaminated water from the hose. **DO NOT USE THE HOSE AT THE DOCK TO FILL THE WATER TANK—YOU DON'T KNOW WHERE IT HAS BEEN!**
3. Fill until the filling sound starts to increase, or water comes out the vent/overflow on the hull just below the deck fill.
4. Tighten the deck cap.
5. Return the deck cap key to the chart drawer in the helm.

HOT WATER

- Hot water is provided by an 11-gallon tank heated by an electric element and by a heat exchanger from the engine.
- You automatically have hot water if the engine has been running.
- When connected to shore power, or using the generator, make sure the WATER HEATER circuit breaker on the AC POWER distribution panel is in the ON position.
- If you are anchored out for a time and need hot water, you must start the generator and ensure the hot water breaker is on. After 20 to 30 minutes, you should have plenty of hot water.

ICE MAKER

The ice maker can be used when connected to shore power, or when underway through the inverter. Our recommendation is to make ice during the above periods and transfer it to the freezer. Turn the icemaker off when anchored as it is a significant drain on the batteries.

27. Windshield Wipers, Washer and Defroster

To Operate:

- Check that the WIPERS breaker switch on the DC sub-panel in the pilothouse is ON (normally always left on).
- The 3 wipers are individually controlled for turning on/off and applying washer fluid. (see photo on right). The switches are located on the dashboard in front of the helm.
- The window defrost/defog fan and heat have a separate high/low speed toggle switch, located to the left of the wiper switches.



We hope you found this information helpful. Have a great time!!
