

# *Mariah* Owner's Notes

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## PANEL PICTURES

Welcome aboard Mariah! You have chosen one of the most popular and best equipped boats in the San Juan Yachting fleet. We have maintained her in a like new condition and are continually upgrading and adding new features. We trust you will take care of our investment as if she were your own. Please let us know if you find anything missing or in need of improvement. While using or reviewing these notes, please feel free to mark corrections, and make suggestions and improvements. Your constructive criticism will be appreciated. We hope you enjoy cruising with Mariah as much as we do. Thank you, Scott and Susie Larson (Owners) [salarson@methow.com](mailto:salarson@methow.com) 509-220-8475

## INTRODUCTION

**Mariah** is a 2004 Nordic Tug 42, powered by a Cummins diesel engine, with a HP rating of 450 @ 2600 RPM. It 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 owners 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.**

## PREPARING FOR DEPARTURE

### 1. ENGINE ROOM CHECKS should be performed daily, before cruising.

At the office station, turn ON the BILGE 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.

**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 **blue plastic jug marked Delo 400 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. (Down to the yellow tape line.) 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.

**Check the oil level in the generator.** The generator has a diesel engine requiring the same care as the main engine. Open 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:
  - i. 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.
  - ii. 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.

**Check the fuel filter of the GENERATOR for water or contaminants.** The generator's fuel filter is mounted on the aft port side bulkhead near the toolbox. Look through the glass at the liquid in the bottom of the filter. IF you see liquid separation or other contaminants, you need to remove them. (You don't want to drain all the fuel in the glass bowl—just the contaminants.) With a collection container in place just below the glass bowl of the filter, partially unscrew the black drain valve at the bottom of the filter bowl to evacuate the contaminants; then quickly retighten the drain.

**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 never 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.

## 2. **DISCONNECT SHORE POWER**

- a. At the OFFICE STATION breaker panel, turn OFF the main AC gang breaker labeled SHORE POWER. All remaining AC breakers may be left on.
- b. 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.
- c. 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!*

## 3. **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 with the exception of the following breakers that should be turned on only when using that system and when done turn them off.

- BILGE LIGHTS
- SEA WATER WASHDOWN
- OIL CHANGE PUMP.

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

## 5. **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.

## 6. **HELM CHECKLIST**

**Check the fuel level** at the “Tank Tender” gauge at the helm, and / or 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.**

- 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!**

- See instructions below for adding water, if necessary.

**Check that all breakers at the helm station are on except the 3 spare breakers, the WINDLESS, FUEL TRANSFER, and DC Refrigerator (top deck freezer) Turn the windless breaker on only when you use the system then turn it off for safety.**

**Note; The Aft Camera and DC Refrigerator (top deck freezer) should be off unless you plan to operate those items.**

**Start up the Ray Marine depth sounder** by *pressing and holding* the button in the lower left hand corner of the screen until the screen comes on.

**Turn on the Ray Marine GPS chart plotter** by **pressing and holding the red PWR button for 3 seconds**, the display will come on after a brief period.

**There are two Radar units, the primary radar is viewed by selecting a radar display page on the chart plotter and following the start up instructions displayed there. The radar mounted left of the chart plotter is a back up.**

**Turn on a VHF radio. (two VHF radios are installed)**

- **Check the weather channel.**
- **Turn on Channel 16.**

## GETTING UNDERWAY

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.*

**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 ascertain that the thrusters are functioning properly.

- The thrusters are used primarily in maneuvering at or near the dock. In open water while underway, the thruster is not effective.
- The thrusters will turn off automatically after a period of non-use. Restart in the same manner.
- 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 inoperative, check the large red shut off switch in the lazarett 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.***

**CRUISING**

When clear of the marina, make sure.....

**all mooring lines, fenders and anything loose are stowed. Operate the engine at 1000 rpm for warm up. (5min.)**

1. **After a 5 min. warm up operate the engine no faster than 1300 rpm** until the coolant temperature reaches 140 degrees. You will probably operate at 1100 to 1350 rpm, as this is very economical and quiet. 1350 rpm is the “sweet” spot. Above that setting fuel burn goes way up without much corresponding speed increase.
  
2. **Please make power changes slowly, rapid power changes can put great stress on engine and drive components.** It is advisable after cruising for 4 hours or more at economical speeds (1100 to 1500 RPM), to **run the engine at 2400 RPM for at least 5 min. prior to the end of the cruise day.** This helps to clean out carbon deposits in the engine. At the end of the run-up slowly and smoothly reduce power as you approach your destination and allow at least 5 minutes for cool down before shut down.
  
3. According to Cummins Northwest, Inc data, at reasonable speeds the Nordic Tug 42 has very economical 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

4. Monitor the engine instruments at the helm station while cruising.
  - Volts should read between 13 and 14 at normal cruising.
  - Water temperature should be between 160 and 165 degrees.
  - Oil pressure should range between 30 and 100 depending on RPMs.
  - Vacuum gauges for the RACOR fuel filters should read below 7 while cruising.

**\*\*\* 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 and 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 79a and request assistance. The tender can be launched and used to tow Mariah if there is no other option.

## RETURNING TO DOCK

Fenders out and...

- a. On docking side of the boat, (port side is most convenient).
- b. 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.**

Once docked and the mooring lines are secure, turn off the engine.

Shut down the Ray Marine multifunctional displays by *pressing* the red power button in the lower left corner *and holding* for the countdown on the screen. Please re-place the screen covers on all the screens as direct sunlight can damage them.

There is no need to turn off the breakers at the DC POWER breaker panel next to the helm station. **Do not shut down electronic equipment ie. Chart plotter or depth sounder with the circuit breakers...use the red power buttons or damage could occur.**

- a. Note: The autopilot wireless remote control is recharged by a cord located below the dc power plug on the starboard side of the instrument panel. The battery charge state of the remote can be read on the left side of the screen and is represented by a number of bars. The autopilot c/b must be on for power to charge the remote. Depending on use, one charge should last 2-3 days. Remember to turn the remote off by pressing and holding the © button while the unit counts down. Use the same button to turn the unit on.
- b. CAUTION: If using the remote outside of the pilothouse please use the attached lanyard and wear it around your neck. The remote costs over \$400 and could be easily lost overboard.

## CONNECTING TO SHORE POWER

1. At the OFFICE STATION electrical distribution panel, make sure the AC gang circuit breaker marked SHORE POWER is in the OFF position.



2. 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.
3. 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.
4. Return to the boat and turn the AC SHORE POWER circuit breaker to the ON position.
5. 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.
6. All AC circuit breakers should be ON.

➤ NOTE: 30-amp power may not be sufficient to run all the ships systems if the batteries are not fully charged when connecting to shore power. . The inverter/charger will draw a large amperage to charge up the batteries and may cause the dock power to disconnect. 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. Check the inverter control panel at the office station and using the power share button, select a battery charge rate of 15 or 5 amps. This will allow more power to be diverted to ship systems like hot water or 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 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).

➤ NOTE: Any time you are connected to shore power be sure to deselect the inverter (green LED light “not illuminated”) on the xantrex control panel. 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)
  - a . Ensure the inverter power button is off. (No green light illuminated on the INVERT button at the xantrex control panel).
  - b . Leave the DC POWER circuit breakers ON except for the red flagged breakers.
  - c . 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.

## ELECTRONICS

### 1. Ray Marine Radar, Chart-plotter, Depth/Fish finder.

**Note: For more detailed instructions on the operation of these units please**

**view the DVD video I have prepared. (located in the entertainment cabinet)**

Mariah is equipped with the latest Ray Marine electronic equipment, and with Multi-Dimensional Charts for the Pacific Northwest to Alaska. The display includes navigational charts, 3-D displays, Fish finder, Radar, Data, Course Deviation Indicator and Waypoints capabilities. Please refer to the Quick Start Card, Operating Guide and Reference Manual, which is on-board. You will use the chart plotter any time you are underway. It is a wonderful tool and confidence builder, and should be used in conjunction with paper charts. Most of the time we operate with 2 map displays open. One window will be zoomed in for more detail, the other window will be zoomed out for a bigger picture of the area you are navigating. To change the scale on either window press the "active" button. That will activate a screen and give it a red border line around the screen. Then press the "in" or "out" button to zoom in or out. The red border indicates the active window and can be modified with the zoom feature and other ways. Your check-out skipper will show you the basics on the chart plotter. Use the manual for more detailed functions if you wish. **Do not use the circuit breakers to turn off the helm electronics units, they are like computers and need to be shut down and started with their own power button on each unit. Please do not attempt to remove the navigation card in the chart plotter. If not done properly the card can become corrupted and henceforth unusable.**

**2. Mariah has a custom Bose AM, FM, CD, DVD, TV video, Player with surround sound.**

**3. Direct TV satellite TV and radio.**

**4. Two VHF Radios, and a hand held VHF**

**5. Cell phone signal amplifier.**

**6. A Beats Bluetooth portable speaker.**

NOTE: To use the Direct TV programming,

- a. First turn on the flat screen TV with the LG TV or the Direct TV remote.
- b. Turn on the Trac-Vision power switch located on the upper right corner of the inverter/waste panel at the office station. The Trac-Vision unit makes a grinding sound as it searches for a satellite. The sound is normal. Make sure the dish receiver is on, and monitor the progress on the TV screen as the dish acquires the satellite.
- c. Use the Direct TV remote to change channels and the guide button to view program options just like you do at home. You can also use this remote to control other components by selecting them with the selector at the top of the remote.
- c. Select video 1 on the BOZE remote and use it for volume control.
- d. If you are not connected to shore power you will need to use the inverter to power these systems. Remember to turn the Trac- Vision and inverter off when not required, in order to save battery power.

NOTE: The cell phone signal amplifier will only work within an 8’ radius from the office station. Beyond 8’ you will only receive an un-amplified signal.

## **FUEL**

Mariah has two (2) diesel fuel tanks 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.

### **1. CHECKING THE FUEL LEVEL**

- a. 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.
- b. The most accurate method is to view the sight tubes on the tanks.

### **2. 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:***

- a. **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)

- b. 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.
- c. 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.
- d. 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.

### 3. 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.

a. **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.

b. **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.

- Change the filter with the reading between 7 and 10 inches of vacuum. If both indicate in this range than change them both.
- First, drain out a few ounces of fuel using the drain valve and catchment

container.

- 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.
- 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.
- 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”.
- 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.
- Then put the lid back on the unit and snugly tighten the brass nut by hand-ONLY.
- Start the engine and check for leaks. Correct any leaks with the engine off.
- *Remember to replenish the jug of clean diesel fuel at the earliest opportunity*

#### 4. 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.

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

## **WATER**

There is a 200-gallon fresh water tank on Mariah. The tank and shutoff are located in the lazarette.

### **1. CHECKING THE WATER LEVEL**

The gauge for checking the water level is located at the office station. The ignition switch must be on to power this gauge. You may also check the sight gauge on the tank located in the lazarette. Just like the fuel tanks....the sight gauge's are the most accurate method.

### **2. FILLING THE WATER TANK**

- a. 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.
- b. Connect the WHITE fresh water 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!**
- c. Fill until the filling sound starts to increase or water comes out the vent/overflow on the hull just below the deck fill.
- d. Tighten the deck cap.
- e. Return the deck cap key to the chart drawer in the helm.

### **3. HOT WATER**

Hot water is provided by an 11 gallon tank heated electrically 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.

### **4. 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.**

## ELECTRICAL POWER

### 1. DC/BATTERY POWER

The BATTERY POWER or distribution panel is located on the right half of the main circuit breaker panel at the office station.

- a. **The DC POWER circuit breakers should be left ON, whether you are on or off the boat, and regardless of whether you are connected to shore power or running the generator. EXCEPTION: leave the following breakers off until you need to use the system. 1) BILGE LIGHTS. 2) OIL CHANGE PUMP. 3) SEA WATER WASHDOWN.**
- b. If you have been plugged into shore power for 12 or more hours, the batteries should be charged. Away from shore, as long as you are cruising several hours a day, the batteries are recharging, and you should have adequate power without the aid of shore power.

Note: There is a Xantrex battery display at the office station. It measures the state of charge for the house battery bank. It works in unison with a generator auto-start circuit that will automatically start the generator when the battery voltage is low or a large draw-down is experienced such as starting the coffee maker in the morning after having watched a movie at anchor the night before. When the generator starts on it's own you must go to the office station and turn on the gang circuit for the generator in order to bring it on line. The Xantrex "Power Share Selector should be set for 50amps to provide maximum charging from the generator. The generator is preset to run for two hours and then will shut down. You can always shut it down manually at any time you wish, after the batteries are recharged. **If the DC volts read less than 12.0 volts you will need to run the generator to recharge the batteries, unless you will be underway soon.**

### 2. 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 XANTREX INVERTER/CHARGER panel is located at the office station directly in front toward the left, as you are sitting at the table.

While away from shore power, if you want 110 AC power:

- Turn the Inverter ON at the INVERTER/ CHARGER panel by pushing where it says INVERT. A green indicator light will come on inside the box labeled INVERT. With this green light illuminated, the inverter will power selected 110-volt appliances and outlets.
- 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).

**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.

- **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 Xantrex inverter panel. Check the green LED light is not illuminated on the INVERT button. If it is, push the button and the light and inverter will turn OFF. 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. The real danger is that the bilge pumps depend on battery power, and if they die, the bilge pumps die with them.

### 3. GENERATOR

Mariah has an 11.5 kw Onan generator. 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, you should have adequate battery power. However, if the DC panel voltmeter #2 battery bank (house batteries) gets down to 12 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 volts.

Note: If the generator auto start panel is in the “enable” position it will start the generator when the battery level reaches approximately 11.8 volts. Should the generator start on it's own you will need to go to the AC power panel and select the generator gang breaker to “ON” in order to charge the batteries. Also ensure the xantrex power-share panel is set at 50 amps for maximum charging rate from the generator.

- a. The generator panel is located in the center/right of the AC panel at the office station. There is a rocker switch on the left side of the panel used to start the generator engine. Hold the top of the switch DOWN 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 there are no illuminated lights in the switch when pressed, ensure the (red rocker power switch) on the upper starboard side of the generator unit is turned on. (That switch can easily be pushed off inadvertently when moving about near the generator). 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.*
- b. Let the engine run for 2 minutes to warm-up before adding an electrical load.
- c. 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, and 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.
- d. 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.
- e. Monitor the generator control panel for any faults that may occur and are indicated



- by a series of flashes in the switch.
- f. To shut down the generator
- Remove the electrical load –Turn OFF the generator circuit breakers at the SHOREPOWER OR GENERATOR distribution panel at the upper left side of the AC panel.
  - Run the generator 2 minutes to cool down.
  - Push the lower rocker switch down to the STOP position.

## TOILETS

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 45gallon-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).

### 1. USING THE HEAD

- a. 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 TANKWATCH 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.
- b. **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.
- c. 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 1 minute) and the red light goes out.

## 2. CLEANING THE HEAD

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.

## 3. MONITORING THE HOLDING TANK

The holding tank should be monitored daily. The TANKWATCH 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.**

## 4. DISCHARGING THE HOLDING TANK

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

- a. Locate the deck fitting labeled “WASTE” just outside the starboard helm door.
- b. Open the deck fitting with the key located in the helm drawer.
- c. 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.
- d. Follow the instructions at the pump out station to pump out the holding tank.
- e. To rinse the waste holding tank after emptying:
  - 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.)**
  - Reinsert the pump-out nozzle into the boat’s WASTE deck fitting and pump some more liquid out of the waste holding tank.
  - Repeat this procedure.
- f. 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.
- g. Carefully remove the pump-out nozzle and place it back on the portable holding cart or the pump-out station.
- h. Replace the deck fitting and tighten it down with the key.
- i. Return the key to the helm drawer.
- j. *Wipe up* any spills on the deck and *throw away* the used disposable gloves and wipe up rags.

- k. *Wash down* the fill area on the boat with the fresh water hose.

## 5. 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, 3 miles from shore is legal. Confirm that the SEACOCK IS OPEN BEFORE OPERATING DISCHARGE PUMP (open is the normal position)*

- a. 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.
- b. 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.
- c. Watch the tank level monitor to confirm that the tank is empty (green light). Note: it may take 10 min. or more to pump out a full tank.
- d. When finished, flip the macerator switch on the panel to the off or DOWN position.
- e. 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.
- f. *If after several minutes of operation the tank lights do not indicate the tank is being emptied, there may be a clogged duck bill valve. Consult the video for procedures to clear the duck bill valve.*

## SHOWER

### 1. USING THE SHOWER

- The shower works like any domestic shower. Except that water drains into a small holding tank and then is automatically pumped overboard. 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.

### 2. HOT WATER

Hot water is provided by an 11-gallon tank heated electrically and by a heat exchanger from the engine.

- You automatically have hot water if the engine is running, and it will stay hot for quite awhile even after the engine is turned off. So if you have been cruising for a couple hours, you should have abundant hot water after the engine is off.
- When connected to shore power or using the generator, make sure the WATER HEATER circuit breaker on the SHOREPOWER OR GENERATOR distribution panel is in the ON position

## DECK WASH

There is a deck wash access port at the bow on the starboard side of the windshield and also in the aft cockpit. Salt water is pumped through the self-coiling hoses (kept with the fresh water hose in the lazarette 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 WASHDOWN C/B 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. Also, gently tapping on the sea water pump can help dislodge material and start the pump.

## GALLEY

### STOVE

To operate the stove:

- 1) Check the propane tank valve is open. (Tanks are located in the propane locker in the aft cockpit port side of the salon door.
- 2) Propane should be available to the stovetop and oven. If DC power has been turned off and then restored, the alarm in the galley near the floor will chirp. (Propane is automatically turned off with loss of DC power) You must turn the detector switch off then on to turn the gas on.
- 3) The stove is equipped with electric starters, to activate push in and turn the knob until the burner starts. A safety feature is installed in the event the flame goes out the gas will automatically stop. To restart, turn the burner off then back on.

### 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.

## **REFRIGERATOR/FREEZER /ICE MAKER / DECK FREEZER**

When disconnected from Shore Power, make sure the REFRIG 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. It is powered by a breaker in the pilot house labeled “DC refrigerator” 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 volts.

## **HEATING SYSTEM**

There are three sources of heat on Mariah: heat from the Hydronic Diesel furnace, Auxiliary electric heat when the generator is on, and small portable electric heaters for use when connected to shore power.

1. **The Hydronic Furnace** system is a thermostatically controlled diesel heater.
  - a. The master thermostat is in the salon, on the starboard side of the galley counter just below the counter top. 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.
  - b. NOTE: THE FURNACE MAY TAKE 10 – 15 MIN. TO HEAT THE WATER BEFORE ANY HEAT ENTERS THE BOAT.
  - c. 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 pre mixed antifreeze found inside the false stack on the boat deck.
  
1. **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.
  - a. Turn ON the circuit breaker labeled COMPARTMENT HEATER at the SHOREPOWER OR GENERATOR distribution panel located at the office station.
  - b. Adjust the thermostat at the electric heater to the desired temperature.

- 2. 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.

### **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 cell phone signal amplifier installed on the boat that is supposed to work with all cell phone service providers except Nextel. Signal amplification will not occur beyond approximately 8 feet from the office station.

### **BARBEQUE GRILL**

The stainless steel Magnum propane barbeque grill is mounted on the starboard aft railing. It is for *outdoor use only*. 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.

1. To light the grill first remove the cover:
  - a. Make sure the regulator knob on the grill is in the OFF position.
  - b. Connect the propane tank.
  - c. Open the lid to the grill. Remove any accessories stored inside.
  - d. Push and turn the regulator knob counter-clockwise to the high setting.
  - e. Use the peso electric starter and confirm that the burner is lit, before closing the lid.
2. Cooking.....
  - a. Adjust the regulator knob on the grill to the desired heat setting.
  - b. The BBQ does not require pre-heating. Do not overheat.
  - c. Do not cook on the high setting with the lid closed.
  - d. Unless you are searing a steak the low setting works best for general use.
3. To shut off the grill:
  - a. Turn the regulator knob on the grill clockwise to the LOCK-OFF position.
  - b. When cool remove the hose from the grill and coil it in the top of the tank.
4. 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.
  - a. On the front lower outside of the BBQ slide out the grease tray for cleaning.
  - b. Lift out the cooking grill and the heat plate for cleaning.
  - c. The exterior of the BBQ can be cleaned with soapy water.
  - d. Lock the lid of the grill securely with the latches.
  - e. Cover the grill with the canvas cover between use.

### **ANCHORING SYSTEM**

## 1. CHAIN MARKINGS

The anchor chain is 520' 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 yellow paint at 50' intervals. As the anchor enters the water there will be chain painted with yellow and will have white paint before and after the yellow. This is the indicator that the anchor is entering the water, and you can expect the first single yellow 5' paint mark at every 50' interval. Simply count the number of yellow indicators so you will know how much chain has been let out. When a yellow line bordered by white appears @ 500' you are near the end of the chain.

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## 2. WINDLASS

The anchor windlass has foot controls (Up/down) at the forward end of the deck. There is also a switch 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 the chain will fall over on itself and will not allow for a free feeding of chain to the windlass when attempting to redeploy. 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 red button 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.**

## 3. SCOPE AND TIDE SWING

Scope is the relationship of length of rode (chain, line, cable) to the depth of the water. San Juan Yachting recommends a 4:1 scope. If you are in 40' of water, put out 160' of chain.

- Check the tide tables to know at what point in the range you are anchoring, and measure the scope for the high tide.
- Check for depth and rocks within the proposed "swing" area.

## 4. SETTING THE ANCHOR

- 1 The boat should be stopped facing into the wind or current.
- 2 At the bow, detach the "security carabiner pin" from the anchor.
- 3 Ensure that the "Windlass" breaker on the DC panel is ON.
- 4 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.
- 5 Let out the proper amount of rode based on scope desired.
- 6 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.

- 7 Verify the anchor is set by selecting “neutral” and seeing the boat move forward and the chain angle dropping to near straight down.
- 8 Using the anchor harness line with the stainless chain hook (stowed in the step at the helm settee, or on the bow cleats) 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.
- 9 Do an “anchor watch” for the first 30 minutes, observing how the boat swings and how close it gets to other boats and objects.
- 10 The chart plotter has an anchor alarm feature that will provide an aural warning if the boat drifts outside of a predetermined radius. We have a baby monitor stored in the upper port cabinet in the master stateroom. Put the “baby unit” near the chart plotter (it must be plugged into an AC outlet so the inverter must be on), and the battery powered “parent unit” in the stateroom so you can hear the warning should the boat drift at night. This procedure is recommended any time an anchorage is determined to be marginal or you expect high winds or current to be a factor.

#### 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.

### 5. RETRIEVING THE ANCHOR

Raise the chain so you can easily unhook the anchor harness. Release the line from one of the cleats and bring it over to the other cleat and remove the harness 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:

- Turn ON the SEAWATER WASH DOWN breaker on the DC power panel.
- Retrieve the self-coiling hose and nozzle from the Lazarette.
- Connect the hose with the nozzle attached to the seawater receptacle at the bow near the anchor.
- 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. 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 windless. 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 for 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.

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. Remember to shut off the seawater wash-down breaker.

### STERN REEL

There is 600' of line 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.**

## THE TENDER

### 1. LAUNCHING THE TENDER FROM THE DAVIT SYSTEM

- a. 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.
- b. 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 Evenrude 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.
- c. 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 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, and then step out and release the single tie-down on the bow. Be careful not to drop the straps overboard. Stow the straps and cover in the lazarette.

**Ensure the aft drain plug is installed.**

- Remove the winch controller (located in the entertainment cabinet) and plug it into the receptacle next to the aft cockpit entry door. 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 strap by pulling out a loop that touches the deck. Do not release the strap hook. Lift the bow of the tender and push it along the davit until it starts to tip up and draws the launch strap tight. You should now be able to feed out additional strap and the tender will launch by its own weight. When the tender is completely in the water reach down and release the hook and using the tie off line, 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 to three additional passengers.
- Ensure the gas line is connected, and pump the primer bulb until it is firm. Make sure the outboard is in neutral, (throttle lever vertical), and the motor is 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. Re-hook the winch strap and ensure the center keel of the tender is centered on the davit roller. Using the winch controller retrieve the tender until it is snug into 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 during your charter but you will need to **pull the aft drain plug (located in the fish storage compartment behind the helm seat) so that splashed water or rain water will not fill the tender and damage the electrical systems. Wrap the plug lanyard around the steering wheel as a reminder to reinstall it before the next launch. In rough water conditions you will want to raise the motor so it doesn't splash water as the boat rolls with wave action.** To raise the motor while in the transport position, push the trim button on the throttle. Adjust the motor as needed for the sea conditions. Remember to reconnect the stabilizer bar, and install and return the winch controller to the entertainment cabinet.

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

- a. **Make sure all occupants are wearing appropriate life jackets. (Coastguard requires life jackets be immediately available). There are 6 inflatable life jackets kept in the master stateroom closets. Never let minors start or operate the tender.**
- b. **Check the gas level** by observing the gauge on top of the fuel tank. *Always stop the motor before refilling the tank.*
- c. **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.**
- d. Start the motor:
  - 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.*
- e. 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.
- f. To stop, close the throttle, put the motor in neutral and turn the key to off.
- g. 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 fish finder 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 will accumulate in the tender unless you have the drain plug removed. To remove the water, turn on the bilge pump (far left toggle switch) until water no longer is pumped out the aft port bilge water exit hole. Installing the tender cover will keep most of the water out and will protect the inside contents from weather. **Alternatively, and Highly recommended, you can remove the drain plug located in the fish box behind the helm station, and tie it around the steering wheel as a reminder to reinstall before the next launch. 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 before requiring complete replacement of the fuse box and connectors so we have added this warning!**

## KAYAKS

We have mounted two Wilderness Systems kayaks on the pilothouse roof for your enjoyment. They should be launched only in calm conditions. The easiest way to launch the kayaks is by using the Nick Jackson davit system. This system utilizes the electric/hydraulic crane on the upper deck. Please use the following procedures to launch the kayaks.

1. Remove the crane controller and cable from under the tip up instrument panel at the helm station and the lift harness from under the settee step. Take them to the upper deck. Be sure to check the crane circuit breaker is on. "Located next to the ice maker"
2. Remove the weather cap on the crane electrical socket (put it in your pocket or other safe place) and plug in the controller. Observe the control buttons and lower the hook so it can be released from the stowage cleat. Take a moment and familiarize yourself with the operation of the crane by pushing the various control buttons. Note: (Side to side movement of the crane is accomplished by manually pulling or pushing on the boom).
3. Have a crew member assist in removing the tie-downs on the kayaks. Note how they are tied down and secure them in the same way when you are returning them to their stowed position. Secure the straps to the mounting rails so they don't blow away.
4. With the help of a crewman, pull the kayak aft and set it on the deck. It's best to prepare the kayak for boarding while it is out of the water. Remove the paddle, and install the cockpit skirt. The skirt will help keep you dry and is normally stowed with the life jackets in the large deck cooler on the top deck... we use it for dry storage. There are 2 ski type life jackets and 2 inflatable life vests for use with the kayaks. One is a medium (up to 42") and the other is a large. Both can be adjusted to fit most body sizes, the inflatable type will fit nearly anyone. PLEASE WEAR THEM. There is a lift harness (tan & black) located in the pilot house under the settee step. The longer line from the lift ring attaches to the bow, the short line to the stern. Attach the crane hook to the lift ring and raise the boom to its full up position using the controller. Raise the boom hook high enough so the kayak will clear the rail.
5. Carefully push on the crane so the kayak clears the rail. When the crane is perpendicular to the rail it may be lowered a small amount so the kayak will clear the deck below. **CAUTION: do not lower the crane onto the stainless rail, observe the allowable clearance and do not exceed it!** You can now lower the hook until the kayak is in the water.
6. Let out enough cable so the kayak can be positioned to the stern of Mariah.
7. You will find it easier to board the kayaks from the tender or the swim platform if the tender is already launched. It may be helpful to have a crew member launch the tender and tie it to the swim platform. Do this prior to launching the kayaks and remain in the tender to assist in positioning the kayaks for boarding. (See the instructions pg#23 for guidance on launching the tender) Leave the tender tied to Mariah and it will give you a stable platform to get in and out of the kayaks.
8. Detach the crane harness from the bow and stern and use the attached line to tie off the kayak so it doesn't drift away while you launch the second boat.
9. Raise the hook and swing the crane back into position to launch the second kayak. NOTE: For the proper balance point, the longer harness line attaches to the bow of the kayak. Repeat the above launch procedure for the second kayak. After the kayaks are launched bring the crane back to its stowed position by swinging the crane into the position and attach the hook to the stowage cleat. You may leave the harness attached to the crane hook for the recovery. Retrieve the cable so as to remove all slack from the cable. **CAUTION: use short applications of power as the cable gets close to snug. You don't want to rip the cleat out of the deck with the winch. Note: (It is important to have the cable snug so the boom will not swing side to side when underway)**

### RETRIEVING THE KAYAKS.

To retrieve the kayaks reverse the above procedure. Remember to replace the weather cap on the electrical socket of the crane and stow the controller and cable under the tip up instrument panel at the helm and the lift harness in the settee step.

### SALON SETTEE CONVERSION TO A BED

To convert the salon settee to a double bed, move the table to the port side of the salon. Lift the front side of the settee 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. **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 it's 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

The pilot house settee can be configured as a single bed using the following procedure. 1) 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. 2) 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. 3) 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. 4) 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.

## **“EIGHT”**

### **key items to remember when operating Mariah**

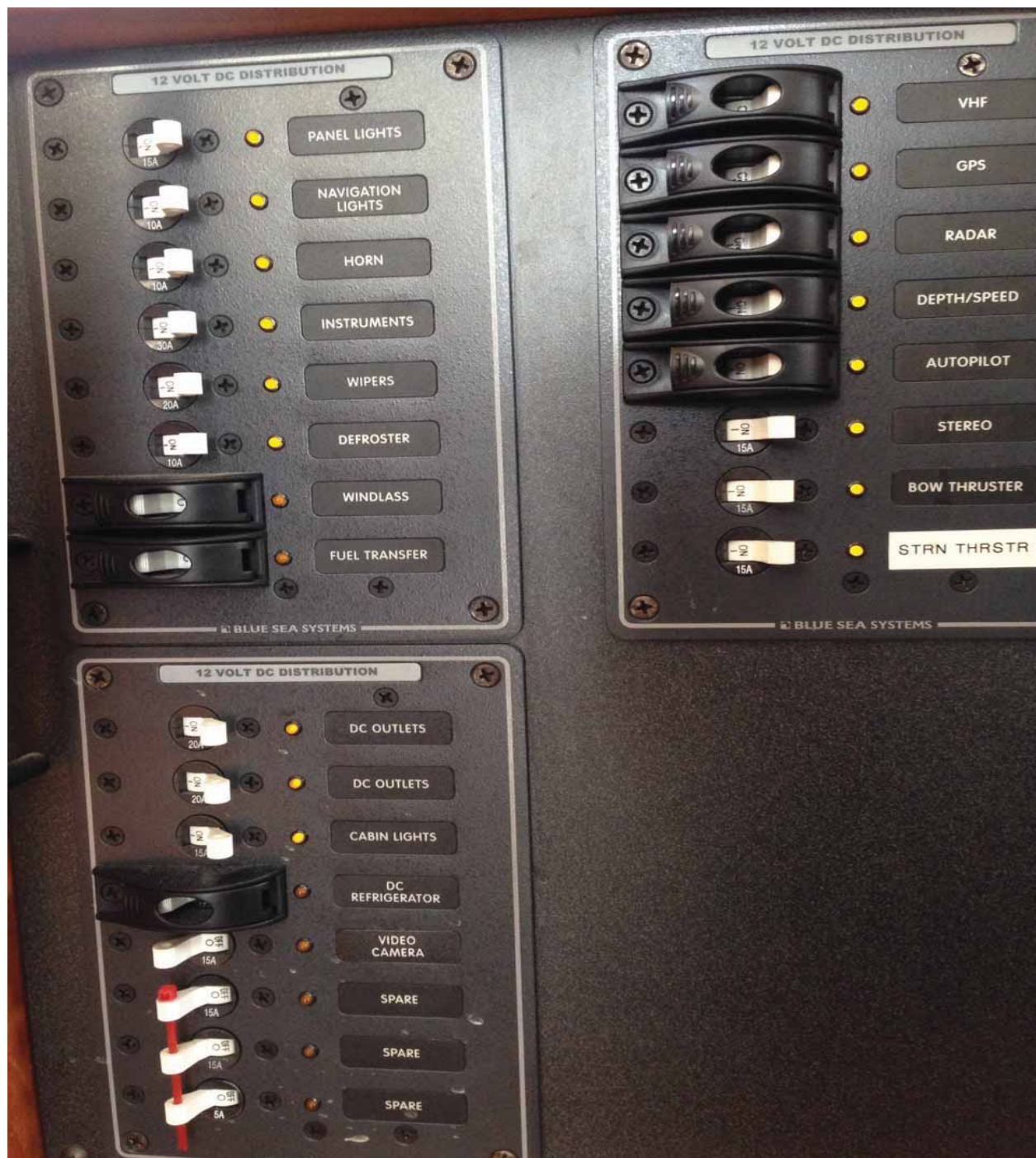
- 1) Remember to properly seat all dipsticks after checking oil levels. If not seated, oil will spray out and make a mess.
- 2) When returning the Tender, remember to install the two aft and one forward tie-down straps and the stabilizer bar if you anticipate heavy seas.
- 3) To save the batteries, turn the ice maker off when anchored.
- 4) Deselect “INVERT” on the Xantrex inverter panel (office station) when shore power is connected. (Prevents battery depletion if shore power fails)
- 5) Unplug all three electric heaters when NOT connected to shore power. Otherwise the inverter will attempt to power the heaters and will deplete the batteries and damage them.
- 6) When raising and lowering the shades, use two hands pulling in opposite directions. This will relieve stress on the shade clutch and mounting assembly.
- 7) Do not store any metallic items under the office station seat or on the floor in front of the seat. The ships auto pilot compass receives its directional input from an electronic compass under the seat. Inputs can be affected by metal objects in close proximity.
- 8) Remove the drain plug on the tender and tie it to the steering wheel to prevent water buildup and corrosion of electrical components in the tender.

THE FOLLOWING PANEL PICTURES AND EXPLANATIONS WILL BE HELPFULL IN AQUAINTING YOU WITH MARIAH'S SYSTEMS AND OPERATIONS.

## PILOT HOUSE CB PANEL

Note:

- 1) The DC Refrigerator breaker is for the 12 volt freezer on the top deck.
- 2) Leave the Video Camera, Freezer, Fuel Transfer, and windless breakers off unless you intend to use them.
- 3) Leave the five guarded breakers on the upper right panel on at all times. Never use these breakers to turn off the associated equipment or damage to the various systems will result. Use the individual component on/off buttons.





## AC / SHORE POWER / GENERATOR PANELS AT THE OFFICE STATION

### NOTE:

- 1) The Magnum automatic Generator starting circuit must be armed (enable) to operate.
- 2) The red LED numbers indicate shore power is connected and indicating AC voltage.
- 3) The top breaker on the left column is the inverter/battery charger. It needs to remain on to be able to use battery power through the inverter to power 110 volt circuits located on the center column of breakers. It will trip if the AC loads are too high for the inverter.
- 4) The left and right columns of breakers are systems that can only be powered from shore power, or the generator....except the inverter breaker which must remain on at all times.
- 5) The **DRYER** will only operate from **generator power** as it is a 240 volt system.
- 6) The water maker is not installed, so the breaker stays off.





## DC PANEL

### Note:

- 1) Red flagged breakers stay off unless the system is required....they are (1) oil change pump, (2) sea water wash down, (3) bilge lights. The down rigger and spare breakers are not used.
- 2) The two meters are DC amps in use and DC system voltage...if the voltage reads less than 12 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 11.8 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.
- 3) 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.
- 4)



XANTREX INVERTER PANEL and TANK WATCH PANEL

NOTE:

1) Normally the only switch you will operate on the tank watch panel is on the lower left side labeled "MACERATOR." Use this switch to dump the waste tank. See the instructions in the notes.



CLOSE UP VIEW OF THE INVERTER PANEL

NOTE:

- 1) In this view the panel indicates the boat is either on shore power or the generator. Looking at the illuminated green led's from left to right, the first shows AC power is applied. The battery state is full, there is a 13.5 volt charge going into the batteries, 10 DC amps are being used, and the power-share feature is set to allow up to 30amps of available AC power to charge the batteries. If charging from the generator you should select 50amps for a faster charge.
- 2) If you are away from shore power and don't need to run the generator, you can push the "INVERT" button that will allow the inverter to use 12 volt DC and turn it into 110 volt AC that will power the systems on the center column of breakers on the AC breaker panel.
- 3) **When shore power is connected, always deselect the "invert" button** because if shore power were to fail for some reason, 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.
- 4) **When away from shore power and 110 AC power is not required, keep the inverter off**, as it will continue to needlessly draw power from the batteries even if no load is selected.



XANTREX BATTERY MONITOR

Note:

- 1) Think of this indicator as a battery fuel tank. It shows the amount of charge in the house battery bank. Every several days it will need to be re-calibrated or “synchronized”. You can reset the indicator by pressing the two outside buttons in for 3 seconds. Do this only if you are sure the batteries are fully charged as indicated by 13 or more volts on the dc volt meter (on the DC circuit breaker panel). This procedure will reset the “tank” and give you an additional means of monitoring the state of charge in the house battery bank.

