Welcome aboard!

We are happy you have chosen Phantom for your vacation. We are sure you will enjoy cruising the lovely islands of the Pacific Northwest.

We had the pleasure of having Jet Tern build Phantom and Townsend Bay Marine outfit her 11 years ago. We have cruised the Puget Sound, the San Juan Islands, and then Gulf Islands since then, with cruises up to 60 consecutive days. She was not built to charter, but to actively cruise with a small crew. She is a dream for two people to handle because of the heavy displacement, bow and stern thrusters, active stabilizers, and high railings/bulwarks throughout. The custom-made remote steering station takes all the drama out of docking. The pilothouse design allows us to cruise in any weather, including snowstorms. We love having an additional couple on board because of the almost equal private guest stateroom. When the weather is good we live on the flybridge with its built-in settee and table. We have maintained her in Bristol condition and are often asked “Is that boat new?” She is the perfect size – large enough to be safe and comfortable, but still small enough to fit in a 50’ slip and hang on Washington State bouys. Life changes, and while we are not ready to totally stop boating, we have decided to share her with a few other people who appreciate the finer things in life. If you have half as much fun on her as we have you are in for a fabulous trip!

We hope this manual will help you become familiar with Phantom. We realize you are experienced boaters and have tried to limit the manual to the specifics of Phantom. We have some unique ways of doing things. Please try it our way and see if you like what we suggest. If you have questions about the boat or about places to visit, please do not hesitate to ask the Fleet Captain for Phantom or the AYC staff.

**PRINCIPAL DIMENSIONS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Fuel Capacity: 640 USG</th>
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<tbody>
<tr>
<td>L.O.A.:</td>
<td>47’-7”</td>
<td></td>
</tr>
<tr>
<td>L.O.H.:</td>
<td>42’-4”</td>
<td></td>
</tr>
<tr>
<td>L.O.D.:</td>
<td>43’-6”</td>
<td></td>
</tr>
<tr>
<td>L.W.L.:</td>
<td>43’-11”</td>
<td></td>
</tr>
<tr>
<td>Beam:</td>
<td>15’-8”</td>
<td></td>
</tr>
<tr>
<td>Max Draft:</td>
<td>6’-0”</td>
<td></td>
</tr>
<tr>
<td>Displacement:</td>
<td>60,000 lbs</td>
<td></td>
</tr>
</tbody>
</table>

**PHANTOM IS A NO SMOKING VESSEL**

(Inside). Cigars and single-malt scotch on the top deck on a clear night are recommended. If you smoke, please do it outside.

**PHANTOM IS A DRUG-FREE VESSEL**

Recreational marijuana is legal in Washington and will soon be legal in B.C. However, it is still illegal under Federal Law. Phantom is a U.S. Documented Vessel. The U.S. Coast Guard can board her anywhere in the world. If they find drugs on board they can seize the vessel.

**PHANTOM IS A PET-FREE VESSEL**

Some of our guests have severe pet allergies.

Thank you for respecting these policies.
Phantom Operation Manual

Safety First!!

We want you to have a great time on your cruise but most of all we want you to be safe. Please be careful while cruising on the boat!

The most common cause of injury is slipping on the stairs – inside the boat and outside the boat. Please use the handrails, especially when going from the pilothouse down to the staterooms. Also, place your feet SIDeways on the circular staircase leading to the staterooms. (This is VERY important.) The stairs on the outside walk-around can also get slick when wet. Move slowly; especially the first few days. Some docks are also unstable. Watch where you are walking.

During low tide the ramps at Anacortes Marina are very steep. Load the dock cart half way or less. Always handle the dock carts from the Uphill side. Never allow someone between the dock cart and the dock. If you must let the dock cart go you can replace or dry out the contents. Ask for help if necessary.

Use caution and the handrails to keep from falling off the boat, especially while underway. The railings and bulwarks make Phantom a very safe boat. The waters are cold in the Northwest (45°F) —if you fall in you only have a few minutes before hypothermia sets in. While having skills for “Man Overboard” are important, not needing them through prevention is even better. There is a protocol to follow to warm someone. Improperly warming someone can be fatal. Refer to the following for the proper technique.

https://www.mayo clinic.org/first-aid/first-aid-hypothermia/basics/art-20056624
http://www.princeton.edu/~oa/safety/hypocold.shtml

Fire hazards exist; on board are diesel fuel, propane, and gasoline. All burn, some explode. Diesel fuel is very safe but keep unintended sparks and flames away!

Do NOT become a human fender! Never get between the boat and anything else: the dock, another boat or (heaven forbid) a rock.

Use caution around any moving parts—in the engine room, using the winch, using the windlass.

Safety Orientation—know where your safety equipment is located, learn how to use it before you might need it and discuss and perhaps drill with all on board.

Never kayak alone. Always go with another kayaker or with the dinghy.

Do NOT drink and operate the boat—wait until you are docked or moored for the day.
https://www.boat-ed.com/washington/handbook/page/47/Alcohol-and-Drugs/

Do NOT swim in marinas. Phantom is equipped with an isolation transformer which protects the boat and swimmers from electrical “leaks.” Other boats and many marinas are not protected, and it is possible to get an electrical shock that causes your muscles to contract which leads to drowning. This is a serious issue in fresh water (Lake Washington) but can occur in salt water. Professional divers report “buzzes” in every marina.
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SUPPLEMENTAL INFORMATION

There are electronic manuals for much of the equipment on both computers (NAV and COMM) in the pilothouse. Look in C:\Phantom\Equipment Manuals\ for various folders. An electronic copy of this operations manual is located under C:\Phantom\. Other items of interest will also be in this folder. If you want access to the electronic manual while running the Admiral 10 chartplotter, power up the COMM computer and switch the starboard screen between digital (Nav) and Analog (Comm). You will also find this manual and other files on a blue flash drive in the small drawer above the chart table on the starboard dash. You can copy them to your own computer.

BOAT OPERATION

Over the years we have developed procedures that make boating on Phantom easier. Some of these procedures are probably unique. We have developed procedures for things a mundane as laying out the water hose to docking and anchoring using the portable remote steering station. As experienced boaters, you probably have your own way of doing things and may have suggestions that are better. We would love to hear them.

Electrical Panel

The electrical panel is in the Pilothouse on the starboard side. There is a small black flashlight velcro’d to the far starboard bulkhead. Please return it to its rightful place. Set up the 120v panel, the 24v panel, and the 12v panel before startup. Appendix A shows the recommended configuration when underway, docked, and moored/anchored. The following paragraphs in this section will briefly discuss boat operation. More detailed information on each system appears later in this manual. The index is hyperlinked in the pdf file.

Engine Inspection

Remember your “WOBBS” every morning: Water (Coolant), Oil, Bilges (Inspect and Pump-out), Belts and Sea Strainer.

All the fluid levels and sea strainers for the engine and generator can be accessed on the port side of the engine room by entering through the master shower. There should be a flashlight in a small plastic vessel on your right (port). The transmission fluid level dipstick and SALT WATER WASHDOWN pump (for anchoring) are located on the starboard side of the engine room and are usually accessed through a hatch in the salon (unless you are thin and flexible).

- Check the level of COOLANT in the expansion tanks located on the starboard side of the engine room. There is a mark on the tank which shows the normal cold level. You should never have to add coolant, but if you do have to, use the coolant (Fleet Charge 50/50 mix) stored in the engine room.

- Check the level of OIL in the engine by checking the dipstick located on the port side of the engine. DO NOT OVERFILL OIL! You should never have to add oil. If you do, please notify AYC on your return.

Only fill if oil levels are below the ½ way mark. Please use a paper towel, cotton rag or oil rag, not the dish towels! Extra oil is stored in the engine room port side. Inspect all bilges and pump-
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out if necessary. You should never have to pump the bilges, except possibly the lazarette if there has been a rainstorm or you washed the boat.

- Check the general condition of the BELTS, HOSES, and FUEL LINES. Check the oil absorbent pads under the engine and transmission. They should show no or very little oil. The engine room bilge should be dry. There is a clear plastic hose that runs from the refrigerator down to the bilge. It should go into a Nalgene bottle. If the bottle is more than ¼ full please empty it into the master head sink or shower sump and put it back in place. Normally, the only water in the bilge is from the refrigerator defrosting.

- Observe the glass of the RAW WATER STRAINER for debris. Shining a flashlight (there should be one in a bucket just as you enter the engine room) through the strainer often helps see debris. If necessary, close the seacock, open the strainer cover, clean the strainer, and reassemble. Remember to reopen the seacock. After start, confirm water flow from the exhaust (stbd side aft.) Check the generator fluids and sea strainer as well. If you are using the Grunert freezer check the sea strainer in the starboard locker in the commissary.

- Ensure the valve on the RAW WATER THRU-HULL for both the engine and the gen set is in the ‘open’ position (lever in-line with valve).

- Check the transmission oil while the engine is in idle using the white dipstick behind the transmission front housing. You should never have to add oil to the transmission. Look at the etch marks on each dipstick that indicate the proper oil level. There is a set of ear muff style hearing protectors at the forward end of the engine room. Please protect your hearing.

- The large batteries on Phantom are all Absorbent Glass Mat (AGM) batteries. There is nothing to check and no way to fill them. Please don’t remove the covers from the battery boxes except in an emergency.

Getting Underway

This paragraph is a condensed version. More details are in appropriate sections below. REMOVE and STOW all items on the counters and tables in the Salon. Put the coffee pot in the sink along with anything else that could damage the floors when it falls. DISCONNECT and stow the shore power cord (see 120-Volt page 16). DISCONNECT and stow the water hose (details!? Page 25). Unscrew the quick connect water fitting from the shore water faucet and stow it in cockpit cabinet (lift the lid). Close the PORTHOLES (no one likes a wet berth), WINDOWS, and FORWARD HATCH. Close the toilet lids and put the white plastic window coverings on the floor. (Scary bangs happen if you forget.) Turn on your VHF and electronics (Page 30). SETUP the electrical panel (Appendix A). Start the Navigation systems (Page 32). SETUP the Remote Steering Station (Page 10). CHECK the operation of the thrusters. ASSIGN crew members their various positions. Use the bow and stern thrusters to keep the boat near the dock until everyone is onboard. (1/2 second pulses – 3+ second pause.) Once outside the marina, idle the engines while the crew brings in fenders and lines. DO NOT DRAG LINES ACROSS THE TEAK CAP RAILS. See the section on “Dock Lines & Fenders”, page 13 for helpful hints.

Fuel management

There are two 320-gal fuel tanks onboard. This gives you about 150 hours of fuel and a range of 1200 nautical miles at normal cruise speed (1600-1700 rpm). The valves are set in the engine room to draw from both tanks at all times. The valves on the fuel feed and return manifolds are set the way they should be for
Phantom Operation Manual

operation. Appendix B shows how they should be set for normal operation. If you feel there is a need to change them for any reason, please talk to AYC first. If you are taking the boat for multiple weeks and want to use the aft water tank talk to AYC about trimming the boat.

Remote Steering Station

If you are going to use the portable remote steering station (highly recommended) when leaving the dock and docking, set it up before starting the engine. Take the canvas cover off the station and stow it. The recommended position for the station is on the forward flybridge next to the dock, but it can go anywhere you see a fish rod holder with a notch in it (8 positions). If you are shorthanded, you can set it up in front of the pilothouse on the main deck. Two cables are stored below the settee in the pilothouse. Use the shorter cable if you are only going to set up the station on the starboard side. Use the long cable if you may have to set up to port or for anchoring. Remove the covers from both ends of the cable and store them on the starboard side of the pilothouse dash. Either end of the cable can be attached to the steering station. Silver marks will help you line the cable up. Be gentle. The collar will screw on easily when everything is lined up. The cable must be screwed into the outlet on the starboard side of the pilothouse or on the starboard wing on the forward side of the flybridge. If you are putting the station to port, run the cable in front of the Portuguese bridge (main deck) or forward of the instrument cluster (flybridge). Make sure the pin on the stainless post fits into the notch on the fishing rod holders. The station should be facing the same direction as the fixed stations in the pilothouse and on the flybridge. To use, push the throttle select button, both ON buttons for the thrusters, and the left button on the job lever so the FU light is lit. After you leave the dock you can leave the station in place and cover it with the canvas cover. Please keep the station covered when it is not in use.

Stabilizers

Phantom is equipped with Wesmar active stabilizers. They are very effective in reducing roll when underway over 5 knots. To use, turn on the STABILIZER (#39) breaker on the 24-volt panel. Then turn ON the Stabilizer switch on the dash. Make sure the stabilizers are in STANDBY until you need them. You can then push the ENGAGE button to use them. Be sure to push the STANDBY button when preparing to dock or anchor. That horrible clunking sound you hear at slow speeds is the stabilizers trying to work with no moving water to divert. The stabilizers work well for roll, but don’t help with heave. The wake from large powerboats pushing huge volumes of water can result in serious bouncing. Be sure everything has been stowed before leaving dock. Slow down and try to hit the wake at a 45° angle. In the summer you will get slammed occasionally. Cursing and hand gestures make me feel better.

Start-Up

Before starting the engine, do your inspection, install the remote steering station, and totally set up and check the navigation systems. The engine should be started from the pilothouse. A full set of engine instruments is located above the Pilothouse helm.

Make sure the FIREBOY breaker (#27) is turned on. If you get no response from pressing the start button be sure the ENG IGNITION (#12), ELECTRONIC ENG CONTROL (#13), and fireboy switches are on.
Press the pilothouse “STATION SELECT” button (light to left of button will turn red). Make sure the idle speed knob is turned all the way to the left (IDLE 1). Make sure the GEARSHIFT is in ‘neutral’ (“N” light will be lit) or the engines cannot be started because of the “neutral lockout.” Insert the key into the IGNITION SWITCH, rotate it about 1/8 turn to the right, and press the “START” button to engage the starter. Watch the oil pressure gauge on the overhead. It should register about 50 psi when the engine is cold. (Note the mark on the gauge.) It normally takes about 15-20 seconds after start for the oil pressure to come up. Check the wet exhaust on the starboard side of the swim step as soon as the oil pressure is normal to make sure water is coming from the wet exhaust. Water will come out in slugs at idle. This is normal.

If the engine cranks slowly or fails to turn over (which should never happen), check the condition of the engine battery on the ELECTRICAL PANEL. If the battery is low, HOLD the appropriate PathMaker switch (to stbd and below helm) UP to combine the house and engine start batteries. Release the switch as soon as the engine starts. Alternatively, start the generator and let it charge the batteries for 15 minutes before trying to start the engine again. If the engine start battery is low or dead call AYC and let them know. This should never happen.

After start, either rotate engine idle (red arrow, above) to IDLE 2 (750 rpm) or IDLE 3 (900 rpm) OR hold the “Station Select: button (blue arrow) down to disengage the transmission and while continuing to hold the button down move the THROTTLE to raise the engine speed to 1000 rpm on the TACHOMETER. Warm the engine for about 2 minutes. MOVE THE IDLE KNOB TO IDLE 1 before engaging the transmission. Observe the readings of the gauges. The oil pressure will register about 50 psi when the engine is cold. The engine temperature should rise slowly.

Note -- If oil pressure is low, shut down engine, and inspect engine compartment and look for possible cause (for example, loss of oil.) Caution -- If an engine is overheating or there is lack of raw water expelled in the engine exhaust, stop the engine immediately. Recheck the raw water-cooling system to ensure the seacock is ‘open’ (handle in-line with valve). Next, check the raw water strainer for debris. Remove the strainer, clean, re-assemble, and reopen the raw water intake valve (seacock). Restart the engine and re-check water flow from the exhaust. If water is not flowing properly, the RAW WATER PUMP may need to be serviced. Seek help.

TEST both thrusters while tied to dock. Details below.
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Shut-Down

Before shutting down, allow the engine to ‘idle’ for about 5 minutes (600 RPM) to cool it gradually. The time engaged in docking the boat is usually sufficient. (You will probably approach and dock at 600 rpm.) Ensure the GEARSHIFT is in the ‘neutral’ position and the IDLE KNOB is in the ‘IDLE 1’ position. Make sure all docklines are in place and the boat is secure. Turn off engines by pressing the red “Stop” button either in the pilothouse or on the flybridge.

Cruising

All close quarters maneuvering should always take place at the flybridge helm or using the Remote Steering Station for maximum visibility.

Make sure the idle control is in IDLE 1 – 600 rpm before engaging the GEARSHIFT. Ideal cruising speed is about 1600 - 1750 rpm. If you run at 1700 rpm you will cruise at 7.5 knots and use only 4 gallons of diesel per hour. Your speed will vary depending upon the weight and load and weather conditions.

Note -- Avoid sustained running at less than 1000 rpm or higher than 2000 rpm. Long-term running at lower engine speeds can lead to “carboning up.” Higher engine speeds cause higher engine and engine room temperature, possible damage, and dramatically higher fuel consumption with little gain in speed. (1700 rpm = 4 gph, 7.5 kts; 2675 rpm = 16 gph, 10.2 kts.) In general, lower RPMs result in much-improved fuel economy. Appendix C has a graph of fuel burn and speed versus rpm. If you need the extra 3 kts to get out of trouble, then burn the fuel necessary to be safe and then back off. It won’t hurt the engine.

After getting underway, turn ON the E/R BLOWER breaker (#25) on the 24-volt panel. This will help exhaust hot air from the engine room. You can monitor the engine room temperature on the Maretron in the pilot house. It can easily get to 102°F. If it gets above that please back off the throttle to 1300 rpm or so and let it cool down. The blowers are difficult to hear when underway, but sound very loud at dock. You can turn them OFF as you get ready for docking or leave them ON for as long as you can stand it after docking to cool the engine room so you're not baking in the master stateroom.

Docking

During docking, use the FLYBRIDGE HELM and the REMOTE STEERING STATION (highly recommended) for greater visibility. TEST both thrusters. Have your crew make ready the lines and fenders as described in the next section and give clear instructions on how you will be docking (See the next section for details). The crew will usually step (not jump!) off from the swim step to handle either the bow or the stern line. Another crew member may need to be at the bow to hand over the bowlines. If you set up as described in the next section two people (or even one) can easily handle the boat. Use the thrusters in short (1/2 sec) bursts, (3+ second wait) to adjust the position of the vessel in the slip or at the dock. Click the throttle in and out (IDLE 1) to adjust the boat fore and aft. MOVE SLOWLY. Phantom carries a large amount of momentum. With practice, you can easily make 6-inch adjustments. The goal is no drama.

If someone on dock runs to help you, either you have frightened them, or they are inexperienced. If you are moving slowly and under control, it might be wise to say “Thanks, but we need the practice.” There are times when help is very welcome. If the currents or winds are strong, then accept the help. HOWEVER, you are in command. Have the crew hand them the line you want and then TELL THEM WHAT TO DO. Never assume they know what they are doing (unless they are paid dockhands like you find at Roche Harbor who work for tips). The goal in docking is to bore the audience to the point they walk away, mumbling about cheating and trying to hide their jealousy.
Dock Lines & Fenders

The dock lines and fender lines are color-coded (!) to make life easier. Normally --- Green goes forward. Blue goes aft. Red, black, or gold/white goes midships. However, do what you need to do to tie the boat securely. Usually, a bow line, stern line, and two midships spring lines are all that are necessary.

You can slow down or stop (in a clear area) outside the marina to set up for docking and then proceed calmly into harbor.

There are 2 green lines – a shorter one and a longer one. The short green line is sized to tie to a cleat approximately in line with the after hawse hole. (We call it a “bow” line even though it is technically a “forward breast line.”) The way we do it is to loop the eye around BOTH horns of the cleat in the forward hawse hole and cleat it off on the dock. There should be very little extra line left after cleating. The long green line can be led from the hawse-hole under a bull rail and back over the bull rail to the hawse hole and tied off on the cleat in the hawse-hole. When leaving, you can throw the line on the dock and pull it under the bull rail from the foredeck – no excitement. If you are shorthanded when docking, you can lead the green line aft along the rail, so it can be grabbed from the dock. You can also cheat and use a boat hook to pull it off the rail. **Be very careful not to let it drop overboard and get into the thruster. That will ruin your day and may ruin your week.**

There are 4 blue lines – 2 short ones, 1 medium one, and 1 long one. The short ones tie to cleats approximately in line with the after hawse holes (“Stern line” or “after breast line.”). Normally, the hawse holes on the side of the boat are used rather than the ones on the transom. Try to position the boat so that the stern line does not create a tripping hazard when using the swim step to get on and off the dock. Anacortes Marina is probably the only place where you will use dock lines on both sides of the boat. Every other marina will probably be a side tie. When setting up to dock, hold the line in your off hand (weak hand) and drape the eye outboard of the side of the boat. Reach through the hawse hole and pull the eye in. For the bow and stern, put the eye over both horns of the cleat in the hawse-hole. **DO NOT DRAG THE LINE ACROSS THE TEAK RAIL.** Once the eye is on the cleat, reach through the hawse hole and pull a loop of line into the boat leaving a short (6” +) tail that can be grabbed from the dock. The teak rails can easily be “burned” by dragging anything across them and are expensive to repair. In strong currents or winds, the long blue line may be used to hold the stern close to the dock. Place the eye over both horns of the cleat in the transom hawse hole furthest from the dock (or put the eye over the horn closest to the dock) and lead the blue line through the staples (normally, between the top bar and the middle bar of the one closest to the hawse-hole; or between the swim step and the middle bar) to a cleat aft of the boat. This crosstie is one of my favorite ways to control the stern, but it is often hard to find the right cleat setup. You may have to use lines other than the long blue one.

There are 2 red lines, 2 gold lines, and 3 black lines which are normally used as forward and after Midships Spring lines. Usually, the red lines are the ones to use. Bring them from the line locker to the midships hawse hole. Run the eye of one of them through the space forward of the stainless railing and above the gel coat part of the bulwarks. This will keep the line off the teak railing! Pull the eye back through the hawse hole and hook the eye over one of the horns. The Forward Spring will hook over the forward horn. (The After Spring will hook over the after horn.) Flake the forward line on the gel coat toward the forward part of the opening leaving about a foot or so of tail that can be grabbed from the dock. Do the same with the after line toward the after part of the opening.

The following table contains the length and normal use for the dock lines.
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<table>
<thead>
<tr>
<th>Line</th>
<th>Length</th>
<th>Normal Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Green</td>
<td>11.5’</td>
<td>Bow (cleat on dock)</td>
</tr>
<tr>
<td>Long Green</td>
<td>21.5’</td>
<td>Bow (bull rail on dock)</td>
</tr>
<tr>
<td>Short Blue (2 each)</td>
<td>6’</td>
<td>Aft (cleat on dock)</td>
</tr>
<tr>
<td>Medium Blue</td>
<td>12.5’</td>
<td>Aft (bull rail on dock)</td>
</tr>
<tr>
<td>Long Blue</td>
<td>21’</td>
<td>Forward after spring (rare) or stern crosstie</td>
</tr>
<tr>
<td>Red (2 each)</td>
<td>16’</td>
<td>Midships spring</td>
</tr>
<tr>
<td>Gold &amp; White (2 each)</td>
<td>35’</td>
<td>Midships spring</td>
</tr>
<tr>
<td>Short Black (2 each)</td>
<td>16’</td>
<td>Midships spring</td>
</tr>
<tr>
<td>Long black</td>
<td>20’</td>
<td>Spare</td>
</tr>
</tbody>
</table>

The fenders are usually stored on the foredeck by tying them to the rail with a clove hitch. When deployed, green is forward; blue is aft – just like the dock lines. Carry the aft fenders either inboard or over the water either one at a time or two at a time and lay them on the deck. Hold the blue line in your off hand and lift the fender over the rail making sure you don’t drag it across the teak. Lead the blue line through the hole in the bulwarks with the cam cleat. Pull the line into the cam cleat with the fender 6” to 12” off the water. (We’ll adjust the height later.) Tie a figure-eight knot in the blue line near the end. Repeat for the other two after fenders. Usually, you only need one of the forward (green-lined) fenders. Bring it back near where the stainless rail begins to dive toward the after deck. Look over the side for the rub rail with the stainless insert. The fender will go about a foot aft of where that ends. Take a wrap around the top railing and lower the fender to about 12” off the water. Use a clove hitch to secure it temporarily.

You are now all set up for a no drama docking.

**Docking Final Approach**

Why colors? Picture this: As you approach the harbor you quietly say, “Please pull a short blue line and set it up on the starboard side of the stern. Grab the shorter green line and set it up on the starboard side of the bow. Grab two red lines and set them up on the starboard midships. Remember not to put lines on the teak rail.” No stress trying to figure out which lines go where.

**After entering the harbor lower all the fenders to about 2” off the water.** It ruins the desired effect to have to yell at the crew to lower the fenders as you are about to close with the dock.

After docking, the skipper should check and adjust the lines and trade out the red ones for gold or short for long or whatever is necessary to feel secure. Even the dockhands at Roche won’t tie them the way you want.

**Seattle Locks**

In the line locker, there are two 50’ + lines – one black and one white – with “water bowlines” tied in them. These are for going through the large locks on the Hiram M. Chittenden Locks leading to or from Lake Union in Seattle. If you go into the lake, hope for the small lock which only requires normal dock lines. If you intend to transit the locks, please go over the procedure a couple of times with AYC. The first couple of dozen times through the locks it’s pretty exciting, especially on a summer weekend with 100 of your closest friends in the big lock. See the videos in C:\Phantom\Ballard Locks\ for a preview.
Phantom Operation Manual

Fueling Up

OPEN FILLER CAPS located in small cabinets close to the deck on each side of after part of the cabin with a DECK FITTING KEY. The key is kept in the key box on top of the cabinet located in the after starboard salon. (Or use the ends of the pliers on your multi-function tool – Leatherman or Gerber or …)

BRING HOSE ON BOARD THROUGH A TRANSOM HAUSE HOLE OR AFTER DOOR. DO NOT PULL THE HOSE ACROSS TEAK CAP RAIL OR EVEN PUT HOSE ON THE CAP RAIL!!!

MAKE SURE YOU HAVE THE RIGHT FUEL!  DIESEL! MAKE SURE IT IS GOING INTO THE RIGHT DECK FILLS! (The water and waste caps are a LONG way from the diesel fill, so this should not be a problem.)

Before pumping, have some oil/fuel sorbs handy to soak up spilled fuel. The fuel vents are in the small cabinets where you are fueling. If there is any overfill, it will go into the sump in the cabinets rather than overboard. Listen for the tank becoming full to know when to stop pumping. You should have a rough idea of the number of gallons you will need by the engine hour indicator (4 gal/hr * # hrs).

If the fueling station has a high-speed and low-speed pump, use the low-speed one. This will pump about 10 gallons/minute. Place the DIESEL (green hose) nozzle into the tank opening, pump slowly and evenly, and note the sound of the fuel flow. Pumping too fast may not allow enough time for air to escape, which may result in spouting from the tank opening (should not be an issue with the low-speed pump). As the tank fills, the sound will rise in pitch or gurgle. If fuel starts coming into the small cabinet then STOP PUMPING. You will have to fill both sides; they will equalize too slowly to just fill one side. Top off carefully and wipe any spillage. Move the fuel hose carefully. They are nasty, greasy things and will mark the gel coat.

Replace each tank cap. Turn on the blower before starting the engine. Caution -- Clean up splatter and spillage immediately for environmental and health reasons. Wash hands with soap and water thoroughly.

There are tank gauges on the starboard side below the pilothouse helm which are useful when running, but not so much when filling the tanks. Button 4 is port fuel. Button 5 is starboard fuel. Make sure 24v switch labeled “NAUTICAL INSTRUMENTS” (#40) is on. The Maretron system also measures the fuel level, but it is unreliable during filling. The Maretron should read 320 gallons when the tanks are full.

BOAT ELECTRICAL

The electrical system is divided into THREE distribution systems: 120-volt AC, 24-volt DC, and 12-volt DC.

The systems are controlled from the ELECTRICAL PANEL located on the starboard forward side of the pilothouse, and the BATTERY SWITCHES found on the right side of the panel. When not connected to shore power, batteries are providing all the power. Therefore, monitor the use of battery levels carefully with your volt meter and amp hours totalizer located next to the Magnum Inverter/Charger in the stairs to the lower staterooms. The Maretron system also has a battery condition monitor, and one of the screens in the Master Stateroom has the information.

There are colored dots on each breaker which indicate their “normal” position. Red is normally OFF; Green is normally ON; Blue is ON for motoring; Yellow is ON for anchoring. When not motoring, the blue dot
breakers are normally OFF. Some of the breakers have switch covers on them. Do not change the position of these breakers unless you know why you are doing that.

**120-Volt AC System**

SHORE POWER supports all AC equipment and receptacles on board, as well as the battery chargers. Phantom uses 30-amp power which is the most common outlet in the Pacific Northwest. The electrical cables are stored in the Portuguese Bridge port cabinet. The cabinet also includes an extension cord and adaptors from 50-amp service to a 30-amp plug which may be necessary in some marinas.

**Disconnecting from Shore Power**

Power down 120 v electrical loads until the 120v amp meter reads 0. It will probably be necessary to put Magnum charger (in stairway to staterooms) on standby (Red Arrow). (Don’t push the INVERTER button below the CHARGER button.) The charger will automatically reset in a few minutes and be ready to go when you plug into shore power.

- REFRIGERATOR (#3) OFF
- FREEZER (#21) OFF
- WATER HEATER (#4) OFF

Turn OFF 120v forward or aft breaker in the DC POWER SUPPLY panel (starboard side of electrical panel). The amp meter should go blank. Turn off the electrical outlet on shore. Remove electrical cord from shore and bring on board. **Keep the end out of salt water.** If the end goes in the ocean wash it with fresh water and dry. Remove the electrical plug from boat. (Lift SmartPlug locking cover; pull plug, lock cover over receptacle.) Coil cord, tie with flex ties and stow in cabinet on port side of Portuguese Bridge. Check the locking cover over the receptacle to make sure it is locked down. (Click)

**Connecting to Shore Power**

To connect to shore power, plug the 30-amp POWER CORD into the boat (make sure to snap the SmartPlug cover onto the cord to hold it in place “Click”). Then lead the cord over the empty bow roller. Make sure the power switch on the 30-amp connection on shore is off and plug the cord into the 30-amp dock receptacle. Check the power rating/plug size of the nearest dock receptacle (that is 50-amp, 30-amp, 20-amp, or 15-amp). If necessary, add a CORD ADAPTER located in the port locker in the Portuguese
Bridge. Turn the dock power on. Use flex ties or several Velcro ties to attach cord to the railing. Keep the cord off the deck to avoid collecting dirt.

At the ELECTRICAL PANEL, turn the master shore breaker ON (if necessary), then flip the forward or aft SHORE CIRCUIT BREAKER on. You may have to slide the slider up or down to select the correct shore power connection (forward or aft). Check for reverse polarity (Extremely unlikely). In about 15 seconds you will see the load increase as the Magnum Inverter/Charger starts charging the batteries. Even if you have been motoring for hours, the Magnum will start charging. It should max out at 15 amps if no one has “adjusted” the settings. Then turn on appropriate breakers for the refrigerator and water heater. Watch the amp meter for load.

If the load exceeds 30 amps, a breaker will pop. If this occurs, turn off all 120-volt electrical loads. The forward breaker is in a cabinet above the guest berth on the starboard side. The aft breaker is located in the lazarette near the forward starboard side of the hatch high on the bulkhead. There is also a breaker under the pilothouse helm on the forward bulkhead. Open the cabinet doors below the helm and look deep into the cabinet just to starboard of midline. There is a grey box with a switch. If the switch is down, it is tripped. If none of these breakers were tripped check the breaker onshore in the power pedestal. After power is restored watch the amp meter until it gets below 15 amps. Then you can start turning on loads again.

If your outlets fail to work, make sure they are turned on at the ELECTRICAL PANEL, then check your GFIs (the button next to the plug in) to make sure that they have not been tripped.

Only use one hair dryer or curling iron at a time and turn off the water heater and freezer while doing so. Keep the sum of all your loads under 30 amps (unless using the generator as discussed later.)

**Inverter Power**

The Magnum pure sine wave INVERTER provides AC power to the 120-volt receptacle plugs (i.e., the microwave oven, computers, and electrical outlets) when the boat is disconnected from shore power. It switches on automatically when short power is lost. The inverter does not provide power to the water heater or the battery charger. The inverter control panel is the Magnum panel shown above. It operates automatically. You should not have to do anything for it to work. The actual inverter is in the commissary in the port side outboard cabinet.

The inverter’s power source is the DC house or inverter batteries located in the lazarette. The quantity of DC power is limited to the capacity of these batteries. Therefore, running hair dryers, curling irons, toaster, coffeepots, microwave, etc. will quickly discharge the house/inverter batteries. If you want to use a hairdryer or curling iron, turn off the hot water heater and do not use the microwave oven, toaster or washer/dryer until you are finished. You can use everything; you just need to manage the timing. Use these items VERY SPARINGLY when using the inverter! Monitor your battery usage very carefully! If anticipated power usage is heavy, start your generator (preferred) or engines to keep batteries charged.

When connected to shore power, the inverter automatically becomes a battery charger for all the 24-volt batteries. Should you detect the inverter failing to charge the house batteries, check the circuit breaker in the AC Panel and the inverter control panel. The inverter breakers - INVERTER INPUT (#17) and INVERTER OUTPUT (#18) - should always be on. See if someone inadvertently put the charger on standby. Also, there is usually a circuit breaker located on top of the inverter box in the commissary (which has never tripped).
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**Uninterruptable Power Supply (UPS)**

The computers that drive the Nobletec Admiral navigation system are located under the pilothouse berth in the large cabinet to starboard of the stairs to the salon. The power for these computers goes through a UPS (APC Model BR800BLK) located behind the ELECTRICAL PANEL. You should never have to touch it. If it starts whining or the computer won’t start check it by undoing the barrel bolt at the bottom left part of the panel and carefully swinging the door open about a foot or two. Stop when you feel resistance (you can open to about 90°). If the UPS is turned off, turn it on. As you switch from shore power to inverter, you may hear a short peep out of the UPS.

**Battery Chargers**

There are three battery chargers on board. The primary charger is the Magnum Charger/Inverter discussed above. It is set to charge while drawing 15 amps of 120-volt power which should allow you to simultaneously run the refrigerator and hot water heater while on shore power. The 120-volt breakers labeled INVERTER INPUT (#17) and INVERTER OUTPUT (#18) should always be ON (24/7).

The 120-volt panel breakers labeled CHARGER HE (#1) and CHARGER SBG (#2) are normally OFF because they can draw more than 30 amps which will pop one of the shore power breakers.

If you are running the generator and need to load it you can turn ON the 120-volt panel breakers labeled CHARGER HE (#1) and CHARGER SBG (#2). HE charges the House and Engine battery while SBG charges the Stern thruster, Bow thruster, and Generator battery.

**Generator**

Phantom has an 8 kW Northern Lights Model M753W2 genset that can put out 50 amps at 120 v. To start the GENERATOR, first, check that your generator’s fluids are topped off, and the raw water intake is open. You can access the generator on the port side of the engine room by going through the master shower. You will have to open the soundproofing cabinetry surrounding the genset. Be sure to reinstall the cabinetry.

Prior to starting, make sure all individual AC (except the computer and inverter) breakers are turned off. Turn off all the master switches on the right side of the panel. Hold lever 1 (left picture) down to activate the glow plugs for about 10 sec. Then pull lever 2 up while holding lever 1 down until the generator starts and oil pressure has climbed. Let go of lever 1. After the generator is running, slide the lockout slider on the right side of the ELECTRICAL PANEL so you can turn on the generator switch. The Magnum charger will again start charging at about 15 amps. Let the genset warm up to over 100°F and then turn on AC systems as you would on shore power one system at a time. The genset should be loaded to about 35 amps which is hard to do. Now is the time to run the freezer, water heater, dry your hair, dry the bath towels in the washer/dryer, make toast, etc. **Do not run the genset for longer than 30 minutes at or below 15 amps.** Turn it off and wait until it can be loaded again. The generator is
very quiet, so you may want to set a timer on your phone to remember to check it occasionally, especially if you are underway.

To turn the generator off, first, take off the load by turning off AC breakers (except the computers and inverter). Then turn off the GENERATOR breaker on the starboard side of the electrical panel (the one where you had to move the slider to turn on.). **Run the genset unloaded for 5 minutes to allow it to cool down.** Set a timer on your phone as you may not hear the genset running. After it has “cooled down” kill the generator by holding lever 2 down until it dies (about 10 seconds).

**House (24-volt) System**

Five battery banks support 24-volt DC power: 1) engine battery, 2) generator battery, 3) house battery bank, 4) bow thruster battery, and 5) stern thruster battery.

There is a round, red BATTERY SELECTION switch on the DC POWER SUPPLY panel (starboard side of electrical panel.) **DO NOT MOVE THIS SWITCH UNLESS THERE IS AN ELECTRICAL FIRE.**

The 24-volt panel contains all the systems supported by the batteries except the bilge pumps. Primarily you will be turning on the breakers for the lights, water pressure, electronics, etc. All but one of the bilge pumps switches are located on the “mimic” panel high to starboard in the pilot house. One bilge pump switch (forward crash locker) is located to starboard below the helm. All bilge pumps should be left on auto.

The breakers for propane should always be turned off after every use. At a minimum, press the button located above and to the right of the stove to close the remote solenoid-activated valve at the propane tanks.

**House Battery Bank & Switch**

The HOUSE BATTERY BANK provides power for all DC systems, except the engines, generator, thrusters, and 5 automatic bilge pumps. When disconnected from shore power, all 24-volt devices drain the house battery. Use devices only as needed. The DC voltmeter on the DC panel can be switched between the various battery banks to measure charging or resting battery voltages.

When a battery bank is being charged, the voltage will read from about 26.2 volts to 28.8 volts depending upon state-of-charge of the battery bank. When the battery bank is at rest, (that is, not being charged), the voltmeter can give a rough indication of the state-of-charge of the battery bank.

<table>
<thead>
<tr>
<th>Voltage (Wet Cell Battery)</th>
<th>Battery State</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.30 volts</td>
<td>100%</td>
</tr>
<tr>
<td>24.94 volts</td>
<td>75%</td>
</tr>
<tr>
<td>24.50 volts</td>
<td>50%</td>
</tr>
<tr>
<td>23.90 volts</td>
<td>25%</td>
</tr>
<tr>
<td>23.40 volts</td>
<td>0%</td>
</tr>
</tbody>
</table>

All batteries are charged by the engine ALTERNATORS while underway. All batteries are charged by the BATTERY CHARGER when connected to shore power. Ensure the INVERTER INPUT (#17) and INVERTER OUTPUT (#18) circuit breakers at the electrical panel are ALWAYS ON (except in case of an electrical fire). The INVERTER OUTPUT switch must be on for any 120v power to be available. The GENERATOR will also charge the batteries.

There are two battery monitoring systems on board. One is a Xantrex LinkLite monitor located in the stairway from the pilothouse to the staterooms and the other is the Maretron system (discussed below).
Phantom Operation Manual

The Xantrex should normally be on the amp-hour setting where it will display a bar chart similar to the signal strength chart on your cell phone.

**Bow/Stern Thruster Breakers**

The breaker for the thrusters (#36) is located on the 24-volt panel. Turn it ON before starting the engine.

There is an overload protector for the bow thruster located in the forward stateroom to port next to the floor. **It is the large red knob that whoever is bunking forward will accidentally kick sometime during the cruise which will disable the forward thruster.** Have them pull the knob out before starting the engine.

The overload protector for the stern thruster is located in the lazarette on the starboard side near the cockpit deck. It would be hard to flip it accidentally, but it could be done.

Once all the breakers are set, the thruster control at the helm must be activated. Push both ON buttons simultaneously to activate the control. If you change helm stations, you must push the buttons at that helm station. This is important when transitioning from the remote steering station to either of the fixed stations.

If they fail to turn on at the helm station, check the breaker(s). Be aware that the thruster controls turn off automatically after 7-10 minutes and need to be re-armed on the helm control.

**ALWAYS test both thrusters in both directions before leaving dock and before entering the harbor.** Test them again as you approach the dock. A very short (1/4 second) pulse will move the boat noticeably, and you can hear them grind the coffee.

You can let them time out to turn them off or press the OFF button.

**12-Volt System**

The 12-volt panel is energized by turning on the 12V DC PANEL breaker on the 24-volt panel. Some items run on 12-volts. The Furuno GPS, Maretron system, Simrad VHF, Flybridge (redundant) VHF radio, stereo, etc. The Maretron is normally ON 24/7. The others are optional. The flybridge VHF is lower quality than the main Simrad radio which has a repeater on the flybridge, so it is normally OFF.

NOTE: on the 12v panel there are twice as many breakers as there are loads. Switch on both breakers next to the sticker, and you won’t have to figure out if the upper or lower breaker is the hot one.

**SANITATION SYSTEM**

The black water system consists of two Tecma Vaccuflush fresh water heads, a holding tank, a macerator pump, and an OUTBOARD pumpout fitting.
Marine Toilet

The material deposited in the heads is stored on board in a tank and pumped out at an approved pump station at a marina or if we are a long way from a marina and outside U.S. waters, pumped overboard in deep water. A few simple rules will make life much easier. The heads are manufactured by Tecma and use fresh water to flush. They have built-in macerators which work great as long as the rules are followed. Make sure the Master Head and Forward Head switches are ON in the 24-Volt panel. The control unit located near the toilets has two buttons and a green light to indicate it is powered on. The button on the left fills the bowl and is used before solids are to be deposited. The button on the right empties the bowl and is used to flush. For liquids only don’t use the left button.

1. Nothing goes in the head unless it has passed through your body or small amounts of marine toilet paper. i.e., no feminine hygiene products; no condoms; no paper towels; no wet wipes – no exceptions.

2. Men – please sit to pee. These heads are deviously designed to splash most of the material out of the bowl if you don’t sit.

3. Close the lid when you finish. If you leave it open, it will drop with a frightening “thump” when you hit the first small wave.

4. Use the heads onshore whenever possible. That’s why we go to restaurants. And you thought it was for the food.

5. The head in the guest head is rather small. Sorry about that. Nothing I can do about that now.

It is important that every member of the crew be informed on the proper use of the MARINE TOILET. The valves, openings, and pumps are small and may clog easily. If the toilet clogs, it is YOUR RESPONSIBILITY!

Always pump the head for children, so you can make sure nothing foreign is being flushed.

**Caution – Never** put paper towels, tampons, Kleenex, sanitary napkins, household toilet paper, makeup tissues, or food into the marine toilet. Use only the special dissolving marine toilet tissue provided by AYC.

The TOILET THRU-HULL is located under the removable lower shelf in the large cabinet behind the master head. That is also where the macerator is located.

Holding Tank

The sanitation HOLDING TANK holds approximately 60 gallons. Be aware of the rate of waste production (about 1 gallon per flush). With an overfilled tank, it is possible to break a hose, clog a vent, or burst the tank. The result will be indescribable catastrophe and an EXPENSIVE FIX to you. Empty the tank EVERY OTHER DAY to avoid this problem. Flushing a few ounces of AYC provided deodorizer will help eliminate odors. Alternatively, there should be a bottle of Zaal Noflex Digestor next to the master head or under the master sink. Adding 1 Tsp (+/-) per day to a flush will keep things smelling fine.
The HOLDING TANK is located under the master stateroom floor near the door. There is a tank watch warning light located in the master head. It never reads green even when empty. Orange is about 60%. If it hits red, you must empty the holding tank! **The Maretron display in the pilot house has a very accurate black water level on one of the screens.** It will read 0 when the tank is empty. It will show the percent full unless someone has changed it. **If you get to 75%, it’s time to think about how to empty the tank.**

**The holding tank is emptied in one of two ways:**

#1 At the Marine Pump-Out Station, remove the WASTE CAP located on the outside of the port bow. BE CAREFUL WITH THE CAP. The safety chain is not attached, and it can easily fall into the ocean. Insert the pump-out nozzle into the waste opening. Hold nozzle firmly against the fitting to ensure a tight seal. Turn on pump and open the valve located on handle. When pumping is finished, close lever on handle and turn off pump. Remove the nozzle from the deck fitting and carefully replace the cap. (There is also a WASTE fitting on the port side behind the Portuguese Bridge. It could be used, but you are **much** better off using the one on the port bow.)

If there is a fresh water hose on the dock, rinse the tank by adding 2 minutes of water into tank. Then re-pump to leave the tank rinsed for the next charterer. This also eliminates head odors.

If you’re having problems getting suction you can open the valve and drop the hose in the ocean. It will start sucking. Quickly close the valve, jam the nozzle in the opening, and open the valve.

#2 The tank’s contents can be discharged with the MACERATOR only in Canadian waters or beyond the 3-mile limit. Make sure you are out of harbor and in waters where there is a good tidal current.

To operate the macerator, turn on the MACERATOR PUMP (#22) switch on the 24-Volt panel. Cycle through the Maretron screens until you find the Black Water Tank level. You will hear the diaphragm pump as it empties the holding tank. It may change sounds when the tank is empty. The Maretron level will read 0 when the tank is empty. You may want to set a timer on your phone for 5 minutes to remind you to check the level as the pump is very quiet. It should only take a few minutes to empty the tank. **Turn off the MACERATOR PUMP switch when the tank is empty.**

**Y-Valve**

The Y-VALVE directs waste effluent into the sanitation-holding tank or flushes the effluent “directly overboard.” The Y-VALVEs are located below the sinks in the heads. A plastic wire tie keeps the handle pointed to the holding tank – the normal position. **Y-valves are usually wire-tied to the holding tank position in respect to Coast Guard regulations. Please leave it “as is” unless there is an emergency. Be familiar with the applicable laws concerning dumping sewage directly overboard. If you get inspected by the Coast Guard, they will check to make sure the Y-valve is tied in the “To Tank” position.**
WATER SYSTEM

Fresh Water Tanks
The FRESHWATER TANKS hold a total of 337 gallons. The forward tank is located on the centerline under the forward berth and holds 112 gallons which is usually sufficient for four people for two days or more. The after tank is located to starboard under the master berth and holds 225 gallons. The analog tank level gauges are to starboard and below the pilothouse helm and show the level of both tanks. (Make sure the Nautical Instruments switch (#40) is ON.) Press 2 for the forward tank and 3 for the after tank. The Maretron also has a very accurate level for the forward tank. The Maretron level for the after tank is not very accurate. If the after tank is filled, the boat will list about 4 inches to starboard. If you are going to be in marinas often enough to run on the forward tank, don’t use the after tank and avoid the list. If you do use the after tank, empty it first. AYC will probably fill both tanks unless you ask them not to. You can always empty the after tank at dock by running water in the Galley sink. It will take a while.

To refill the tank, remove the WATER CAP(S) located just behind the Portuguese Bridge on the starboard side. Avoid flushing debris from the deck into the tank opening. AYC recommends that you DO NOT fill water and diesel at the same time.

A MANIFOLD to switch tanks is located on the forward bulkhead in the engine room. Unless you are thin and flexible, you will have to enter the engine room from a hatch in the salon. The aftermost hatch in the salon is for the commissary. The next forward hatch is for the engine room. The hatch under the peninsula is to remove the engine and is not operational. Be sure to turn on the engine room lights by going into the port side of the engine room through the master shower before opening the hatch in the salon. ONLY RUN ON ONE TANK AT A TIME. If you open both valves, the pump will suck air as soon as the upper tank is empty. You can tell when you are about to run out of water by listening to the water pump. It will hiccup and may not be able to pressure up the system even with the faucets closed. If that happens SHUT DOWN THE PUMP and change (or fill) tanks.

Fresh Water Pressure Pump
The WATER PRESSURE PUMP is located on the starboard side of the forward bulkhead in the engine room. Activate the pump at the 24-Volt panel by turning on the breaker (#21). If the water pump continues to run, either you are out of water or there is an open valve somewhere. If you run out of water SHUT OFF THE HOT WATER HEATER on the AC panel. Serious damage can occur! If you do run out of water, you will have to open a faucet after you have filled the tank(s) and turned on the water pressure pump so that the pump can prime. It is a good idea to turn off the fresh water pump when you are not using it and especially when you leave the boat for an extended period.

Whole House Water Filter
There is a whole house water filter mounted on the starboard fuel tank near the fireboy. If it becomes plugged (which should never happen), you can bypass it by changing the three valves near it. This filter gets the big chunks out but does NOT purify the water. The municipal water in Washington and B.C. is usually quite good. If you need to change the filter, there is a blue plastic wrench behind the filter assembly. Replace the rubber gasket at the same time. Close both the inlet and outlet valve and press the button on top of the filter to relieve the pressure so you can rotate the clear plastic filter holder. If you leave the rubber gasket out, the filter assembly will spray water all over you and the engine room when you pressurize the filter assembly. (It’s pretty exciting.)
Hot Water Tank

The HOT WATER HEATER has a 5-gallon capacity tank and can be heated with 120v power when connected to shore power (or the genset is running) or via a heat exchanger from the Hurricane Hydronic heater. To use on shore power, flip ON the water heater circuit breaker (#4) on the AC electrical panel. Do not use the water heater if the water tank level is very low. The water heater is located in the forward part of the engine room to starboard.

THE HOT WATER HEATER IS NOT HEATED BY THE ENGINE. To get hot water while at anchor, moored, or underway you will have to run the Hurricane heater. See the instructions below. There is enough hot water for 2-3 boat showers if the tank is hot. It takes 15 minutes or so to recover enough to get the 4th shower. You might stagger your showers morning and night or 2 before breakfast and 2 while underway. (It’s fun.) However, there is a trick that can result in almost on-demand hot water. The hurricane heater has a “summer loop” that closes off all the heating loops to the staterooms and salon and diverts all the hot water from the heater through only the hot water heater. The valves for the summer loop are below the engine room hatch in the salon along with a picture of how to control the flow. Moving one valve 90 degrees changes back and forth from summer loop to “winter” loop. Put it on “Summer” and shower away. Change back to “Winter” if you need cabin heat.

There is a “mixing valve” mounted on the hot water tank which lowers the water temperature going into the hot water pipes and keeps you from getting scalded.

Shower

Before taking a SHOWER, make sure water pressure and shower sump breakers are on. The shower sump is 120-volt and is wired to the GFCI outlet in the master head. Take only very short “boat” showers (turning off water between soaping up and rinsing). There is a small valve on the hose next to the shower head. You can use it to turn off the water without having to use the main shower valve and possibly changing the temperature of the water. If you use the small valve, it takes a couple of seconds for the temperature to equalize because the water backflows a short distance. Sometimes it’s a few degrees warmer and sometimes a few degrees colder. It settles down quickly. The plastic shower curtains keep water from leaking out into the master head or forward stateroom. In the master head you can turn on the exhaust fan to defog the mirror. The exhaust fan in the forward shower is wired to the light switch. To keep the shower tidy, squeeze the shower stall and seat after the last shower. Check for the accumulation of hair in the shower and sink drains. The sump pump runs intermittently. If there is water above the teak grate, the drain is probably plugged with hair. The teak grate in the master head is sometimes hard to pull up. There should be a light line hanging from the shower rod. If necessary, you can insert a loop (“bight”) under one of the cross members, pull it up with the galley tongs or the pliers on your multi-tool, and run the two “bitter” ends back through the loop. Now you have a handle to pull the grate up to access the drain. Ensure that the faucets and nozzle are completely off after using the shower.

Transom Shower

An additional FRESH WATER SHOWER is located on the inside of the transom. Gently pull the stainless shower head from its resting place. The hose is about 10 feet long and is spooled on a spring-loaded reel. Pull the hose out to the desired length and then let it spool back for a few inches until it catches. It operates like an old-fashioned window blind. Depending on the speed of retraction, the reel either catches or spools up the hose. You will have to play with it to find the right speed, and while trying to retract it you may have to pull it out a little and let it back in a few times. Like many things, a little practice makes it easier. After the valves are opened, you will have to push the silver knob on the shower head down to get water flow. You can either hold the knob down with your thumb which takes a bit
of force or lock it down with the little slide. To unlock the slide, push the knob down which should release the slide.

**Gray Water**

Wastewater from the galley sink drains directly overboard through an above-the-waterline thru-hull. Wastewater from the sinks in the heads and from the showers flows into a plastic box (sump) under the master stateroom which can be accessed from the hatch at the foot of the bed (berth). *Everything* put into the lower sinks and showers is pumped overboard by the pump in this sump.

**Hoses**

The *fresh* water hoses are stored in the *port* locker on the bow next to the anchor windless. **There is a system.** The hoses are set up to “click” together using quick connects and have shut off valves. Lift the top of the cabinet in the cockpit. You will find hose fittings including a Y and an orange fitting to screw onto the male hose fitting on the dock. There are two hoses in the forward locker. The 25’ green one ordinarily connects to the orange fitting on dock (or the Y) as it is the larger. If you don’t need extra length you can start with the blue one (50’). **Close the valve on the green hose.** Lead the male end of the green hose over the empty bow roller and plug it into the quick connect. You can now turn on the dock water without creating a runaway. On board, use a wire tie to attach the green hose to the railing or the Samson post, then click the male end of the blue hose into the closed valve. **Close the valve on the blue hose** and open the valve on the green hose. If you are filling the water tanks wrap the valve end of the blue hose around the railing next to the fill (starboard) and adjust the length to hold the end of the hose in the filler. Slowly open the valve and adjust as necessary. The hose should jam in the filler and you can walk away until you either hear water running on deck or the tank level indicators to starboard of the pilothouse helm show full.

If you want to rinse the salt water off the boat or rinse the dust off the deck you will find several nozzles in the cockpit cabinet.

When you disconnect the hose, please be sure to retrieve the piece you screwed on the dock fitting.

There is a *salt* water hose and nozzle in the *starboard* bow locker along with all the other paraphernalia for anchoring. When the anchor is being pulled you can rinse it off with salt water by plugging into the salt water fitting on the port side of the bow, turning on the DECK WASH PUMP breaker (#24) on the 24-volt panel, and opening the faucet. After the anchor is aboard you can switch to the fresh water faucet and get rid of the salt on the deck. **Be sure to turn the DECK WASH PUMP breaker (#24) OFF.**

Stow the hoses in the appropriate locker.

**GALLEY**

The galley is fully equipped with a 3-burner propane stove with oven, GE convection/microwave oven, vertical refrigerator/freezer, dual stainless sinks, and an additional Grunert freezer in the commissary. It has 8 sets of plates, cups, bowls, glasses, and silverware along with all the kitchen utensils and bowls, etc. you would need to live aboard for an extended period. There is a “Pampered Chef” covered dish in the cabinets that will just barely fit in the oven with a little -gentle- effort. It can be used to make a nice one-pot meal. The two sets of tongs in the front of the silverware drawer are very handy.
Phantom Operation Manual

Stove
The stove and oven use propane. The propane stove is activated by the following steps:

1. Turn on one of the three propane tanks located in the locker (the one attached to the hose! 😊)
2. Turn on the 24-volt DC breaker labeled “GAS ALARM (#29).”
3. Press the leftmost “pad” on the solenoid control panel located to the right of the microwave to open the solenoid-activated valve in the propane locker.
4. Turn on the gas at the stove (Press in the burner control knob and turn counterclockwise) and light burner. You should hear a “click” as the piezoelectric lighter snaps. If you don’t hear clicking, either push in the knob furthest to the right or use a firestick to light the burner. If this is the first time you have used the stove, you will have to hold the knob in for 10-15 seconds while either “clicking” or keeping a lit firestick near the burner to purge the air out of the gas line. Continue holding the knob in for a few seconds to allow the thermocouple to heat up. Then adjust the burner.

The burners are hot. There is a diffuser (movable plate) on the stove that can be used to reduce the tendency to burn things.

If you create smoke while cooking the smoke alarm on the ceiling in the port after Salon may go off. You can move it to fresh air by twisting it counterclockwise to remove it. Replace it when done cooking. You can usually prevent this by using the fan that is part of the microwave.

The gimbals should be in one of the drawers to port of the galley (probably the 3rd one down). If you think you might want to cook underway, please review their operation with AYC.

Oven
1. It is essential to the proper operation of your oven that the stainless-steel heat disbursement plate be placed in the lowest shorter racks at the oven bottom with the curved side of the plate down. (It should be there.)
2. Turn all control knobs to the OFF position.
3. Before lighting the broiler burner make sure that the oven rack has been adjusted to position your food at the desired height.
4. Push in the oven control knob; this will start the spark ignition system. At the same time turn the control knob to the desired temperature or to the broil position; hold the knob down until the burner is lit. Continue holding the burner control knob all the way in for about twenty (20) seconds after ignition. This will heat the thermocouple and allow the gas valve to stay open. The thermocouple is designed to cut off the gas supply to the burner if the flame should accidentally be extinguished.
5. Close the oven door carefully to ensure that the oven burner will not be extinguished.
6. Remember that broiling is a rapid process. Broil with the Door Open. Check your food often, and do not run the broiler for more than 20 minutes at a time.

When you are finished cooking, push the button on the solenoid control panel to close the remote valve and allow the flames to burn out. **TURN OFF THE ROUND KNOBS ON THE STOVE.** The oven has two “OFF” settings – one leaves a pilot light burning, and the other turns off all the gas. Unless you are going to leave the remote valve on and use the oven again soon, make sure the oven is OFF OFF. AYC recommends you manually turn off the propane at the bottle.

**Switching Propane Bottles**

It is unlikely that you will have to switch propane bottles, but if it is necessary, there is an adjustable wrench on a set of fragile hooks on the pilothouse bulkhead in the propane locker which is on the centerline aft of the Portuguese Bridge against the pilothouse (below the cushion). *Tickle* the wrench off the hooks. **Remember that flammable gases have a left-hand thread and don’t overtighten.** (Notice the “grooves” on the nut. Let AYC know you had to change propane bottles.

**Convection Oven/Microwave**

The GE Profile Convection Oven, Microwave is located above the stove. Turn ON the 120-volt “MICROWAVE OVEN” breaker (#13). You will have to set the clock before you can do anything else. Press the CLOCK button, turn the large dial to set hours and press the dial. Turn the dial to set minutes and press. Turn the dial to select AM or PM and press. You will have to do this every time you turn OFF the switch on the 120-volt panel (hint). The microwave draws almost no electricity when it is not running.

The microwave works just like you would expect. There is a manual in C:\Phantom\Equipment Manuals\GE Profile Microwave\n
The surface light is very handy when using the stove, and the fan is good to use when frying anything.

If you use the convection oven, please let us know how it works. We haven’t used it in 10 years of cruising.

**Refrigerator/Freezer**

The REFRIGERATOR is dual voltage (24-volt and 120-volt power). There are switches on the 120-volt panel (#3) and the 24-volt panel (#16) to control which voltage it is using. **The refrigerator will only operate on 120 volts when the boat is plugged into shore power or the generator is running.** (And the 120-volt breaker is ON.) Monitor the use of the refrigerator when the engines are not charging the 24-volt battery system. Minimizing openings helps a lot!

You can monitor the temperature of the refrigerator on one of the screens on the Maretron in the pilothouse. It will show you the current temperature and the history. The Maretron runs 3–8 degrees hotter than the thermometers in the refrigerator so it should be about 40°F–43°F to keep lettuce from freezing. The control knob inside the refrigerator is probably at the proper position when you get on the boat and probably should not be adjusted. It can take a couple of hours to cool down after you put warm groceries in it. Cranking it up (down?) will not speed up the process.

The compressor is located in the engine room on the starboard side near the forward bulkhead. There is a large black flexible hose running from the unit to the lower level. This hose draws cooler air into the compressor so please leave it in place.
The freezer above the refrigerator works well.

The refrigerator drains through a clear plastic tube into the engine room bilge. Normally, the hose goes into a Nalgene bottle to keep the bilge dry. Please empty the bottle if it gets half full by pouring it into the shower sump or the master head sink.

**Grunert Freezer**

If you are going to be on an extended trip and want to have several pounds of frozen groceries you can use the freezer in the commissary. It is controlled by the 120v FREEZER breaker (#21). It takes about 6 hours to cool from 50°F to 10°F when empty and will hold at about 6°F on the current setting. One of the Maretron screens in the pilot house has the current freezer temperature and a graph of historical data. The freezer only runs off shore power or the generator. When on shore power, it will cycle about every 4 hours. When cruising, you can probably get a couple of days out of it before you have to run the generator to cool it off again if you limit the number of times you open the box. The compressor is located in the lazarette on the starboard side. Seawater is circulated to cool the compressor. When the freezer is running there should be a steady stream of water coming out of a thru-hull under the swim step on the starboard side. The seawater strainer is in the starboard locker in the commissary. If you run the freezer check the water flow and the strainer at least daily. If you don’t run the freezer, please leave the door cracked so it doesn’t get smelly. You can block it partially open with a partial roll of paper towels or bubble wrap and bungee the door to keep it from flopping around in a seaway.

**HEATING SYSTEM**

The space heating system includes a diesel furnace, plastic tubing running throughout the boat, “air handlers” which are heat exchangers and fans, and thermostats. Besides heating the living quarters, the furnace heats hot water when underway or anchored or moored.

**Diesel Heater**

The DIESEL HYDRONIC FURNACE (“Hurricane Heater”) located in the lazarette provides heat by circulating a 50/50 mixture of water and non-toxic glycol through PEX tubing. This tubing runs throughout the boat. All of the closets are heat traced, and you can see the green color of the circulating fluid through the semi-transparent tubing. There are three thermostats that control the temperature in different rooms – forward stateroom, master stateroom, and salon. Whenever any one of these thermostats calls for heat the diesel boiler fires up and begins circulating hot water throughout the entire system. The individual thermostats control fans on heat exchangers in the rooms. The fans on the individual heat exchangers will not turn on until the water is up to temperature. If you turn up all three thermostats, you will hear the fans
come on at different times in the different rooms as the water gets up to temperature in that particular room. Once a room reaches the set temperature, the fans in that room will turn off.

The individual “Air Handlers” (heat exchangers with fans) have individual switches to run the fans at low, high or off. The master stateroom and master head are on the same thermostat (next to the master berth), but they have individual fan controllers. The forward stateroom and forward head are similarly configured. The salon and pilothouse are on the same thermostat. Pacific Northwest mornings can be chilly. One trick is to turn the head fan on HIGH, the stateroom fan on OFF, and increase the thermostat temperature in the stateroom. This will heat the head faster than the stateroom. **Be sure to lower the temperature again after the head is toasty.**

There are two pumps to circulate the hot water – one 120-volt and one 24-volt. The 24-volt runs automatically, but you should use the 120-volt one as much as possible. It will run off the inverter as well as shore power and the generator. The Hurricane will run off the house batteries at anchor or while on a mooring.

To power up the Hurricane, turn the HURRICANE HEATER switch on the 120-volt panel to ON. Then turn ON the master control located on the wall to starboard of the stairs from the salon to the pilothouse (red arrow). You will see two rocker switches below the master control. You can safely leave them ON, or you can follow instructions and only use the heating element on shore power. If you are hooked to shore power, there is a small electrical heater that saves some diesel. Adjust the thermostat(s) to the desired temperature and, if necessary, the Hurricane will automatically start. It takes about 15 minutes from a cold start to heat coming out of the air handlers.

Check The furnace EXHAUST PORT located just forward of the swim step on the starboard side. Do not block this opening when operating the furnace as it will fry anything that is in front of it. Be particularly careful with dock lines as they will melt and even burn. Once the Hurricane is on, allow it to run for at least 15 minutes before turning it off. Turn ‘off’ the furnace heater by lowering the temperature setting on all three thermostats or by switching off the master control (wall by stairs- red arrow above). The heater will continue to run for a few minutes as it burns all the fuel in its firebox and goes through an automatic cool down sequence. The best way to turn off the Hurricane if you are leaving the boat is to switch off the master control.

If you are going to run in heavy seas with waves breaking from the starboard after quarter you can plug the Hurricane exhaust using the stainless steel adjustable plug stowed in the drawer near the after door under the settee. **THE HURRICANE MUST REMAIN OFF AT ALL TIMES WHEN THE EXHAUST IS PLUGGED.** Put a piece of blue tape over the master control with a note to remove the plug! You should not be out in those kind of seas. If you want to learn how to do this, ask AYC before leaving.

Because the hot water tubing runs throughout the boat and demand from any thermostat causes all the water in the system to heat, the master stateroom can get pretty warm if you leave the salon thermostat at a high (65°F) temperature overnight. Turn the salon down to 55°F or so when you go to bed.
The people who are often cold will probably prefer the master stateroom while the hot sleepers will probably enjoy the forward stateroom. The forward stateroom also has a screened hatch that can be opened to cool it off. Remember to turn your thermostat down so you don’t roast the people in the master.

The tank and fill fitting for the Hurricane antifreeze are under the pilothouse dash. When cold, the level should be about ¼. When full, the level should be about ½ to maybe ¾. DO NOT OVERFILL. USE THE SIERRA GREEN (PROPYLENE GLYCOL) 50/50 MIX STORED IN THE COCKPIT CABINET. Propylene glycol is NOT poisonous and is used in some food, primarily as a thickening agent. The “Fleet” branded antifreeze used in the engine IS poisonous. Use the correct antifreeze in the appropriate place.

**ELECTRONICS**

Phantom has an extensive array of redundant electronics. This operations manual will give you some of the basics, but you will need to refer to paper manuals in the two plastic file carriers in the commissary or to electronic manuals in the appropriate folder under C:\Phantom\Equipment Manuals\ for more details.

**VHF Radio**

There are two independent VHF RADIOS (including antennas), one of which has an additional wired handset on the flybridge. The main radio is a Simrad RS86 mounted to starboard of the pilothouse helm. It has a large number of features including dual watch (monitor two channels at once), hailer/listening horn, and automatic fog horn. The paper manual is in the chart drawer to starboard under the pilothouse settee. The pdf manual is in C:\Phantom\Equipment Manuals\Simrad\RS86 Manual.pdf. To operate turn ON the VHF breaker in the 12-volt panel. The radio will usually wake up. If necessary, push the ON/C button. The radio looks for a GPS signal from the Furuno GPS (to port of the helm) and will alert you if it has not had an updated location recently. There is a wired handset on the flybridge (RS87) to starboard of the helm that also controls the radio. Whenever you change channels at one of the stations the channel changes on the other station. They are not independent. Normal hailing is done on Channel 16 which you should always monitor while underway. After raising your party, pick a working channel (9, 68, 69, 71, 72 & 78A) and switch. If you “converse” on channel 16 the Coast Guard will yell at you. No one seems to use Channel 9 for hailing in the PNW. Use 22A for a radio check or risk the wrath of the USCG. The Simrad radio is very powerful. A SQUELCH of 01 is usually the best place to run, but you can increase it if you are getting interference.

The U.S. and Canadian Coast Guard monitor Channel 16. If you contact the U.S.C.G., they will ask you to shift to “Channel 22 alpha in the U.S. mode.” Either twist the channel knob or push 2 2. Your radio is permanently in U.S. mode. The Canadian CG may ask you to switch to 22A or maybe 74. Canada seems to be using 26 for a radio check.
Before hailing it’s always a good idea to push the red “16” button to make sure you are on channel 16 as you may have been listening to the large vessel traffic controllers. If you are using Dual Watch, you MUST push 16 to hail, even if the radio shows channel 16 on the screen. You can then change to a different channel.

If your radio emits a two-toned alert for 30 seconds or more that sounds like an ambulance is running over you, it means someone within 25 miles has pushed the red distress button under the flap at the top right (or equivalent). Your radio and all other modern radios will retransmit the alert, and the Coast Guard will soon be on the radio. Be prepared to copy the information. Hopefully, they will broadcast a lat-long rather than naming some unfindable landmark. If you have a medical emergency or other life-threatening event, lifting the flap and pushing the distress button will send the boat’s identification and location to the Coast Guard and all nearby boats. You will get immediate attention. DO NOT TEST THIS.

It is sometimes hard to reach Washington State Ferries on Channel 16. You should not call them unless you really need to. You may have better luck on Channel 13. Large ships usually ignore radio calls from small boats, but if you are in a potentially dangerous situation (e.g., engine failure in a shipping lane with a 20 kt container ship approaching) you can usually get their attention with a “PAN, PAN” call. The coast guard will pick up on that and help you as well.

You can listen to commercial traffic control on 5A, 11, or 14 depending on your location. There is a list of what areas are which channel stuck to the autopilot.

When you are close to the other station, push the 1W button. Don’t call marinas on channel 16. They monitor various other frequencies which are listed in the Waggoner’s Guide. Cell phones are an even better way to contact them. You can also make slip reservations online at some marinas (Port Sidney).

There is a second, totally independent radio on the flybridge. It is normally OFF because it continually breaks squelch. If you need to use it, turn ON the FB VHF breaker in the 12-volt panel. It also has a distress button. If you want to use it to contact a marina from the flybridge while still monitoring channel 16 on the Simrad you can turn it on and off on the face of the radio as necessary.
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Chartplotters

There are two independent navigation systems on board. The primary system runs on a PC located under the pilothouse settee and uses Admiral 10 to run a chartplotter, radar, and depth sounder (fish finder). The secondary system is a Garmin with its own charts, and radar. The Admiral 10 system displays on two AmbientNav screens in the pilothouse with the port screen being repeated on a Big Bay display on the flybridge. The Garmin is above and to port of the pilothouse helm and a second station is located on the flybridge. The systems can be extensively customized, but they are set up to be very functional in the “default” configuration.

Starting the Chartplotters

Start all the inputs (GPS, etc.) before turning on the computers.

24-volt panel:
- RADAR/SOUNDER----ON
- AUTOPILOT---------ON
- GPS---------------ON
- 12V DC PANEL-----ON
- MONITORS---------ON
- GARMIN----------ON

12-volt panel
- GPS---------------ON
- VHF--------------ON
- CAMERA/AIS-------ON

Furuno GPS (Dash)--------ON
Simrad AutoPilot (Dash)----ON

120-volt panel:
- INVERTER INPUT-----ON (24/7)
- INVERTER OUTPUT--ON (24/7)
- COMPUTERS---------ON (24/7)

The power switches on the faces of the two AmbientNav monitors should be left on 24/7. (Thus, the blue tape.)

Power up the NAV computer by pressing the red button to port on the dash in front of the helm. If the Nobeltec (Admiral) dongle lights up the computer is powering up. If you don’t see anything on the monitors, turn the brightness knob on the lower right of the monitors to increase the brightness. Both monitors should come up with a Windows 7 extended desktop. You can use the remote pointer marked N as a mouse; pull the trigger to click. Push the left arrow to right-click. There is a Kensington wireless keyboard with integrated mouse pad for each computer. The dongles are plugged into the USB ports on the dash. There are sliver dots on the keyboards and dongles to pair them. Alternatively, you can plug the wired trackball into the left set of USB ports. There are various wired and wireless trackballs and keyboards in the small (but deep) locker on the help station next to the spiral staircase.

You will probably never turn on the COMM computer unless you want to use it for the electronic manuals while using the NAV computer for navigation.
Phantom Operation Manual

**Nobeltec**

The Nobeltec system drives the open array radar, chartplotter, and fishfinder (depth sounder). The navigation system is Admiral 10. To use Nobeltec turn on the NAV computer.

There is a Tides & Currents Pro icon on the desktop. This would be a good time to get familiar with the program. You can also get to it from inside Admiral. You can find tides and currents for many locations and many dates, past, and future.

**Starting Nobeltec**

Start Admiral by right-clicking on the Admiral icon and “open”ing it. (Or double-click)

Admiral may come up in “PlanView” mode. Since you won’t be using routes, you can go straight to navigation mode by clicking on the N icon. If you go straight into navigation mode upon opening Admiral that is even better. The paper manuals are in the two black plastic folders in the commissary. There is also a pdf file in C:\Phantom\Equipment Manuals\Nobeltec\userguide_maxpro.pdf. Additionally, you can reach the same electronic information by hitting help in Admiral 10.

This manual will cover a few basic areas which will allow you to use Admiral 10 to navigate safely.
The standard screens are a large chart to port and radar, depth, and a small chart to starboard. In the lower right corner of each screen is a control block. Clicking “Menu” turns on and off the vertical menu on the right. The white diagonal arrows indicate sub-menus. Clicking “Info” in the control block puts information along the bottom of the screen.

Clicking “Back” and “Next” changes the information displayed. The Target information (shown above) is the recommended Info. You can change the target displayed (usually the nearest) by clicking on the white up “arrow” to the left of the word Target.

Clicking “Tool” in the control block replaces the information bar with the toolbar for the active window, in this case, the chart. You can change the type of chart displayed and make other adjustments.

The normal page on the starboard monitor displays a radar, depth (fishfinder) and a small chart.
In the picture above, the menu is set on “Tool.” THE FISHFINDER IS SELECTED. (A light-yellow line surrounds it because it was the last thing I clicked.) The tool bar is specific to the fishfinder.

**Stopping Nobeltec**
You stop Admiral 10 by clicking the EXIT button and selecting QUIT ADMIRAL. Give it some time to save the files and close gracefully. The Windows 7 screen will come up. You should shut down Windows from the START button. If you accidentally hit the red button the computer will immediately power down. It usually powers back up and all is well, but don’t tempt it if at all possible.

**Chartplotter Tips and Tricks**

**Chart Orientation**
You have a choice of orienting the chart and radar North Up, Course Up, or Heading Up. Some people prefer North Up which keeps the “world” from spinning every time the boat changes course at the cost of having to figure out whether to turn right or left, while others prefer Heading Up which causes the chart to look like the view out the windows. Course Up defaults to Heading Up if no course is specified. Change the orientation by clicking Menu > Charts > Orientation. You can set the chart differently than the radar. I prefer chart North Up; radar Course Up, but it all works. You must click on the radar and set its orientation separately from the chart.
**AIS for pleasure craft and sailing vessels**

On the Admiral 10 system, vessels that identify themselves as pleasure craft or sailing vessels disappear from the chart unless Admiral thinks they are a threat. They continue to appear in the information bar at the bottom of the chart. This reduces the enormous amount of clutter small boats put on the screen.

**Vessel course and speed**

The little green boat shaped icon in the center of the screen is Phantom. The light black coming from the bow is the heading. The heavy black line is the course. (They may be different because of currents.) The end of the heavy black line is where you will be in 6 minutes if you continue to hold your course and speed. This is one of the handier features on the Nobeltec

**Tracking Phantom**

You can turn tracking on and off by clicking **Chart > Track** and choosing the appropriate button. You might enjoy tracking your journey and putting it on a flash drive. To put it on the drive, turn tracking on when you first get on the boat. At the end of the trip, exit Admiral 10 and then bring it up again. When confronted with the Delete, Export, or Do Nothing prompt, export it to the flash drive.

**Garmin**

Turn on the Garmin by pressing the power button. The first screen will be the Home Screen. The Garmin has a touch screen for all functions. You will have to turn on the flybridge Garmin separately. They are independent units.

You can choose Charts, Radar, or Information. There is no Sonar or Weather. The manual is in C:\Phantom\AYC\Equipment Manuals\Garmin\Garmin_5208_5212_OwnersManual.pdf

The backlighting is set to Auto and should not be changed.

If the chart does not look correct, you may need to pull the SD card and reinsert it.

**Chart Orientation**

You have a choice of orienting the chart and radar North Up, Course Up, or Heading Up. To change the orientation, touch Charts > Chart Setup or touch Menu > Chart Setup while viewing the navigation chart.

**AIS for pleasure craft and sailing vessels**

The Garmin has no way to suppress AIS targets. You will notice harbors are painted green from docked pleasure craft (or painted red if you are close to them.)

**Vessel course and speed**

The little black/red/green boat shaped icon in the center of the screen is Phantom.

**Tracking**

Tracking is normally on for the Garmin and it drops old data off as it puts new data on. There is no way to export it (that I know of).
Phantom Operation Manual

**Radar**

The following is taken from the Garmin Operating Manual. You probably already know this. The radar transmitters on Phantom are high off the top deck and should not be an issue. If you are going to climb onto the top of the pilothouse (not recommended), make sure the radar is OFF. (That’s not a safe place to be while underway in any circumstances.)

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**WARNING:** The marine radar transmits microwave energy that has the potential to be harmful to humans and animals. Before beginning radar transmission, verify that the area around the radar is clear. The radar transmits a beam approximately 12.5° above and below a line extending horizontally from the center of the radar. Avoid looking directly at the radar, because the eyes are the most susceptible part of the body.

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It’s a good idea to run with the radar on even in clear air to get a feel for how it works. It will find targets that you don’t see with the naked eye. Typically, I run with the Nobeltec at 3 miles and the Garmin at 1 mile. Remember you are not allowed to travel in FOG or in serious wind conditions.

As you get ready to come into dock or a mooring (or, especially, a lock), turn both radars to STANDBY outside the harbor. Your neighbors will be really grumpy if you are painting them with radar at the dock.

**Nobeltec**

To run the radar, you must select it (click on it; watch for yellow lines). Then you can use the radar tools. In most cases, there are TWO parts to the Tool menu. You must click Back or Next (either) to get to the next menu. Once the radar has been selected and you have moved to the Next menu, you can start transmitting by clicking on the appropriate icon. Hovering over the icons will tell you what they do.

The “buttons” look like they push in. To set the radar to standby, click the Transmit/Standby button. You can use the tools menu to change the radar range and set many other options.

The Nobeltec radar does a great job of picking up small items which is a blessing and a curse. It will see boats you did not notice, but it will also pick up waves and, occasionally, birds on the water as well as clutter next to the boat and rain. You can adjust the gain, rain, and sea manually or automatically. Try automatic until it isn’t doing what you want.
Phantom Operation Manual

**Garmin**

To use the radar from the Home screen, touch Radar > Cruising. After warmup, touch Menu and then touch Transmit Radar.

The Garmin has a very clear display and is not as sensitive as the Nobeltec. It does a very nice job of identifying nearby targets, but not so good beyond 2 or 3 miles. Running with it at 1 mile seems to be optimal.

**Radar Tips and Tricks**

One handy feature on the Nobeltec is the Mini-automatic radar plotting aid (or MARPA). You can double click on any radar target and the system will start tracking it just as if it had an AIS transmitter (see below). This will show you the CPA, TCPA, and a graphical course. The MARPA targets will also be displayed on the chart. You can often tell if you have tagged a buoy this way. After the target passes by you (if close) the MARPA will usually lock onto the near-Phantom returns. You can right click on the target on the CHART and delete it.

**Global Positioning System (GPS)**

There are three GPS receivers on board – Garmin, Maretron, and Furuno. The Maretron GPS turns on when you power up the Maretron breaker on the 12-volt panel. To turn on the Furuno, turn ON the breaker labeled GPS in the 12-volt panel. Then push the DIM PWR button until it lights up. The Garmin GPS powers up when the Garmin is turned on. The Furuno has several screens which can be accessed from the MENU button. The DIM button can be used to control the lighting. The Furuno is the source of lat-long data for the MAYDAY button on the Simrad radio.

*Note -- GPS is considered a navigation aid. Do not rely on it. Compasses, charts, and dividers are the tools to plot position, course, and speed.*
AIS (Automatic Identification System)

The AIS is controlled by a breaker on the 12-volt panel labeled “CAMERA” with AIS on white tape below it. It should always be ON while motoring. The AIS targets will automatically appear on the chartplotters and radars.

All large vessels (> 150 tons) are required to have an AIS which broadcasts their position, speed, and other information. AIS is one of the best things to ever be required on large vessels. It increases safety and reduces anxiety. Pleasure craft may have an AIS transmitter. Phantom has an AIS receiver, but not a transmitter. AIS targets show up on your chartplotter and radar as icons with a line extending from them. That line shows where they will be in 6 minutes if they maintain their course and speed. If your 6-minute line and their 6-minute line cross at 6 minutes (or 5 or 4 or 3!!!!) then you may have to act IF THEY ARE A LARGE CRAFT. If they are a 30-foot sailboat under power, the normal rules of the road apply, and you MAY be the stand-on vessel. The AIS is constantly computing the Closest Point of Approach (CPA) and the Time to Closest Point of Approach (TCPA). On the Nobeltec you can see this information and more in the information ribbon across the bottom of the chart (or radar) IF you have scrolled through the information bars to get to it. IT IS HIGHLY RECOMMENDED THAT YOU RUN WITH THIS INFO BAR ACTIVATED. If the AIS thinks there is a threat of collision (within 0.5 nm), it will turn the icon and line for the other boat RED. Don’t panic. Ferries and large container ships follow specific lanes that are shown on the chart. If they are going to turn away in a minute, then you may be fine. The ferries do a nice job of trying to avoid you without telling you. Just stay away from the ferry paths on the chart (if you can do so safely).

One of the nicest things about AIS is that it is not line-of-sight like radar. It allows you to see “behind” islands. For instance, if you are headed to San Juan Island, you can watch the ferries headed to Thatcher Pass (between Blakely Is and Decatur Is) while they are still behind Blakely.

You can estimate when they are going to pop out from behind Blakely at 17 kts and take appropriate action which may mean going north of Lawson Rock before crossing the Ferry Route as you round the southernmost point on Blakely. The passage between Willow and Blakely is quite wide and usually a nice place to transit. Watch your AIS, however, because sometimes ferries use that passage and while it is not difficult to fit Phantom and a ferry in the passage it does generate some anxiety.
The difference between the Nobeltec and Garmin is shown below:
Nobeltec

Notice the Green icon in Anacortes Marina which is Phantom. Our heading is slightly east of south. The Sioux Arrow is going to hit us in 4 minutes unless she changes course or speed. (She is going to do both as she is going into Cap Sante Marina.) The boats north of Anacortes are large tugs or other commercial craft. Notice that Anacortes Marina is totally RED. Those are all docked pleasure craft with their AIS transmitters running. They show up in red because the computer thinks they are threats (their course will “pass” within 0.5 nm of your course). The black X is an AIS on a boat stored onshore that has not transmitted recently. Notice Cap Sante Marina shows only two boats. (which are commercial boats). We will contrast that to the Garmin soon. (The wavy interference pattern is because this is a photograph of a computer screen – you will not see it.)
The Garmin does not show the Sioux Arrow because the picture was taken after she had entered Cap Sante Marina. There is a black and green and red icon representing Phantom hidden in the middle of the sea of RED pleasure craft that the Garmin thinks are dangerous targets. Notice that Cap Sante Marina is covered in GREEN. Those are transmitting pleasure craft that the Garmin does not suppress and that it does not deem are threats.
Getting the Most out of AIS

Run with the AIS info bar activated at the bottom of either on the port or starboard AmbientNav computer screens. The info bar will normally show the nearest AIS target which may not be of interest. You can switch to a boat of interest by double-clicking on the boat icon or by clicking on the white “arrow” or triangle just to the left of the word “Target.”. This will bring up a list of the 30 closest targets sorted by distance from Phantom. When you click on the desired target, it will show up in the info bar along with its CPA, TCPA, RNG, etc. It will also show size of the vessel and its MMSI number in a little box on the right side of the info bar. You can often tell the kind of craft by the name. After you are done watching a particular target, be sure to CLICK ON CLOSEST so you are back to normal running.

Watch the 6-minute lines. If they are long, the target is moving fast. The Victoria Clipper and San Juan Clipper run about 27 knots. You can tell who they are by the length of the line. The line also shows if they are making a turn. A small flag indicates a slow turn; a curved line indicates a fast turn. Each dash and space is 1 minute. Both these targets are turning to starboard, but at different rates of turn.

AIS is also very useful for whale watching. You will see fast boats flying out of Victoria (Prince of Wales) and Vancouver and Anacortes (Mystic Sea and Island Adventures). You can often tell by their speed and name that they are whale watching boats. If you see them suddenly stop or slow down and cluster together “thar be whales.”

When a ferry is docked near your path, you can set them as the target to watch and keep track of their speed. If you see their heading line look “outbound” and the speed goes to 0.3 kts and climbing you know they are underway and you can make sure you are out of the ferry lane.
Depth Sounder

There are two DEPTH SOUNDERS, one is a fishfinder which displays a depth profile and water temperature profile on the Nobeltec system, and the other is a single point sounder which displays on the Maretron and on the Garmin. To activate the Nobeltec DEPTH SOUNDER, turn ON the breaker on the 24-volt panel labeled “SOUNDER.” The Maretron sounder comes on automatically when the Maretron breaker is ON. The Nobeltec display automatically changes range as the depth changes. Occasionally, it locks onto clutter and shows a very shallow depth. You can click on the display to “activate” it, switch to the “Tool” bar, and manually adjust the range until it finds the true bottom. Then switch back to auto depth. You can also play with the frequency (50 Mhz for deep, 200 MHz for shallow), clutter, gain, etc. Most of the time setting everything to AUTO works well. The Nobeltec sounder can easily find the bottom in 1000 feet of water at 50 MHz.

The Maretron sounder will only work to about 200 feet. If you are in deeper water than that, the Garmin depth (lower left of screen) will read something like 5.9 feet and blink. Warn your guests about this since it can create anxiety.

Both sounders are set to read depth below the waterline. Therefore, if they read 6 feet you are aground! Try to anchor or moor so that you will have 4 feet under the keel at low tide (10 feet on the depth sounder.) The sounders may show depths that are a foot or two different in shallow water and several feet different in deeper water. Be conservative.

Remember, ALWAYS consult your charts for depth! When you are in bays with shallow slopes and harbors the depth sounder is quite useful. Around reefs and rocks do not think you are safe if you are in 30 feet of water (or more). The reefs and rocks are quite steep, and you can show 30 feet in the middle of the boat while the bow is on a rock.

Autopilot

Phantom is equipped with a full-featured Simrad (Robertson) AP25 autopilot. Turn on the AUTO PILOT breaker (#34) on the 24-volt panel. Then push the STBY PWR button to turn it on.

You will not be using routes unless that has been approved by your fleet captain so the NAV button will not be discussed. However, you can use the AUTO function which will hold the heading that you dial into the autopilot. Even if you are steering by hand, the autopilot must be ON as it provides heading information to the chartplotter. The autopilot has several screens, but the one shown here is the most useful. The large numbers show the status of the autopilot and the heading. “S” means the autopilot is in standby mode and steering is done from the wheels. “A” means the autopilot is in AUTO mode and “George” will hold your heading. “N” is nav mode where the autopilot is following a route from the chartplotter. You should never see this mode.

If you are in AUTO mode, the wheel will NOT change the rudder angle. You can spin the wheel all you want, and the boat will not turn. To use the wheel, you must push the STBY button. It is a really good idea to push the STBY button whenever you get ready to make turns with the wheel to lock in the muscle
memory. That way if you are ever in AUTO mode and have to make a quick turn you will push STBY without having to think about it.

Talk to your fleet captain about running in AUTO. Done properly, running in AUTO is a good way to reduce fatigue and stress. When in AUTO mode you can change the heading by rotating the knob. One click is one degree. Pushing the arrows below the knob will change the heading 10 degrees. Unless you are an AP25 wizard, it is best to push STBY and hand steer rather than using the DODGE function. There are numerous other functions on the AP25 that have little use while cruising.

The rudder angle is shown below the heading. The rudder sensor is very sensitive.

**Maretron**

Phantom is equipped with a Maretron NEMA 2000 system that allows for monitoring tank levels, battery condition, engine information, temperatures, and many other things. There are three multifunction displays – pilothouse, flybridge, and master stateroom. Each of these displays has 16 screens displaying information. The pilothouse and flybridge displays primarily have navigation and engine information, although the pilothouse display also has refrigerator and freezer temperatures, and tank levels for fresh water and black water. The detailed instructions for the displays are contained in C:\Phantom\Equipment Manuals\Maretron\DSM250UM_1.6.2.pdf.

Various alerts can also be set. There is only two alerts currently set on Phantom – the anchor watch, which is more fully explained under the section on anchoring and an overheat on the exhaust which would indicate a saltwater pump failure on the main engine.

The Maretron system is normally always ON (24/7). Turn on the MARETRON breaker on the 12-volt panel (#0). Press and release the leftmost button on the display to power it on locally. You will have to power on all three displays separately. Press the rightmost button (enter) to accept the disclaimer. Use the arrow keys to scroll through the screens. When you reach the engine screens, you will have to accept another disclaimer. Some of the engine information will not be available until the engine ignition is ON.

The display in the master stateroom has battery charge information and various temperatures. Scroll through the screens to see what is available.

The second button from the left (the light) controls both dimming (short push) and the screen color (long push). Black lettering on a white background is usually the most readable in daylight. Red is usually the
preferred color at night. The pilothouse and master stateroom displays are set to be either black on white or red. The flybridge display can be cycled through several colors.

**Computers**

There are two computers located under the pilot house settee in the cabinet to starboard of the stairs from the Salon to the Pilot house along with a mass of wiring. One is “dedicated” to navigation and the other is labeled “communication”. The radar and fishfinder are physically attached to the NAV computer. The breaker labeled COMPUTER (#20) on the 120-volt panel should be ON 24/7. There is a UPS behind the electrical panel that also should be on 24/7. If you turn off the COMPUTER breaker the UPS will beep. Either turn the breaker back on or open the electrical panel and turn off the UPS. Push the red button on the dash to port to start NAV and the red button to starboard to start COMM. The COMM computer is almost never used, but you may want to open equipment manuals on it while navigating on the NAV computer. The computers run on Windows 7. **Please don’t change any system settings.** When you turn off shore power the inverter will automatically turn on to supply 120-volt power. The UPS usually gives a short peep when this happens. Each computer has a keyboard with integrated touchpad. The dongles that control the keyboards are plugged into the USB ports in the dash. The dongles are coded with one or two sliver dots which correspond to the dots on the keyboard. There are also two Interlink “mice” which can be used to move the cursor. The “mice” are connected to the computers via receivers in the computer cabinet. It is sometimes nice to use the NAV mouse when you are on the flybridge to run the Nobelttec system. Be careful with the keyboard for the COMM computer. It is easy to set it on the dash so that it pushes the red button and turns off the COMM computer.

**AmbientNav Monitors**

The computers are attached to two AmbientNav monitors. The monitors can be cycled through “Digital”, “Composite”, “S-Video”, and “Analog” by repeatedly pressing the “Input” button next to the “Star” (red arrow.) The port monitor is normally run on Digital which displays the NAV computer. On Analog that monitor will mimic the Garmin charplotter. However, it is NOT a touchscreen so you will have to touch the Garmin screen to drive the Garmin. You can display DVD’s from the stereo (stbd aft salon) on the port monitor by changing to Composite. The soundtrack will play from the stereo speakers. The brightness can be adjusted using the knob. If the knob is turned all the way counterclockwise, the monitor is very dark (0.5 nits), even at night. When the knob is turned all the way clockwise the screen is readable (1200 nits) in bright sunlight. This “dynamic range” is one of the major reasons these monitors cost $8000 each when new.

The starboard monitor will display the NAV computer screen when it is on Digital. On Analog it displays the COMM computer. On Composite it displays the Pilothouse DVD (on the side of the chart plotter). Normally, both monitors are on digital and used for navigation. You can cycle to Analog on the COMM computer to view manuals and back to Digital without disturbing the navigation system. If you have a portable DVD/Blueray player that connects using a Composite Video Out cable AND has a speaker system, bring it and the cabling, and the speaker. Otherwise just use the stereo and the port monitor.

If you need to clean the monitors, use the spray lens cleaner in the small drawer above the chart table on the starboard side of the pilothouse and the soft lens cloths in the drawer. **NO PAPER.**
Phantom Operation Manual

Wi-Fi

Phantom is equipped with a Wi-Fi router and an antenna on the mast that increases wi-fi range. You probably will connect all your devices to the Wi-Fi router and then connect the router to the internet connection in port. The router is named “Phantom”. The password is posted on the pilothouse dash or available from your fleet captain. After connecting to the router, connect to the internet by entering the URL http://192.168.89.1/ (If you open Internet Explorer or Chrome you will find a shortcut to this URL.) You will now see a list of possible wireless internet connections. Click on the appropriate one and, if necessary, enter the login credentials provided by the marina. Now, everyone can access the internet. There are some places in the islands where you can access the internet using a phone hotspot. One example is the southeastern buoys in Echo Bay on Sucia Island, especially with Verizon. The cell coverage is quite good in the San Juans and Gulf Islands. There are probably many other places where you can get internet over phone.

If you don’t have a Canada Roaming plan be very careful as you get north of Orcas Island and into the Matia/Sucia/Patos area. You may get attached to Rogers or Shaw which are Canadian carriers. Check with your carrier about roaming charges. (Internet in Canadian marinas is usually free, and you may be able to use internet calling.)

ENTERTAINMENT SYSTEMS

AM/FM Stereo Radio

The JVC Model KD-DV5300 unit is located in the cabinet in the salon next to the after door. It operates like a normal car radio. Detailed instructions are in C:\Phantom\Equipment Manuals\VVC\GET0444-001A.pdf. There are two speakers (stereo) in the salon, two in the pilothouse, two in the master stateroom, two in the forward stateroom, and two (stereo) on the bridge. The FADER controls the distribution of the salon and bridge speakers. F is the Flybridge; R is below decks. If you are using the stereo only below decks, do your neighbors a favor and FADE to R 06. That will shut down the Flybridge speakers. The BALANCE controls the sound distribution in the left and right speakers. There is a remote control (line of sight) velcro’d to the after side of the cabinet. The master volume can be controlled from this remote. There are knobs that control the volume to the below decks speaker in each room. In the salon the black knob is to starboard of the stove. In the pilot house the white knob is on the interior wall of the chart table (stbd side of dash). The black master stateroom knob is next to the Maretron panel forward of the master berth. The black guest stateroom knob is to starboard near the thermostat and air-handler fan control.

DVD/CD Changer

At the top of the radio there is a slot for CD’s and DVD’s. You can watch DVD’s on the port monitor in the pilothouse using the radio. Put the port monitor on composite, insert the DVD in the slot in the radio, and enjoy. You can bring your audio CD’s and DVD’s from home. Remember to take them at the end of the trip.

TV/VCR

This vessel does not have a TV. There are many places in the islands where you can stream TV stations on a personal device over the internet.
ANCHORING AND BUOYS

Anchoring

There is excellent holding ground in most anchorages.

The primary WORKING ANCHOR is a 40kg (88 lb.) Rocna (made in Canada before they moved production to China) attached to 400 ft chain passing through the deck from the ANCHOR LOCKER. The locker can be accessed through the hatch on the starboard bow. All the materials needed for anchoring or picking up a mooring ball are in the starboard bow locker. Read the section below on using the Maretron Anchor Watch Alarm and have someone prepared to mark the location of the anchor.

Setting

I like to use the remote steering station on the bow to set and retrieve the anchor. Release the anchor keeper (using your multifunction tool). Be careful to hold the lever down and release it slowly to keep it from snapping your fingers. Remove the part attached to the anchor and hang it on a lifeline so it does not go swimming. Make sure the manual override pawls are not engaged (they have blue tape on them). They should never be used unless you have to manually retrieve the anchor.

The 24v WINDLASS breaker (#20) must be on along with the WINDLASS POWER SWITCH located on the starboard side of the electrical panel. At the bow, tap gently on the ‘down’ foot control to provide a small amount of slack in the chain. The anchor will begin to tip. You can have someone mark the anchor location at this time. Use the steering station or hand signals to have someone hold the boat on station until the anchor hits bottom. Then use short reverse pulses (1 sec) to lay out the anchor chain without unduly stacking it on the sea bed.

Let out sufficient ANCHOR RODE (chain) before setting the anchor. The anchor line is marked with a long white paint mark at about 10’ (when the anchor is about to break the surface). It is marked with a 1’ white patch at 50’, 2 white patches at 100’, 3 white patches at 150’. This pattern is continued (200’ = 1 white patch, 250’ = 2 white patches, 300’ = 3 white patches, etc.) The end of the chain is tied to the chain locker with a line that can be cut in an emergency. Be sure to record the lat-long or set a mark if you have to do this so we can get a diver to go retrieve it. If the anchorage is crowded put down at least a 3 to 1 scope (60 feet for 20 feet of water taking into account the +/6’ from the bow roller to the water), back the anchor in with a short burst from the engine. Then let out additional scope dependent upon conditions. Install anchor chain bridle running it over the spare bow anchor roller, NOT in a V-pattern to the bow cleats, cleat it off on the Sampson post, and slack a loop in the windlass side of the chain. Run the snubber straight back from the bow roller to the port side of the Sampson post, take some wraps and cleat it off. To test the anchor set and work it in you can reverse for 30 seconds or so until the slack in the anchor chain starts to come out. Then go to neutral and watch the snubber to see if it starts tugging. You can repeat this. The engine is very powerful in reverse and if you continue to reverse even at idle you will break the snubber. (Sailboats have small engines – Phantom has a large engine.)

Raising

Sometimes the anchor chain does not cascade in the chain locker when you raise the anchor. When this happens, the chain begins to “jump” in the gypsy and you have to correct the problem before continuing to raise the anchor. This can lead to unnecessary stress. The recommended procedure is to pull everything out of the starboard locker and put it near the Portuguese bridge (get it out of the way). Pull the two aftermost grates out of the locker, exposing the chain pile, and put them near the Portuguese
bridge. Hook the boat hook on the life rail near the bow so it is handy. If the chain stacks you can use the boat hook to push over or pull over the pile and continue.

Before raising the anchor, ALWAYS start the engines as the windlass uses large amounts of power and you need to have control of the boat before the anchor is raised. Either have someone at the helm to control the boat or be prepared to use the steering station. If you used the Anchor Watch function on the Maretron, either disable the alarm or change the operating mode to “Underway”. Turn on the DECK WASH PUMP breaker (#24), plug in the washdown hose (in the starboard bow locker), and open the hose bib. Assign someone to wash off the anchor chain as it comes aboard. Direct the salt water in the stainless steel channel so the water and the mud goes over the bow of the boat. Turn ‘on’ the WINDLASS SWITCH and take up slack to remove pressure on chain bridle. Give the windlass short rests as you are pulling it up. When you see the continuous white mark the anchor is about to break the surface. You can then have the person at the helm hold the boat in position until the anchor is up or use the steering station to hold it in position yourself. Don’t start out of the anchorage until the anchor is stowed. As the anchor rises, be careful not to allow it to swing against the hull. Once the shank hits the bow roller carefully tap the up control to pull the anchor in. It will usually rotate to the correct position. You can use the boat hook in the starboard bow locker to roll it over if necessary.

Reconnect the anchor keeper. Close the plastic covers on the FOOT PEDAL CONTROLS (lift them straight up to release – don’t force). Turn ‘off’ the WINDLASS POWER SWITCH and the WINDLESS breaker. TURN OFF THE DECK WASH PUMP breaker. It’s a good idea to use the fresh water washdown on the port bow to rinse off the bow roller assembly and foredeck to get rid of the saltwater.

**Spare Anchor (Should never be needed)**

A SPARE Fortress FX-55 ANCHOR is normally stowed in the port bow locker underneath the grate that hold the fresh water hoses. It is attached to 75 feet of 5/16” chain and 200 feet of rope rode. The Fortress anchor must be assembled before use so if you need to use it for some reason, plan ahead. The assembly instructions are inside the red canvas cover. This is an emergency anchor only. The anchor itself weighs 32 lb and shank is attached to the chain. To get it out you will have to remove the hoses and the teak grates, crawl down into the hole and yank it out. It is the largest Fortress anchor that will fit on board and it is a tight fit. It will come out of the locker. If you need to use it your day has gone terribly bad and the adrenaline will help you get it out. Assembly is not difficult. Just go slowly and follow the directions. Check every step. You will need to deploy it manually over the spare bow roller. There is no rope gypsy on the windlass so you will retrieve it manually.

**Anchor Watch**

The Maretron has an Anchor Watch Display that runs off the Maretron GPS. Consider this a sleep aid. If you use it while anchored it will alarm if your anchor drags. Also, the person on the forward side of the master berth can see the heading of the boat and the distance from the anchor while lying in bed. One of the screens in the pilothouse (#1) and one of the screens in the Master Stateroom has the display.
The display is centered on the position at which the anchor is dropped (when set correctly); this point is represented by the anchor symbol. The control is always oriented North-up, with the boundary circle located at the Alert Set Point distance from the anchor position. The position of the vessel is represented by the boat symbol. This is oriented according to the heading of the boat.

You may use the “control mode” of the display to easily set the Anchor Drop position as follows.

In normal operating mode, use the “Scroll Up” and “Scroll Down” keys to change to the screen containing the Anchor Watch display. Once that screen is displayed, follow these steps to set the Anchor Drop position:

1. Press the “Enter” key for approximately one second. This will place the display into “Control mode”, and one of the controllable items on the screen will be highlighted with a thick border. (Note the “thick” border around the compass rose in the photo below compared the “thin” border in the photo above.)

2. If there is more than one controllable item on the screen, you may use the “Scroll Up” and “Scroll Down” keys to change the highlight to the Anchor Watch display. (The screens should only have one controllable item as they are currently set up.)

3. Once the Anchor Watch display is selected the GPS location of the anchor can be set by pressing the “Power” key. (Coordinate this with the person setting the anchor.) You will then see a confirmation popup asking whether it is okay to set the Anchor Drop position to the current position. If you answer “Yes”, the Anchor Drop position will be set to the GPS position shown on the screen.

4. To exit the control mode, press the “Lights” key to return to normal operating mode. The highlight will disappear.

The Anchor Watch is currently set up to be active only when the Operating Mode is “Anchored.” To set the operating mode press the **Enter** key to get into “Menu Mode” (left picture). While on Alert Setup press **Enter** to get to the Alert Setup sub menu (right picture). Scoll down to Operating Mode and set it to “Anchored”. First thing in the morning set the Operating Mode to “Underway” or the Anchor Watch will go off as you leave the anchorage and scare everyone in an already stressful situation.
Ultra Trip Hook

If someone sets their anchor across your anchor line you can use the Ultra Trip Hook to get free. It is stored behind the flat fender in the line locker behind the Portuguese Bridge. The “instructions” for use are in C:\Phantom\Equipment Manuals\Ultra Chain Grab\UltraTripHook_Brochure.pdf. You could probably use the mooring lines in the starboard bow locker as the two lines to operate the hook. You might also check out the crab pot lead line as one of the lines.

Mooring Buoys

The State Park Sticker on your vessel allows you to pick up the MOORING Buoys in the parks for free. You only need to register at the kiosk usually located at the heads of the docks. State mooring cans have a metal triangle at the top (usually) upon which is a metal ring. They also have a plate on them which states the number of boats that can be attached to the buoy. Phantom is the largest Selene that can be attached to a State Parks Buoy. (If asked, she is 43’ – the max is 45.’) If you get caught in a strong blow (30 + knots) you are better off on the anchor rather than a mooring buoy.

There are two white “manila” lines in the starboard bow locker that are used for mooring lines. Please DO NOT use docklines. One or both of these lines are run through the metal ring on the top of the buoy and then over the SPARE BOW ROLLER back to the port side of the Sampson Post where they are cleated off. Don’t create a “bridle” by cleating off one end to each of the forward cleats. (Yes, I know. That is what all the books say to do.) If you use the cleats the lines rub on the bottom paint and you can run over the buoy. If you run both sides of the line(s) over the spare bow roller the boat will stay away from the buoy and the lines will stay away from the boat.

Picking up buoy

In the summer, buoys are hard to get. Usually they free up about 10 AM and are often gone by noon. You should plan your movement to try to arrive at the anchorage about 10 AM and be prepared to lurk until someone leaves. If you are pulling the dingy bring it up to the swim step so you don’t suck one of the lines into the stern thruster.

Review the operating instructions for the Happy Hooker contained in Appendix D. Set up the steering station at the bow. Get two helpers who will operate at the bow on the port side. Life vests are a good idea for everyone on the deck. Pull the two manila lines out of the starboard bow locker. Pull the “happy hooker” out of the locker (right). Get the boat hook out of the starboard locker (or grab the one in the cockpit). Grab the deck brush from the after, port side of the salon wall in the cockpit. Take the brush off the pole and put the happy hooker on. Attach one end of a manila line to the Samson Post leaving very little excess behind the cleating. Attach the other end of the manila line to the paracord attached to the happy hooker (double sheet bend). Make sure it is all set up correctly so the manila line will lead cleanly over the spare bow roller.

Come up to the buoy into the wind or current as you would for anchoring. Use the thrusters and throttle to hold the boat so the buoy is about three feet forward and slightly to port of the bow. Have crew members on the port side of the bow, one with a boat hook and one with the happy hooker. Hook the ring on the buoy and hold it upright so the crew with the happy hooker can get the mooring line through the ring. Lead both legs over the spare bow roller and adjust the length of the mooring line so there is very little slack in it. Cleat the free side of the mooring line off on the Samson Post. It is recommended that you add the second mooring line. (Think of it as a sleep aid.) You can hold the ring up with the first mooring line and
use the happy hooker to run the second line. Stow everything. After shutdown, take the dingy to shore and register or just wait until the ranger comes by and growls at you (sometimes they are nice).

**Releasing buoy**

This is where being on a buoy really pays off. Stow everything and make the boat ready to go. Engine on idle and neutral. Let go of one side of each mooring line while making sure the other side is still attached to the Sampson Post. Pull the lines aboard and stow them in the starboard locker. On to the next adventure.

**CANVAS**

There is a system.

All the canvas is marked with its location and an “up” indicator. You will probably only be concerned with the canvas for the pilothouse windows, the flybridge dash, and the flybridge settee. You might use the BBQ cover, the flybridge table cover, and the dingy cover.

You can store the canvas on the pilot berth or in the commissary while it is not in use.

**Pilothouse Windows**

There is blue opaque canvas and brown translucent canvas for the pilothouse. You will want to use the translucent canvas when not mooring as it keeps the sun from baking you in the pilothouse. Do not have any canvas on the pilothouse windows when underway. The brown canvas should be rolled up on the pilot berth with the open side of the snaps exposed. Rolling it makes it easier to install. Start with which ever side is the outer part of the roll (port or starboard). Snap the top snaps as you unroll the canvas while leaving the bottom snaps undone. **DO NOT LIFT THE WIPERS LIKE AN AUTOMOBILE.** They break if you do that. Raise them about 1” off the glass and slide the canvas under them. Because you are working with the roll this can easily be done by one person. After you have snapped all the top snaps go back and snap all the bottom snaps. You will have to stretch the canvas for some of the snaps. Reverse the process to remove the canvas. When you unsnap the first top snap, roll the canvas such that the after seam rolls AWAY from the window to start. That way when you get to the other side you will have a neat roll when the last snap is undone.

The brown canvas will allow you to look out at the world during the day while remaining mostly hidden. It will reverse at night and allow the world to look at you while you cannot see out if any lights are on in the boat. You will probably want to replace the brown canvas with the blue canvas at night in a marina.

**Flybridge Dash**

Please cover the instruments with the plastic covers and put the white canvas on the flybridge dash when you are done using it. You can run with the canvas bunched just forward of the flybridge dash by undoing the bungies, unsnapping the twist lock on the helm, and unsnapping ONE of the sides where they are snapped to the dash.

**Flybridge Settee**

There is a trick. Unsnap the lower snaps first starting by the BBQ. After you have a few unsnapped you can pull the canvas up on the seat, put a knee on the seat with the loose canvas in front of you (don’t kneel on it) and work your way around the settee. When you get to the after part of the settee you can unsnap
the top while moving backwards or slide out and unsnap the top from the BBQ to the stern. You should cover the settee every night or the dew will make for some wet bottoms in the morning. To cover the settee, look at the back of the canvas to figure out what is up and what is forward (or aft). Flop the canvas over the back of the settee and move around the settee from the BBQ aft snapping only the top snaps while keeping the loose canvas pushed to the back of the settee. Right leg kneeling on the settee; left leg jammed between the table and the settee. After the top is snapped, pull the slack canvas over the seat of the settee and snap the bottom snaps without kneeling on the seat.

**SETTEE CUSHION WARNING:** If you decide to remove the cushion backs be aware they are held in place by Velcro straps. If you pull on the cushions you will rip the straps off the cushions. Undo the Velcro straps first. All the bottom cushions are snapped down.

**BARBECUE**

The BARBECUE is in the port cabinet on the flybridge. Lift the (heavy) white fiberglass cover and lean it against the railing. Raise the stainless steel cover and lock it in place. To lower it you will have to lift slightly and pull the brace towards you. Open the locker doors and turn on the propane. Get a firestick out of the drawers in the salon to light the BBQ. To light push the black knob down and rotate it while holding a lighted firestick near the burners. Adjust the intensity by rotating the knob. There are two large tweezers (or forceps) in the front of the silverware drawer (unless they have been moved). These are really handy for turning anything on the BBQ.

After use turn off the BBQ using the black knob and turn off the propane bottle. Wait until the grill cools before closing the stainless steel and fiberglass covers. Please clean up the grill after use.

**DINGHY & OUTBOARD MOTOR**

Your Walker Bay Genesis Deluxe 301DX DINGHY with a 15 hp Honda engine is stored on the flybridge. It has a capacity of about 1350 pounds (motor, equipment, and 4 people). It is a precision fit on the flybridge so take your time.

Remove the canvas cover by undoing the two “cam cleat” style plastic line holders on the port side of the dingy. Pull the line up to release it from the cam cleat and pull it out of the little hole. Leave the cleat attached to the canvas. If you cover the dingy you will pull the line through the hole from the back and cleat it just like a jib sheet (pull down into the cam cleat). Store the canvas forward on the clear chart table temporarily.

Getting the dingy off and on the boat takes some time. It is recommended that you tie up to a linear dock with the lines to port and take the dingy off the starboard side. It can go off the port side, but it is easier to use the starboard side. Talk to your fleet captain about dropping the dingy at the beginning of the trip and towing it. If the wind is blowing hard or there are big waves it is best to have the dingy on the flybridge and tied down.

**Deploying**

*Preparation*
Remove the ensign and stow on the pilot berth or elsewhere. Insert the drain plug into the drain hole and tighten. Set up the winch and boom controls which should be stored in the large blue padded bag. There is a “W” on one handle and a “B” on the other handle. W is for Winch and B is for Boom. The plug in for the controls is on the starboard wing of the flybridge. There are markings (single line and double line)
to make sure the W goes in the winch outlet and the B goes in the Boom outlet. After setup, quickly pulse the winch OUT to make sure they are in the right sockets. Lead the electric lines to the port side of the flybridge AFT of the mast (so you have lots of slack). Turn the helm seats to face backward so you have more room to maneuver. Release the courtesy flag halyard from the mast (small “white” line on starboard side of mast running from spreaders to cleat) and let it hang. Undo the three straps that hold the dingy down and stow them in the (large blue padded) bag. Note the way the after two straps are crossed to keep the dingy from rolling. Also note how they are lead through the Weaver Chocks so you can run them again when you tie the dingy down. Click one or both of the yellow lines onto the stainless eye outside the bow of the dingy. Install the 3-point lifting harness (grey lines with stainless snap hooks in the “bag”). There are two stainless eyes on the inside of the transom and one eye inside the bow for the harness. When it doesn’t go in so everything leads cleanly take it off and redo it. Hold up the ring by hand and make sure everything leads cleanly. Let the winch out a little, undo the snap hook from the winch, and hook it into the ring on the harness between the two aft lines. Take up most of the slack to hold the harness up off the boat. The harness and winch line are made of Dyneema which is very smooth and will not snag you like wire line. You can hold them and let them run across your hands. Drop the boom a few inches and release the snap shackles on the after rails if you are not rolling much. If you are rolling you can keep the boom from swinging by leaving the port snap shackle in place and leading the starboard control line OUTSIDE the shrouds to the D-Ring on the forward starboard side of the railing. You will have to loosen the control lines to do this. Red is the Port line. Not Red (couldn’t find green) is the Starboard line. Using the control lines will keep the boom from swinging and dampen the motion of the boat, but it requires careful and continuous line handling. Only do this if necessary. Assign one person on the flybridge to keep the dingy from rotating as it is moved. They should keep their hands apart, touching the port tube and be more like the immovable object than the irresistible force. (Just use enough force to stop the rotation.) They can also use the yellow line to help control the dingy. Assign another person to be ready to do the same on the main deck. OK. We are now ready for the fun.

**Execution**

You can always stop the winches by letting go of the switches. Make sure everything is leading cleanly. If not STOP and fix it. Move slowly.

Raise the boom and let out the winch, either simultaneously or sequentially until the boom is directly above the ring in the harness. If one of the winches doesn’t turn get the rubber hammer out of the toolbag and vigorously beat on the winch while holding the lever down. You should not have to do this, but it can happen if the winches are not used for a long time. Once the boom is directly above the ring you are ready to raise the dingy off the chocks. Leave the boom alone and raise the dingy straight up. Have your crew keep it from rotating. After lifting it up a couple of feet, let them experiment with the amount of force necessary to rotate it. (Not much.) Don’t let the dingy motor hit the back rail. If necessary, readjust the position of the boom. Continue to lift the dingy until the prop is just above the railing. You will find that the bow is trying to wedge itself into the crotch between the mast and the shrouds. Move the dingy aft by (simultaneously) lowering the boom and taking in the winch. You may have to stop and adjust either the boom or the winch by itself as they take up at slightly different rates. Move slowly and stay in control. WATCH THE WINCH LINE as the harness nears the block on the end of the boom. 

**Stop before you hit the splice.** I usually rotate the dingy at this point so the bow is headed toward the swim step. Rotate the boom until the dingy is outboard of the boat. Lower the boom (if necessary) until it is horizontal. Push the boom against the shrouds and hold it there. Let out the winch until the dingy hits the water. The person on the deck will keep the dingy from rotating while it drops. Take the yellow line(s) back to the after hawse hole (DO NOT DRAG THE LINES ACROSS THE TEAK CAPRAIL) and tie them off. You can either continue to let out winch line until the dingy is behind the boat or use the boat hook to pull the bridle close to the boat near the side doors and unsnap the winch snap shackle. Make sure you have the dingy tied to the boat before undoing the winch line.
Phantom Operation Manual

Hold the winch line to keep some tension on it and coil up the winch line smoothly. Reattach the boom control lines to the after D-Rings. Raise the boom until the control lines are just taut. Unclip the bridle from the dingy and stow in the bag. If you used the control lines to control the boom, coil them neatly and stow on the mast. Undo the electrical controls, replace the caps, and stow the cables in the bag. If you want to open up the deck space, unscrew the screws on the Weaver chocks, slide them out of the deck plates and stow them in the bag. Take note of the way they are oriented so you can replace them the same way.

Recovery

Recovery is the reverse of the deployment procedure. Take down the ensign and stow it. Let the courtesy flag halyard loose. Rotate the helm seats to face aft. Make sure the dingy motor is in the down position. Set up the chocks. Set up the electrical controls. Install the bridle while the dingy is next to the swim step. Either clip the winch line onto the bridle at the back of the boat or bring the after part of the dingy forward to the middle hawse hole of Phantom and cleat it off; work through the side door to hook the winch line to the bridle. Release the boom control lines and lower the boom to horizontal. Swing the boom out and take in the winch line while holding tension on it with your hand until it is taut. Release all the lines tying the dingy to the boat. Raise the dingy with the winch until the winch line has about 6” left above the start of the splice. Have your crew positioned on the main deck and flybridge to prevent the dingy from rotating. Raise the boom and let out the winch keeping the prop above the railing. At some point rotate the dingy so it faces forward. Keep raising the boom and lowering the winch until the dingy comes into the boat. Be careful to get the outboard motor inside the railing before lowering the boat onto the chocks. Getting the dingy placed right will require some finesse. Have one of the crew get under the after part of the dingy and guide it onto the chocks. After recovery strap the dingy down, remove the drain plug, and stow the cables and bridle in the bag. If you are not going to use the dingy again, cover it and put the light lines through the cam cleats and tighten. The canvas has bow and stern written on the inside to help with orientation. The seat back should be up to make the cover fit correctly.

Towing

I use the two yellow lines to tow the dingy in a configuration I have never seen on any other boat. Clip the two snap shackles on the ring on the outside of the bow of the dingy. Run the lines through the staples to each of the after hawse holes. Cleat the lines so that the chafing gear goes around one horn of the cleat and through the hawse hole. Use plenty of wraps and lock loops on the cleats as polypropylene is quite slick. You can hang the excess in the black line hangers. I’ve tried to find the sweet spot, but Phantom’s wake is quite unusual and I can’t find the third wave in the center of the wake. If you find it let me know. When you leave an anchorage or come into an anchorage pull both lines up and cleat them off so the nose of the dingy is against the swimstep. This keeps the lines from getting sucked into the stern thruster and ruining your week. This is also a good way to keep the dingy at night so it doesn’t bounce against the hull in the middle of the night. Remember to let it out before increasing rpm’s when leaving an anchorage. When towing the dingy please raise the prop out of the water so it doesn’t spin.

CRABBING & FISHING

A crab pot with a float and 100’ of lead line are located in the lazarette along with a crab measuring gage.

Always check the fishing and crabbing requirements before you leave on your cruise. You will need a license. Many areas are CLOSED to crabbing and fishing on certain months. The limit is usually 5 male crabs per day per license.
CRAB AWAY FROM THE BOAT!  Lines can get wrapped around props.  The best way to set the pot is to put it in the back of the dingy (between the seat and the motor), get away from the boat, attach the line to the bridle, bait the trap, and drop it in 40’-60’ of water.  Fish-flavored cat food or with the pop-up ringed lids or frozen chicken backs or turkey legs work the best for a nice neat way to bait the trap.  You can leave the pot down for 4-8 hours over slack tide or overnight.  Be certain of water depth before lowering the crab pot; make certain the buoy line is long enough for the depth.  Measure the crabs using the CRAB MEASURING GAUGE normally stored in the crab pot.  Keep the male crabs of proper size (usually 6 ¼ inches across the carapace).  When you go to set your pot take the white bucket and get your (clean) cooking water.  When you check your pot take a white bucket for crabs.

Boil crabs about 12 minutes to cook.  There is a large stainless steel pot under the port side of the “bench” in the lazarette that holds the hydraulic ram for steering.  It is in a square plastic basket.  You will probably have to pull some things out of the laz to get to it.  Please store it upside down so it drains.  There is also a smaller pot under the after chair in the salon.  There are crab crackers and picks in the salon drawers.  Cracking crab is messy and best done outside with lots of paper towels and a trash can.  The shells and innards should go overboard as they get really stinky after a day.

After using, wash equipment thoroughly with fresh water (available from the cockpit shower).

Note -- Please let the crab line and pot dry a bit in the cockpit before putting it away in the laz.  DON’T put the line or pots on the teak cap rail!

OTHER:  Safety & Bilge Pumps

SAFETY should be paramount in your daily cruising.  A MAN OVERBOARD DRILL should be discussed and perhaps even practiced with a life jacket.  Remember your lifejackets are stowed in the starboard cabinet on the Portuguese Bridge.  A few should always be out and ready.  Your “flares” (safety light) and safety equipment are located in the cockpit locker.

Phantom is equipped with several AUTOMATIC BILGE PUMPS.  The master switches are located on the “mimic” panel above the chart table in the pilothouse.  Normally, the switches will be left in the AUTO position.  The bilge pumps almost never run.  If you hear one running check to see why.  There are wooden plugs near each thru hull and a foam “universal” plug at the port side entrance to the engine room.

An AUXILIARY HAND OPERATED BILGE PUMP located in the cockpit locker.  The handle is on the wall of the cabinet.  There is a manifold in the locker that allows you to chose which are is being pumped.  This is used only in emergency situations.

The ENGINE SPARES BOX (plastic orange color) is stowed in the outboard starboard locker in the commissary.  Most other spares are stowed in the outboard port locker in the commissary.  Light bulbs are stowed in the bottom drawer of the cabinet in the Salon.
THRU-HULL LOCATIONS

The locations of the thru-hulls are noted on the following diagram. There is a single-page laminated version of this diagram in the chart drawer. There is a wooden plug next to each thru-hull in the unlikely event the hose comes off, and you cannot close the thru-hull. There is also a universal orange foam plug at the port-side entrance to the engine room that can be stuffed into any thru-hull or a hole in the hull smaller than your fist.
## Appendix A – Electrical Panel Configuration

### 120-volt Panel

<table>
<thead>
<tr>
<th>No.</th>
<th>Label</th>
<th>Underway</th>
<th>Docked</th>
<th>Anchored/Moored</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>MAIN 50 AMP</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Always ON</td>
</tr>
<tr>
<td>1</td>
<td>CHARGER HE</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF unless needed to load generator; house, engine</td>
</tr>
<tr>
<td>2</td>
<td>CHARGER SBG</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF unless needed to load generator; thrusters, gen</td>
</tr>
<tr>
<td>3</td>
<td>REFRIGERATOR</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>Only on shore power or gen</td>
</tr>
<tr>
<td>4</td>
<td>WATER HEATER</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>Only on shore power or gen</td>
</tr>
<tr>
<td>5</td>
<td>WASHER/DRYER</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Only when using; shore power or gen</td>
</tr>
<tr>
<td>6</td>
<td>ENGINE BLOCK HEATER</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Winter storage only</td>
</tr>
<tr>
<td>7</td>
<td>HURRICANE HEATER</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>120 v circulation pump</td>
</tr>
<tr>
<td>8</td>
<td>FUEL POLISHING SYSTEM</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Don't use it</td>
</tr>
<tr>
<td>9</td>
<td>FWD CABIN OUTLET</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>10</td>
<td>MASTER CABIN OUTLET (SUMP PUMP)</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Leave on for Sump Pump</td>
</tr>
<tr>
<td>11</td>
<td>SALON OUTLET</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>12</td>
<td>PILOT HOUSE OUTLET</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>13</td>
<td>MICROWAVE OVEN</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>14</td>
<td>TV/VCR</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Not Operational</td>
</tr>
<tr>
<td>15</td>
<td>GALLEY OUTLET</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>16</td>
<td>E/R LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>17</td>
<td>INVERTER INPUT</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Always ON</td>
</tr>
<tr>
<td>18</td>
<td>INVERTER OUTPUT</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Always ON</td>
</tr>
<tr>
<td>19</td>
<td>F/B OUTLET</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed</td>
</tr>
<tr>
<td>20</td>
<td>COMPUTERS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Always ON</td>
</tr>
<tr>
<td>21</td>
<td>FREEZER</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed</td>
</tr>
<tr>
<td>22</td>
<td>LAZ OUTLETS</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed</td>
</tr>
</tbody>
</table>

### 12-volt Panel

<table>
<thead>
<tr>
<th>No.</th>
<th>Label</th>
<th>Underway</th>
<th>Docked</th>
<th>Anchored/Moored</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>MARETRON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Always ON</td>
</tr>
<tr>
<td>1</td>
<td>GPS</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>Furuno</td>
</tr>
<tr>
<td>2</td>
<td>CELL AMP</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Not Operational</td>
</tr>
<tr>
<td>3</td>
<td>FB VHF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>Turn on on FB unless using</td>
</tr>
<tr>
<td>4</td>
<td>VHF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>Simrad</td>
</tr>
<tr>
<td>5</td>
<td>CAMERAS (AIS)</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Defrost Fan</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed</td>
</tr>
<tr>
<td>7</td>
<td>STEREO</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>No.</td>
<td>Label</td>
<td>Underway</td>
<td>Docked</td>
<td>Anchored/Moored</td>
<td>Comments</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------</td>
<td>----------</td>
<td>--------</td>
<td>-----------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>MAIN 100 AMP</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>Always ON</td>
</tr>
<tr>
<td>2</td>
<td>FWD LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>3</td>
<td>MASTER LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>4</td>
<td>SALOON LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>5</td>
<td>GALLEY LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>6</td>
<td>PILOT LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>7</td>
<td>E/R LIGHTS</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>8</td>
<td>COM LIGHTS</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed</td>
</tr>
<tr>
<td>9</td>
<td>LAZARETTE LIGHTS</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed; Activates switch on aft cabinet in Salon</td>
</tr>
<tr>
<td>10</td>
<td>EXTERIOR LIGHTS</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed; Outside red walk lights as desired</td>
</tr>
<tr>
<td>11</td>
<td>NAVIGATION LIGHTS</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>Turn on Anchor light on dash when anchored or moored</td>
</tr>
<tr>
<td>12</td>
<td>ENG IGNITION</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>ELECTRONIC ENG CONTROL</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>SPREADER LIGHTS</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>As needed</td>
</tr>
<tr>
<td>15</td>
<td>SEARCH LIGHT</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Search Light nonop; use handheld</td>
</tr>
<tr>
<td>16</td>
<td>REFRIGERATOR</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>HORN</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>WIPERS</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>19</td>
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</tr>
<tr>
<td>20</td>
<td>WINDLASS</td>
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<td>ON</td>
<td>Requires second switch to right of panel to operate</td>
</tr>
<tr>
<td>21</td>
<td>FRESH WATER PUMP</td>
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<td>ON</td>
<td>ON</td>
<td>As needed; Best to turn off when not on boat</td>
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<tr>
<td>23</td>
<td>DECK WASH PUMP</td>
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<td>OFF</td>
<td>Use to wash down anchor and chain; then TURN OFF</td>
</tr>
<tr>
<td>24</td>
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<tr>
<td>25</td>
<td>FIRE BOY</td>
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<td>ON</td>
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</tr>
<tr>
<td>26</td>
<td>FULL LEVEL ALARM</td>
<td>ON</td>
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<td>ON</td>
<td>Monitor black water level in master head</td>
</tr>
<tr>
<td>27</td>
<td>GAS ALARM</td>
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<td>ON while cooking; otherwise OFF</td>
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<td>31</td>
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<td>ON</td>
<td>Analog tank levels in pilothouse</td>
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<tr>
<td>41</td>
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<tr>
<td>42</td>
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</tr>
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<td>43</td>
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<td>Internal phone system with bluetooth; optional</td>
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**24-volt Panel**

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<th>No.</th>
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<tr>
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<td>ON</td>
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</tr>
<tr>
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</tr>
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<tr>
<td>5</td>
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<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>6</td>
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<td>As needed</td>
</tr>
<tr>
<td>7</td>
<td>E/R LIGHTS</td>
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<td>ON</td>
<td>ON</td>
<td>As needed</td>
</tr>
<tr>
<td>8</td>
<td>COM LIGHTS</td>
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<td>As needed</td>
</tr>
<tr>
<td>9</td>
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<td>As needed; Activates switch on aft cabinet in Salon</td>
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<td>As needed; Outside red walk lights as desired</td>
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<td>Turn on Anchor light on dash when anchored or moored</td>
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<td>15</td>
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<td>Search Light nonop; use handheld</td>
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</tbody>
</table>
Appendix B – FUEL MANIFOLD

The fuel manifold is set up to draw from the bottom of both tanks through the crossover line into the hose that goes from the bottom of the port tank to the Racor. The return goes to both tanks. Please don’t change the valves without a good reason.
Appendix C – Fuel Burn and Boat Speed

Phantom Fuel Burn, Speed, & nm/gal

- Fuel Burn, gph
- Speed, kts
- nm/gal

Engine Speed, rpm

Boat Speed, kts & Fuel Rate, gph

Fuel Efficiency, nm/gal
Appendix D – Happy Hooker Mooring Buoy Grabber

To use your Panther “Happy Hooker” follow these easy instructions:

1. Attach line to eye of link with a simple stop knot:

   ![Diagram of attaching line to eye of link]

2. Push the “Happy Hooker” forward to straddle eye:

   ![Diagram of pushing happy hooker forward]

3. Pull the “Happy Hooker” back:

   ![Diagram of pulling happy hooker back]

Connecting the Panther “Happy Hooker” to a pole:

The “Happy Hooker” can be easily connected to any pole by the use of a 1/4” bolt or hose clamp. (pole not included)

Bolt Connection:

Drill a 1/4” hole through pole using the “Happy Hooker” fork as a guide. Pass bolt thru pole, fit “Happy Hooker” and secure with wing nut. Cut off any surplus length of bolt.

Clamp Connection:

Important in cases of sealed buoyant metal or telescopic poles

The “Happy Hooker” can be fixed with a standard 1/2” wide worm drive hose clamp passed thru the slots provided in either of the two alternative positions.

“Panther “Happy Hooker” NOTES:

The “Happy Hooker” has a built in locking system to prevent accidental detachment of the link. If the link appears to lock, it can be freed instantly by applying pressure to the eye towards the normal handle position. i.e. as would be applied by the line in instruction.

If it is desired to remove or refit the link, this may be carried out by distorting one of the fork arms sideways.