OPERATION MANUAL

Harriet Tubman

40' Caliber

Welcome aboard!

We are happy you have chosen Harriet Tubman for your vacation and are confident you will enjoy your time under sail and at anchor aboard her.

Harriet Tubman was a near mythical figure in American History. After escaping from slavery herself she safely delivered more than 300 slaves from bondage in the South to freedom in the north, this in spite of dangerous and zealous pursuit and using only the stars to navigate. She bravely conducted the passengers of what came to be known as the "underground railroad" on voyages at least as treacherous as stormy ocean passages. Against all odds, she never failed to deliver.

We likewise desire that this boat deliver her passengers from the chains of everyday life to the freedoms of blue water adventures and new explorations.

Please observe the following "rules" and cautions that are in addition to those outlined in the various sections of this manual:

- No Smoking on board or in the dinghy.
- No pets on board or in the dinghy.
- You will need to exercise care and caution when deploying the main salon table from its position when stored up against the main bulkhead and when folding out the leaf. The table is sturdily built and thus relatively heavy as is the leaf. Caution is required in order to avoid potential of an injury as well as causing damage to the piano hinges with which they are connected.
- Exterior lazarette, propane and anchor access hatches are heavy and can cause injury should they be dropped on heads and hands. When using they should be tied or at least held open by another person.

If you have questions about the boat or about places to visit, please do not hesitate to ask the AYC staff.

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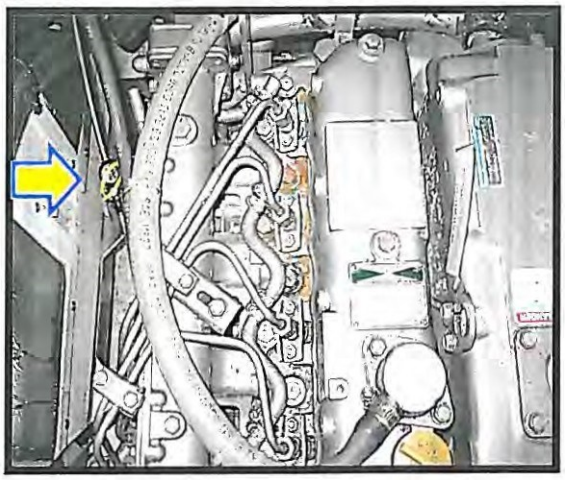
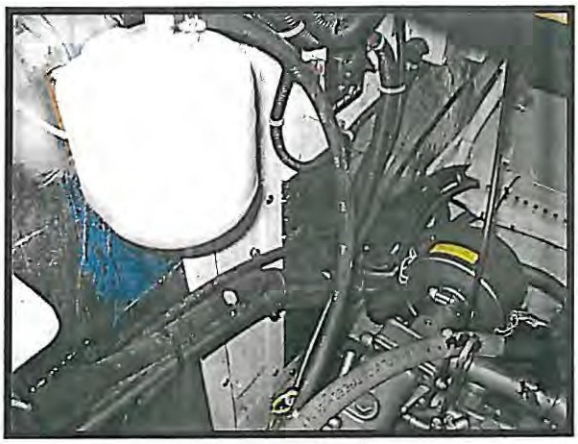
Boat Operation

Engine Inspection



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

Check the level of OIL in each engine with the dipstick located on the starboard side of the engine. A pair of etch marks on each dipsticks indicates the proper oil level. If you observe the oil level to be at or below the lowest mark on the dipstick, "double-dip" the dipstick to ensure you have a correct reading before adding oil. Overfilling can cause damage to the engine. When finished, please sure the dipstick is firmly put back in! Check the oil with a paper towel or a rag. While checking the oil please also have a look at the hoses, fuel lines and belts. If leaks are observed please call Anacortes Yacht Charters and report your observation to our service organization.



Check the level of COOLANT in the expansion tank. Engine coolant is a mixture of 50% antifreeze and water. Spare fluids are located underneath the forward berth. The expansion tank for the coolant is the white/opaque plastic reservoir attached to the starboard engine compartment panel. It should be kept halfway between the low and high marks. PLEASE DO NOT OPEN THE PRESSURE CAP (looks like the radiator cap on a car) at the top of the heat exchanger. Injury could result and the expansion tank would be drained.

The engine Raw Water Intake Through Hull valve is located underneath the navigation station seat and should be left open at all times except during maintenance/cleaning of the sea strainer.

Inspect the RAW WATER STRAINER for debris. The Raw water strainer is located on the lower part of the forward bulkhead of the port cockpit locker. It may be necessary to shine a flashlight on the glass bowl in order to inspect its content. To clean the sea strainer the following steps are necessary: 1. Close the Engine intake sea water valve located underneath the navigation station seat. 2. Remove the wing-nut at the top of the strainer to enable removing the strainer basket from the glass bowl housing. Pull out the strainer basket clean out the debris and replace the basket, cover and wing nut. Ensure the cover is seated correctly. 3. REOPEN THE THROUGH HULL, Start engine and check for leaking at strainer and make sure water is coming out the exhaust.

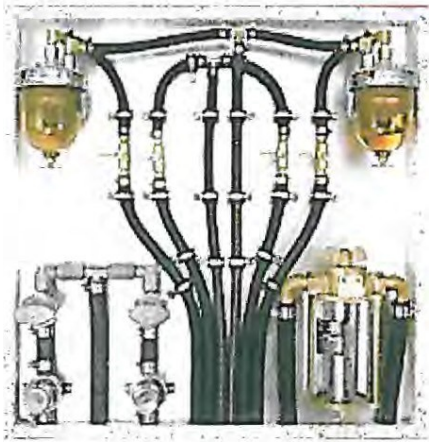
Caliber Yachts Fluid Control Panel

The Fluid Control Panel is located on the forward bulkhead of the port cockpit locker:

Harriet Tubman is equipped with two fuel tanks, each holding 106 gallons and having its own fuel filler located on the port side of the deck, its own Racor fuel filter, as well as its own fuel supply and return lines to the engine. On ly one tank at a time is to be in operation. Because a single tank will like provide more than 120 hours of motoring, It is unlikely that you will need to switch from the tank to the second tank. However, if it is necessary to do so it is done closing the valves on the tank you are changing from, then opening the valves for the tank you are changing to. When the valves are in the open position its handle is in-line the black fuel line to which they are connected. When the valves are in the closed position the handle is perpendicular to the black fuel to which they are connected.

Harriet Tubman is equipped with two water tanks and holds a total of 179 gallons of water in two separate tanks each with its own deck filler. The water tank manifold is located at the bottom port (left as you are facing it) of the Fluids Control Panel. To switch from on tank to another is rotate the gray plastic knob such that it is perpendicular (to close) and vice versa in line with its associated water lines to open. Also note that each tank has a sea strainer to protect the water pressure pump from damage.

Water Manifold



Fuel Tanks Manifold

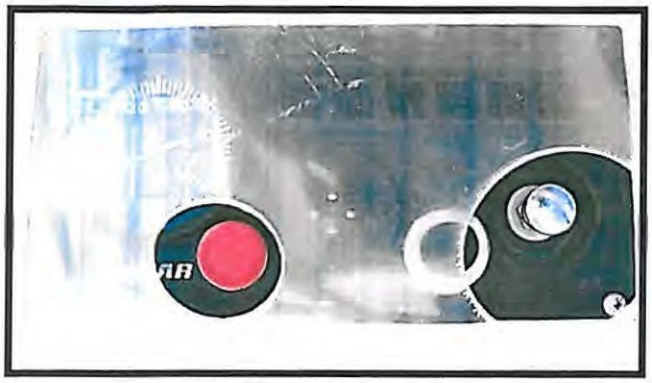
Sea Strain

Engine

Harriet Tubman has a 50hp diesel engine, which drives a two-bladed fixed propeller through a reversible transmission. The combined shift lever and throttle is located on the starboard side of the binnacle (compass) pedestal.
The engine will propel the vessel up to approximately 7 knots in calm water at 2600 RPM. Your best cruising is at 2400 RPM for longer periods.

Using higher throttle settings will produce very little increase in forward speed but will greatly increase fuel and (potentially) oil consumption and the wear on the engine. For this reason, we ask that you limit the use of higher power settings to real emergency situations.

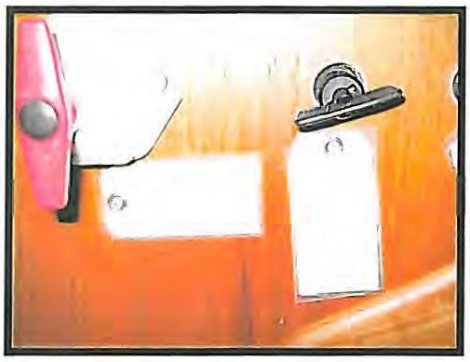
Harriet Tubman has a definite prop walk to port in reverse. As always should be the case, center the rudder before engaging reverse or forward and keep a firm grip on the wheel when in reverse. Use only low RPMs. The engine instrument panel includes an audible low oil pressure alarm, tachometer and hour meter, start and stop buttons and ignition switch.



To the left in the picture is the tachometer and hour meter, the red "stop" button. The audible alarm is at the bottom center. The chrome button on the right is the "start" switch which must be pulled out to start the engine. The black button to the left of the ignition switch is the start button. To start the engine depress the button, but be sure to release it once the engine has started. The chrome ignition switch should be left pulled out whenever the engine is running and never pressed in (turned off) when the engine is running. Doing so can ruin the alternator.

Start-Up

The BATTERY SELECTOR SWITCHES located underneath the navigation seat to their ON positions. The large red handle switch is for house bank and the picture shows this switch in the ON position. The start battery switch is pictured on the right and it too is in the ON position.



UNDER NORMAL CIRCUMSTANCES DURING YOUR CHARTER THESE SWITCHES SHOULD BE LEFT IN THEIR "ON" POSITION.

UNDER NO CIRCUMSTANCES SHOULD THEY BE TURNED OFF WITH THE ENGINE RUNNING. BECAUSE DOING SO WILL RUIN THE HIGH-CAPACITY ALTERNATOR. DAMAGE THE MULTI STAGE CHARGING SYSTEM CHEATE THE POTENTIAL FOR OTHER ELECTRICAL HAZARDS AS WELL.

1. Place the combination SHIFT AND THROTLE LEVER in neutral (straight up in center). Note there is a tab/lever as part of the throttle shift level assembly. When pulled up it allows one to increase RPM without the transmission engaging. For cold start up engage this by pass and move the shift/throttle lever forward slightly to enable the cold engine to have adequate fuel to start and run smoothly. Shift gears at idle only.
2. Pull out the chrome "push/pull" ignition switch at the engine panel and then depress the black start button. Do not hold the start button on for more than 15 seconds at a time. If the engine does not start the first time, WAIT for about 15 seconds before trying again. The Low Oil Pressure Alarm will sound during this process, but should stop sounding moments after starting the engine. IF THE ALARM CONTINUES SOUNDING, SHUT DOWN THE ENGINE IMMEDIATELY BY DEPRESSING THE RED ENGINE STOP BUTTON AND CONTACT AYC SERVICE. NEVER DEPRESS THE CHROME START SWITCH WITH THE ENGINE RUNNING. You will do serious alternator damage. It should always remain on. Allow the engine to warm up by idling for at least 5 minutes at about 1000 RPM before putting under load.
3. After the engine catches, LISTEN AND LOOK at the transom visually to ensure water is exiting with the exhaust. IF THERE IS NO WATER EXITING THE EXHAUST UPON START UP SHUT DOWN THE ENGINE IMMEDIATLEY B DEPRESSING THE RED ENGINE STOP BUTTON, CHECK THE SEA STRAINER FOR DEBRIS. IF IT IS CLEAR, DO NOT START THE ENGINE AGAIN, CALL AYC SERVICE.

Shutdown

Place the transmission in neutral and allow the engine to idle and cool down for several minutes. Usually this is about the amount of time it takes to secure your lines and plug into shore power. Depress the red stop button (his cuts off the fuel supply to the engine) then follow that by pushing in the chrome ignition switch. The low oil pressure alarm will sound until the chrome ignition switch is pushed in.

Getting Underway

- Decide upon a conservative float plan for your destination that takes into account the remaining number of day light hours, the weather, tides and current.
- Have a "look around" the interior and exterior of the boat to ensure items are secure on deck and below.
- Before getting underway close the PORTHOLES, WINDOWS, and FORWARD HATCH. Once outside the marina, idle the engines while crew brings in fenders and lines.
- Check that lines are not in the water where they could potentially be caught in the propeller.
- Assign one crew member to be in charge of securing ports and assign one to be in charge of the dinghy if towing. Shorten the line on all close-quartering maneuvers

Leaving the Dock

1. Turn off the boat AC Power Main Circuit Breaker at the AC Panel as well as any other AC breakers (e.g. battery charger).
2. Turn off the AC Circuit Breaker at the Dock.
3. Disconnect the shore power cord from the dock then then the boat.
4. Neatly stow the shore power cord in the port cockpit locker.
5. Center the helm.
6. Simultaneously with freeing the boat from its dock lines, ensure that no lines are left in the water and back out of the slip.
7. After clearing the dock walk the dinghy aft after backing out of the slip. Ensure that the dinghy painter is tied up close to the stern to avoid it getting caught in the propeller.
8. After exiting the marina the dinghy can be let out such that it rides just forward of the crest and on the face of the second wave from the stern. This is the most efficient point of towing the dinghy.

Docking

Have your crew make ready the lines and fenders and give clear instructions on how you will be docking. Have bow, stern, and spring lines ready. Open life line gates.

As you are coming in to dock, have your best communicator mid ships to give you distances from the dock. It is often hard to judge how close the dock is. Calling out distances (i.e. 20 feet, 10 feet, 4 feet etc.) will only add to a successful docking.

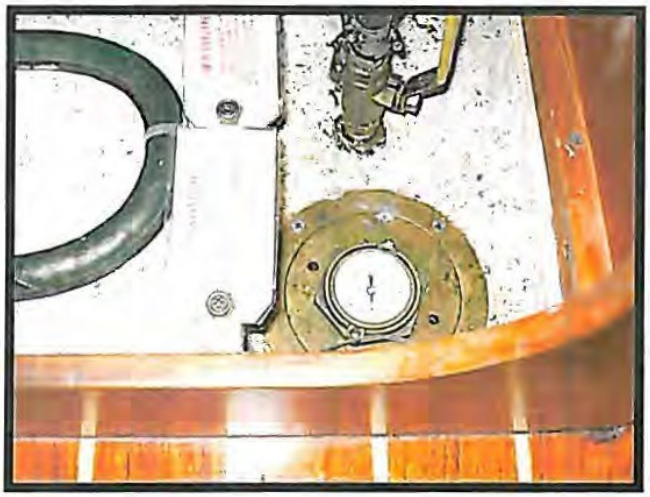
If you find you are too far off the dock, back off and do it again. We highly recommend that you communicate to your crew that jumping off to the dock is not an option. If your first approach is not optimal, abort your attempt and try again. Calmness and patience with your crew and neighbors is more likely to result in success and less stress than forcing a potentially damaging situation.

Connecting to Shore Power:

1. Connect the shore power cord to the boat.
2. Connect the shore power cord to the dock.
3. Tum on the AC breaker at the Dock
4. Tum on the AC breaker at the boat, then AC appliances you want in available (e.g. battery charger, hot water heater, etc.)

Fueling Up

You will need to fuel up before returning to your slip at the end of your charter. As mentioned earlier each fuel tank holds over 100 gallons of diesel fuel. Before pumping, have an oil/fuel sorbs handy to soak up spilled fuel. You should have a rough idea of the number of gallons you will need by the engine hour indicator. The Diesel engine installed uses approximately .6 gal/hr. Under normal circumstances, it is not likely that you will need to add fuel during your charter, nor is it likely you will need to switch from tank 1 to tank 2. The fuel tank gauges for each tank are located in two places:



Fuel Tank Gauge Under Galley Sink Cabinet

Fuel Tank Gauge Under Port Salon Seat

The fuel deck cap are located amidships on the port deck. CHECK THAT YOU HAVE THE CORRECT DECK OPENING AND ARE ADDING DIESEL. Do not add water or pump-out at the same time you are fueling. The deck fitting keys are located in the navigator's desk.

Place the DIESEL 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. As the tank fills, the sound will rise in pitch or gurgle. Pay attention to the TANK OVERFLOW VENT on the outside of the hull opposite the tank opening. The sound may indicate that the tank is nearly full. Top off carefully, and be prepared to catch spilled fuel.

Spillage is always embarrassing and may result in a fine from law enforcement. Replace deck cap *Caution -- Clean up splatter and spillage immediately for environmental and health reasons. Wash hands with soap and water thoroughly.*

Harriet Tubman Systems

Electrical Systems

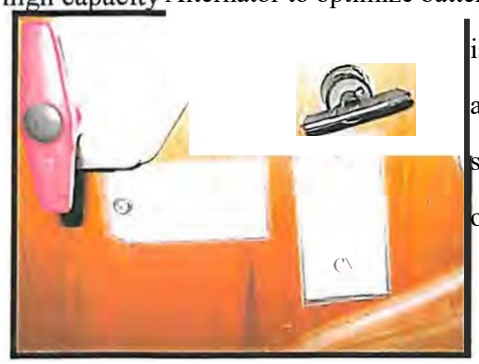
The electrical system is divided into two distribution systems: 110-volt AC and 12-volt DC.

Harriet Tubman is equipped with an alternator charging system that consists of high capacity deep-cycle batteries and a high output alternator that is controlled by a fully automatic multistage "smart" regulator that adjust the alternator current to maximize battery charging when the engine is running. This regulator is located underneath the navigators seat and should not require use or intervention on your part.

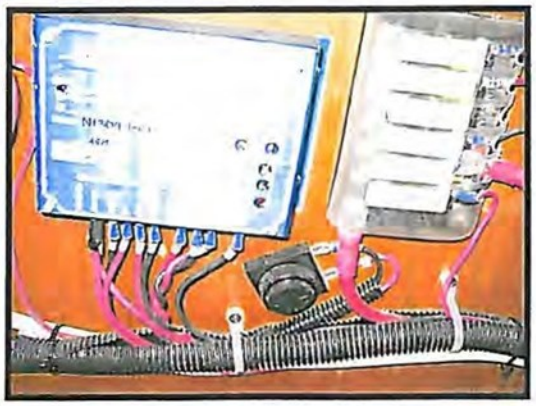
There are three MAIN SWITCHES also located underneath the navigators seat on the aft bulkhead. Looking at them from left to right (inboard to outboard) they function as follows:

The switch with the red handle is a main "off" switch, and functions to disconnect the house service batteries from all external circuits. This switch should be left in the on position (pictured below in the "on" position) unless the electrical system and batteries are being serviced or turned off in a suspected electrical emergency (providing there is time to safely do so). When "on" power is supplied to the main DC circuit breaker panel as well as the auxiliary fused circuits (pictured to the right of the regulator above), which provide power to the bilge, sump pump and other functions as labeled.

The center switch supplies power from the starting battery to the starter and is pictured in the "on" position. It must be "on" to start the engine. It is pictured is in the "off" and must be rotated clockwise approximately 30 degrees to provide power from the start battery to the starter. The most outboard switch (not pictured) enables connecting the house batteries to the starting battery should the starting battery fail. Use of this switch should not be required. Please call AYC service should there be a problem with starting the engine. Located underneath the navigators seat on the fore and aft inboard panel is "smart" regulator that automatically adjusts Harriet Tubman's high capacity Alternator to optimize battery charging. Also co-located



is a fuse protecting other accessories. No intervention should be required for either of these systems.



The systems are controlled from the AC ELECTRICAL PANEL and the DC AUXILIARY PANEL circuit breakers both of which are located at the navigation station.

12 Volt DC System

Your 12volt panel shows all the systems supported by your batteries. Primarily you will be turning on the breakers for your lights, water pressure, electronics, etc. Interior lights are also powered from a circuit breaker on this panel but have individual switches at each fixture.

The HOUSE BATTERY BANK provides power for all DC systems. When disconnected from shore power, all 12-volt devices and 110-volt devices drain the house battery.

Battery systems will lose their charge while ANCHORED or MOORED. Avoid this by using power sparingly at anchor. Tum the refrigerator off at night. Use only one or two lights at a time. Turn off systems not in use such as instruments, VHF, stereo, etc. If you stay moored for more then a day, run your engines just above idle to recharge your batteries. WATCH YOUR VOLTAGE!

When underway under power, the batteries are charged by the engine high capacity Alternators controlled by the "smart regulator" previously described. The engine/house batteries are also charged by the ProSine CHARGER when connected to shore power.

Voltage (Wet Cell Battery)	Battery State
12.65 volts	100%
12.47 volts	75%
12.25 volts	50%
11.95 volts	25%
11.70 volts	0%

Each of the functions of the AC & DC panel are labeled and will be reviewed by the AYC fleet captain responsible for checking you out on Harriet Tubman. When not connected to shore power and/or with the engine not running the batteries are providing all power and are being depleted by the systems in use. Therefore, monitor the use of onboard electricity carefully battery monitoring system display at the navigation station and turn off electrical devices that are not needed.

AYC recommends that refrigeration be turned off at night to conserve power, unless you know you will be motoring for at least 2 hours after a night at anchor. Harriet Tubman's refrigeration is very well insulated, thus refrigerated items should be able to be kept safely with the fridge turned off at night.

If the fridge is left on at night recharging the batteries could take more than two hours of engine running time (at 1500 RPM or higher) the day following.

The rotary switch on the upper left enables you to test the battery state which is displayed on the analog meters across the top of the panel.

The "ProSine" Control Panel at the bottom left serves to enable the functions of the inverter/charger for use while on shore power (set in charger mode) or when AC is required at anchor (inverter mode). Be very cautious about the use of AC provided by the inverter as it is a drain on the house batteries. High wattage appliances should not be used (hair dryers) unless the engine is running or when on shore power.

110-Volt AC System

SHORE POWER supports the water heater and receptacles on board, as well as the battery charger. The standard shore power cord is a 30 AMP connector. To connect to shore power, plug the POWER CORD into the boat and then into the dock receptacle. Check the power rating/plug size of the nearest dock receptacle (that is 30 amp, 20 amp, or 15 amp). If necessary, add a CORD ADAPTER located in the orange box under the starboard settee cushion in the main salon. Tum the dock power on. Cords coming off the bow can be wrapped loosely around the bow line. Care must be taken to ensure the AC power cord is not left in the water.

At the ELECTRICAL PANEL, flip the AC CURCUIT BREAKER on. Check for reverse polarity. Then turn on appropriate breakers for battery charger, water heater, and outlets if needed. If you are not getting power to your outlets, check that one of the GFIs have not been tripped.

Inverter Power (110-volt AC)

The INVERTER provides AC power only to the 110-volt receptacle plugs (i.e. the microwave oven) when the boat is disconnected from shore power. The water heater and the boat battery charger are automatically disconnected when the inverter is providing power.

Your inverter panel is located at the navigation station adjacent to the AC and DC panel with an on/off switch and display. Make certain that it is on. The actual inverter is located under the port aft seat in the main salon.

The inverter's power source is the DC house or inverter batteries located underneath the floor of the cockpit. They are visible/accessible via the port side cockpit lazarette, however you should not need to access them. The quantity of DC power is limited to the capacity of these batteries. Therefore, running hair dryers, toaster, coffeepots, space heater, etc. and will quickly discharge the house/inverter batteries. It is recommended that toasters and hair dryers only be used when plugged into shore power or with the engine running (if at anchor run at 1,400 RPM) or with shore power. Electric space heaters should only be used when connected to shore power. Monitor your battery usage very carefully.

When connected to shore power, the inverter automatically becomes a battery charger for the 12-volt HOUSE BATTERIES. Should you detect the inverter failing to charge the house batteries, check the circuit breaker in the AC Panel.

BASIC BATTERY MANAGEMENT (SUMMARY) FOR YOUR CRUISE

When connected to shore power:

- AC Main On
- Battery Charger On
- Hot Water Heater On (if desired)
- Fridge (DC Panel) On
- AC outlets On. This enables the use of toaster/microwave, AC electric space heaters, hairdryers etc. you may wish to use. Do not use all these items at once because doing so may trip the 30 AMP circuit breaker at the dock or boat).
- Other DC accessories that you wish to use On (e.g. lights, stereo,etc.)

At anchor or dock with no shore power and engine not running:

- AC Main OFF (unless using Inverter)
- Battery Charger OFF
- Hot Water Heater OFF Note: Never turn on the Hot Water Heater unless connected to shore power.
- Inverter ON if needed. *CAUTION: high demand AC items such as hair dryers will quickly deplete the batteries. Only use hairdryers, AC Space Heaters ect when connected to shore power.*
- DC Main ON
- Conservative use of DC accessories and fridge-Monitor battery

voltage. Underway with engine running:

- AC Panel can be on as can Outlets
- Inverter ON if outlets are needed for microwave or limited/intermittent use of hair dryer (under 1200 watts). Note: that although it is possible to use these items, their use limits the recharge capability of the alternator while they are in use. It is recommended that they not be used.
- DC panel ON with DC items you wish to use.
- Fridge ON

SANITATION SYSTEM

Marine Toilets

Harriet Tubman is equipped with two toilets both are manually operated. It is important that every member of the crew be informed on the proper use of these toilets. 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.

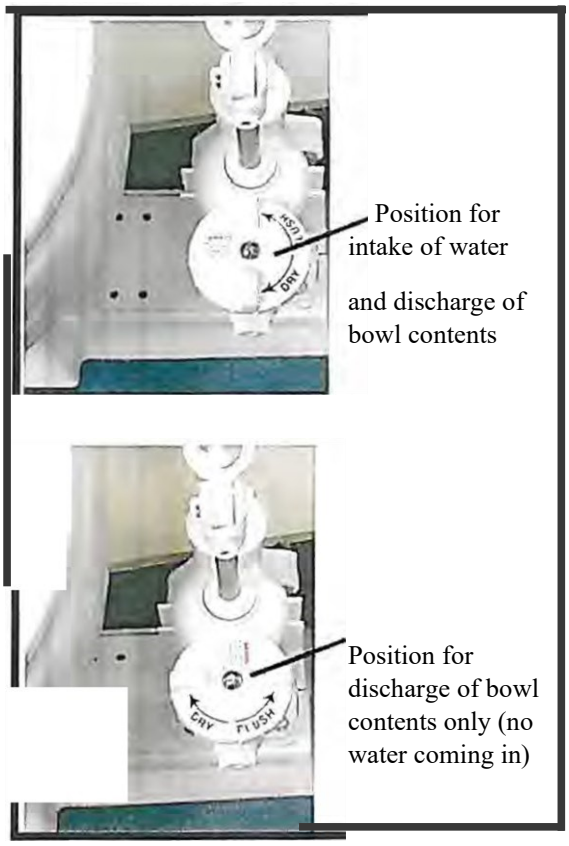
Caution – Never put paper towels, tampons, Kleenex, sanitary napkins, household toilet paper, or food into the marine toilet. Use sparingly only the special dissolving marine toilet paper provided by AYC.

To use the toilet, Rotate the knob to wet bowl position. Lift the pump handle 3 to 5 times to wet the bowl. After using the toilet, lift the pump handle to wet the bowl again. Then, move the PUMP knob to the dry bowl position. Pump to remove water from the bowl. Flush sufficiently to move effluent in the hoses; heavy effluent may clog hoses. Clean the toilet as necessary.

Should the toilet pump handle squeak or stick, it needs to be lubricated. Put a couple of squirts of 'head lube', salad oil, or dish soap into the toilet. Pump the toilet dry slowly, to draw the lube into the handle unit.

Harriet Tubman has two heads:

The TOILET TRU-HULL valves for the forward head are located in the locker forward at the base of the V berth. The forward head valves enable direct over board discharge or diversion to the holding tank. The aft head is connected only to the holding tank.



Holding Tank

The sanitation HOLDING TANK holds approximately 40 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 an indescribable catastrophe and an EXPENSIVE FIX to you. Empty the tank every other day to avoid this problem. The 40 gallon HOLDING TANK is located underneath the v-berth visual check with a flashlight or the "watermelon" test by thumping it.

The holding tank is emptied in one of two ways:

Holding Tank Pump Out

To make this necessary task as least unpleasant as possible
follow best practices. Ask the dock attendant, if available, for suggestions or to instruct your crew operating turning on and off the pump. It is best to have two persons for the pump out procedure, one to operate turn on the pump and the other to apply the pump out nozzle.

I. Remove pump out deck plug cap. Note these caps usually do not have restraining chain or cable thus extra precautions need to be made to not lose them overboard.
2. Turn on the power to the pump at the dock.
3. Insert the pump out hose and nozzle into the deck pipe, pressing down hard such that the rubber suction flange can create a seal.
4. While continuing to press down open the valve on the nozzle.
5. When finished close the valve and (holding the nozzle up right) get it off the boat and put its tip into the water at the dock and turn on briefly (this clears the hose of waste).
6. Partially fill the holding tank from the fresh water hose provided for this purpose
7. Repeat number 3 through 5.
8. Return pump out hose to storage location and secure holding tank cap.
9. Feel good about yourself for doing the right thing and saving yourself $100 by not having AYC do this for you!

#2 The tank's contents can be drained/discharged by opening the valve labeled "overboard" located in the forward cabinet underneath the starboard side of the V berth. Over board discharge is a gravity system. Note: It is your responsibility to abide by the laws governing the USA and Canada pertaining to overboard discharge.

WATER SYSTEMS

Fresh Water Tank(s)

There are two FRESHWATER tanks, each holding approximately 90 gallons of water. The water tank gauge is currently not functioning, however the manifold pictured on page 5 enables drawing from one tank at a time, thus when water is depleted from one tank you can switch to the other. Be mindful of the amount of water you use while washing dishes and taking showers. We recommend you top up water tanks whenever you have the opportunity to do so. To refill the tank, remove the WATER CAPS located at the deck port side amid ships. Attach the hose to the dock spigot and let run for a minute before inserting into deck fitting. Avoid flushing debris from the deck into the tank opening. DO NOT fill water and diesel at the same time!

Fresh Water Pressure Pump

The WATER PRESSURE PUMP is accessed in port cockpit hatch. Activate pump at the DC panel by turning on the breaker. If the water pump continues to run, you are either out of water or might have an air lock and need to bleed the system by opening up a faucet. If you are connected to shore power and run out of water SHUT OFF YOUR HOT WATER HEATER on the AC panel. Serious damage can occur!

Hot Water Tank

The HOT WATER HEATER has a 10gallon capacity tank and heats when connected to shore power or off the heat exchanger when the engine is running. To use in the AC mode, flip on the water heater circuit breaker on the AC electrical panel. Do not use the water heater if the water tank level is very low.

Shower

Before taking a SHOWER, make sure water pressure and shower sump breakers are on. Waste water from the sinks drain overboard through thru-hulls located and marked under each sink. They may be closed while sailing to ensure water. The shower drains into a sump with an automatic float switch directing it overboard. Take only very short "boat" showers (turning off water between soaping up and rinsing). To keep shower tidy wipe down the shower stall and floor. Check for accumulation of hair in the shower and sink drains. An additional FRESH WATER SHOWER is located on the transom. Ensure that the faucets and nozzle are completely off after use.

GALLEY

Propane Stove

The boat is equipped a low-pressure propane system for cooking.
Your propane stove is activated by the following steps:

#1 Tum on the propane tank located in the aft most cockpit locker.
#2 Turn on the DC breaker labeled propane at the main DC panel.
#3 Turn on the gas at the stove (Press in knob) and light burner. You will need to hold knob in for a few seconds while the thermo coupler warms up.

When finished cooking tum off the stove, then the propane solenoid and also close the valve on the bottle.

Refrigeration

The REFRIGERATOR operates on 12-volt power. Monitor the use of the refrigerator when the engines are not charging the 12-volt battery system. There is both a breaker on the DC panel and a switch outside the refrigerator, under paper towel holder. AYC will supplement you with 2 bags of ice. As stated under BATTERY MANAGEMENT (page 12) it is best practice to turn off the refrigerator when anchored or moored to prevent drainage of the battery.

Space Heaters (AC)

Two 120-volt SPACE HEATERS are available when connected to shore power. One is normally found on the shelf in the forward stateroom and the other in the cabinet in the aft stateroom. Do not attempt to run these off the inverter.

ELECTRONICS

Manuals for on-board electronics are located underneath the navigator's seat.

Turning on the electronics breaker on the DC panel enables all electronic items to be turned at their individual power on/off switches.

VHF Radio

The VHF radio is located at the navigation station. Make sure the DC breaker is on located at the panel, then turn it on by pressing the by pressing the on/off volume control button.

Depth Sounder

There is one DEPTH SOUNDER located with the instrument cluster at the cockpit binnacle. To activate the DEPTH SOUNDER, turn on the sounder should provide reliable readings in shallow waters. If in doubt, switch it off, then turn it back on to reset sounder. If your reading is blinking, it is a FALSE reading. False readings can occur in depths of more than 200 feet or in areas of string currents or tides.

Chart Plotter I Global Positioning System (GPS)

The Raytheon GPS chat plotter and combined Radar displays are located at the navigation station and helm station. Its basic operation will be reviewed with you by your AYC Fleet Captain. GPS is considered a navigation aid. Do not reply solely on it. Using the compass, charts and dividers to plan and execute your movements is both good seamanship and adds to the enjoyment of your cruise.

ANCHORING

The primary WORKING ANCHOR is a 45 pound CQR and is attached to 300 ft of chain passed through the deck from the chain locker to an on deck windlass. To operate the windlass it is necessary to first turn on the breaker at the main DC Panel.

The windlass is then operated from the bow via "foot switches" for lowering ore retrieving the anchor. Let out sufficient chain before setting the anchor. Colored markers are placed every 50 feet on the chain. In all but the most extreme cases you will be anchoring using all chain. If the anchorage is crowded put down at least a 3 to 1 scope (60 feet for 20 feet of water). Lower (not drop) the desired amount of chain while slowly backing up until the desired amount of scope is achieved. The back the anchor in with a short burst from the engine to set the anchor. Then let out additional scope dependent upon conditions.

TIE OFF THE SNUBBER LINE TO THE CHAIN AND A CLEAT SUCH THAT THE ANCHOR WINDLASS GYPSY DOES NOT TAKE THE LOAD OF THE BOAT WHILE AT ANCHOR. DOING SO WILL KEEP FROM DAMAGING THE WINDLASS AS WELL AS PROVIDE A MORE QUIET TIME AT ANCHOR.

Coordinate the maneuver with the helmsperson to remain steady above the anchor as it is raised. As the anchor rises, be careful not to allow it to swing against the hull.

Before raising the anchor, start the engine. Turn 'on' the circuit breaker at the electrical panel. As the boat moves toward the anchor, press the 'up' control to take up slack line, rather than pulling tight line. Give the windlass short rests as you are pulling it up. The windlass uses a large amount of electrical power; so ALWAYS operate the windlass with the engines running. Place yourself in position to guide the anchor onto the roller,

Reconnect the keeper between the anchor and the windlass. Close the plastic covers on the FOOT PEDAL CONTROLS. Turn 'off' the WINDLASS POWER SWITCH at the electrical panel.

The SPARE ANCHOR RODE is co-located in the anchor rode locker.

Mooring Cans

WA State Marine Parks offer mooring balls you can use on a first come first serve basis throughout the islands. There is a fee for use usually paid by phone when calling in to register. Or if applicable there may be a kiosk to register usually located at the heads of the docks. Mooring cans have a metal triangle at the top upon which is a metal ring. The metal ring is attached to the chain which secures your boat. IT IS VERY HEAVY. The strongest member of your crew should be picked for this job.

Come up to the CAN into the wind as you would for anchoring. Have crew members on the bow, one with a boat hook and one with a mooring line secured like a bow line. As you are coming slowly up to the can have the crew holding the boat hook point at the can with the hook so the skipper always knows where it is. Hook the can and bring the ring up to the boat to allow the second crew to thread the ring with the line. Release the hold with the boat hook. If your mooring line is led out the starboard chock bring the end of the line back through the port side. You will essentially create a bridle with about 10 feet of slack from the chalk to the can.

SAILS AND RIGGING

The 130% JIB is furled. The furling line is starboard of the cockpit. To unfurl the headsail, (a) un-cleat the furling lines, (b) wrap the sheet around the appropriate winch, (c) pull the sheet aft while maintaining tension on the furling line, (d) cleat when desired reefing level has been achieved. To furl the jib, apply slight tension on the jib sheet while pulling on the furling line until there are three wraps to hold the sail.

Jib sheets are led back to the cockpit to the main winches. Use the jib sheet 'stoppers' as little as possible as they tend to fray the lines badly. Adjust fairleads forward in heavy wind, aft in light wind.

The mainsail jiffy reefing allows first and second reefing from the cockpit configured as a single line system. To apply a reef go head to wind, lower the main halyard, pull in on the desired reef line sufficiently, and then raise the halyard and resume sailing.

Jib sheets, reef lines, mainsheet, halyards, and traveler are all operated from the cockpit. There is a rigid boom vang fitted. The system simplifies raising and lowering of the mainsail as it supports the boom while doing so. sail handling.

Troubleshooting:

1. *Mainsail resists being raised.* Check all lines. Both reefing lines should be pulled loose and flopping. The boomvang should be loose. The battens should not be stuck on the lazy jacks. If they are, lower the sail and be sure to be head to wind on raising the sail again.
2. *Furling line gets stuck* partway through the furling process. This is usually due to not having proper halyard tension and/or applying proper tension on lines in furling and unfurling process. Try letting the sail out and repeating the process. Be sure you are headed into the wind to reduce pressure on the rig. If this fails you could have an over-ride in the furling drum.
3. *Unable to point with reef in place.* Probably have not snugged the reef line sufficiently. Repeat process and be sure lines are snug before raising the halyard.

BARBECUE

The BARBECUE and MOUNTING BRACKET are stored mounted on the rail.

Attach the small PROPANE BOTTLE supplied by AYC (Must NOT be stowed below decks or in a locker that does not vent overboard) to the REGULATOR found in the navigators desk. Carefully light the unit, preferably with the long-stem butane lighter provided by AYC. The barbecue generates a lot of heat and cooks hot and fast. Please wipe with a paper towel before storing to prevent grease and dirt soiling the boat.

Caution --For safety reasons, do not store an opened propane bottle within the salon or engine compartment. Chances are these will leak slightly once opened and propane gas could settle into low spaces. Store these bottles in the cockpit cabinet. Ensure gasoline and flammable materials are not near the barbeque.

DINGHY

The Achilles RIB DINGHY has a capacity of about 600 pounds (motor, equipment, and 4 people). Be sure when towing your dinghy, that one responsible individual is always keeping an eye on its tow rope when slowing down or stopping. Bring up all the slack to prevent a wrap around the prop.

When rowing the dinghy to shore, use EXTREME CAUTION. Choose an area free of any large rocks that might cause harm in beaching. Lift up on the dinghy to bring it up to higher ground. NEVER drag it! Secure it when leaving as the tides come up very quickly.

SAFETY / OTHER

SAFETY should be paramount in your daily cruising. Retrieving a person that has gone overboard should be discussed. The location of safety and emergency equipment will have been reviewed by your AYC fleet captain and are noted on the ships inventory list as well.

Wear Lifejackets at all times when away from the dock.

For the bilge pump to come on automatically the shower sump pump breaker (on the DC panel) must be loft on at all times).

An AUXILIARY HAND OPERATED BILGE PUMP is operated from the cockpit using the handle provided for that purpose (located in the port aft cockpit locker. This is used only in emergency situations.

The location and list of SPARE PARTS and Fluids are noted on the inventory.

Please call AYC Service team with questions that arise or in the event of a system failure.