

OPERATION MANUAL

'S Wonderful

Welcome Aboard!

We are happy that you have chosen Ship Harbor Yacht Charters and the vessel North Star for your vacation. We hope you enjoy your cruising experience in the lovely islands of the Pacific Northwest. North Star is a beautiful 39' Ocean Alexander that is well equipped for Northwest cruising. Please take care to help preserve the beauty of both North Star and the islands by taking good care of both.

This manual will help you become more familiar with your boat. If you have any further questions, about the boat or your itinerary, please do not hesitate to ask the SHYC staff.

Remember our vessels are non-smoking boats.

Bon Voyage!

The Ship Harbor Yacht Charters Staff

TABLE OF CONTENTS

Boat Operation	Page
Engine Inspection	4
Start-Up	
Shutdown	
Getting Underway	5
Cruising	
Docking	
Fueling	
Boat Electrical	
A.C. (Shore) Power	6
Inverter	
Generator	7
D.C. (House) Systems	
Batteries	
Sanitation System	8
Marine Toilet	
Holding Tank	
Water Systems	9
Fresh Water Tanks	
Fresh Water Pump	
Hot Water	
Shower	
Galley	
Propane	
Refrigeration/ Ice Maker	10
Microwave/ Convection Oven	
Heating Systems	
Diesel Heater (DC)	
Electric Cabin Heat (AC)	
Electronics	
VHF Radio, Depth Sounder, Radar	
GPS/Plotter	
Anchoring	11

Entertainment	11
TV	
Stereo/ CD Player	
Bar-B-Que	
Dingy/ Outboard	
Other Notes	12
Safety	
Cruising Restrictions	
M.O. B.	
Dead Heads/ Debris	
Crabbing/Fishing	
Thru-Hull Diagram	13

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 COOLANT in the expansion tanks. Check the level of your engine oil with the dipsticks. Your dipsticks are located on the port side of each engine. Look at the etch mark on each dipstick that indicate proper levels. **DO NOT OVERFILL!** Only fill if oil levels are below the ½ mark. Check the general condition of the hoses and belts. Check the generator as well.

Ensure the valves on each RAW WATER THRU-HULL are OPEN! (Lever in-line with valve). Observe through the glass of each sea strainer for debris. If necessary, close the thru-hull, open the strainer lid, clean out debris, and reassemble. **REOPEN the Thru-hull!**

Start Up

Having finished your inspection, start your engines from the lower helm station. Ensure that gearshifts are in **neutral** or the engines will not start (neutral lockout). Beginning with the port side engine, inset the key into the ignition and turn clockwise until the engine alarm sounds. Push the start button to engage the starter. Follow with the starboard engine. (In cold conditions, the engines can be preheated by running the Hurricane diesel heater for 10-20 minutes before starting.)

If the engine does not turn over, move the gearshift slightly while holding the start button until the engine engages. If the engine cranks slowly, check the condition of your batteries at the electrical panel. If the battery is low, move the battery selector switch to "BOTH" to connect other batteries. After the engine has started, return battery selector switch to "1".

After the engine starts, warm it up at about 1000rpms for about 5 minutes. Observe your gauge readings. Oil pressure reads around 60 psi and water temp around 170-190 degrees. Engine temperature should rise very slowly.

*Note: If water temp.is high or oil pressure low, **shut down engine** and look for problem. Was there a lack of water exiting with exhaust? Are thru-hulls open and debris cleared from sea-strainer? If problem keeps occurring, call SHYC Service.*

Shut Down

Before shutting down, let engines idle for about 5 minutes letting them cool. Ensure each gearshift is in the neutral position and each throttle is in idle. Turn off the engines by turning the keys in the lower helm station counterclockwise to the "off" position. Run engine room blowers (ENG RM BLOWERS on electrical panel) for 20 mins following shutdown to cool engine rooms.

Getting Underway

Disconnect the shore power cord (see AC Power next page). Close portholes, windows, and hatches. Turn on VHF and electronics. Assign crewmembers to their tasks. Once outside marina, have crew members bring in fenders and put lines away.

Cruising

All close quarter maneuvering should always take place at the upper helm. Make certain the throttles are in idle and engage the gearshifts. Slowly come up to cruising speed of 2000 rpms. If you run at 2000 rpms, you will cruise at approx. 12 knots, using only 12 gallons of diesel/hour. Your speed may vary depending on weight, load, and weather conditions. Trim Tabs can bring the bow down to the idle cruising position. Watch your speed on the Datamarine DART instrument as you adjust.

The synchronizer can be used to automatically match engine speeds while in cruise. First make sure the SYNCHRONIZER switch on the electrical panel is turned ON. To engage synchronizer, with engines running at just above idle, pull up synchronizer knob located on either helm. The port throttle now acts as the "master" and the starboard throttle as the "slave", so you can now run both engines using the port throttle only. Move the starboard throttle to the full forward position to eliminate strain on the synchronizer. To disengage, push synchronizer knob back in and move starboard throttle back towards idle. This will re-engage the starboard throttle.

Note: Avoid high engine speeds as it causes the engine to overheat causing damage as well as high fuel consumption.

Docking

During docking, use the upper helm for the best visibility. Give clear instructions to the crew on what you will expect of them i.e. with lines and fenders.

Ensure trim tabs are rocked back up for slow speed backing. While moving slowly towards the dock, center the wheel and use the gears and throttles to maneuver the vessel. Throttles should only be used in moderate to windy conditions. Otherwise, the use of the transmission should be sufficient. The bow thruster can be used to add small amounts of bow correction during docking. To use the bow thruster, the switch behind the electrical panel (accessed from the dinette area) must be turned to the "on" position.

Fueling Up

Open filler cap located in the aft portside corner of the aft deck with the deck-fitting key kept in the drawer under the salon settee. **MAKE SURE YOU HAVE DIESEL!** Make sure it is going into the right deck fill! **DOUBLE-CHECK!** Before pumping, have your oil/fuel sorb ready to soak up any spilled fuel. You should have a rough idea of how many gallons you will need, but have someone check the fuel sight gauge periodically. The sight gauge is located under the port side of the aft berth. Turn the lever to vertical position (in-line with the gauge) to read, and **RETURN LEVER TO HORIZONTAL POSITION** after reading fuel level.

Put **Diesel** nozzle into the deck fitting and pump slowly listening to the sound of the flow. Pumping too fast may not allow excess air to escape, which will lead to spillage out the vent. As the tank fills, the sound will rise in pitch or gurgle. Pay attention to the vent that it does not spill fuel into the water. Top off carefully, catching any spillage with your sorb.

Replace the deck fill caps and turn on the engine room blowers for a few minutes. Clean up any spatter and wash hands thoroughly.

BOAT ELECTRICAL

The electrical system is divided into two distribution systems: 110 volt or AC and 12 volt or DC. The systems are controlled from the electrical panel and battery switches located under the lower helm station.

When not connected to shore power your batteries provide most of your electrical power. Therefore the use of onboard electricity needs to be monitored very carefully. **Turn off electrical devices** when they are not being used (lights, instruments, etc.)

110 Volt or AC (Alternating Current)

Shore Power supports all AC equipment and receptacles on board as well as the battery charger.

To connect to shore power, plug the power cord into the boat and then into the dock receptacle. Check your power rating/plug size of the dock receptacle (i.e. 30amp, 20 amp etc.) If necessary, add an adaptor located under a bench seat on the bridge. Secure the cord around the shore power electrical receptacle and off the bow (i.e. wrap around bowline a few times) turn the dock power breaker on.

On the boat, turn the shore circuit breaker on at the electrical panel. Turn on appropriate breakers for battery charger (labeled INV. CHRG/TRANS), refrigeration, and water heater. Watch your voltmeter for load. If the load exceeds the current, it will pop the breaker. If this occurs, wait to turn on one of your systems (i.e. water heater) until the use of power decreases.

Inverter

The inverter provides AC power to the 110 receptacle plugs (i.e. microwave) when the boat is disconnected from shore power. The inverter does not supply power to the water heater or battery charger. Your inverter panel is located in the upper right hand corner of the electrical panel. It has four small button switches, including the on/off switch. Make certain it is on. The actual inverter is located in the engine compartment on the forward bulkhead, in front of the port engine. The Inverter is powered by batteries located a bank of 4 golf cart batteries located on the port side of the port engine. The easiest access to these batteries is through a hatch under the salon settee. The amount of AC power is **limited** to the capacity of these batteries so **use it very sparingly!!!** This means use of the toaster, hair dryer, microwave, coffee maker etc. must be limited!

When connected to shore power or when running the generator, the inverter acts as a battery charger for the 12-volt house batteries. Should you detect the inverter

failing to charge the house batteries, check the circuit breaker on the AC panel and the inverter panel to make certain that it is on. There is usually a circuit breaker located on the inverter itself that can get tripped during a surge of power.

Generator

To start your generator, first check that the fluids have been checked and the raw water thru-hull is open. The generator controls are located at the electrical panel. Pre-heat the generator by holding the preheat switch down for about 20-30 seconds. Then, after pre-heating, hold down the start switch to start. Hold the switch in that position for about 5 seconds until the engine catches. Make sure your water and exhaust is exiting midship on the starboard side.

After the generator is running, turn your AC distribution switch to generator (GEN POWER). Turn on your AC systems as you would as hooking up to shore power. If you have been anchored a while, turn on the INV. CHARG/TRANS first for 10 minutes. Too much load such as water heater, stove top etc. may overload the system.

To turn the generator off, first take off the load by turning the AC breakers off. Turn off the main AC distribution switch. Last, kill the generator by holding down the stop switch until it dies.

House 12-volt System

Two battery banks support your 12 volt system:

#1 Engine Starting Bank

#2 House Battery Bank

The main engine battery switches are located in the engine compartment on the rear bulhead between the engines. Normally you will leave the switches in the on position. In addition to on/off for each engine there is also a switch here to connect the batteries in parallel. *Note: Changing the position of the battery switches with the engine running will cause damage! Only change positions with the engine off!*

Your 12 volt panel shows all the systems supported by your batteries. Primarily you will be turning on these breakers for lights, water pressure, electronics, etc. Bilge pumps will always be left on 'auto'. Your breakers such as propane and salt water pump should be turned off after every use.

When disconnected from shore power, the 12-volt systems will drain the battery especially when at anchor. Monitor your batteries very carefully. The house battery selector switch (Smartswitch) on the DC panel has an LED voltage meter. Selecting '1' will show you the voltage of the house bank while '2' will show you the voltage of the starting bank. Typically the bank should read from about 13.0 to 14.5 volts when being charged. While at rest, your voltage will drop as indicated in the figures below. If you need more battery power to crank the engines or start the genset, the Smartswitch can be put be set to 'Both', but should be returned to 1 once the engine is started.

All your batteries are charged while underway by the alternator. The engine and house batteries are charged by the battery charger/inverter while connected to shore power. Ensure that the inverter/charger (labeled INV. CHR/TRANS) is on. Note that North Star also has an old battery charger installed. It is labeled BATTERY

CHARGER on the panel and should not be used unless the inverter/charger fails. The generator will also charge the batteries when used in conjunction with the inverter/charger.

Voltage	Battery State of Charge
12.65 volts	100%
12.47 volts	75 %
12.25 volts	50 %
11.95 volts	25 %
11.70 volts	0 %

SANITATION SYSTEM

Marine Toilet

It is imperative that every member of the crew be informed on the proper use of a marine head. The valves, openings, and pumps are small and will clog easily. If the head gets clogged, **it is your responsibility!** Always **flush the head for small children** so you can be certain of what is being flushed. *Note: Never put in paper towels, napkins, sanitary products, household T.P., or food into marine heads. **Use only marine T.P. provided by SHYC.***

To use toilet, first turn on the vacuum by pulling the silver knob marked "HEAD". Make sure there is water in the bowl. To add water if needed, lift the foot pedal. After using the head, push down on the foot pedal to remove waste from bowl. Then turn the vacuum pump off by pushing the silver knob back in.

Holding Tank

Your sanitation holding tank holds 18 gallons. Be aware of the rate of waste production (about 1 gallon/flush). If you overfill your tank, you will break a hose, clog a vent, or burst the tank **which is an indescribable catastrophe!** And a very **expensive fix for you.** Empty the tank at least every other day to avoid any problems.

The holding tank is located under the galley floor near the refrigerator. Some may be subject to a visual check with a flashlight or the "watermelon test" by thumping it. There is a tank watch warning light located in the aft head, but do not rely on this as they are subject to being inaccurate. The flashing red light on the tank watch indicates the tank is nearly full and needs to be pumped out. If the light goes to solid red, the tank must be pumped out IMMEDIATELY without adding any more to it.

The holding tank is emptied as follows:

#1 At the pump-out station, remove the deck waste cap located on the starboard deck near the foredeck. Insert the pump-out nozzle into the waste opening. Double-check that you have the right deck opening! Turn on the pump on the dock and open the valve on the handle of the hose. When pumping is finished, close lever on handle and turn off pump. Remove from deck fill.

If there is a fresh water hose on the dock, rinse the tank by adding water for 1-2 minutes. Then re-pump to leave the tank rinsed and clean for the benefit of the next charterer. This also eliminates any head odors.

WATER SYSTEM

Fresh Water Tank/ Pump/ Hot Water Heater

The fresh water tank(s) hold 150 gallons and is located under the galley floor. Observe the water level by checking the visual indicator on the tank. To fill the tank, remove the deck water fill cap located on the starboard deck at midship. Fill the tank avoiding flushing debris into the tank. **Do not fill water and diesel at the same time!** Waste water from the sinks drains overboard through various thru-hulls usually located under the sinks. The shower uses an automatic pump drain overboard. The shower pump switch is located in the DC electrical panel and should be set to 'auto'. The pump itself can be accessed through a hatch in the floor of the aft cabin hanging locker.

The water pressure pump is located in the engine compartment in front of the port engine. Activate the pump by turning on the breaker at the DC panel. If when in use, the pump continues to run, you are either out of water or have an air lock which can be corrected by opening a faucet. If you run out of water, shut off pump and **turn off hot water heater** on AC panel. **You can cause serious damage** to the heating element.

The hot water heater has a 12 gallon capacity. It is heated when the AC breaker is on while connected to shore power or running the generator. It is also heated by the engines and by the Hurricane diesel furnace. Do not use the water heater if the water level is low. The water heater is located in the engine compartment on the port side in front of the port engine.

Shower

Before taking a shower, make sure the fresh water pump and shower sump pump breakers are on. The shower sump works automatically and is located under the aft cabin hanging locker. Take short "boat" showers by turning off the water between soaping and rinsing. Please wipe down the shower stall and floor when finished to keep shower tidy. Pick up any accumulation of hair in the drains as it clogs the hoses. Ensure that the faucets are tightly turned off after each shower to save water.

GALLEY

Propane Cooktop

The boat is equipped with a low pressure propane system for cooking. The propane tank is located on the bridge deck under the starboard bench seat. Open the tank valve. Turn on the switch labeled PROPANE which is located behind the electrical panel (accessed from aft of the settee). Go to the AC panel and turn on the breaker labeled cooktop. (If you are not connected to shore power or running the generator, the INV/CHRG TRANS breaker must also be turned on.) Then turn on the propane solenoid switch in the galley. When lighting the first time, allow a few seconds for the gas to travel from the tank to the stove. You might need to keep the stove top in the light position for a few more seconds while the thermo-coupler warms up.

To ensure safety, turn off the propane solenoid switch, the propane at the bottle, and the breakers when finished.

Refrigerator/ Ice Maker

The refrigerator is dual voltage (12 volt and 110). It will automatically use the 110 volt power when shore power is on and the AC breaker flipped on. Carefully monitor the use of the refrigerator when the engines are not charging the 12-volt system as when you are at anchor. Use a cooler when possible for all your drinks to keep the refrigerator door closed as much as possible.

The power switch is located in the refrigerator compartment. It can be turned down at night to conserve energy while anchored or moored.

An ice maker is located in the main salon. The ice maker can only be used when connected to shore power or running the generator. Turn on the ICE MAKER with a breaker located in the AC service panel.

Microwave/ Convection Oven

The galley oven is a combination microwave and convection oven. For operating instructions, please refer to the manual located in a galley drawer.

HEAT

The Hurricane diesel forced-air heater is located in the aft of the engine compartment on the starboard side. It provides heat much like your household furnace. Turn on the toggle switch in the dinette area. Thermostats are located in each cabin (forward, main, and aft) to set the desired temperature. Check the exhaust port on the starboard midships to make certain that no obstruction such as a fender or line exists; the exhaust port WILL melt a fender! Let the furnace run at least 15 minutes before turning it off. Turn the furnace off back at the main switch.

Electric heaters are also available when connected to shore power or when using the generator. There are three electric heaters: forward cabin, salon and aft cabin. Make sure the appropriate AC breaker is on. Make sure there is nothing flammable near the heater. Adjust the temperature control knob to the desired setting.

ELECTRONICS

There are two VHF radios, one located at each helm. Make sure the breaker is on at the DC Panel. Always monitor Channel 16 while underway.

There are two depth sounders located on the upper and lower helm. To activate, ensure that the DC breaker is on. The sounder is reliable in waters less than 200 feet and at slower speeds. If your reading is blinking, it might be a false reading due to excessive depths or strong currents! Watch your depth carefully in cruising unknown waters that might have rocks or obstacles.

To operate the radar press and hold the power button. To turn off, hold the power button for about 3 seconds. Remember you are not allowed to travel in fog or at night.

A Raychart GPS/Chartplotter is located at the upper helm. Turn on by depressing the power button.

ANCHORING

Your primary working anchor, a CQR, is attached to 300 feet of chain. It is marked with red paint every 10 feet as well as a marking system.

Turn on the anchor windlass on the AC panel and proceed to raise and lower the anchor as needed. Be sure to always have your engines running. The windlass can be operated by foot pedals at the bow, or by using the switch on the upper helm. See page 9 in the White Binder for further anchoring instructions.

Turn off the breaker when finished.

A spare Danforth anchor is located in the engine compartment below the Hurricane heater with spare rode and chain.

ENTERTAINMENT

A television with a video tape player is located in the main salon and is connected to an antenna mounted on the radar arch.

A control panel for the stereo with CD changer is located in the main salon above the television. The CD changer is located behind the electrical panel (access from dinette area). If the CD cartridge fails to eject, it can be lifted using a small suction cup located in the galley utensil drawer.

BARBEQUE

The Barbeque and mounting bracket are stored on the aft deck or on the aft rail. Barbeque should be mounted on an aft rail by tightening the mounting hardware.

Attach the propane bottle and regulator usually found in a drawer under the dinette. Carefully light the unit. This Barbeque cooks fairly hot and fast so keep a good eye on your food. Store the barbeque back on the aft deck when it has cooled. Please wipe it down with a rag or paper towel before storing. *Note: Propane bottles are not stocked by SHYC so you will need to purchase a bottle if one is not found on board during your check-out. Ensure that outboard gas or any other flammables are not near barbeque.*

DINGHY AND OUTBOARD MOTOR

Your Boston Whaler dinghy is equipped with a 25 hp Mercury engine. It has a capacity of 365 pounds or about three of people.

To deploy the dinghy, first connect the remote control (located in the drawer under the salon settee) to the receptacle near the main cabin door. Disconnect the two safety cables at the davit. Next remove the two pins

connecting the dinghy to the davit stanchions. This is best accomplished by moving the dinghy OUT a few inches until the forward pin can be removed easily. Remove the forward pin first, followed by the forward pin. Make sure the plugs are installed. There is one plug under the seat and a second in the transom. Now move the davit OUT until the dinghy reaches the water, and disconnect the hanging cables.

After the dinghy is in the water and readied to go (PFDs etc), open the vent in the fuel tank and squeeze the bulb until it is hard. Make sure outboard is in neutral. If you need to add more gasoline mix with 2-cycle motor oil at a ratio of 50:1. *Note: Failure to use proper mix will damage outboard.*

Return the dinghy to the davit using the reverse of the deployment procedure above. Lower the davit until you can attach the hanging cables. Lift the dinghy with the remote making sure the aft cable does not hang up on the outboard steering. Bring the dinghy IN until you can insert the aft pin. Getting the pins back in can be tricky, but putting the aft one in first makes it easier. Once the aft pin is in, raise the dinghy until the forward pin can be inserted. With both pins in place raise the dinghy until the black top of the cable reaches the davit housing. Reattach the two safety cables.

OTHER NOTES

Safety should be paramount to your daily cruising. A man overboard drill (person?) should be discussed and practiced with an unlucky PFD as the victim. (please rinse and dry afterward before stowing). Remember that your lifejackets are stowed under the upper helm and in hanging lockers. A few should always be readily available. Flares and other safety equipment are located under the upper helm.

Always have a sharp lookout posted for logs, deadheads, or other flotsam and jetsam. A log hitting your prop can ruin your vacation. As you are traveling, the debris does seem to gather along current lines. It is sometimes best to go around these areas and miss the "mine fields".

North Star is equipped with numerous automatic bilges pumps that can be activated on the DC panel. The switch should normally be left in the "Auto" position can be switched for a minute or so to "manual" to pump the bilge. If you continually hear the bilge pump running, **check your bilge!** You may have a serious problem!

An auxiliary hand-operated bilge pump is located under the bottom stair leading from the aft deck into the salon. This is used in an emergency situation.

The engine spares are located in two boxes in the engine compartment. They include extra oil filters, impellers, head pump, etc. Extra oil and coolant is located in the engine room.

Crabbing is fun but requires the correct license and season. Please be sure not to crab off the stern as the crab line can easily get tangled in your prop

as you swing with wind or current. You certainly don't want to be the person who has to dive over and cut the line out of the propeller. It is best to use the dinghy to set your crab pot/ring away from the boat. A partially open can of seafood catfood works well as any other bait and is less messy. Please clean up any seaweed or crab shells afterwards to keep the boat neat and tidy.