

## **Hunter 356 *Shenandoah***

*Welcome aboard from Tim and Christine Keiper!*

# Hunter 356 *Shenandoah*

## Owner's Notes

We would like to welcome you and your family and friends to share our Hunter 356 sailboat on the waters of the US Pacific Northwest! We have done everything we can to make *Shenandoah* (pronounced Shannon-doe-ah) beautiful, comfortable, and easy to sail. We will be grateful for you to treat her like she is your own boat. We hope you have a wonderful time!

*Shenandoah* is a smoke free boat. We respectfully ask that you do not smoke inside or on the boat. Please only light up when ashore! Thank you for your consideration.

Thank you for taking a few minutes to read these notes. They document some of the essential characteristics of the boat and answer a few of those “How do I operate the \_\_\_\_\_?” questions. Familiarity with this information will help us keep *Shenandoah* in great shape for all to enjoy and definitely will make your sailing experience aboard easier and more enjoyable.

Please let us know how we can clarify or add to these “Owner’s Notes” to improve the information. We will consider all suggestions included with your post-charter report to the San Juan Sailing staff, including needed maintenance and repairs. Safety and fun are our priorities.

Bon voyage!

Tim and Christine Keiper , Owners

*Revised/Updated May 2017*

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## **SAFETY ABOARD**

Safety is the primary concern of all, captain and crew alike. PLEASE take time to review all safety features of “*Shenandoah*” before you set off on your cruise. This includes location of the life sling and related equipment, use of the GPS to set a “Man Overboard” waypoint, location of fire extinguishers, safety harness, etc. □ The captain /skipper is responsible for ensuring his/her crew know the safety features and follow instructions in an emergency. **Life jackets** are stored in the wet locker located in the shower/head compartment. All crew should try on and properly fit a jacket prior to departing from any anchorage or dock and should know at all times where “their” jacket is located. □ Use of the radar/chart plotter (GPS), VHF radio, depth sounder, and other instrumentation as well as official government charts should be considered as assists to promote safety and safe navigation BUT not as a substitute for continuous alertness and caution. **See sub section Emergency/Safety for a list of safety equipment and their storage locations onboard.**

## **FIVE FAVORITE THINGS ABOUT *Shenandoah***

1. In-mast Furling Mainsail. Breezes come and go. Reducing sails or furling at the end of a long tack back to the docks can be handled from the cockpit and that’s it! You can sail with as much sail as needed, and still maintain great sail shape. No sail ties, no folding, just getting on with the fun. Remember though, that it is the outhaul and not the halyard that you need to release when furling! You never need to touch the halyard unless the sail is bunching at the bottom and you want to raise it slightly. See details under “Sails and Rigging”.
2. Power Windlass. Pulling chain and anchors is NO FUN. Stow the chain and lash the anchor in the bow bracket and then relax. It’s done! Launching the anchor is also a snap. See details under “Anchor Windless”.
3. Storage. There are lots of storage areas inside and out. There are storage areas under almost every cushion and mattress in the boat!
4. Dual Instruments. New C90 Map Plotter in 2013 – easy to operate and with an easy to see screen. The Furuno Map Plotter/Radar was left in place, so one screen can be zoomed in, and the other out, or one screen radar and one map plotter without splitting the screen! See “Electronics” for details.

5. Extended Battery Capacity and Combiner/Start-Battery Isolator. The house battery bank was doubled in 2013 to extend the battery life while away from shore power. The Start Battery is isolated and kept at full charge. The four deep cycle battery house system provides an ample service at 400 amp hours. Battery charging is automatic, and no battery switching is required. See “Battery System/Charging” for more.

### **TOP TIPS FOR OPERATING *Shenandoah***

1. In-Mast Mainsail Furling line: The black control line for the in-mast mainsail furling has a thickening at the splice causing it to sometimes ‘jam’ at the rope clutch on the cabin-top. It often takes an small extra tug to pull the splice through the cleat.
2. The main sail is new April 2015! Makes sailing easier, but furling slightly harder. You may need to use the endless loop AS WELL as the outhaul to deploy the main. You will need to use the outhaul tension to get a tight wrap to replace the main in the mast. If it is not furling evenly (white left out at top) then you will need to raise the boom. For more info see “Sails and Rigging”.
3. Power Windlass: Use of the power windlass is great – but jamming the anchor chain is a royal pain and can be a hazard under stress or in an emergency. The chain must be kept clear of the forward edge of the windlass and not allowed to pile up and block the anchor feed or kink as the chain peels off the gypsy cogs. Use the handle of the mop on deck to push down the chain as you raise the anchor. If releasing the clutch (port side of windlass) does not solve a jam, it may be necessary to unbolt the top cover to clear the gears and release the jam. By then, the circuit breaker will have blown, and will need to cool and be reset. Observing caution is the best bet! See “Anchor Windless” under “Anchors and Anchoring” for details.
3. Checking the Oil: Not convenient! It is located almost at the floorboard level on the starboard side of the engine below a bunch of hoses. A small flag should be attached to the dipstick to make it easier to find. If the flagging should be missing, please add something clever or bright-colored to help the next sailor. As a last resort the step cover can be removed to give you the needed room to get it in place.

4. Lighting the Stove: Turn propane tank valve to “open”. (Propane tanks are located in the starboard aft locker of the cockpit.) Flip on the “LP Gas” switch on D.C. panel. Turn solenoid switch on. (Located to the right of the head door.) Turn burner knob to the lighting position and light with a match or a propane lighter at the burner. In order for it to stay lit, you must hold the knob in until it has heated then slowly release the knob. (The system is made to light without a match or lighter, so you might not need to use a match or lighter! But probably not.) See “Stove/Propane” for more.

5. Cabin Hatch Water Leaks: Hatches have 3 settings – open, vent and closed. If you latch it in the middle setting they will leak if raining or with heavy sea spray while underway. You need to have the lever BELOW both black pieces to be water tight. You’ll want to give special attention to the hatches over the settee and the berths. Sleeping on bedding that is damp is no fun!

6. Anchor Chain: Remember the chain is marked at 50 foot intervals. When you reach the end of the chain you are at 200.

## **ABOUT *Shenandoah***

### **ANCHORS AND ANCHORING**

*Shenandoah* is equipped with two anchors, the primary anchor is forward in the anchor locker and the secondary anchor is in the port aft cockpit locker. The primary bow anchor is a plow-type with 200 feet of chain and 220 feet of rope. The line is marked in four 50-foot intervals (white at 50’, yellow at 100’, white at 150’, red at 200’). The secondary/stern anchor is a Danforth with 60 feet of chain and 200 feet of nylon line. *Shenandoah* draws 6’5” therefore it is advisable to allow a minimum of 10’ clearance.

The stern tie line is a coil of 200 feet of spooled yellow line in the cockpit port locker for stern tying in case of close anchoring. □ The scope to use in the islands is (3or4)-to-1 for the highest water depth you’ll encounter in the spot where you choose to drop anchor.

Check your tide data in order to gauge how much depth you may lose and how much depth you will gain as the tide floods in and ebbs out during your stay. Since most coves are 15’-30’ deep, expect to pay out about 60’-120’ of rode. After you have paid out the suitable amount of rode, 2 minutes of reverse (in idle speed reverse) sets the anchor and tests its holding power.

(Note other boats and points of reference on land. Are you moving? If not after 2 minutes, you've set your anchor successfully.) If you wish to sleep even better, throttle up to about 1500 RPMs in reverse for another 30 seconds to prove to yourself that the anchor is set well!

For storm conditions (sustained winds of 25+ knots), extend your scope to 7 or 10-to-1, provided you have room to leeward. Otherwise, set two bow anchors (using the secondary anchor chain and rode) in a v-type pattern for extra holding power

### **Anchor Windlass**

Check the low tide depth anticipated during your time at anchor and assure sufficient depth is available over the duration. Check the tide tables and correction for the locale from the sources stowed in the book rack at the navigation table. **Remember, the depth sounder is set at the water-line, and the boat draws 6.5 feet.** □ Release the anchor sufficiently upwind so that the actual position of the boat (and swing circle) is clear of other anchored boats, rocks, or other obstructions.

The electric anchor windlass first **REQUIRES** power from a switch on the navigation table D.C. panel. A hinge-type Circuit Breaker for the windlass circuit is located under the chart table. **Always operate the windlass while the engine is running.** The up-down controllers for the windlass are on the forward starboard deck just aft of the anchor locker. □ If the anchor chain jams and/or the windlass is used to pull the boat up to the anchor (instead of using the engine in low-forward gear) it is likely that the circuit breaker will open and power to the deck switches will be lost.

Start the engine prior to operating the Windlass to avoid tripping the breaker and potentially drawing down the starting battery. Watch the chain and anchor line markers to determine the amount of scope released. To deploy the anchor: 1. Release the safety carabineer attached to the anchor chain. 2. Push the anchor by hand over the bow taking care to limit swinging 3. Use the down controller to slowly lower chain. Stop periodically to be certain the chain is clear in the anchor locker.

Retrieving the anchor requires good planning and crew coordination.

1. When retrieving the anchor, never use the windlass to pull the boat up to where the anchor is set. Instead, head the boat under power toward the anchor while using the windlass to take up the slack chain.

2. Using the “up” button with the arrow pointing back, retrieve the chain and anchor line **slowly**. Bring up 3’ to 4’ at a time, stopping each time to flake the chain toward the front of the locker. If you go too fast the chain will jam. If the chain jams, stop and allow a foot or two feet of chain back down. After it clears continue as before.
3. Once the anchor is out of the water, retrieve it by hand, placing the anchor’s shaft on the rollers, and then lifting it into place. Stow the remaining chain with slow, short activation of the windlass, leaving a small amount of slack in the chain. Throughout the retrieval process, **KEEP THE CHAIN CLEAR OF THE FORWARD SIDE OF THE WINDLASS TO AVOID JAMMING** the gypsy and potentially throwing the circuit breaker.



(The circuit breaker for the Windlass is under the Nav table at the right in the picture above. On the left is the switch to combine batteries for emergency engine start as well as reset switches)

IF power is lost, clear the chain (using the clutch on the right side of the gypsy, or if that fails to release the jam, carefully remove the cover plate by removing the two screws) and check the circuit breaker and reset as necessary by closing the small black lever on the breaker by raising it to a horizontal position. Have the helmsman maintain position over the anchor set position by using idle-neutral with head to wind.

KEEP the engine running throughout the retrieval process in order to avoid accidental tripping of the circuit breaker as the windlass requires significant power. Engine power will also be needed to maintain position and reduce

strain on the windlass motor and gearing. □ Secure the anchor by attaching the carabineer to the anchor chain and close the foot switch covers. Turn off the breaker switch on the main electrical panel.

**BARBECUE** The stainless steel propane BBQ is mounted on the starboard side on the stern rail. It operates on propane by use of the ‘pigtail’ hose connected to a separate tank in the propane locker. The tank valve must be opened. Upon completion of use, the tank valve should be closed. When active use is finished, make sure the regulator knob at the end of the hose is **OFF**. As a courtesy to the next guest, please use the wire brush attached by wire to the barbecue to clean the grill. Also, replace the cover to keep the BBQ out of the elements. *Shenandoah* has a new BBQ as of 2015.

### **BATTERY SYSTEM/CHARGING**

*Shenandoah* is equipped with a four deep cycle battery system. The master battery dial/switch is located on the bulkhead beneath the chart table - *see picture on previous page*. You may simply leave the switch in the **ON** position. The isolator assures all batteries are charged, while protecting the engine start battery from draw-down by house usage. The two battery banks are located in the cockpit locker compartment under protective covers. The 4 deep cycle batteries are connected in series to provide 400 ampere-hours for house 12 volt power requirements. The isolator detects remaining charge and will automatically keep the start battery bank at full charge and reserved for engine starting. In an emergency the battery switch can be set to “Combine” to temporarily boost engine starting power. (Also, an emergency engine starter button is located under the companionway steps.) Also See “Electrical Power/Panel” section of these notes.

**BERTHS** *Shenandoah* is ideal for four adults. She can sleep seven. Two can sleep in the forward cabin with 6’ headroom and a berth 75” long, narrowing from 82” to 12” at the bow. The aft cabin has 6’4” headroom and a queen size inner-spring mattress that sleeps two. The main cabin table when made into a berth is 36” forward, 52” aft and 80” long. (This requires lowering the salon table and using the settee cushion insert and is possible but not comfortable for 2 adults.) The port settee measures 22” forward, 30” aft and 79” long. **Converting Main Cabin Table to a Berth:** Remove all the table seat cushions. Pull the pins on both sides of the table mount □ and lower the table until it rests on the wooden supports. □ Replace the seat cushions □ and add the filler cushion. (Stored in the forward v-berth when not in use.)

## **BILGE PUMPS**

There are two bilge pumps. The electric bilge pump is controlled at the electrical panel. The pump also has an automatic float switch wired directly to the battery bank. When there is enough bilge water to float the switch, the pump engages even if it is turned off at the electrical panel. Should you lose power and/or need to rapidly remove water from the boat use the manual bilge pump system. **The manual bilge pump handle is located in the cockpit port storage locker above the emergency tiller. The fitting is in the cockpit next to the engine kill pull.**

When showering turn on the D.C. sump pump switch. The sump pump empties water from the shower and refrigerator without letting the water enter the bilge (the white box under the floorboards at the base of the stairs is the sump pump and hoses). **Beware:** If you shower without the sump pump on, water will spill into the bilge and can lead to an unpleasant odor until the bilge is cleaned and pumped.

Hopefully you will never hear the shower sump pump start automatically. If you do, please investigate immediately and report it to San Juan Sailing either by phone or VHF (channel 80) if there is a significant problem, or upon your return if a minor problem.

An emergency portable bilge pump is located in the port cockpit storage locker.

## **BOARDING**

A small white boarding step is provided at the San Juan Sailing dock for *Shenandoah*. This step folds and may be taken aboard for use at other ports of call. There is also a collapsible swim ladder tucked under the swim step at the stern.

## **BOAT SPECIFICATIONS**

All boat specifications such as LOA, LWL, draft, tank capacities, serial numbers, etc., can be found in the pages following these owner's notes.

## **STEREO**

The Sony sound system operates like a car stereo. □ Simply experiment with the regular buttons to gain familiarity. The stereo will beep three times when

the unit is turned off on the main control panel. This is normal. Use the “FADE” function to activate the speakers in the cockpit, to have both inside and outside speakers operating, or to return audio to the cabin only. This unit has a jack for aux. players such as ipod/mp3 players.

## **DINGHY**

*Shenandoah* has a hard bottom inflatable 10’2” Avon RIB dinghy. Towing works best when the dinghy is brought close to the boat—about 4 or 5 feet off the stern. This lifts the bow, reduces drag, and lessens the chance of wrapping the painter around the propeller. Tie the painter off twice—once at a portside cleat then tie the bitter end to the stern rail. Keep track of the oars as well. The oars should be stored flat inside the dinghy when under tow. **Tow on the port side** to avoid the engine exhaust outlet. For tie-up after anchoring, please tie on the starboard side to avoid the heat of the furnace outlet vent.

The dinghy has a Honda 2.3-HP 4-stroke outboard motor (New 2014). See the section in these notes for “Outboard Motor” for additional information and operating instructions. The outboard motor holds about 1/3 gallon of regular gas (no oil mixing is needed!) Do not store spare gasoline on the boat. An extra gas container is secured inside the dinghy.

PLEASE check regularly that the dinghy drain plugs on the transom are SECURLY in place prior to towing or heading out to the crab-pot or for ice cream ashore! □ Please use special care when beaching the dinghy (refer to the dinghy beaching procedure in your charter guest book). Most of the beaches in the Islands are strewn with barnacle covered, bottom slicing rocks. When approaching the shore, weight the dinghy aft by leaning or moving toward the back of the dinghy. Then offload everyone over the bow. Lift the dinghy/outboard motor using the hand lines on either side above the barnacle “line”, and deposit the dinghy gently on the beach. Also remember to secure the painter under a rock or to a log - especially in the case of a rising tide. Carefully lift the dinghy off the beach and launch carefully beyond the shore rocks rather than dragging it when departing the beach. **The inflating pump is stored in the small bow locker of the dinghy, together with a pump-out hose and limited repair kit.**

## **DODGER/BIMINI**

The dodger windows are plastic that is vulnerable to scratching from salt crystals, especially after sailing into a challenging breeze. The salt spray on the windows dries in the wind, leaving behind tiny salt deposits that obscure your vision. Please avoid directly touching the windows with a rag or sponge. It's like rubbing the plastic windows with sand paper! To clean, use generous amounts of fresh water from a hose, a pan from the galley, or a sopping wet sponge to "flood" the glass and dissolve the salt crystals away. (Better yet, wait until you're at a dock where you can hose off the salt crystals. If the dodger windows are really clear, you can thank previous guests for their diligence. And we thank you too!

Please do not toss items (winch handles, fenders, life jackets, etc) on top of the house and potentially hitting the dodger windows.

### **Dodger Adjustment for Sun//Rain**

The Dodger consists of three separate sections. The center section may be either removed or installed in order to accommodate the wishes of the captain and crew relative to both sun and rain. To remove the canvas center section, first unzip the forward edge using the zipper pulls from each outboard edge. Once the zipper is open, the canvas is removed by slowly pulling the hard aft edge from the slot, pulling either to port or starboard. Carefully roll the unit taking care to NOT crease the plexiglas window, and store the unit securely below out of the way. This provides a nice selection of both sun and shade in the cockpit. To reinstall the center canvas for either full shade or protection from rain, slide the hard track aft edge into the slot on the cockpit bridge, then close the zipper from each side. Close the snaps and enjoy! □ A canvas companionway hatch cover is also provided to offer privacy and/or ventilation when the hatch boards are not in use. This is generally kept on the shelf in the port cockpit locker.

## **ELECTRICAL POWER**

There are two electrical subsystems on board, the battery system and the shore power system.

1. The **Battery System** is 12v D.C. and supports most lighting and instrumentation functions. See Battery/Charging A second battery, isolated from the main system, is the electrical source for starting the diesel engine.

2. The *Shore Power System* operates on 120v AC power, obtained by connecting the shore power cord to an appropriate 30 Amp shore connection available at almost all marinas. In addition to powering the battery charger, several components onboard require AC power.

*Shenandoah* is equipped with a 50' yellow shore power cord. **(Stored in the port aft cockpit locker. )** To connect the AC shore power, first make sure both the AC master switch and the shore power source are turned off. Connect the shore power cable to the three-pronged plug on the outside of the port stern rail. Then connect to the shore power source. Turn on the shore connection, then the AC master switch on the electrical panel. Reverse this process when disconnecting the AC shore power.

After connecting to shore power, activate the A/C main switch on the nav table panel and use the individual breakers (electrical panel switches) to power various appliances. The various switches are self-explanatory, and can be individually turned on or off as desired. **If power is lost, check the AC circuit breaker located on the aft bulkhead in the large port cockpit storage locker.** Reset the breaker as necessary, which should then power up the AC side of the electrical panel.

The AC outlets only function while the boat is connected to shore power. If the AC outlets are not “on,” check the GFCI’s in the outlets just past the chart table.

The battery charger also operates on AC (120V). TURN OFF the AC battery charger switch on the electrical panel before starting the engine in order to prevent damage to the charger or batteries.

### **Electrical Panels/Circuit Breakers/Switches**

Breaker switches for activating component sub-systems and equipment for the two systems are arranged separately on the master electronics panel located in the salon above the chart table. The battery functions are located on the left (DC) panel, and the shore power functions on the right (AC) panel. Each section has a main system switch located at the top of the respective section. **The reset for the 12 V DC panel is located on the bulkhead below the navigation table. The Shore Power (AC) breaker is located on the aft bulkhead inside the port cockpit locker.** Most switches at the panel board are self explanatory.

Amp meters located at the panels will help you monitor the power

consumption as various components are used.



(Clockwise from upper left -*Tank indicators* for water, fuel, and red holding tank full indicator; *stereo*, *heater thermostat* with on/off switch, *AC panel* for shore power; *DC panel* for battery power.)

## Emergency Starting

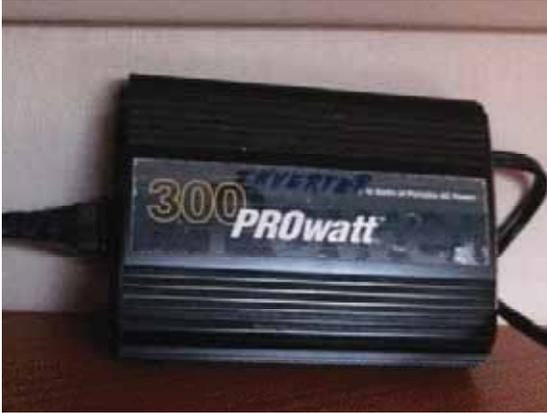
In emergency starting situations only:

1. The battery dial (located on the bulkhead under the navigation table) may be set temporarily to “COMBINE” to boost available amperage.
2. Should the ignition fail, there is a bypass starter button located under the companionway steps/engine cover near the engine hour meter.
3. Check that the kill-pull in the cockpit has been pushed back in! If you are still having difficulty starting the engine, call SJS.

## Inverter

*Shenandoah* also has a portable 300 watt inverter that can be used on a short term, limited basis to provide AC (120 V) power **when shore power is not available**. The inverter should be stored in the forward berth near the DVD player and plugged into the outlet. You can use the inverter for powering other small appliances, such as the TV/DVD player, laptops, game boys, phone chargers, and CPAP units that do not draw much amperage.

Electric hairdryers, razors, recharging units, and other things that require high amperage will not work.



(You will need to plug them into the inverter when not on shore power, because the TV/DVD or cell phones can't use DC power supplied by the battery.)

### **Anchor Windlass Electrical**

The switch is located on the electrical panel. If the chain jams and/or the windlass is used to pull the boat up to the anchor (instead of using the engine in low-forward gear) it is likely that the circuit breaker will open and power to the deck switches will be lost. **The windless circuit breaker on the bulkhead below the chart table. See anchor section for details regarding use of the windlass.**

### **Chargers & Cellular Telephones**

*Shenandoah* is equipped with 6 12-volt “cigarette lighter” outlets that may be used for recharging your cellular telephone. To activate the plug on the port side of the steering pedestal in the cockpit, turn on the “Charger” breaker switch on the DC side of the main electrical panel. Cellular/wireless phone reception in the Islands can be quite variable by individual carrier. Be aware that roaming charges can be quite expensive, especially when wireless calls are routed through Canadian cellular services. This frequently happens when in the vicinity of both Stewart Island and Sucia Island even when in US waters. The inverter in the forward berth can also be used for charging items like ipods and cell phones.

### **House Lights**

The interior lights on *Shenandoah* are activated by a single breaker on the DC electrical panel. But there are both individual light switches and group switches, depending on which set of lights are to be used. Just outside the head, close to the LP Gas switch, there is a single white toggle switch that

controls most (but not all) of the recessed ceiling lights as a single circuit. Separately, there are small pole switches on the ceiling light at the base of the companionway steps and those in the forward and rear berth compartments. The wall-mounted swivel lights are also controlled by small switches on the lamp bases.

## **ELECTRONICS**

The depth sounder, wind instrument, and autopilot are all Raytheon products. There are laminated Raytheon-prepared quick operating reference guides in the white SJS Charter notebook (or, in the chart table) to assist in using the various instruments. If you take them out during your charter, please return them to the notebook for the next charter guests. Detailed User Guides are included in the literature packets stored in the storage compartments below the Chart Table.

The power for the navigation instruments is activated by turning on the Autopilot Switch on the DC control panel. Revised 11/2014

### **Autopilot**

*Shenandoah* is equipped with an autopilot unit that can be used to keep the boat moving on a pre-set course while the skipper is occupied with short-term tasks or for extended open passages where there are no obstructions, other boats, or shallow water. ***IT IS IMPERATIVE*** that full attention be given to sailing conditions and the location and course of the boat at all times. The autopilot is only an aid for sailing/cruising and is not a substitute for a continual primary focus on conditions and safety. The unit will NOT independently steer the boat into heavy weather or strong seas. This may cause the control mechanism to disengage and/or the drive belt to slip.

The autopilot is activated by switching on the breaker switch on the DC panel. This is the same switch used to activate the other electronic instruments as well. There are TWO autopilot controls that are used in combination. While the boat is moving on the desired heading, push the black clutch lever located on the starboard side of the wheel downward into a locked position. Then, push the red “Auto” button on the instrument head are used to engage the unit’s compass control mechanism. To disengage autopilot press the red “Standby” button AND bring the clutch lever up to a horizontal unlocked position. Leaving the clutch lever engaged will quickly damage the motor/drive unit.

Autohelm is also connected to the Raymarine Plotter. Please see Raymarine booklet in the cupboard under the navigation table for more information.

The round disk in the center of the wheel tightens and loosens the steering as needed for short periods. If the wheel is difficult to move someone may have tightened this and it may need to be loosened.

### **Furuno Color Chart Plotter and Radar**

This instrument is installed at the helm. The radar switch at the electrical panel powers up this unit and the other instruments. Then use the Power Brill button on the display unit at the helm to turn the plotter on/off. A “long press” will turn the unit off and on. A “momentary press” opens the display for adjustment of brilliance, etc. Rotate the “Enter” knob to make adjustments, and then press to enter your selection of menu options or adjustments. An abbreviated “User Guide” is located in the cupboard under the navigation table and will answer most routine operating instructions. The instrument’s full User Manual is also in the cupboard. The plotter is fairly simple to use, and is much like a standard GPS with map plotter. You won’t hurt it by experimenting with the various functions a bit to learn basic operations. Please leave all basic setup functions as pre-set so that other users can easily operate the system.

### **Raymarine Color Chart Plotter**

A booklet on usage is available in the cupboard under the navigation table. One option is to use the Furuno system for radar and the Raymarine system for map plotter. Some skippers use one zoomed out for the bigger picture and one zoomed in to see rocks and hazards!

It is recommended that your PRIMARY navigation aid in the cockpit while underway be the Maptech waterproof chart book or the roll charts (with the most active “killer rocks” marked in red) with the chart plotter as an additional aid. The chart plotter confirms your location. If someone asks, “Where are we?” within 3 seconds, you need to be able to point to the vessel’s precise position on the chart. If you can’t, you’re in danger of hitting a rock. The only time when the chart plotter becomes your primary navigation tool is when you’re in a “tight spot” like going through a narrow pass or approaching the entrance to a secluded cove. With the chart plotter, you can “zoom in” to make something that is the size of a dime on a paper chart into the size of a paperback novel or larger on the screen. You can see

more detail and, importantly, any hazards in the area. Your boat's position on the chart plotter is accurate to within 3 meters – about 10 feet.

You should have little need of the radar except for the highly unlikely event that you are suddenly enveloped by fog, which is rare in this area. The fog encountered in the islands usually forms in the wee hours of the morning and burns off by mid-day. So if it's a little soupy after breakfast, you might just put on an extra pot of coffee until it lifts. Never depart from a safe location into the fog! To do so, even with radar, would be contrary to prudent seamanship. FYI – Fog becomes “reduced visibility” when you can see 1/4 mile (about 4 football fields) in all directions. It is safe to proceed CAREFULLY in reduced visibility using your radar to “see” beyond the haze, but be sure to look up from the screen about every 10 seconds to scan the horizon forward, behind, and side to side. A motor yacht, tanker or freighter traveling at 20 knots takes only 39 seconds to travel 1/4 mile! You need to see these fast moving vessels sooner rather than later so you can prepare to quickly take evasive action to avoid an impending collision. **User's manual is in the cupboard near the nav table.**

### **Depth Sounder**

The digital depth sounder will not give accurate readings beyond 200'. It is designed for use in shallow waters. In deeper water, the sensitivity on the unit increases as the transducer tries to get some reading back. Consequently, you will receive many false readings caused by currents, changes in water temperature, fish, and seaweed. Use the depth sounder only as an aid to navigation in shallow water. However, the key to avoiding rocks is not the depth sounder—but knowing where you are at all times. **Rocks** are the greatest navigational and safety hazard in the islands—but they are all clearly marked on the official government charts. San Juan Sailing has also clearly marked danger areas in **RED** on the charts. We do not recommend using the alarm. It is likely to sound at inappropriate times such as late at night while fish are passing beneath the transducer. While underway USE BOTH the charts provided aboard AND the chart plotter. Also, remember that most driftwood (including large logs) FLOAT and MOVE and must be spotted visually in order to avoid serious damage to the driveshaft and prop.

Remember, the depth sounder is set to the water line, and the boat draws 6.5 feet.

## Knot Meter

If the digital knot meter shows a reading of “0.00” while underway, the impeller is most likely clogged with a piece of eelgrass. Sometimes it will float off overnight. You can also try removing it by powering in reverse for a short distance. However, the GPS input to the chart plotter also provides an alternative and quite accurate indication of speed over ground. The knot meter indicates movement relative to the water, and is impacted by tidal current, etc. The knot meter is located under the floorboard just behind the front cabin doorway. If it is not functioning, it can be cleaned out by unscrewing and removing the plug. Please note: Sea water will come in and flow into the bilge. When replacing the knot meter be sure that it is lined up in the direction of the boat’s travel.

## VHF Radio

You should monitor channel 16 (the hailing and distress channel) during your cruise (It’s the law). For non-emergency communications, after establishing contact on channel 16, switch to working channels 68, 69, or 79. Scan the weather channels for the one with the best reception before sailing in the morning and prior to anchoring for the evening. Remember to use proper procedures when using the VHF and, in most cases, use the low power option to reduce on-channel congestion and interference.

This is generally a light wind region but weather changes can be sudden. Listen for the “inland waters of western Washington”. You will hear “Strait of Juan de Fuca” (lies south of the San Juan Islands), “Georgia Strait” (lies north), and “Rosario Strait” (runs through the eastern part of the San Juan Islands). The remote access microphone (RAM), when plugged into the forward side of the pedestal, controls all radio functions of the unit mounted above the navigation station from the steering station. This can be very convenient while entering and leaving moorings. To operate the Remote VHF, first carefully plug the unit into the pedestal connector, and **then** turn on the panel breaker AND the main VHF radio switch. Then activate the **ON** switch for the remote. **If the VHF is turned on before the handheld is plugged in it will not work.**

In case of a distress where you can no longer stand by the radio to pass your mayday, use the red distress button on the radio. First flip up the cover, then press the button. □ San Juan Sailing monitors channel 80 during office hours (closed Sundays). By phone you can also reach the San Juan Sailing office at

(800) 677-7245 or San Juan Sailing owner, Roger Van Dyken, at (360) 224-4300 (cell) or (360) 354-5770 (home). Additional emergency contact numbers are also included in the Charter Guest Reference Manual onboard.

## **Wind Indicator**

The wind indicator is mounted at the masthead. The instrument indicates both apparent and true wind angle and wind speed in knots. A small black square appears on the screen below the “True” or “Apparent” labels, designating which setting is currently active.

## **EMERGENCY/SAFETY**

In addition to the reminders on safety at the beginning of these notes, you will find the following items on board: □

Fire Extinguishers –3 - cockpit locker, companionway, and forward stateroom. □

Life Sling and gear – located on the stern railing and cockpit locker

Flare kit, fog horns, (manual) and extra canisters; radar reflector; absorbent pads (for mop of diesel spill while fueling) – all located in the cockpit locker  
Emergency tiller; emergency rudder post – cockpit locker

Flashlights – 2 – chart table and companionway □

First Aid Kit – under sink in head. □

Spotlight –a high powered led/halogen handheld rechargeable spotlight is located in the forward cabin, port side. It is AC/DC rechargeable as well as “hand crank.” □

## **ENGINE**

*Shenandoah* is powered by a 27 HP Yanmar Diesel engine. This is a very reliable engine and is the MOST IMPORTANT MECHANICAL SYSTEM aboard. Understanding how to use the engine is absolutely essential for having an enjoyable and stress-free charter experience. ***Please make an extra effort to fully understand the engine system before leaving the San Juan Charter docks.*** Ask questions, and practice all operations and functions BEFORE departing from the docks.



## Starting the Engine

### Pre-start checklist:

1. ALWAYS check that the thru-hull valve for the engine cooling water intake is OPEN before starting the engine!
2. Check the oil level. *Shenandoah* consumes very little oil during cruising and rarely needs oil added. Access to the engine is by unlatching the companionway stairs and pulling them towards you. The dipstick is on the lower starboard side of the engine. There is a wide gap on the dipstick between the full line and the fill line. Midway or a little less than between the lines is fine. If oil is needed, do not overfill. Use the onboard spare oil to add no more than a cup at a time. Then check the level again. Overfilling can be harmful to a diesel engine. The excess oil will escape somehow, perhaps by blowing the head gasket. Also, if the dipstick seemingly indicates no oil the first time you check it, reinsert and try again - the correct level will show when the air lock bubble is broken. Expect the oil to be blacker than that of a gasoline powered automobile engine. This is normal for a diesel.
3. Check the coolant levels. Check for belt tightness and leaking fluids. □ Secure the companionway engine cover. □
4. Visually inspect the clear raw water strainer to make sure there is no eel grass stuck in it. The strainer is located under the floor boards forward of the companionway near the kitchen drawer. To remove eel grass from the

strainer see “Engine Overheat” below.

5. TURN OFF the AC battery charger switch on the electrical panel before starting the engine in order to prevent damage to the charger or batteries. Make sure propane gas is turned off. Look over the stern for things that could foul the propeller. □

## **Start Up**

Make sure the gearshift (metal handle at the pedestal) is in neutral (straight up). □ Push the black clutch pin on the handle in, and then push the throttle lever about 1/3 forward. This increases the rpm while leaving it in neutral. Do NOT put the transmission into forward gear! □ Insert the key and turn it clockwise. There is not a glow-plug on this engine. The warning buzzer will sound because there is no oil pressure. This is normal.

Press and hold the starter button (next to the key). Expect the engine to start in 5 seconds or less. If the engine doesn't start after 10 seconds of cranking, turn the key to the left and remove it. Wait 15 seconds and try again.

***An emergency start button is located in the engine compartment UNDER THE STEPS.***

After the engine starts, release the start button, check for water gurgling out the exhaust, then gradually ease the throttle back to a slow idle. Unless in an emergency situation, please allow 5 minutes of warm up before placing a load on the engine. It is very hard on a diesel to be placed under load when cold.

## **Shifting Transmission Gears**

When you bring the throttle back to the straight up position, the clutch pin will pop out. Now you may engage forward gear by pushing ahead on the throttle or reverse gear by pulling back on the throttle. Please remember to *pause* in the straight up (neutral) position when shifting from forward to reverse and vice versa. This engine tends to shudder if shifting goes rapidly from forward to reverse. Shift slowly, going thru neutral for a few seconds. New transmissions are expensive!

## **Engine Operation**

The 27 HP Yanmar 3 GM series engines are very reliable. Cruising speed is

approx. 6 knots at 2800 RPM. Refuel when the fuel drops below 1/4 full in order to avoid the possibility of sucking air or sludge into the engine when the fuel level approaches 1/8 full. Based on using 75% of the 37gallon fuel capacity yields an approximate 300-350 NM range. Please do not exceed 3000 RPM. It is hard on the diesel to push past the designed hull speed and will yield very little increase in speed. Running at higher engine RPM will significantly increase fuel consumption. At 2800 RPM, the engine uses about 0.50 to 0.79gal/hr in relatively smooth water (depending on currents and wind).

### **Engine Overheat**

The engine should normally run at about 160-170 degrees (F). Check the gage frequently. If the buzzer sounds after the engine is running, immediately check the exhaust discharge on the transom. The alarm buzzer is more likely to indicate engine overheating. If water is NOT exiting the discharge port, there is a strong likelihood that the cooling water intake filter is blocked or that the water pump is malfunctioning. Turn off the engine. Check the coolant level after the engine cools down. If there is no water discharged, the seawater strainer is likely plugged with eelgrass. The best solution is to prevent this problem from occurring —keep alert for eelgrass masses, especially along those “soapy” tide and eddy lines in the water. If eelgrass gets sucked into the engine cooling water intake, it jams the raw water strainer. IF you are motoring and see a patch of eel grass that can not be avoided, slip the engine into neutral and glide through the bed of eelgrass.

To clear the strainer, first remove the floorboard forward of the companionway stairs for access. *Before* clearing the strainer, *close the seacock* below the strainer. Extract the stainless steel filter element. Remove the eelgrass. Open the seacock momentarily to assure that it is not clogged. Close the seacock again and carefully reinsert the stainless steel filter element into the strainer and close the unit snugly. Be sure to **REOPEN THE SEACOCK!** If the engine overheats again upon restarting, check that you remembered to reopen the seacock. If it is open, check the seal between the strainer and its lid. If the strainer is drawing air, it won't draw water. (If needed, shut the engine down, close the seacock and open and retighten the lid on the strainer.) □

If water IS exiting the discharge port, the engine has most likely *lost oil pressure*. Check the oil pressure gauge frequently. Immediately shut down the engine, check the oil level, and if pressure is not restored contact the

Maintenance Professional and/or San Juan Sailing. See emergency contact numbers in the white SJS Charter notebook.

**Engine Shutdown.** Do NOT turn off or remove the ignition key while the engine is running! First bring the engine to idle and the gearshift to neutral. Allow the engine 5 minutes to cool down. Then pull the fuel cut-off handle at deck level, down by your left foot while in the cockpit. After the engine stops a warning will sound, turn off the ignition and remove the key.

### **FUEL TANK**

Diesel refill fitting is located starboard, stern deck, aft of the railing. A universal key to open the fitting is in the chart table. Please be very careful when fueling. The 37-gallon tank is located under the aft berth. Never allow maximum flow from the filler hose. If you do, the fill tube will surge and diesel will spill from the vents onto the side and onto the deck. It takes only a few drops of diesel fuel in the water to create sheen and subject you to a Coast Guard fine. Fill slowly and carefully. When the pipe begins to gurgle like it is full, you are probably full. You may also be able to see the diesel when looking down into the fill tube. Check the side vent and, with soap, wipe up any excess fuel to avoid yellowing the stern and polluting the water. Also be very careful of drips when removing the hose. Diesel and shoe bottoms are a very slippery and dangerous combination. After wiping, please use soapy water to scrub down any drips so it does not stain the fiberglass

### **HATCH BOARD COVER STORAGE, SECONDARY COVER**

The two piece hatch boards can be safely and securely stored in the canvas pockets mounted on the inside bulkhead of the cockpit locker. Please use this pocket accessory to keep the boards protected and out of the way. A cloth hatch cover is rolled up and stored in the cockpit locker on the forward shelf. It snaps onto the hatchway and makes for easy entry and exiting on cold evenings when you want to contain heat in the cabin.

### **HEAD AND HOLDING TANK** □

Head issues can really put a kink into a fun trip. If you'd like to avoid putting the head out of order, follow the guidelines below.

Please do not put anything in the toilet that hasn't been eaten. Deposit toilet paper (and feminine hygiene items) in the head wastebasket, not down the toilet. (Zip lock bags under the head sink help with containing soiled tissue.)

*Shenandoah* has a 30-gallon fresh water holding tank mounted in the rear swim step locker of the boat on the starboard side. Both sinks and the toilet draw water from this tank. The fresh water tank gauge is at the nav table electronics panel. San Juan Sailing staff will discuss holding tanks and pump-outs at the pre-departure Skipper's Orientation held upon your arrival

A Holding Tank Full red indicator light is located at the navigation table bulkhead below the electronics panel. The red light will light when the tank is nearly full. **Flushing the head while the holding tank is full can cause the holding tank to burst.** It has happened before. It isn't fun. (Also see information under heading "Water – Hot and Cold Pressure System/Holding Tank" in these notes). **Oil and sewer treatment powder are available in the cupboard behind the pull down mirror of the vanity.**



### **Flushing Head**

The toggle switches are high on the bulkhead near the head. Fill and empty to dry bowl using the right toggle. Empty with automatic wet bowl using the left switch.

**Emptying the Holding Tank:** □ The holding tank may be emptied by either use of shore-based pump-out stations or by use of the macerator pump and thru-hull valve. Facilities for pump out are somewhat limited and emptying via macerator is restricted to open water. **It's best to plan ahead and strongly advised to empty the tank regularly instead of simply waiting until the 'full' indicator light appears.** When the red "full" indicator is lit do not continue to flush the head.

## **Macerator Pump Out:**

*Shenandoah* has one automatic macerator at the head and one manual macerator with discharge thru-hull valve at the holding tank. Avoid macerating when located in a small waterway, bay or anchorage. Macerating may be accomplished when underway. □ This should be done according to regulations only in broad, open waters where there is good water circulation and **NOT** activated in port or at anchorages. □

1. The master thru-hull valve is located inside the port-side swim step locker. For safety and to avoid the need to access the swim step while the boat is underway in open waters, the holding tank discharge line is plumbed with an air loop so that the valve may be left open while the vessel is in active use. The holding tank will retain all materials in the tank until the macerator pump is activated. The thru-hull valve handle should be pointing in the same direction as the hose: yellow handle up - open. □ It's easiest just to leave the valve in this position at all times.
2. After checking that the discharge thru-hull valve is open (see above) turn on the primary macerator switch located on the 12-volt control panel. □ Push and hold the secondary macerator button just under this switch until no waste can be seen □ exiting the stern of the boat. This may take three to four minutes. When the effluent is frothy and bubbly, the tank is empty. Slowing the engine to forward/idle and having a crew member listen for a change in pitch of the macerator motor from inside the aft cabin is a good way to know when the tank is empty and to avoid burning out the motor. It is desirable to also rinse the tank by liberally flushing (+/- 100 'pumps') water through the toilet and repeat the discharge process to reduce clogging and odors. Release the secondary macerator button to stop pump operation. Turn off the main macerator switch on the panel.

**Shore Pump Out** Follow the instructions posted at the station facilities.

**The pump-out deck fitting is located aft, just under the barbecue on the starboard side. Don't confuse this with the Diesel Fuel fitting!** If you pump out the holding tank at a shore facility, please fill it with fresh water through the deck fitting to rinse, and then pump it out again. This will help avoid unpleasant odors during your cruise.

## **HEATER/DIESEL**

The Webasto diesel cabin heater is located in the outboard portion of the

port swim locker. Because the unit becomes very hot, a longitudinal panel separates it from the cabin wall. The heater is a forced-air system, so check to see if the outlets are opened or closed in the forward berth, salon, and/or aft berth as desired. Adjust to personal preferences.

The heater control is located near the nav table, to the right of the stereo and above the AC Electrical Panel. The “Off-Heat” switch turns the heater on and off. The Up-Down arrows are used to set the desired salon temperature. After setting the temperature, the digital dial will revert to showing the current temperature and the heater will activate as necessary to reach/hold the desired temperature. The fan will continue to run while the unit is cooling down. There are outlets at floor level in each cabin and in the main cabin. The heat is dry, comfortable, and on those rainy days or cool evenings, makes a huge difference in cruising comfort! Please be patient! It may take several minutes for the heater to ignite once it is turned on and the thermostat set. You will likely hear the fan operating during the startup phase. There is also an electric back-up heater located underneath the starboard side seat cushion.

The blue snap-on fabric companionway cover will enable you to contain the heat below deck while making for easier access. The cover is rolled up and stored on the shelf in the cockpit locker.

**INVERTER** – See “Electrical Power”/ AC Inverter

**KITCHEN APPLIANCES** Both a Milita and french press are onboard. The Milita uses a #6 filter, and can be set to drain directly into a glass thermos server.

**MICROWAVE** Use only when plugged into shore power!! There is a switch for this on the AC panel.

**OUTBOARD MOTOR** – □ *Shenandoah* is equipped with a 4-stroke Suzuki 2.5 horsepower outboard. This brand and size has proven to be a practical and VERY reliable dinghy outboard. DO NOT add any oil to the gasoline mixture – it uses just straight gasoline. The fill cap is located at the top of the motor. As a courtesy we have an additional red spare gasoline container tied into your dinghy. □ **WARNING** □ – Gasoline fumes are explosive and a very dangerous fire hazard if stored on a boat. Keep the spare gasoline container in the dinghy and tied to the transom so it stays upright. **NEVER store the**

**spare gasoline container in a locker, lazarette, or any other storage area on your vessel.** PLEASE do not cruise with the outboard on the dinghy. It will no longer work after saltwater gets into or even near the intake of the carburetor. If this happens, you will have to condition your rowing muscles until you get back to Bellingham. We also recommend taking the outboard off the dinghy at night. Dinghies often deflate in the cool of the night and wind waves or powerboat wakes can flip the dinghy over. It's a disturbing sight first thing in the morning to see your outboard propeller sticking straight up, with the motor under water. At that point it's nothing more than an ineffective \$900 anchor.

### To Start

Ensure the outboard is on the dinghy and in the water; water provides the cooling.

1. Open the air vent on the top of the fuel cap (top of outboard) by turning counter-clockwise. □
2. Push the fuel valve lever (starboard aft corner of the outboard) aft to open the fuel valve. □
3. Turn the red fuel cock lever to the left.
4. Ensure the SHIFT lever is in NEUTRAL or the dinghy will move forward as you start the engine. (There is no reverse) □
5. Make sure the black U-shaped kill clip (with the red lanyard) is clipped into the red shut-off knob (port forward corner of the outboard). □
6. If the engine is cold, pull out the choke
7. Turn the throttle slightly. □
8. Pull the rip cord until it starts. (You shouldn't have to pull it more than 5 times.) □
9. After starting, slowly push choke back in. □
10. Warm up engine for 5 minutes. □

While Running: □ With throttle in idle, move the shift lever to FORWARD □ There is no REVERSE. If you need to reverse direction, turn the motor 180 degrees for a tight turn. Speed is controlled via the handle.

To Shut Off. □ Shut the outboard off by pushing in the red shut-off knob (where the kill clip is clipped in). Or just pull the red lanyard until the clip pops off. □

To avoid prop damage, shut the outboard off and raise it out of the water before you reach the shore. Pull the outboard forward and out of the water until it clicks and stays in place. □ To put the outboard shaft back in the water, release the stainless steel lever on the starboard side of the shaft.

(Outboard Motor cont.)

When Not in Use. □

1. Put the outboard back on the outboard mount on the stern rail and tighten both braces.
2. Push the fuel valve lever forward to close. □
3. Close the air vent on top of the fuel cap (top of outboard) by turning it clockwise. □
4. Secure the outboard further by tying the safety lanyard with to the stern rail.

Troubleshooting. □ If the engine won't start, review steps 1-7 above to make sure you've done all 6 steps. There is a spare spark plug and spark plug wrench in the tool box in case the engine won't start or is running rough. (A new spark plug solves myriad outboard problems. If you use the spare spark plug, notify your check-in skipper upon your return so a new one can be placed aboard for future guests.) If the outboard is running and you're heading toward shore, and the engine suddenly quits, it's usually that someone has forgotten to vent the fuel cap. If the engine is running fine but the propeller isn't moving, the shear pin is probably broken – just take the cotter pin out to remove the propeller and replace the broken shear pin (a spare pin is located forward of the shaft under the handle grip) and put the propeller and new pin back into place.

### **REFRIGERATOR & /FREEZER**

The well-insulated DC powered refrigerator/freezer must be turned on at the electrical panel. The thermostat is in the freezer compartment. The approximate dimensions of the refrigerator are 16" x 13" x 24" deep with two shelves. The freezer works best (coldest) when things are placed close to the internal freezer element. Items placed there will remain frozen, or will freeze items such as containers for ice. Freezer dimensions are 14" x 13" x 21" deep with one shelf. We recommend running the refrigerator during the day only, turning it off, or reducing the refrigeration and keeping the cover tight at

night. This will help conserve the house battery power unless you are plugged in to shore power and have the battery charger turned on. Water from the refrigerator/freezer drains into the sink drain. □

## **SAILS and RIGGING** □

### **Sailing & Handling Characteristics**

*Shenandoah* is a delight to sail. Her sail plan features a 130% roller-furling jib and an in-mast furling main, without spinnaker. This sail plan was selected with consideration for single or short-handed sailing as well as relaxed cruising. Under power, she backs hard to port. However, once she has sternway, she is easily steered with small rudder changes. □ Her perfect breeze is 15-20 knots with heel at 15-20 degrees. Full sail can be carried in winds up to 18-20 knots. It is easy to use the roller furling to incrementally shorten your sails. If you shorten the jib, you may want to move the jib cars forward to get a better sail shape and more control. □ CAUTION: Be sure to close and lock the forward hatch when preparing to raise sails as the jib sheet can be caught in it when tacking and the hatch could be damaged or pulled off. □ Both sails have roller furling. This makes it possible for one person to easily handle all the sails. Brief instructions are as follows:

### **Deploying the Headsail (Jib)**

With an in-mast rig, in normal conditions, it's recommended that the **headsail/jib be deployed first** (while underway). The mast bows slightly aft at the top. By deploying the headsail first, the pressure of the wind in that sail tends to straighten up the mast. This makes it easier for the main to deploy from within a plumb mast.

Provided that the wind is less than 20 knots, steer to a course of approx. 60 degrees to the wind (close reach). Un-cleat the furling line on the starboard aft side of the cockpit. Pull the jib sheet to deploy sail. The wind will assist in deploying this. Control how much jib is released by keeping tension on the furling line, and cleating when the desired amount of sail has been deployed. Now you may throttle down and place the engine in neutral, sailing on the jib alone. Shut down the engine.

## Deploying the Mainsail

*Shenandoah* is equipped with the Selden “Furlin” mainsail furling and reefing system, with in-mast mainsail. A few minutes to acquaint yourself with this system for mainsail reefing and furling will be well worth the effort once you leave the dock and are underway. □

The key components of this system are:

In-mast furling □ reefing winch (located below the boom on the aft side of the mast), □ clew outhaul, □ “endless” furling line (solid black line) led to cockpit (port side of companionway) cleats for locking “endless line”.

First, deploy the headsail. See above.

Second, to deploy the mainsail:

1. Open both rope clutches holding the “endless line” - the solid black lines on the port housetop. This is a circular line that turns the reefing winch on the mast. The mast reefing winch has a control lever which can be set to “ratchet”, or alternatively to “free”. “Free” releases the winch and allows the line to move freely. This line is continuous and the *splice* where the line is joined is *bulky* and may **stick or jam** at the rope clutch on the cabin house or at the winch on the mast. In this case pull the line through the clutch opening or mast winch by hand in order to free the line while deploying the main sail.
2. Pull the clew outhaul line on the starboard housetop while keeping a hand on the endless furling line until the sail is all the way out and then snub it down. Be careful not to force the outhaul or you will do damage to the rigging and the sail. If it does not respond to moderate force check for the hang-up. The wind pressure on the main will actually help the main to deploy. In strong winds keep slight tension on the endless furling line (both) to prevent the wind catching the main sail and deploying it in an uncontrolled manner. BECAUSE IT IS A NEW SAIL, IN LIGHT WINDS YOU MAY NEED TO USE THE ENDLESS LINE TO BEGIN TO HELP UNFURL THE MAIL. ONE PULL IS USUALLY ENOUGH TO GET IT GOING.
3. Using the primary winch is advised as the sail nears full set position.

Adjust the sail angle with the main sheet adjustment or traveler (located on the overhead dodger support stainless bar).

**Deploying Sails in High Winds:** If you're in high wind (20+ knots) conditions, you may prefer to deploy the mainsail head-to-wind instead. That's okay; but in high winds and head-to-wind, deploy the main first. Only partially deploy the main so it's in effect "reefed". Remember to keep tension on the "endless" furling line (both). Once deployed, fall off and begin sailing...just like you would on a vessel with a conventional main. Then partially deploy the headsail. Be conservative with the amount of sail you deploy in high winds. If you've been too conservative, you can easily deploy more sail area while sailing.

**Reefing & Furling the Mainsail:** *You can deploy as little or as much sail area as you determine is appropriate for wind conditions. And you can reef an in-mast main while sailing from the safety of the cockpit! A loosely furled main inside the mast could mean a tough next deployment or a jammed main. Please give attention to the following guidelines for furling.*

*Shenandoah* will sail well with minimal weather helm in an 18-20 knot breeze under full sail. However, we recommend furling sooner rather than later as the wind rises. The furling line is a spliced loop. If the loop becomes bound in the mast reefing winch, make sure there are no binding points on the outhaul or sail then the reefing winch can be turned with gentle pressure on a winch handle inserted at the mast winch. Please do not force furling. If you have a problem check to make sure the outhaul line is completely free, the halyard tensioned and the sail under some wind pressure from the port side.

Attention should always be paid to the neatness and spiral of the sail wrap inside the mast. If there's any sign of binding or doubling of the sail as it enters the mast, pull it out a little way using the outhaul and re-furl.

When you need to reef or furl the main, it's best to allow the sail to fill slightly with the wind just over the bow. It can be furled in either direction, but it is easiest if you pull the right side when on a port tack and the left side when on a starboard tack as it rolls in more easily (if you watch it roll into the mast you will see which is the preferred way. Try to not make it take a 90 degree turn to furl into mast as it is much harder to do). In order to avoid jamming, do not allow the main to luff much during this procedure. For best furling, and to avoid sail snarling, the main should be furled with the boat

tight against the wind, not directly into the wind. In a steady breeze, one person can set the autopilot, adjusting to assure the relative breeze is appropriate, and handle the furling line.

Ease the boom vang and mainsheet . Reefing or furling works best when a slight drag is placed on the outhaul to ensure some tension on the sail as it disappears into the mast. Allowing the outhaul to slide through a light grip will do the trick. It's also possible to take a single wrap around the cabin top winch with the outhaul line to produce some drag and a smooth wrap. The first time you furl the main, you may want to have one person handle the furling loop and another to guide the outhaul tension. It takes a bit to get used to. If you have difficulty in beginning the furling of the main, check to make sure the lower luff is in the slot.

The mainsail may be reefed at any intermediate position by first setting the mast reefing winch to "FREE", carefully giving some slack by easing a foot or two off the outhaul line, and taking up the resulting slack using the "endless" loop furling line. Continue easing off the clew outhaul to roll in the desired amount of sail. The leech should be kept fairly taught. Keep slight tension on the outhaul to do this. When the desired amount of sail is rolled in, use the clew outhaul to stretch the foot of the sail. Make both 'sides' of the "endless" reefing line fast to prevent slip on the reefing winch.

As noted, the mainsail reefing winch on the mast has a lever with two settings on it: "ratchet" and "free". In higher wind situations, once the sail has been set, this lever will need to be set to "ratchet" to help hold the mainsail in a reefed position and reduce stress on the primary winch.

If reefing from the mast, activate the lock (Ratchet") on the reefing winch before reefing the sail. Use a winch handle, but NEVER leave the handle in the winch! □ You will find a slight difference in operation between the "free" position and the "ratchet" position. In the "free" position the continuous furling line will work in both directions to furl the mainsail. In the "ratchet" position the "Endless" furling line will only furl in one direction. When leaving the boat, lock the reefing winch to help reduce sail flutter.

### **Furling the Head Sail/Jib**

After the main sail is furled and while sailing on a close reach, start the engine and shift into forward in order to maintain your course of 60 degree

off the wind. Check that both jib sheets are free and hold slight tension on the working sheet. While holding course, furl in the headsail using the furling line on the starboard side of the cockpit. Never use a winch on the jib furling line, as it may damage the furling unit.

## **SHOWER**

Hot water is stored in the insulated 6 gallon tank located under the aft bed. It takes about 30 minutes of running the engine under load to get hot water. When on shore power, you can switch on the AC (120 V) switch on the electrical panel to heat your water electrically (also in about 30 minutes). Experienced cruisers adhere to the sailor's shower: "get wet, turn it off, soap up, rinse off".

Be sure to turn the sump pump on at the DC electric panel. CAUTION: the engine can heat the water to scalding temperatures! On warm, sunny days, an alternative to the below deck shower is the swim platform shower. This is also a good way to rinse off salt after swimming or dirt after going ashore.

## **SPARE PARTS AND TOOLS**

*Shenandoah* carries a modest supply of spare parts and working tools. Tools and spare parts are stored in the main cabin below the cushions of both the port and starboard dining settees. An inventory listing of spares is provided in this notebook. If you use a spare part, please note this on the check out sheet so the part can be replaced. A Multi-Tester (electronic) is stored in the nav table.

## **STOVE-PROPANE**

The gimballed propane stove has two burners and an oven. Two propane tanks are located in the aft cockpit starboard locker. Propane is heavier than air and requires caution. For your safety, please carefully follow these procedures: □ Make sure all stove control knobs are in the "off" position! THEN: □ Open the main valve at the propane tank all the way open and very slightly snug. □ Turn the LPG switch on the DC control panel ON. Next activate the electric solenoid switch located on the navigation station wall. A red light will appear, and you'll hear a click in the propane locker as the solenoid valve opens. □ Ideally, no match is necessary. Push and hold in the stove control knob for a few seconds and turn to the left to high. However, it is often difficult to light the stove automatically, so having a propane starter available is often necessary. The oven should also light automatically by

pushing knob in, turning it until it clicks – then continue pressure on the knob and turn it to the desired temperature. Hold the knob for about 20 seconds, then release. □ If it doesn't light, use the propane starter on the oven burner inside the oven at the back. When finished with the stove, shut off the burner(s), and then shut off the solenoid switch. (What little propane remains in the line from the tank to the galley is insignificant, and even if this tiny amount of propane were to leak into the cabin, it would not cause a problem.) □ If you do not intend to use the stove again in the next several hours, it is recommended that the main □ valve on the propane tank also be shut off. Definitely turn it off before turning in for the night. Both the solenoid valve and the hand valve protect against a potential propane leak into the main cabin. Please note that both propane valves – the hand valve and the solenoid valve – are located in the propane locker in the aft of the cockpit, which is isolated from the rest of the boat and is vented directly overboard. Any leaks within this compartment will vent down, out, and away from the boat. While the propane tanks normally last for two weeks or more, the San Juan Sailing staff fills the propane tanks regularly. The gauge only measures tank pressure, NOT the actual volume of propane remaining. It is increasingly difficult to locate sources of propane in the San Juan and Canadian Gulf Islands, so confirm with the San Juan Sailing staff that the tanks are properly filled before departure.



Cabin light switch (left) and propane solenoid switch. Propane LPG switch is on the electric control panel.

### **TRASH, DUSTPAN, HANDBROOM, VACUUM**

The boat has a built in dustpan located under the floorboard in the galley. This is where the small hand dustpan and broom are also stored. You may sweep directly into the built in dust pan and empty it at the end of your charter. There is a built-in Trash compartment on the galley counter opposite the nav table. A standard plastic trash bag can be secured with a stretch “bungee” cord onto the under-the-counter trash compartment lip, allowing trash to be deposited directly from above. The bag can be released, tied, and stowed until convenient to deposit at an appropriate shore facility. There is a handheld AC vacuum stored under the settee by the chart table.

### **TV/DVD PLAYER**

There are a few DVDs available onboard. □ Please bring along your own favorites. Be aware that Blu-ray DVDs will not play on this system. The DVD player operates on AC (120 V) power through the power inverter as discussed in Section 5 of these notes. There is a small monitor located inside the port side forward cabinet along with remote controls. The DVD player is located on the port shelf of the forward cabin. This system operates much like your home system, with the exception that it must be properly connected to the power inverter. (Note: While on shore power the system can be left plugged into the inverter or plugged into an AC outlet.)



If having difficulty seeing screen you can lift the screen from it's mount and settle it at a different angle on the wood edge below the screen's compartment.

To play a DVD, turn the switch on the AC 120 VOLT Inverter to ‘ON’ position (green light). Turn the screen on with the remote (Gray) or with the switch on top of the screen. You can mute the static and control volume with this remote. Turn the DVD player on. Press the TV/VIDEO button on the monitor (Grey) remote to select “Video”. Press the “OPEN/CLOSE” button on the top of the DVD (black) remote and load the DVD disc. Close the DVD tray. DVD should then start automatically. IF not, press the “PLAY” button on the DVD. All DVD controls must be controlled with the black remote and it must be aimed at the DVD player.

To STOP the DVD, press “STOP” and “OPEN/CLOSE” and take the DVD out. Turn off the monitor, then the DVD player, then the inverter.

### **WATER – HOT & COLD PRESSURE SYSTEM**

The galley, head, and swim step wash down systems are pressurized with both hot and cold water supplies. The 6 gallon hot water tank is relatively small, so hot water should be used sparingly. The water will heat either by running the engine or by shore power (see above relative to the shower). Heating from air temperature takes approximately 30 minutes.

**Fresh Water** The fresh water pump switch is located on the DC electrical panel. **Please switch this off when motoring or sailing.** If a tap is running and you do not hear the pump running due to the sound of motoring or sailing you could burn out the water pump and end up with no water! □

### **Tankage**

*Shenandoah* has the following tank capacities: Fuel (Diesel) 38 gallons; □ Water (Fresh) 75 gallons; □ Waste Holding Tank 30 gallons; Water Heater 6 gallons

### **Fresh Water Tank**

The fresh water tank fill is located inside the anchor locker at the bow. Please use the WHITE hose located in the port swim locker to fill the fresh water. A water tank gauge is located near the electronic panel at the nav table. (An examination port is located under the V Berth cushions.) Because *Shenandoah*’s new fresh water head draws from this tank, it’s a good idea to keep an eye on the gauge. With reasonable water usage, it should be no problem.

## **Holding Tank**

Flushing the head draws water from the fresh water tank (75 gallons capacity). Excessive flushing does fill up the waste holding tank quickly (30 gallons capacity)! See also “Head and Holding Tank” in these notes. Remember, only way to know if the tank is full is when the holding tank light comes on.

## **GUEST NOTES AND COMMENTS**

We hope your time on Shenandoah is fun and exciting and that you enjoy the gorgeous San Juans. If you have any suggestions, corrections, or clarifications needed we'd sure like to hear them. Please make a note below or online.

Thank you and bon voyage!