OPERATIONS MANUAL

WELCOME ABOARD ARTEMIS!

32’ Nordic Tug

Welcome aboard!

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

We hope you enjoy cruising with Artemis. Please let us know if you find anything missing or in need of improvement. While using or reviewing these notes, please feel free to mark corrections and make suggestions and improvements. Your constructive criticism will be appreciated.

Thank you – Chris and Kathy Chambers

We hope this manual will help you become familiar with the boat. If you have questions about the boat or about places to visit, please do not hesitate to ask the AYC staff.

Artemis is a 1999 Nordic Tug 32, powered by a Cummins diesel engine with a HP rating of 270@2800 RPM. She holds 200 gallons of fuel and 100 gallons of water. The optimal cruising speed to minimal fuel consumption is 1200 RPM. It is safe to run the engine at any speed.

RPM	SPEED KTS	GPH	RANGE MILES
1000	5	.99	1161
1200	6.8	1.5	1042
1600	8.7	3.69	542
2000	11.3	6.43	404

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EMERGENCY/SAFETY EQUIPMENT

Life preservers are located under the starboard settee seat in the salon.

Life sling is in the lazarette.

There are two (2) fire extinguishers.
- Affixed inside the cabinet starboard side above settee
- Affixed to forward bulkhead on port side of engine room

A hand-held Air Horn is located at the helm station in the storage box built into the helm seat, down low.

The emergency SOS beacon is located in the storage box built into the helm seat, down low. It is USCG approved hand held device that can be tethered or hoisted aloft.

Flashlight is located in the drawer under the TV on port side.

Bilge pump located in the engine room. Always make sure the switch on the DC electrical panel is on. There is a bilge cycle meter on the port side of the helm command station. Typically the reading is “0”.

Rubber seacock emergency plug is located in the engine room.

ANCHORING SYSTEM

The primary anchor is a Lewmar Claw anchor. The anchor holding line with the galvanized chain hook is stowed in the step at the starboard helm door. Artemis’s draft is 4 feet. The depth displayed in the electronics is the water depth from the transducer to the bottom. The keel protrudes down about 18” further. So, if the depth on the Garmin is 5’6”, you have 4” under the keel.

Tide swing: check the tide tables to know at what point in the range you are anchoring and measure the scope for the high tide. Check for depth and rocks within the proposed “swing” area.

Chain markings: The anchor chain is 200’ in length with about 15’ of nylon line at the “bitter end”. The nylon line is used in case of emergency to release the anchor by cutting the line. The chain is marked at 25’ intervals in red and safety green 100’ intervals. (25’ one red mark, 50’ two red marks, 75” three red marks, 100’ one green mark, etc.)

Windlass: The anchor windlass has foot controls (up/down) at the forward deck that are designed to be foot operated. To operate, turn on the breaker located near the floor, directly below the steering wheel. This breaker will trip if the windlass starts to draw too much load. If this happens, wait about 20 seconds and depress the red button and then turn on the breaker again. It is recommended to have 4:1 scope when anchoring in the San Juans. (so in 30 feet of water you will deploy 120 feet of chain).

Setting the anchor:

The boat should be idling facing into the wind.
Ensure that the “windlass” breaker is on.
At the anchor, remove the holding pin for the anchor.
Depress the down arrow foot switch to SLOWLY initially lower the anchor about 12 inches. Push the anchor past the anchor roller carefully so the anchor does not swing back and strike the bow of the boat. Then continue to lower normally.
Let out the proper amount of rope based on scope desired. Moving the throttle in and out of reverse will provide adequate astern momentum to lay out the chain on the seabed.
Put the engine astern momentarily to put a strain on the anchor.
Verify the anchor is set by seeing the boat move forward and seeing slack in the chain.
Do an “anchor watch” for the first 30 minutes, observing how the boat swings and how close it gets to other boats and objects.

Retrieving the anchor:

The engine should always be idling when you are retrieving the anchor in case it is necessary to move the boat forward momentarily by moving the throttle in and out of gear.
At the circuit breaker panels next to the helm turn ON the windlass breaker at the helm below the steering wheel. Turn ON the washdown pump.
At the bow: Connect the blue coiled hose (from the lazarette) with the nozzle to the faucet at the bow near the anchor.
Depress the UP arrow to bring up the anchor.
Wash the chain with plenty of sea water before it comes over the roller to keep the mud off the boat.

As the chain tightens and starts to bog down the windlass, wait until the boat catches up, then continue. Don't drag the boat by the anchor chain thru the water, you will end up tripping the breaker on the windlass and have to reset it.
When the anchor is clear of the water, make sure it is clean of mud.
Be careful for the last couple feet to make sure the anchor is facing the proper direction.
When the anchor is fully retrieved, reset the locking pin and then release the tension on the chain just a bit to take the strain off the windlass.
In an emergency, the windlass can be operated manually. There is a winch handle in the starboard helm step storage. Simply insert the handle in the top of the windlass and turn to raise or lower the anchor.

BARBEQUE GRILL

The stainless-steel propane barbeque grill is mounted on the aft railing. Cooking tools are located in the compartment on the top step, entering the salon from the aft door.

To light the grill: make sure the regulator knob on the grill is in the OFF position.
Open the lid and push and turn the regulator knob counter clockwise to the high setting.
Light the BBQ with the butane lighter. If the BBQ does not light, turn off the gas and wait for a few minutes and try again.

Grilling: Adjust the regulator knob to the desired heat setting.
The BBQ does not require pre-heating.
Do not cook on high with the lid closed.

Cleaning the grill: The grill should be cleaned after it has cooled. Please clean the grate, heat plate and wipe out any excess grease. Re-assemble and lock the lid and put the cover back on.

BATTERIES

Artemis has two banks of house batteries and a third bank of two starting batteries dedicated to solely to the engine.
The DC panel is located at the inboard side of the helm seat. The main DC circuit breaker should be left ON if the boat is in the water, whether you are on or off the boat and regardless of whether you are connected to shore power. If you have been plugged into shore power for 6 or more hours, the batteries should be charged. Away from shore, as long as you are

cruising a couple of hours a day, the batteries are recharging and you should have adequate power without the aid of shore power.
Voltage monitoring: At the top of the DC panel is a voltmeter. Position #1 on the selector switch (top switch) is the port battery bank. Position #2 is the starboard bank. Both these are house batteries.

On shore power: The batteries should read over 13V, if they do not it means that they have been drawn down significantly and will need to be charged for more than a couple of hours of runtime or shore power time. Remember that underway, the alternator is providing the charging. It is a common misconception that once the engine is on, you have unlimited power. All devices operating while the engine is running, will be using the batteries and thus offsetting the amount of charging going into the batteries from the alternator. Said differently, your batteries will charge faster while running the engine, if you turn off all unnecessary loads.

Underway (engine running) the batteries should read over 14V.

At anchor/mooring (not underway or plugged into shore power) the batteries should read 12V or above. To protect the batteries and the proper function of all electrical equipment on board, the batteries need to be charged when they drop to **12V**.

The engine must be running at greater than 1000RPM 's in order for the alternator to produce enough excess power to charge the batteries. When at anchor or on a mooring, it is extremely important to be judicious with what electrical devices are used and left on.

BATTERY CHARGING

All batteries are charged automatically from the main engine when running or from shore power when selected. When the main engine is running at cruise speed above 1000 RPM, the batteries are charged automatically by the alternator on the engine through combiners which connect to and charge the 3 battery banks. The output charge from the alternator is connected to the start battery bank directly and then to the two house banks through the combiners. When on shore power, the inverter/charger reverts to the charging mode and takes over for the output load of the main engine alternator.

BERTHS

The forward stateroom has a double berth 76” long, 39” at the foot and 61” at the shoulder width. To convert the settee, fold and move the table towards the port side. Pull the back and seat cushions off settee and slide out shelf. The built in legs will support the slide out shelf. Reposition cushions to make a double berth. The size of the berth is 45” wide by 79” long.

BILGE PUMPS

The bilge pump is located at the centerline of the boat, below the salon/galley at the shaft seal. There is a bilge cycle meter on the starboard side of the helm station. It is reset to 0 at the start of your trip – or fell free to reset when you embark.

DECK WASH

There is a wash down connection at the forward end of the deck and also in the cockpit. Salt water is pumped through the hose which you can use to clean the anchor and chain or wash dirt overboard through the deck drains called scuppers.

To utilize the system: Turn ON the WASHDOWN PUMP circuit breaker located at the helm. The blue coiled hose is connected to the faucet at the bow and has a nozzle that is operated by your thumb. Turn OFF the washdown pump at the breaker when you are finished.

DINGHY

Artemis has a 2017 Achilles hard-bottom inflatable dinghy with a 8 HP Tohatsu four stroke outboard motor. The dinghy is accessible from the swim step. It is mounted to a Seawise davit at the stern and is lowered into the water with a davit handle crank.

Launching the dinghy: Look and make sure the plug is in the transom of the dinghy (it should not be removed). Remove the safety pin located on the winch and also the bowline from the railing of Artemis. Begin to slowly lower the boat by turning the winch handle. Watch the lower unit of the engine as it will need to be nudged over the dinghy pontoon. You will see as the boat lowers, that the engine swings into place on the transom. Go slowly and make sure that the transom bracket on the engine is lining up with the transom. They fit tightly together.

Once fully lowered, place the locking pin in the transom to hold the engine and engine bracket in place. Finally, you release the dinghy from the transom by lifting up on the keeper pins on the swim platform. Make sure you have a stern line attached (located in the propane locker). The fuel tank is located on the upper deck of the salon. Untie it and place it in the dinghy.

Operating the dinghy: Make sure all occupants are wearing appropriate life jackets and that the oars are in the dinghy. Check to make sure the tubes are inflated as hard as possible. There are two pumps located in the lazarette when additional inflation is needed. Check the gas level and open the vent on the gas tank and connect the fuel line to the outboard motor. Check to make sure the red safety lanyard is clipped into the stop button. You need to pull the stop button up and slide the clip in the base. The engine will not run without this clip in its proper position (which is holding up the stop button).
Squeeze the primer bulb a few times until it is firm – this will prime the line and the motor. Twist the throttle to the starting position (about 25% up from the lowest setting (there is a mark on the throttle).

Starting the motor: Set gear selector to neutral position. Pull recoil starter cord slowly until you feel the starter engage then pull rapidly to crank the engine. I pull it twice, then I pull the choke knob out when starting a cold motor. It should fire right up. If the engine is flooded, wait 30 seconds, then continue. After engine start, check for a steady stream of water flowing out of the water pump indicator hole. If no water is coming out, stop the engine and check the cooling water intake for obstruction. If there is no obstruction, there may be a water pump failure or blockage in the cooling system, which will cause the engine to overheat – do not operate the engine. Allow the motor to warm up for a few moments, then push in the choke knob half way. After several minutes, push the choke control in all the way. Operate the dinghy with the shift lever (forward, neutral and reverse), steering with the handle that has the twist throttle. To stop, push in the red engine stop button or pull out the end of the red lanyard (the kill switch).

Storing the dinghy back on the transom: Fastening the dinghy into the clips at the stern of the swim platform. Disconnect the fuel line from the outboard motor and close the vent on the fuel tank. Return the tank to the top of the salon roof and secure it in place. Remove the pin holding the engine bracket in the transom. Attach the lifting cable. Turn the winch handle to raise the dinghy. Make sure that the motor is swinging into place. The system is designed to keep the motor vertical when you are raising and lowering the dinghy. Once the dinghy is up, place the safety pin in the winch. Using the dinghy bow line, tie off the dinghy bow to the stern railing of Artemis.

Fueling the dinghy motor: The outboard motor is a four stroke and does not require mixed fuel. *When buying fuel, it is critical to purchase unleaded gas that doesn't contain ethanol.*

ELECTRICAL PANELS: The electrical distribution panels are located on the helm station.

DC/Battery power distribution panel: The DC POWER circuit breaker should be left ON if the boat is in the water, whether you are on or off the boat and regardless of whether you are connected to shore power. At the top of the BATTERY POWER panel is a meter that indicates the level of charge, in volts, of each battery bank.

User settings for the DC Panel:
Cabin lights FWD – always on.
Cabin lights AFT – always on.
Upper electronics – always on.
Lower electronics – always on.
DC fridge – always on.
Fresh water pump – always on
Shower pump – always on
Accessory – not in use – heat control from helm
Head – always on
Washdown pump – only as needed
Auto pilot – always on
Wipers – only as needed
Turn off electronics not in use at anchor to preserve batteries.

AC and/or SHORE POWER distribution panel: This panel turns on AC power to the vessel. It will convert the batteries 12V to 120 when the shore power breaker is in the off position. When connected to shore power and the shore power breaker is on, the vessel is 1. Charging the batteries and 2. Drawing 120V power from the shore power connection on the dock.

Shore Power – only on when connected to shore power. The shore power cable is located in the lazarette. Always follow this protocol:

1. Connect the line to the boat, located on the starboard side of the pilot house.
2. Check to make sure the breaker is off, then connect the cable to the shore power breaker box.
3. Check to make sure the AC panel shore power breaker is in the OFF position.
4. Turn on the breaker at the dock.

5. Turn on the breaker at the AC panel.

Reverse this process to disconnect from shore power.

User setting for the AC panel: Shore power/reverse polarity – on only after connecting to shore power.
Water heater – always on.
Refrigerator – always on.
Outlets FWD and AFT – always on.
Spares – always off.

ELECTRONICS/ENTERTAINMENT SYSTEMS: Garmin- Artemis is equipped with the latest Garmin electronic equipment and multi-dimensional charts for the area. The dual displays include navigational charts, 3-D displays, fish-finder, radar, AIS, data, course deviation indicator and Waypoints capabilities. Please refer to the QuickStart card, operating guide and reference manual which is on board.

AMFM Radio & Pod player Bluetooth – located in the pilothouse on the overhead dashboard.

Flatscreen DVD player/monitor with remote – the remote controller and DVDs are located below the TV. Insert DVDs into the side of the TV.

VHF radio is located in the overhead panel at the helm station. Turn on the VHF radio by pressing and holding IN on the power/volume control knob.

WX (weather) stations are found by pressing CLR/WX button.

ENGINE: Artemis is powered by a 270 HP CUMMINS DIESEL ENGINE located in the engine room below the helm station.

FUEL: Artemis has one 205-gallon diesel tank located in aft lazarette. The fuel fill deck fitting for the diesel fuel tank is located outside on the centerline of the cockpit floor. When fueling please fuel to the top of the fuel tank – don't over fill.

Before you start to fuel: Make sure the engine is shut down, the stove is off, all ignition materials have been extinguished and everyone is off the boat.

There is a fuel tank vent located just below the fuel tank fill. Usually, the fuel attendant has an overflow device to attach below the vent to catch any spillage. Fuel spills are the responsibility of the person operating the fueling hose.

Fueling need not be messy: take an absorbent pad, rag and/or paper towels from the propane locker to have at the ready. Clean any fuel spill off the deck – it is slippery and hazardous.

Open the DIESEL plate with the deck wrench/key or spanner wrench located at the starboard side of the helm step. Insert the nozzle into the fill valve then start the flow.

Insert nozzle and start flow. As the tank fills, LISTEN for the sputters and WATCH the fuel vent. Your goal is to STOP pumping BEFORE liquid fuel spurts out of the vent.

After the flow stops completely, remove the nozzle from the fill tube , put the hose back on the dock, screw the fill cap back in place and return the key/wrench to the starboard side of the helm.

Servicing the RACOR Fuel Filter: Located in the aft lazarette, port side on the fuel tank. Check the fuel filter for contaminants or water. If there is contaminants or a separation of fluid in the bottom of the collection container, they should be drained of the contaminants. With a collection container in place, open the black drain at the bottom of the container by partially turning the valve; quickly retighten the value when the water or contaminants have been drained. Replace the RACOR fuel filter if needed. The replacement RACOR 2-micron filters are located in the plastic bin in the engine room marked CUMMINS MAIN ENGINE SPARE PARTS, RACOR FUEL FILTERS. Close the fuel supply line. Remove the lid of the filter to be replaced by turning/loosening the brass T handle located at the top of the filter unit. Remove the filter element by holding the molded handles on the filter element and slowly pulling upward with a twisting motion. Replace the black lid gasket with a new black lid gasket supplied with the new filter. Apply a coating of clean fuel or motor oil to this gasket seal prior to reassembly. Insert the new filter (with labeled end up) with a slow downward twisting motion. Fill the filter unit with clean diesel fuel by pouring it on top of the filter element. Replace the red O ring on the brass T handle shaft under the lid with the new red O ring provided with the new filter element. Then put the lid back on the unit and snugly tighten the brass T-handle by hand ONLY. **DON'T FORGET TO OPEN THE FUEL SUPPLY LINE**. Start the engine and check for leaks. Correct any leaks with the engine off.

GALLEY: The Galley has a refrigerator, a separate freezer and a Force 10 two burner propane stove with oven. See REFRIGERATOR and STOVE sections.

Non stick cookware: Artemis is equipped with non-stick cookware. Do not use non-stick cooking sprays on the non-stick cookware – invisible buildup will impair the non-stick release system and food will stick in the pan. The cookware does not need oil. If you prefer oil for taste, olive or peanut oil is recommended. **Use low or medium heat only.** Excessive use of heat will cause pan warping and permanent non-stick coating damage. The cookware is oven safe to 350 degrees F – but never the broiler. Do not use metal or sharp-edged utensils. Clean using mild dishwashing detergent and warm water. **Use only non-abrasive plastic mesh pads to clean.**

HEAD & HOLDING TANK: Using the head- At the BATTERY POWER distribution panel located at the side of the helm station, make sure the following circuits are in the ON position.
DC POWER circuit breaker in ON position.
HEAD circuit breaker in ON position.
In the head, there is a Vacuflush panel on the upper cabinet: Turn the switch for the Vacuflush on. The green light may not come on, but the head will be ready to flush after about 10 seconds. Raise the foot pedal to fill the bowl with water – about 6 inches will suffice. To flush, depress the foot pedal. You can fill and flush a second time to ensure trouble free operation. When you are finished, if the red light does not turn green, simply shut off the Vacuflush system until your next use. As long as the green light is on, the switch may remain on.

In conformity with San Juan Yachting policy, DO NOT PUT ANYTHING DOWN THE HEAD THAT HAS NOT BEEN EATEN FIRST. Please, no tampons or other feminine products, no hair, Kleenex and no toilet paper!! Use the waste basket and the plastic bags located in the cabinet under the sink to dispose of these items.

Cleaning-There is a toilet brush in the cabinet under the sink. Use liquid dish washing soap and water for everyday cleaning of the toilet bowl. Never use chlorine based cleaners, caustic cleaners, chemicals, drain openers, alcohol, solvents etc. in the system.

Monitoring the holding tank: The holding tank should be monitored daily. The monitor panel is located in the bathroom and will glow yellow and red if you are approaching a full tank. The gauge will register the level of the contents of the tank: green for empty, yellow means low, amber indicates mid-level and red says the tank is full – DO NOT ADD MORE AT RED LEVEL.

Discharging the holding tank: The WASTE deck fitting is located on the starboard side, just outside the pilot house door. In the door step storage, you will find the deck key, vinyl gloves and hand sanitizer for this operation.

To empty the holding tank at a pump-out station or at a portable holding cart – locate the deck fitting labeled "WASTE". Open the deck fitting with the key located in the helm step drawer. Push the pump-out nozzle into the WASTE deck fitting and hold the nozzle securely to create an airtight connection to allow the contents of the waste tank to be vacuumed out of the holding tank. Follow the instructions at the pump-out station to pump-out the holding tank. Rinse the waste holding tank after emptying. Add a few gallons of fresh water through the WASTE deck fitting with the available fresh water hose from the dock. You will find the tank takes on fresh water easier by inserting the hose a few inches into the waste cleanout. Reinsert the pump-out nozzle into the boats WASTE deck fitting and pump some more liquid out of the waste holding tank. Repeat until site gauge on hose runs clear. After pump-out, check the tank level monitor in the head to confirm success. It should show green light. Carefully remove nozzle, replace deck fitting and tighten down with the key. Return deck key to right side of helm. Wipe up any spills and throw away disposable gloves and rags. Wash down the fill area on boat with fresh water hose.

HEATING SYSTEM: The heating system is an ESPAR forced air diesel fueled furnace. The on/off toggle switch is in the salon on the outside of the starboard rear hanging locker. Turn the HEAT toggle to ON, red light will indicate power. The wheel should be in the ¾ to high heat position. To turn off move toggle to OFF.

INVERTER/CHARGER: The inverter is intended to provide 110 volt AC power to small appliances away from shore power. The inverter converts 12 volt battery power into 110 volt AC power. The rectangular black "Heart Interface" inverter/charger control panel is located at the left side of the helm station. Switch ON for normal operation and OFF when leaving to protect the batteries from the accidental discharge. Confirm that the REFRIGERATOR, OUTLETS AFT (all outlets from the helm station aft) and OUTLETS FORWARD (stateroom and head) are all ON.

If you don't have power, (appliances, galley or salon) push the red reset button at the GFCI on the bulkhead forward of the stove. This should restore the circuit. If you don't have power forward of the helm station, push the red reset button at the GFCI in the head to restore power.

Monitor your usage. If too many appliances are on at the same time, you may trip a breaker. If this happens, unplug on or more appliances and reset (turn on) the MICROWAVE and/or OUTLETS AFT circuits at the AC/SHORE POWER panel.

When AC power is available from shore power the inverter/charger automatically charges the house batteries. When leaving the boat, turn OFF the inverter at heart interface control panel, so if the shore power should fail, on onboard appliance (coffee maker etc) will not draw down the batteries. The real danger is that the bilge pumps depend on battery power and if they die, the bilge pumps die with them.

REFRIGERATOR/FREEZER: The galley has a refrigerator and freezer. Make sure the refrigerator is ON at the shore power distribution panel next to the crew seat and on the DC distribution panel (it will automatically select its power source). The thermostat control is located inside on the right-side panel of the refrigerator and controls both refrigerator and freezer. Water from a defrosting cycle will collect in the tray under the freezer compartment and must be disposed of manually.

SHOWER: Using the shower – At the battery power panel turn ON the fresh water pump on the DC panel. Turn On the shower sump pump, on the face of the sink cabinet (labeled). Hot water -Hot water is provided by a 6-gallon tank heated electrically and by a heat exchanger from the engine. You automatically have hot water if the engine is running and it will stay hot for quite a while even after the engine is turned off. So, if you have been cruising for a couple hours, you should have hot water after the engine is off. When connected to shore power, make sure the WATER HEATER circuit breaker on the SHORE POWER distribution panel is in the ON position.

SPARES: Artemis carries a collection of spare and replacement parts. These are located in the engine room on the starboard side.

STOVE: Artemis has a two-burner FORCE 10 propane stove with oven. Make sure the valve is open on the propane tank in the rear cockpit locker. On the floor just before the aft salon door at the bottom of the stairs, is a LPG solenoid. It should be switched ON. It will glow red/orange for about a minute until the sensor completes its startup and senses no propane in the salon. When it is ready it will display a green light. Now you can light the stove.

Each burner needs to be lit separately, using butane lighters in the tray above the stove. Turn the temperature knob to high and hold in the knob. **Light the stove and continue to hold in the knob for another 30 seconds.**

To operate the oven – In order to use the oven/broiler, remove the heat shield resting on the burner element for the stove. Turn selector valve to chosen temperature and push in on the valve and using the butane lighter, light the oven. When finished with stove, turn off solenoid valve. You do not need to turn off the propane tank valve on top of the tank.

WATER: Checking the water level – The tank tender is located in the pilot house on the port side. Follow the written instructions on the plaque. Do not over pump the sensor, it may damage the unit. Both the fuel and the water tank levels are located here.

Filling the water tank – locate the deck fittings marked "water" at the port and starboard amidships. The deck plate key to open the plate is located at the right of the helm. Connect the fresh water hose (located in the lazarette in the cockpit) to the domestic water supply at the pier. Let the water run through the hose (overboard) for a minute or two to wash any contaminated water from the hose. Fill until water comes out the vent/overflow on the hull just below the deck fills. Tighten the deck plates. Return the deck plate key to the right side of the helm.

PREPARING FOR DEPARTURE: ENGINE ROOM CHECKS – Should be performed daily, before cruising.

At the helm, turn on the forward cabin lights and the upper electronics. Open the hatch and look for the white toggle light switches on the bulkhead in front of the engine (towards the top of the bulkhead) and ON the Engine Room Lights. Enter the engine room below the helm station. The easiest location to perform the engine room checks is to sit on the starboard of the engine.

Check the oil level in the engine. The oil on the dipstick should be between the hash marks. IF THE LEVEL IS LOW:

- Add oil from the blue plastic jug marked Delo 400 15/40 SAE, using the funnel from the basket marked Replacement Fluids.
- DO NOT OVERFILL THE OIL CAPACITY of the engine. It only takes 2 quarts to fill the oil supply from the lower line to the upper line on the dipstick.

When the engine is cold, check the coolant level of the solid white recovery reservoir mounted on the front of the engine. The fill cap is white – do not open when engine is hot. The reservoir should be half full. IF THE COOLANT LEVEL IS LOW:

- Add some engine coolant to the recovery reservoir. Spare coolant is located along with spare engine oil on the port side of the engine room.

Make sure that the MAIN SEA STRAINER for the engine is free of seaweed or debris. The sea strainer is mounted on the port side of the forward bulkhead and is attached by a large black hose to the seacock. It is a large bronze unit with a glass enclosed section.

Using the flashlight, check to see if the strainer is clear and not plugged with seaweed or debris ***before every start.***

To clean the strainer, close the seacock (lever horizontal), unscrew the top with the spanner wrench in the tool box and lift out the basket and swish it back and forth in a bucket of fresh clean water then reinstall.

REOPEN THE SEACOCK!!

When you have completed the engine room checks, turn off the engine room lights.

DISCONNECT SHORE POWER: At SHORE POWER breaker panel, turn OFF the double SHORE circuit breakers. Leave ON the 2 inverter circuits on the circuit breaker panel.

On the dock, first turn OFF the shore power circuit breaker at the pedestal on the dock, then disconnect the yellow electrical cord from the dock power.

On the boat, disconnect the yellow electrical cord and store the cord coiled in the lazarette.

CAUTION: Always DISCONNECT from the SHORE-END and CONNECT from the BOAT-END to avoid moving a live cord!!

DC/BATTERY POWER PANEL (main breaker should always be on)

REFRIG in the ON position

Other circuit breakers on as you desire.

CLOSE ALL PORT HOLES AND HATCHES which might permit water to enter the interior, except those deliberately left open for ventilation.

CONFIRM THAT THE DINGHY is securely attached to the davit and that the bow is secured to the stern railing using the dinghy bowline.

CHECK AROUND THE BOAT – Review the exterior area around the hull to confirm that there are no obstacles in the water or loose items that should be secured.

HELM CHECKLIST – Check the fuel level. Check the water level. Turn electronics and instrument switches then start up the Garmin multifunctional display by pressing the button on the face of each unit. Follow the prompt on the screen. The Garmin has many functions-navigational and safety, including radar. Study the operations guide to set up the display in the manner most useful to you.

Turn on the VHF radio by pressing IN and holding on the volume/power control knob.

Check weather channel and select channel 16.

GETTING UNDERWAY: Make sure that the shift lever is in the neutral position.
Turn the ignition key ON and quickly push START button while key is in the ON position to start the engine. Note: Do not crank engine for more than 30 seconds, wait 2 minutes to allow the starter motor to cool down before restart attempt.

Check that cooling water is coming out the engine exhaust. Look down at the water from the starboard side of the cockpit for a little water coming out with the exhaust. If no water is visible, check in the engine room to see that the seawater intake seacock is open.

Let the engine idle for about 5 minutes or until the engine coolant temperature gauge reads above 100. Note: The temperature indicator will not show any indication of heat until the engine has been running for several minutes. Keep the engine below 1000 RPMs for five minutes as the preheater cycles on and off as needed during this time period. RPMs over 1000 block the preheating function.

Turn on the bow thruster by pushing the ON buttons. Toggle the joy stick momentarily in both directions to ascertain that the thruster is functioning properly. The bow is used primarily in maneuvering at or near the dock. In open water while underway, the thruster is not effective. The bow thruster will turn off automatically after 5 minutes of non-use. Restart in the same manner.

The bow thruster may overheat and stop after 3 minutes of continuous running. After a 5–10-minute cool down period, it resets itself.

Use the bow thruster to control the movement of the bow while operating the throttle in short bursts of forward or reverse, pausing in neutral, as you maneuver in the marina. Check wind and current directions.

Note: When using reverse, the STERN WALKS TO STARBOARD.

CRUISING: When clear of the marina, make sure all mooring lines, fenders and anything loose are stowed.

Operate the engine no faster than 1000 RPM until the coolant temperature reaches 140 degrees. Monitor the engine instruments at the helm station while cruising.

- Volts should read between 13 and 14 at normal cruising.
- Water temperature should be between 180 and 190 degrees.
- Oil pressure should range between 45 and 80 depending on RPMs.
- Radar (if you want on)

Windshield Defrost: At the helm station, turn on the defroster toggle switch on the upper electronics panel. The three fans should keep the windshield defrosted.

Windshield wipers: Turn ON the wiper circuit breaker at the Battery Power Panel. There is an ON/OFF toggle for each wiper at the helm station.

RETURNING TO DOCK: Fenders out and on docking side of the boat, set at the appropriate level for the dock.

The engine cool down period (the last 5 minutes) should be at idle to allow the engine to cool down before shut off.

Shut down the Garmin multifunctional display by pressing and holding the power button in the lower left corner for the countdown on the screen. Please re-place the screen cover over the screen.

At the BATTERY POWER breaker panel next to the helm seat – Leave ON the DC Power circuit breaker.

CONNECTING TO SHORE POWER: At the SHORE POWER distribution panel at the side of the helm, make sure the circuit breaker marked SHORE is in the OFF position.

Take the bright yellow electrical cord located in the lazarette and connect it to the receptacle located forward of the starboard helm door. Line up the prongs, insert the plug, turn and tighten.

Locate the power supple on the dock, making sure that the breaker on the dock is in the OFF position. The yellow electrical cord is 30 amps. Check the amps for the shore power pedestal on the dock, and use an appropriate adapter, if necessary. Connect the electrical cord to the dock power source, matching prongs, twisting and tightening. Then turn the dock power source ON.

Return to Artemis and turn the SHORE circuit breaker to the ON position.

Verify that you have power to the main electrical distribution panel by looking at the AC voltage gauge on the SHORE POWER panel. The digital gauge should display voltage above 117 to be receiving adequate voltage.

Turn ON the desired AC circuit breakers, including REFRIG.

CLOSING UP THE BOAT: Close windows and hatches, unless you want to leave them open for ventilation.

At the DC BATTERY POWER panel next to the helm seat:

- Turn OFF the FRESWATER and HEAD circuit breakers.
- Leave ON the DC POWER and REFRIG circuit breakers.
- At the INVERTER/CHARGER panel above the circuit breaker panels nest to the helm, turn OFF the invert, so if shore power should fail, on onboard appliance will not draw down the house batteries.

Lock the doors.

On the dock, check the position of all fenders and see that mooring lines are secure.

OPERATIONS MANUAL

WELCOME ABOARD ARTEMIS!

32’ Nordic Tug

Welcome aboard!

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

We hope you enjoy cruising with Artemis. Please let us know if you find anything missing or in need of improvement. While using or reviewing these notes, please feel free to mark corrections and make suggestions and improvements. Your constructive criticism will be appreciated.

Thank you – Chris and Kathy Chambers

We hope this manual will help you become familiar with the boat. If you have questions about the boat or about places to visit, please do not hesitate to ask the AYC staff.

Artemis is a 1999 Nordic Tug 32, powered by a Cummins diesel engine with a HP rating of 270@2800 RPM. She holds 200 gallons of fuel and 100 gallons of water. The optimal cruising speed to minimal fuel consumption is 1200 RPM. It is safe to run the engine at any speed.

RPM	SPEED KTS	GPH	RANGE MILES
1000	5	.99	1161
1200	6.8	1.5	1042
1600	8.7	3.69	542
2000	11.3	6.43	404

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EMERGENCY/SAFETY EQUIPMENT

Life preservers are located under the starboard settee seat in the salon.

Life sling is in the lazarette.

There are two (2) fire extinguishers.
- Affixed inside the cabinet starboard side above settee
- Affixed to forward bulkhead on port side of engine room

A hand-held Air Horn is located at the helm station in the storage box built into the helm seat, down low.

The emergency SOS beacon is located in the storage box built into the helm seat, down low. It is USCG approved hand held device that can be tethered or hoisted aloft.

Flashlight is located in the drawer under the TV on port side.

Bilge pump located in the engine room. Always make sure the switch on the DC electrical panel is on. There is a bilge cycle meter on the port side of the helm command station. Typically the reading is “0”.

Rubber seacock emergency plug is located in the engine room.

ANCHORING SYSTEM

The primary anchor is a Lewmar Claw anchor. The anchor holding line with the galvanized chain hook is stowed in the step at the starboard helm door. Artemis’s draft is 4 feet. The depth displayed in the electronics is the water depth from the transducer to the bottom. The keel protrudes down about 18” further. So, if the depth on the Garmin is 5’6”, you have 4” under the keel.

Tide swing: check the tide tables to know at what point in the range you are anchoring and measure the scope for the high tide. Check for depth and rocks within the proposed “swing” area.

Chain markings: The anchor chain is 200’ in length with about 15’ of nylon line at the “bitter end”. The nylon line is used in case of emergency to release the anchor by cutting the line. The chain is marked at 25’ intervals in red and safety green 100’ intervals. (25’ one red mark, 50’ two red marks, 75” three red marks, 100’ one green mark, etc.)

Windlass: The anchor windlass has foot controls (up/down) at the forward deck that are designed to be foot operated. To operate, turn on the breaker located near the floor, directly below the steering wheel. This breaker will trip if the windlass starts to draw too much load. If this happens, wait about 20 seconds and depress the red button and then turn on the breaker again. It is recommended to have 4:1 scope when anchoring in the San Juans. (so in 30 feet of water you will deploy 120 feet of chain).

Setting the anchor:

The boat should be idling facing into the wind.
Ensure that the “windlass” breaker is on.
At the anchor, remove the holding pin for the anchor.
Depress the down arrow foot switch to SLOWLY initially lower the anchor about 12 inches. Push the anchor past the anchor roller carefully so the anchor does not swing back and strike the bow of the boat. Then continue to lower normally.
Let out the proper amount of rope based on scope desired. Moving the throttle in and out of reverse will provide adequate astern momentum to lay out the chain on the seabed.
Put the engine astern momentarily to put a strain on the anchor.
Verify the anchor is set by seeing the boat move forward and seeing slack in the chain.
Do an “anchor watch” for the first 30 minutes, observing how the boat swings and how close it gets to other boats and objects.

Retrieving the anchor:

The engine should always be idling when you are retrieving the anchor in case it is necessary to move the boat forward momentarily by moving the throttle in and out of gear.
At the circuit breaker panels next to the helm turn ON the windlass breaker at the helm below the steering wheel. Turn ON the washdown pump.
At the bow: Connect the blue coiled hose (from the lazarette) with the nozzle to the faucet at the bow near the anchor.
Depress the UP arrow to bring up the anchor.
Wash the chain with plenty of sea water before it comes over the roller to keep the mud off the boat.

As the chain tightens and starts to bog down the windlass, wait until the boat catches up, then continue. Don't drag the boat by the anchor chain thru the water, you will end up tripping the breaker on the windlass and have to reset it.
When the anchor is clear of the water, make sure it is clean of mud.
Be careful for the last couple feet to make sure the anchor is facing the proper direction.
When the anchor is fully retrieved, reset the locking pin and then release the tension on the chain just a bit to take the strain off the windlass.
In an emergency, the windlass can be operated manually. There is a winch handle in the starboard helm step storage. Simply insert the handle in the top of the windlass and turn to raise or lower the anchor.

BARBEQUE GRILL

The stainless-steel propane barbeque grill is mounted on the aft railing. Cooking tools are located in the compartment on the top step, entering the salon from the aft door.

To light the grill: make sure the regulator knob on the grill is in the OFF position.
Open the lid and push and turn the regulator knob counter clockwise to the high setting.
Light the BBQ with the butane lighter. If the BBQ does not light, turn off the gas and wait for a few minutes and try again.

Grilling: Adjust the regulator knob to the desired heat setting.
The BBQ does not require pre-heating.
Do not cook on high with the lid closed.

Cleaning the grill: The grill should be cleaned after it has cooled. Please clean the grate, heat plate and wipe out any excess grease. Re-assemble and lock the lid and put the cover back on.

BATTERIES

Artemis has two banks of house batteries and a third bank of two starting batteries dedicated to solely to the engine.
The DC panel is located at the inboard side of the helm seat. The main DC circuit breaker should be left ON if the boat is in the water, whether you are on or off the boat and regardless of whether you are connected to shore power. If you have been plugged into shore power for 6 or more hours, the batteries should be charged. Away from shore, as long as you are

cruising a couple of hours a day, the batteries are recharging and you should have adequate power without the aid of shore power.
Voltage monitoring: At the top of the DC panel is a voltmeter. Position #1 on the selector switch (top switch) is the port battery bank. Position #2 is the starboard bank. Both these are house batteries.

On shore power: The batteries should read over 13V, if they do not it means that they have been drawn down significantly and will need to be charged for more than a couple of hours of runtime or shore power time. Remember that underway, the alternator is providing the charging. It is a common misconception that once the engine is on, you have unlimited power. All devices operating while the engine is running, will be using the batteries and thus offsetting the amount of charging going into the batteries from the alternator. Said differently, your batteries will charge faster while running the engine, if you turn off all unnecessary loads.

Underway (engine running) the batteries should read over 14V.

At anchor/mooring (not underway or plugged into shore power) the batteries should read 12V or above. To protect the batteries and the proper function of all electrical equipment on board, the batteries need to be charged when they drop to **12V**.

The engine must be running at greater than 1000RPM 's in order for the alternator to produce enough excess power to charge the batteries. When at anchor or on a mooring, it is extremely important to be judicious with what electrical devices are used and left on.

BATTERY CHARGING

All batteries are charged automatically from the main engine when running or from shore power when selected. When the main engine is running at cruise speed above 1000 RPM, the batteries are charged automatically by the alternator on the engine through combiners which connect to and charge the 3 battery banks. The output charge from the alternator is connected to the start battery bank directly and then to the two house banks through the combiners. When on shore power, the inverter/charger reverts to the charging mode and takes over for the output load of the main engine alternator.

BERTHS

The forward stateroom has a double berth 76” long, 39” at the foot and 61” at the shoulder width. To convert the settee, fold and move the table towards the port side. Pull the back and seat cushions off settee and slide out shelf. The built in legs will support the slide out shelf. Reposition cushions to make a double berth. The size of the berth is 45” wide by 79” long.

BILGE PUMPS

The bilge pump is located at the centerline of the boat, below the salon/galley at the shaft seal. There is a bilge cycle meter on the starboard side of the helm station. It is reset to 0 at the start of your trip – or fell free to reset when you embark.

DECK WASH

There is a wash down connection at the forward end of the deck and also in the cockpit. Salt water is pumped through the hose which you can use to clean the anchor and chain or wash dirt overboard through the deck drains called scuppers.

To utilize the system: Turn ON the WASHDOWN PUMP circuit breaker located at the helm. The blue coiled hose is connected to the faucet at the bow and has a nozzle that is operated by your thumb. Turn OFF the washdown pump at the breaker when you are finished.

DINGHY

Artemis has a 2017 Achilles hard-bottom inflatable dinghy with a 8 HP Tohatsu four stroke outboard motor. The dinghy is accessible from the swim step. It is mounted to a Seawise davit at the stern and is lowered into the water with a davit handle crank.

Launching the dinghy: Look and make sure the plug is in the transom of the dinghy (it should not be removed). Remove the safety pin located on the winch and also the bowline from the railing of Artemis. Begin to slowly lower the boat by turning the winch handle. Watch the lower unit of the engine as it will need to be nudged over the dinghy pontoon. You will see as the boat lowers, that the engine swings into place on the transom. Go slowly and make sure that the transom bracket on the engine is lining up with the transom. They fit tightly together.

Once fully lowered, place the locking pin in the transom to hold the engine and engine bracket in place. Finally, you release the dinghy from the transom by lifting up on the keeper pins on the swim platform. Make sure you have a stern line attached (located in the propane locker). The fuel tank is located on the upper deck of the salon. Untie it and place it in the dinghy.

Operating the dinghy: Make sure all occupants are wearing appropriate life jackets and that the oars are in the dinghy. Check to make sure the tubes are inflated as hard as possible. There are two pumps located in the lazarette when additional inflation is needed. Check the gas level and open the vent on the gas tank and connect the fuel line to the outboard motor. Check to make sure the red safety lanyard is clipped into the stop button. You need to pull the stop button up and slide the clip in the base. The engine will not run without this clip in its proper position (which is holding up the stop button).
Squeeze the primer bulb a few times until it is firm – this will prime the line and the motor. Twist the throttle to the starting position (about 25% up from the lowest setting (there is a mark on the throttle).

Starting the motor: Set gear selector to neutral position. Pull recoil starter cord slowly until you feel the starter engage then pull rapidly to crank the engine. I pull it twice, then I pull the choke knob out when starting a cold motor. It should fire right up. If the engine is flooded, wait 30 seconds, then continue. After engine start, check for a steady stream of water flowing out of the water pump indicator hole. If no water is coming out, stop the engine and check the cooling water intake for obstruction. If there is no obstruction, there may be a water pump failure or blockage in the cooling system, which will cause the engine to overheat – do not operate the engine. Allow the motor to warm up for a few moments, then push in the choke knob half way. After several minutes, push the choke control in all the way. Operate the dinghy with the shift lever (forward, neutral and reverse), steering with the handle that has the twist throttle. To stop, push in the red engine stop button or pull out the end of the red lanyard (the kill switch).

Storing the dinghy back on the transom: Fastening the dinghy into the clips at the stern of the swim platform. Disconnect the fuel line from the outboard motor and close the vent on the fuel tank. Return the tank to the top of the salon roof and secure it in place. Remove the pin holding the engine bracket in the transom. Attach the lifting cable. Turn the winch handle to raise the dinghy. Make sure that the motor is swinging into place. The system is designed to keep the motor vertical when you are raising and lowering the dinghy. Once the dinghy is up, place the safety pin in the winch. Using the dinghy bow line, tie off the dinghy bow to the stern railing of Artemis.

Fueling the dinghy motor: The outboard motor is a four stroke and does not require mixed fuel. *When buying fuel, it is critical to purchase unleaded gas that doesn't contain ethanol.*

ELECTRICAL PANELS: The electrical distribution panels are located on the helm station.

DC/Battery power distribution panel: The DC POWER circuit breaker should be left ON if the boat is in the water, whether you are on or off the boat and regardless of whether you are connected to shore power. At the top of the BATTERY POWER panel is a meter that indicates the level of charge, in volts, of each battery bank.

User settings for the DC Panel:
Cabin lights FWD – always on.
Cabin lights AFT – always on.
Upper electronics – always on.
Lower electronics – always on.
DC fridge – always on.
Fresh water pump – always on
Shower pump – always on
Accessory – not in use – heat control from helm
Head – always on
Washdown pump – only as needed
Auto pilot – always on
Wipers – only as needed
Turn off electronics not in use at anchor to preserve batteries.

AC and/or SHORE POWER distribution panel: This panel turns on AC power to the vessel. It will convert the batteries 12V to 120 when the shore power breaker is in the off position. When connected to shore power and the shore power breaker is on, the vessel is 1. Charging the batteries and 2. Drawing 120V power from the shore power connection on the dock.

Shore Power – only on when connected to shore power. The shore power cable is located in the lazarette. Always follow this protocol:

1. Connect the line to the boat, located on the starboard side of the pilot house.
2. Check to make sure the breaker is off, then connect the cable to the shore power breaker box.
3. Check to make sure the AC panel shore power breaker is in the OFF position.
4. Turn on the breaker at the dock.

5. Turn on the breaker at the AC panel.

Reverse this process to disconnect from shore power.

User setting for the AC panel: Shore power/reverse polarity – on only after connecting to shore power.
Water heater – always on.
Refrigerator – always on.
Outlets FWD and AFT – always on.
Spares – always off.

ELECTRONICS/ENTERTAINMENT SYSTEMS: Garmin- Artemis is equipped with the latest Garmin electronic equipment and multi-dimensional charts for the area. The dual displays include navigational charts, 3-D displays, fish-finder, radar, AIS, data, course deviation indicator and Waypoints capabilities. Please refer to the QuickStart card, operating guide and reference manual which is on board.

AMFM Radio & Pod player Bluetooth – located in the pilothouse on the overhead dashboard.

Flatscreen DVD player/monitor with remote – the remote controller and DVDs are located below the TV. Insert DVDs into the side of the TV.

VHF radio is located in the overhead panel at the helm station. Turn on the VHF radio by pressing and holding IN on the power/volume control knob.

WX (weather) stations are found by pressing CLR/WX button.

ENGINE: Artemis is powered by a 270 HP CUMMINS DIESEL ENGINE located in the engine room below the helm station.

FUEL: Artemis has one 205-gallon diesel tank located in aft lazarette. The fuel fill deck fitting for the diesel fuel tank is located outside on the centerline of the cockpit floor. When fueling please fuel to the top of the fuel tank – don't over fill.

Before you start to fuel: Make sure the engine is shut down, the stove is off, all ignition materials have been extinguished and everyone is off the boat.

There is a fuel tank vent located just below the fuel tank fill. Usually, the fuel attendant has an overflow device to attach below the vent to catch any spillage. Fuel spills are the responsibility of the person operating the fueling hose.

Fueling need not be messy: take an absorbent pad, rag and/or paper towels from the propane locker to have at the ready. Clean any fuel spill off the deck – it is slippery and hazardous.

Open the DIESEL plate with the deck wrench/key or spanner wrench located at the starboard side of the helm step. Insert the nozzle into the fill valve then start the flow.

Insert nozzle and start flow. As the tank fills, LISTEN for the sputters and WATCH the fuel vent. Your goal is to STOP pumping BEFORE liquid fuel spurts out of the vent.

After the flow stops completely, remove the nozzle from the fill tube , put the hose back on the dock, screw the fill cap back in place and return the key/wrench to the starboard side of the helm.

Servicing the RACOR Fuel Filter: Located in the aft lazarette, port side on the fuel tank. Check the fuel filter for contaminants or water. If there is contaminants or a separation of fluid in the bottom of the collection container, they should be drained of the contaminants. With a collection container in place, open the black drain at the bottom of the container by partially turning the valve; quickly retighten the value when the water or contaminants have been drained. Replace the RACOR fuel filter if needed. The replacement RACOR 2-micron filters are located in the plastic bin in the engine room marked CUMMINS MAIN ENGINE SPARE PARTS, RACOR FUEL FILTERS. Close the fuel supply line. Remove the lid of the filter to be replaced by turning/loosening the brass T handle located at the top of the filter unit. Remove the filter element by holding the molded handles on the filter element and slowly pulling upward with a twisting motion. Replace the black lid gasket with a new black lid gasket supplied with the new filter. Apply a coating of clean fuel or motor oil to this gasket seal prior to reassembly. Insert the new filter (with labeled end up) with a slow downward twisting motion. Fill the filter unit with clean diesel fuel by pouring it on top of the filter element. Replace the red O ring on the brass T handle shaft under the lid with the new red O ring provided with the new filter element. Then put the lid back on the unit and snugly tighten the brass T-handle by hand ONLY. **DON'T FORGET TO OPEN THE FUEL SUPPLY LINE**. Start the engine and check for leaks. Correct any leaks with the engine off.

GALLEY: The Galley has a refrigerator, a separate freezer and a Force 10 two burner propane stove with oven. See REFRIGERATOR and STOVE sections.

Non stick cookware: Artemis is equipped with non-stick cookware. Do not use non-stick cooking sprays on the non-stick cookware – invisible buildup will impair the non-stick release system and food will stick in the pan. The cookware does not need oil. If you prefer oil for taste, olive or peanut oil is recommended. **Use low or medium heat only.** Excessive use of heat will cause pan warping and permanent non-stick coating damage. The cookware is oven safe to 350 degrees F – but never the broiler. Do not use metal or sharp-edged utensils. Clean using mild dishwashing detergent and warm water. **Use only non-abrasive plastic mesh pads to clean.**

HEAD & HOLDING TANK: Using the head- At the BATTERY POWER distribution panel located at the side of the helm station, make sure the following circuits are in the ON position.
DC POWER circuit breaker in ON position.
HEAD circuit breaker in ON position.
In the head, there is a Vacuflush panel on the upper cabinet: Turn the switch for the Vacuflush on. The green light may not come on, but the head will be ready to flush after about 10 seconds. Raise the foot pedal to fill the bowl with water – about 6 inches will suffice. To flush, depress the foot pedal. You can fill and flush a second time to ensure trouble free operation. When you are finished, if the red light does not turn green, simply shut off the Vacuflush system until your next use. As long as the green light is on, the switch may remain on.

In conformity with San Juan Yachting policy, DO NOT PUT ANYTHING DOWN THE HEAD THAT HAS NOT BEEN EATEN FIRST. Please, no tampons or other feminine products, no hair, Kleenex and no toilet paper!! Use the waste basket and the plastic bags located in the cabinet under the sink to dispose of these items.

Cleaning-There is a toilet brush in the cabinet under the sink. Use liquid dish washing soap and water for everyday cleaning of the toilet bowl. Never use chlorine based cleaners, caustic cleaners, chemicals, drain openers, alcohol, solvents etc. in the system.

Monitoring the holding tank: The holding tank should be monitored daily. The monitor panel is located in the bathroom and will glow yellow and red if you are approaching a full tank. The gauge will register the level of the contents of the tank: green for empty, yellow means low, amber indicates mid-level and red says the tank is full – DO NOT ADD MORE AT RED LEVEL.

Discharging the holding tank: The WASTE deck fitting is located on the starboard side, just outside the pilot house door. In the door step storage, you will find the deck key, vinyl gloves and hand sanitizer for this operation.

To empty the holding tank at a pump-out station or at a portable holding cart – locate the deck fitting labeled "WASTE". Open the deck fitting with the key located in the helm step drawer. Push the pump-out nozzle into the WASTE deck fitting and hold the nozzle securely to create an airtight connection to allow the contents of the waste tank to be vacuumed out of the holding tank. Follow the instructions at the pump-out station to pump-out the holding tank. Rinse the waste holding tank after emptying. Add a few gallons of fresh water through the WASTE deck fitting with the available fresh water hose from the dock. You will find the tank takes on fresh water easier by inserting the hose a few inches into the waste cleanout. Reinsert the pump-out nozzle into the boats WASTE deck fitting and pump some more liquid out of the waste holding tank. Repeat until site gauge on hose runs clear. After pump-out, check the tank level monitor in the head to confirm success. It should show green light. Carefully remove nozzle, replace deck fitting and tighten down with the key. Return deck key to right side of helm. Wipe up any spills and throw away disposable gloves and rags. Wash down the fill area on boat with fresh water hose.

HEATING SYSTEM: The heating system is an ESPAR forced air diesel fueled furnace. The on/off toggle switch is in the salon on the outside of the starboard rear hanging locker. Turn the HEAT toggle to ON, red light will indicate power. The wheel should be in the ¾ to high heat position. To turn off move toggle to OFF.

INVERTER/CHARGER: The inverter is intended to provide 110 volt AC power to small appliances away from shore power. The inverter converts 12 volt battery power into 110 volt AC power. The rectangular black "Heart Interface" inverter/charger control panel is located at the left side of the helm station. Switch ON for normal operation and OFF when leaving to protect the batteries from the accidental discharge. Confirm that the REFRIGERATOR, OUTLETS AFT (all outlets from the helm station aft) and OUTLETS FORWARD (stateroom and head) are all ON.

If you don't have power, (appliances, galley or salon) push the red reset button at the GFCI on the bulkhead forward of the stove. This should restore the circuit. If you don't have power forward of the helm station, push the red reset button at the GFCI in the head to restore power.

Monitor your usage. If too many appliances are on at the same time, you may trip a breaker. If this happens, unplug on or more appliances and reset (turn on) the MICROWAVE and/or OUTLETS AFT circuits at the AC/SHORE POWER panel.

When AC power is available from shore power the inverter/charger automatically charges the house batteries. When leaving the boat, turn OFF the inverter at heart interface control panel, so if the shore power should fail, on onboard appliance (coffee maker etc) will not draw down the batteries. The real danger is that the bilge pumps depend on battery power and if they die, the bilge pumps die with them.

REFRIGERATOR/FREEZER: The galley has a refrigerator and freezer. Make sure the refrigerator is ON at the shore power distribution panel next to the crew seat and on the DC distribution panel (it will automatically select its power source). The thermostat control is located inside on the right-side panel of the refrigerator and controls both refrigerator and freezer. Water from a defrosting cycle will collect in the tray under the freezer compartment and must be disposed of manually.

SHOWER: Using the shower – At the battery power panel turn ON the fresh water pump on the DC panel. Turn On the shower sump pump, on the face of the sink cabinet (labeled). Hot water -Hot water is provided by a 6-gallon tank heated electrically and by a heat exchanger from the engine. You automatically have hot water if the engine is running and it will stay hot for quite a while even after the engine is turned off. So, if you have been cruising for a couple hours, you should have hot water after the engine is off. When connected to shore power, make sure the WATER HEATER circuit breaker on the SHORE POWER distribution panel is in the ON position.

SPARES: Artemis carries a collection of spare and replacement parts. These are located in the engine room on the starboard side.

STOVE: Artemis has a two-burner FORCE 10 propane stove with oven. Make sure the valve is open on the propane tank in the rear cockpit locker. On the floor just before the aft salon door at the bottom of the stairs, is a LPG solenoid. It should be switched ON. It will glow red/orange for about a minute until the sensor completes its startup and senses no propane in the salon. When it is ready it will display a green light. Now you can light the stove.

Each burner needs to be lit separately, using butane lighters in the tray above the stove. Turn the temperature knob to high and hold in the knob. **Light the stove and continue to hold in the knob for another 30 seconds.**

To operate the oven – In order to use the oven/broiler, remove the heat shield resting on the burner element for the stove. Turn selector valve to chosen temperature and push in on the valve and using the butane lighter, light the oven. When finished with stove, turn off solenoid valve. You do not need to turn off the propane tank valve on top of the tank.

WATER: Checking the water level – The tank tender is located in the pilot house on the port side. Follow the written instructions on the plaque. Do not over pump the sensor, it may damage the unit. Both the fuel and the water tank levels are located here.

Filling the water tank – locate the deck fittings marked "water" at the port and starboard amidships. The deck plate key to open the plate is located at the right of the helm. Connect the fresh water hose (located in the lazarette in the cockpit) to the domestic water supply at the pier. Let the water run through the hose (overboard) for a minute or two to wash any contaminated water from the hose. Fill until water comes out the vent/overflow on the hull just below the deck fills. Tighten the deck plates. Return the deck plate key to the right side of the helm.

PREPARING FOR DEPARTURE: ENGINE ROOM CHECKS – Should be performed daily, before cruising.

At the helm, turn on the forward cabin lights and the upper electronics. Open the hatch and look for the white toggle light switches on the bulkhead in front of the engine (towards the top of the bulkhead) and ON the Engine Room Lights. Enter the engine room below the helm station. The easiest location to perform the engine room checks is to sit on the starboard of the engine.

Check the oil level in the engine. The oil on the dipstick should be between the hash marks. IF THE LEVEL IS LOW:

- Add oil from the blue plastic jug marked Delo 400 15/40 SAE, using the funnel from the basket marked Replacement Fluids.
- DO NOT OVERFILL THE OIL CAPACITY of the engine. It only takes 2 quarts to fill the oil supply from the lower line to the upper line on the dipstick.

When the engine is cold, check the coolant level of the solid white recovery reservoir mounted on the front of the engine. The fill cap is white – do not open when engine is hot. The reservoir should be half full. IF THE COOLANT LEVEL IS LOW:

- Add some engine coolant to the recovery reservoir. Spare coolant is located along with spare engine oil on the port side of the engine room.

Make sure that the MAIN SEA STRAINER for the engine is free of seaweed or debris. The sea strainer is mounted on the port side of the forward bulkhead and is attached by a large black hose to the seacock. It is a large bronze unit with a glass enclosed section.

Using the flashlight, check to see if the strainer is clear and not plugged with seaweed or debris ***before every start.***

To clean the strainer, close the seacock (lever horizontal), unscrew the top with the spanner wrench in the tool box and lift out the basket and swish it back and forth in a bucket of fresh clean water then reinstall.

REOPEN THE SEACOCK!!

When you have completed the engine room checks, turn off the engine room lights.

DISCONNECT SHORE POWER: At SHORE POWER breaker panel, turn OFF the double SHORE circuit breakers. Leave ON the 2 inverter circuits on the circuit breaker panel.

On the dock, first turn OFF the shore power circuit breaker at the pedestal on the dock, then disconnect the yellow electrical cord from the dock power.

On the boat, disconnect the yellow electrical cord and store the cord coiled in the lazarette.

CAUTION: Always DISCONNECT from the SHORE-END and CONNECT from the BOAT-END to avoid moving a live cord!!

DC/BATTERY POWER PANEL (main breaker should always be on)

REFRIG in the ON position

Other circuit breakers on as you desire.

CLOSE ALL PORT HOLES AND HATCHES which might permit water to enter the interior, except those deliberately left open for ventilation.

CONFIRM THAT THE DINGHY is securely attached to the davit and that the bow is secured to the stern railing using the dinghy bowline.

CHECK AROUND THE BOAT – Review the exterior area around the hull to confirm that there are no obstacles in the water or loose items that should be secured.

HELM CHECKLIST – Check the fuel level. Check the water level. Turn electronics and instrument switches then start up the Garmin multifunctional display by pressing the button on the face of each unit. Follow the prompt on the screen. The Garmin has many functions-navigational and safety, including radar. Study the operations guide to set up the display in the manner most useful to you.

Turn on the VHF radio by pressing IN and holding on the volume/power control knob.

Check weather channel and select channel 16.

GETTING UNDERWAY: Make sure that the shift lever is in the neutral position.
Turn the ignition key ON and quickly push START button while key is in the ON position to start the engine. Note: Do not crank engine for more than 30 seconds, wait 2 minutes to allow the starter motor to cool down before restart attempt.

Check that cooling water is coming out the engine exhaust. Look down at the water from the starboard side of the cockpit for a little water coming out with the exhaust. If no water is visible, check in the engine room to see that the seawater intake seacock is open.

Let the engine idle for about 5 minutes or until the engine coolant temperature gauge reads above 100. Note: The temperature indicator will not show any indication of heat until the engine has been running for several minutes. Keep the engine below 1000 RPMs for five minutes as the preheater cycles on and off as needed during this time period. RPMs over 1000 block the preheating function.

Turn on the bow thruster by pushing the ON buttons. Toggle the joy stick momentarily in both directions to ascertain that the thruster is functioning properly. The bow is used primarily in maneuvering at or near the dock. In open water while underway, the thruster is not effective. The bow thruster will turn off automatically after 5 minutes of non-use. Restart in the same manner.

The bow thruster may overheat and stop after 3 minutes of continuous running. After a 5–10-minute cool down period, it resets itself.

Use the bow thruster to control the movement of the bow while operating the throttle in short bursts of forward or reverse, pausing in neutral, as you maneuver in the marina. Check wind and current directions.

Note: When using reverse, the STERN WALKS TO STARBOARD.

CRUISING: When clear of the marina, make sure all mooring lines, fenders and anything loose are stowed.

Operate the engine no faster than 1000 RPM until the coolant temperature reaches 140 degrees. Monitor the engine instruments at the helm station while cruising.

- Volts should read between 13 and 14 at normal cruising.
- Water temperature should be between 180 and 190 degrees.
- Oil pressure should range between 45 and 80 depending on RPMs.
- Radar (if you want on)

Windshield Defrost: At the helm station, turn on the defroster toggle switch on the upper electronics panel. The three fans should keep the windshield defrosted.

Windshield wipers: Turn ON the wiper circuit breaker at the Battery Power Panel. There is an ON/OFF toggle for each wiper at the helm station.

RETURNING TO DOCK: Fenders out and on docking side of the boat, set at the appropriate level for the dock.

The engine cool down period (the last 5 minutes) should be at idle to allow the engine to cool down before shut off.

Shut down the Garmin multifunctional display by pressing and holding the power button in the lower left corner for the countdown on the screen. Please re-place the screen cover over the screen.

At the BATTERY POWER breaker panel next to the helm seat – Leave ON the DC Power circuit breaker.

CONNECTING TO SHORE POWER: At the SHORE POWER distribution panel at the side of the helm, make sure the circuit breaker marked SHORE is in the OFF position.

Take the bright yellow electrical cord located in the lazarette and connect it to the receptacle located forward of the starboard helm door. Line up the prongs, insert the plug, turn and tighten.

Locate the power supple on the dock, making sure that the breaker on the dock is in the OFF position. The yellow electrical cord is 30 amps. Check the amps for the shore power pedestal on the dock, and use an appropriate adapter, if necessary. Connect the electrical cord to the dock power source, matching prongs, twisting and tightening. Then turn the dock power source ON.

Return to Artemis and turn the SHORE circuit breaker to the ON position.

Verify that you have power to the main electrical distribution panel by looking at the AC voltage gauge on the SHORE POWER panel. The digital gauge should display voltage above 117 to be receiving adequate voltage.

Turn ON the desired AC circuit breakers, including REFRIG.

CLOSING UP THE BOAT: Close windows and hatches, unless you want to leave them open for ventilation.

At the DC BATTERY POWER panel next to the helm seat:

- Turn OFF the FRESWATER and HEAD circuit breakers.
- Leave ON the DC POWER and REFRIG circuit breakers.
- At the INVERTER/CHARGER panel above the circuit breaker panels nest to the helm, turn OFF the invert, so if shore power should fail, on onboard appliance will not draw down the house batteries.

Lock the doors.

On the dock, check the position of all fenders and see that mooring lines are secure.