

OPERATIONS MANUAL

Chinook

Bayliner 4788



Home Port

Anacortes, Washington USA

CHINOOK

Welcome Aboard!

We are happy you have chosen *Chinook* for your time on the water. We are sure you will enjoy cruising to the San Juan Islands, the Gulf Islands, Puget Sound, Desolation Sound, the Broughtons, or wherever you decide to venture.

Each boat is a bit unique and we encourage you to read through this manual and ask questions of the fleet captain to ensure you are comfortable operating the various systems on the boat. I'm sure we haven't covered every aspect of operations, so please be sure to leave us feedback on how we can improve the operations manual information. The most important points are outlined below. We ask that you keep it clean and operational. If you have questions about the boat or about places to visit, please do not hesitate to ask the AYC staff.



While we are not natives of the northwest, we have lived here many years and consider the Pacific Northwest our home. In 2008 our jobs transferred us to Tennessee. It is a beautiful place in the foothills of the Smokey Mountains but it was not home for us. We finally had a chance to come home and we jumped at the opportunity! We had been gone for a while and our kids had grown up and finished college by the time we got back here. We had been boating in the Northwest for 20 years and we weren't sure our new empty nest lifestyle was going to be the same as boating as a family. So, for a few years we chartered from AYC and it rekindled just how much we love being on the water in the Pacific Northwest. So, we purchased another boat. We wanted a name that was clearly reflective of our love of the Northwest and the Salish Sea. Chinook was chosen as it has so many northwest ties - It is a western coastal warm wind; It is an iconic northwest salmon; it is a Boeing helicopter; it is a native American tribe and language - (and they were expert canoe builders)! So, it seemed fitting to call out the northwest connection with the name and we added the PNW logo to reflect our tip-of-the-hat to our adopted home.

Quick Tips

- Shift transmissions only while at idle RPM's
- Do not cruise above 2200 RPM's
- Be very careful with the toilets - Only flush human waste and single ply marine toilet paper - If using more than a little, flush multiple times
- Don't let the batteries go below 12V! Recharge them as they start to get close to 12V.
- The oven and stove can't be used at the same time
- Turn off circuit breakers before any activity with the shore power cord
- Check oil and coolant before cruising each day

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BASIC INFORMATION

Helpful facts for docking, replenishment, and space:

Boat Dimensions	Specification
Length Overall (LOA) [pulpit + hull + transom]	52-ft 0-in
Hull Length	47-ft 4-in
Beam	14-ft 11-in
Draft	3-ft 6-in
Clearance Height (VHF Antennas)	23-ft
Clearance Height ()	
Displacement (approximate) (empty)	32,000 lbs
Boat Replenishment	
Diesel Fuel	2 @ 225 gal each
Fresh Water Forward Tank	130-gal
Fresh Water Aft Tank	50-gal
Sanitation Holding Capacity	48-gal
Dinghy Gas Fuel	10-gal
Barbecue Propane Fuel	1-gal tank (2 refillable tanks onboard)
Lubricants/Fluids	
Diesel Engine Oil Type	Heavy Duty SAE 15W-40
Diesel Engine Coolant Mix	Antifreeze-Water 50:50 Mix
Transmission Fluid	ATF MD-3 (Chevron)
Trim Hydraulic Fluid	ATF (Chevron)
Steering Hydraulic Fluid	Mil-Spec 5606 (Sea Star)
Dinghy Motor Oil Type	SAE 10-30W synthetic
Wet Battery Fluid	Distilled Water
Diesel Furnace Hydronic Fluid	Antifreeze-Water 50:50 Mix
Anchoring/Docking	
Working Anchor, Rocna Vulcan	66-lbs (30 kg)
Working Anchor Rode	300-ft 5/16" HT chain+ 200-ft 5/8" nylon
Spare Anchor, Danforth	44-lbs (20 kg) (in the lazarette)
Spare Anchor Rode	40-ft 5/16" HT chain, 200-ft 1/2" nylon
Docking Fenders & Whips	8 – 10" x 26" (black),
Dock Lines	4 – 25+ft. 5/8" (black)
Spring Lines	4 – 35-ft x 5/8" (black)
General Purpose Lines	2 – 50-ft x 1/2" (white)
Berths	
Forward Stateroom Bed	6-ft L x 5-ft W (queen)
Aft Stateroom Bed	6-ft L x 4-ft W
Mid-Stateroom Bunks x2	5-ft 11-in L x 30-in W
Salon Stb Sofa	
Salon Aft Sofa	
Pilothouse Port Bench Seat	
Weights and Measures	
1-gallon (US) diesel fuel = 7.1-lbs	444-gal (total capacity) = 3152.4 lbs
1-gallon (US) water = 8.33-lbs	160-gal = 1166.2-lbs
Conversions	
1 knot = 1.15 miles per hour	16 knots = 18.41 miles per hour
1 mile per hour = 0.87 knot	25 miles per hour = 21.75 knots
1 nautical mile = 1.15 miles	
1 mile = 0.87 nautical mile	
1 mile = 1.6 kilometers	
1 kilometer = 0.625 mile	
1 gallon (US) = 3.785 liters	250 gallons (US) = 946 liters
1 liter = 0.264 gallon (US)	rule of thumb: 4 liters ~ 1 gallon (US)

1 BOAT OPERATION

Become familiar with the various systems outlined in this manual. *Chinook* has features outfitted for comfort, convenience, and safety. Proper use of these features will promote a safe and relaxing trip.

1.1 Important Points

- ❑ **Pre-Operation.** Remember “**WOBBS**”: **W**ater Coolant, **O**il, **B**ilge, **B**elts, and **S**ea Strainer. Any problem is easier to fix while moored and more difficult to fix while adrift.
- ❑ **Electrical.** Monitor both AC and DC electrical systems frequently. Be aware of power use, available power sources, and charging rates. 50A max available on Line 1 shore power. Turn off non-essential, appliances, devices and lights.
- ❑ **Cruising RPM.** Sustained engine speed for cruising is **2200 RPM** for speed of about 14-knots (depending upon weight of fuel, water, passengers, provisions, wind and current). Cruising at **1800 RPM** can achieve speed of 10 knots and will reduce fuel consumption per mile substantially. Avoid pro-longed engine speed above 2200 RPM.
- ❑ **Minor Repairs.** Lubricants, spare parts, and tools are aboard - (see [Appendix B](#)).
- ❑ **Protection.** Protect interior from damage – vinyl furniture, headliners, mattresses, wallpaper, woodwork, countertops, carpet, and appliances. Wipe/wash spills off the gelcoat, carpet and furniture right away to avoid permanent stains.

1.2 Engine Inspection

1.2.1 Forward Engine Compartment

Turn ON lights in the engine compartment at the ENGINE ROOM LIGHT switch on the Pilothouse DC Panel. Raise the passageway staircase hatch to enter the forward engine compartment.

- ❑ **Fuel Management Panel.** Forward of the hatch opening, note the levers position of the fuel distribution valves on the FUEL MANAGEMENT PANEL. Normally, all levers will be in the vertical position to ensure proper fuel flow from ‘source’ tank and return to same tank.
- ❑ **Engine Primary Fuel Filters.** Check the glass bowls of the PRIMARY FUEL FILTERS on the port and starboard bulkheads for water or debris. Rotate the thumb-wheel valve to drain water and debris. Use a paper cup to catch the mixture. Recheck after recent refueling.
- ❑ **Generator and Heater Filters.** On the starboard bulkhead, check the glass bowl of the GENERATOR FUEL FILTER for water or debris. Check the glass bowl of the HEATER FUEL FILTER for water or debris. Drain as necessary.
- ❑ **Hydraulic Shift Reservoir.** On the starboard bulkhead, check the gauge on the HYDRAULIC SHIFT RESERVOIR. Pressure should be about 80-85 PSI for best operation. A pump is in Tools box, if pressure needs to be restored.

- ❑ **Water Tank Selection.** On the port bulkhead, note the position of the WATER TANK SELECTOR valve – water is drawn from either the #1 tank (located near the bow) or #2 tank, (located beneath forward stateroom floor). If the FRESHWATER PUMP continues to run when water is not being used, the reason is an empty tank. Flip the selector valve to the other tank. The #1 tank holds 100-gallons, the #2 tank about 40-gallons.

1.2.2 Main Engine Compartment

From the Forward Engine Compartment, remove the bulkhead hatch to the main engine compartment and set it aside.

- ❑ **General Condition.** Look for abnormalities (loose connections, leaks, chaffing, etc). Note the general condition of HOSES, FUEL LINES, and AIR FILTERS.
- ❑ **Engine Coolant.** Check the ENGINE COOLANT reservoirs – normal level is about ½ full.
- ❑ **Oil Level.** With a paper towel or rag handy, remove the oil dipsticks. Etch marks on each dipstick indicates minimum and maximum oil level. If necessary, to add oil, raise the floorboards in the Salon to open the top of the engine compartment. Open the oil filler cap on piston #1 valve cover. Pour oil through a funnel. Recheck the dipstick. Cleanup spills.

WARNING – DO NOT OVERFILL the engine oil. More is NOT better and may cause damage. Recheck oil level periodically. Report any unusual 'consumption' or 'creation'.

- ❑ **Transmission Fluid.** Check the TRANSMISSION FLUID level in each transfer case. Raise the dipstick on top of the transfer case housings. Tighten properly to prevent contamination.
- ❑ **Seacocks.** Ensure the RAW WATER SEACOCK valves are in the 'open' position (lever in-line with valve). Check the glass container for debris. If necessary, close seacock, loosen the thumbscrews on the cover, clean the strainer, and reassemble the cover snugly. Check later for leakage while running.

WARNING – Open seacock fully after servicing or the engine will overheat.

- ❑ **Bilge Pumps.** Lift the engine room floor panel. There are 2 pumps. Check the 'automatic' bilge pump by lifting the tab on the float switch. If defective, take necessary steps to determine the cause, fix, or report – this is the first line of defense in case of flooding.

NOTE – There are six total bilge pumps – 3 automatic, 3 manual at the pilothouse panel. Two pumps are located in engine room (describe above); two in forward engine room; two beneath the passageway step.

1.2.3 Lazarette

Open the center Lazarette hatch at the Cockpit.

- ❑ **Steering Fluid.** On the transom, note the STEERING FLUID level in the container.
- ❑ **Trim Tab Fluid.** On the transom, note the TRIM TAB FLUID level in the container.
- ❑ **Battery Fluid.** The batteries are AGM and do not need any fluid..

1.3 Engine Startup

Procedure for engine startup:

- ❑ **Engine Switch.** At the top of the DC Electrical Panel, turn ON the PORT and STARBOARD “Engine” switches.
- ❑ **Trim Tab Switch.** At lower right of panel, check the TRIM TAB switch. It is normally ON.
- ❑ **Gear Shifts.** At the helm station, move the GEAR SHIFTS forward and backward to check freedom of movement. Then, position knobs at the ‘neutral’ (vertical) position – the START-SAFETY switch will NOT allow the engine to start unless they are in the neutral position. **ONLY SHIFT GEARS AT IDLE RPM’S!**

NOTE - It is a good idea to remember this fact if the engine fails to start, as expected.

- ❑ **Throttles.** Position throttles to the ‘idle’ position (aft or bottom position).
- ❑ **Ignition Keys.** Insert keys into the IGNITION SWITCHES. Start one engine at a time.
- ❑ **Pre-Heat.** Turn the key clockwise – the ENGINE ALARM will buzz, and the ENGINE PRE-HEAT LAMP may be ‘green’. If cold, press the preheat button for 25-30 seconds (green light may go off sooner). If the engines are already warm or hot, simply wait for the green light to go off.
- ❑ **Start.** Turn the key fully clockwise to engage the starter motor. Start one engine at a time.

NOTE – If the starter motor does not engage, check Engine switch on the DC panel is ON. Then, recheck/re-adjust the neutral position of the gearshift.

- ❑ **Difficult Starting.** It may be necessary to adjust the throttle, particularly in cold weather. If engine cranks slowly or fails to turn over, check the condition of the engine battery on the DC ELECTRICAL PANEL.
- ❑ **Warm-up.** Warm the engine for about approx. 3-5 minutes before getting underway.
- ❑ **Gauges.** The oil pressure should indicate at about 40 PSI within 10 seconds. Note readings on VOLTMETER, OIL PRESSURE GAUGE, TEMPERATURE GAUGE, and FUEL GAUGE.

WARNING – *If oil pressure is low, shutdown the engine, inspect the engine compartment and find possible cause (for example, a loose and leaking oil filter.)*

- ❑ **Exhaust Water.** Go to cockpit and ensure the cooling water is flowing through the ENGINE EXHAUSTS.

WARNING – *If no cooling water in the exhaust or engine overheats, stop the engine. Recheck seacock for open position or excess debris. Check for broken engine belt, which turns the water pump. Restart the engine, and re-check water flow at the exhaust. If water is not flowing properly, seek assistance.*

Repeat the procedure for the other engine.

1.4 Engine Operation

Monitor engine gauges frequently while underway. Listen for unusual noises and feel for vibration changes.

- ❑ **Oil Pressure.** Check oil gauges frequently. Oil pressure should remain above 40 PSI.
- ❑ **Coolant Temperature.** Coolant temperature should remain 150 to 200 degrees Fahrenheit.

WARNING – *If an engine overheats or the alarm sounds, stop the engine. Do an inspection to determine cause.*

- ❑ **General Performance.** Look and listen for changes in engine performance (e.g., unusual noise or RPM loss) or visual appearance that may indicate need for service. An EAR PROTECTOR is in the utility room under the stairs for visual inspections while underway.

1.5 Engine Shutdown

Procedure for engine shutdown:

- ❑ **Cooling.** Allow time for gradual and uniform cool-down of engines running at low RPM or idle. The time engaged in docking is usually enough.
- ❑ **Throttles.** Move each THROTTLE to the idle position.
- ❑ **Ignition Key.** Turn each ignition key to OFF position.
- ❑ **Engine Switch.** At the DC Electrical Panel, turn OFF the PORT and STARBOARD “Engine” switches.
- ❑ **Electronics.** Check instrument switches on the Bridge and Pilothouse and turn off DC electrical devices or electronics. Also, turn off switches at the DC Electrical Panel.

1.6 Getting Underway

1.6.1 Shore Power

The SHORE POWER INLETS are located on the starboard side near the pilothouse. Power cords are stowed in the stbd cockpit cabinet, behind the black door. An extra cable is beneath the port lazarette hatch if needed. Generally, only a single cord is needed in the Line 1 inlet. **Do not** let either end of the power cord into the salt water!

- ❑ **Shore Power.** Go to the shore station and turn the Shore Power switch off, then switch the breakers on AC panel off as well. Then, disconnect the cord from the shore receptacle.

CAUTION – To avoid electrical shock from ‘hot’ cord is drop into the water, disconnect the shore-side plug first before handling the cord. Be sure neither end of the cord goes into the water!
- ❑ **Boat Inlet.** Disconnect the cord from the boat inlet and replace/tighten the inlet cover.

WARNING – If the boat inlet is found hot and has burnt prongs or connector damage, investigate. Ensure connectors are tight and not arching. Use another cord if available and check again.
- ❑ **Cord Stowage.** Stow POWER CORDS stowed in the stbd cockpit cabinet, behind the black door. Always use the EEL cord to attach to the boat - this is a safety feature to protect and the boat from arching. Extra 50-amp extensions cords are under the port lazarette, additional adapters are stowed there as well.
- ❑ **Adapters.** CORD ADAPTERS (30 amp, 20-amp and 15-amp) are stowed inside the port lazarette. Use these to adapt the 50-amp power cord to the shore power receptacles when needed.

To reconnect shore power, reverse the procedure above, first plugging EEL cord to the boat inlet, then to the shore station, switch on the shore station first, then the boat breakers.

1.6.2 Interior Stowage

Prepare the boat interior for cruising and rough sea conditions.

- ❑ **Portholes.** Close and lock the PORTHOLES - 2 Mid Stateroom, 1 Aft Head, 1 Fwd Head, and 4 Forward Stateroom.

NOTE - This is the common cause for ‘wet’ bunks. If water has soaked a bunk, remove the cover and mattress and take steps to dry, else mold and mildew will develop.
- ❑ **Fore Deck Hatches.** Close and lock the 2 deck HATCHES above the Forward Stateroom.
- ❑ **Windows.** Adjust or close Salon and Pilothouse windows.
- ❑ **Glassware.** Check Galley, Salon, Staterooms, Heads, and Bridge for items that may topple or spill while underway (drink glasses, coffee cups, wine bottles, bowls, dishes, etc.).
- ❑ **Galley.** Stow dishware, glasses, pots and pans in their respective cabinets and drawers. Push-in all LATCH buttons. Cabinet items may spill out in rough seas.
- ❑ **Loose Items.** Secure cell phones, iPods, laptops, and other electronics. Ensure heavy items will not fall. Put clothing inside cabinets and drawers and push-in the LATCH buttons.
- ❑ **Doors.** Close or latch Stateroom and Head doors to avoid swinging. Close the Bridge HATCH door or secure the open prevent slamming shut as the boat rolls.

Main salon door must be closed during boat operation.

1.6.3 Bimini Cover

The BIMINI is deployed and should remain deployed.

Operate the vessel from a helm position that provides visibility for the course, speed, weather, and sea conditions. Close-quarter maneuvering, docking and departing is best from the bridge helm.

- ❑ **Line Handling.** Brief crewmembers on the departure plan. Assign duties for handling SPRING LINES, DOCK LINES, or to assist others.
- ❑ **Limited Visibility.** Turn ON the NAVIGATION LIGHTS at the DC Panel and helm switches.
- ❑ **Trim Tabs.** Ensure the TRIM TAB switch is ON at the DC Electrical Panel. For close quarter maneuvering or backing, press both TRIM TAB switches to 'Bow-Up' position to retract the trim vanes.
- ❑ **Bow Thruster Control.** Turn on the master thruster switch on the port pilothouse electronics panel. Push the two ON buttons at the BOW THRUSTER control to activate the joystick. The thruster will remain active for several minutes before shutting itself off. Move the bow as needed in small bursts of a few seconds. Extended use of the thruster will overheat the unit and it will disconnect if it overheats.
- ❑ **Throttles and Gear Shifts.** Ensure the THROTTLES are 'idle' before engaging the GEAR SHIFTS to avoid stress on transmission.
 - Chinook is equipped with Glendinning engine synchronizer. To use the synchronizer ON the DC panel turn the electronics breaker on. Then pull the chrome switch up, or out and the light will come on. Only activate/deactivate the synchronizer at engine RPS of 1000 or less. Never use the synchronizer in close quarters maneuvering.
- ❑ **Fenders and Lines.** After clearing traffic, have crewmembers stow FENDERS and lines.
- ❑ **Cruising Trim.** Before high-speed cruising, press both TRIM TAB switches to 'Bow-Down' position. This sets the trim vanes downward, which will help raise stern as boat accelerates.
- ❑ **Acceleration.** Move THROTTLES smoothly, allowing the engines to power up gently ensuring the temp gauges show warmed up engines. Equalize engine speeds using the tach's, or use the Glendinning synchronizer.
- ❑ **Cruise RPM.** Normally, max cruise is **2200 RPM** . This should achieve a satisfactory plane, depending upon trim configuration, weight, and sea condition. Choose a lower rpm for lower consumption rate of fuel. Cruising 1800 RPM will reduce fuel consumption rate by about one-half. Avoid engine speeds above **2200 RPM** for any length of time; but, vary the speed for short durations.
- ❑ **Trim Adjustment.** Perform trim adjustments carefully. In 'following-sea' conditions or swells, favor a 'bow-up' position to avoid plowing or surfing into waves.

1.7 Docking

For docking, the bridge usually offers the greatest visibility all around.

- Listed below is equipment onboard for docking and mooring.

Item	No.	Description	Stowage Location	Typical Use
Fender, Primary	8	10"x26" black, 2 with clips, 2 fixed mounts on command bridge, 2 on cockpit with covers and 2 with whips.	4x foredeck rails 2x brdg, 2 cockpit	Whips are meant to be tied to the rail near pilot house – 2 with clips are to be attached to rail above salon window (reached from pilot house walkway), 2 deployed from the bridge and 2 in the cockpit.
50ft white	2	5/8 braided	Port fwd locker	Misc utility use
40ft black line	1	¾ black double braided	Forward lockers	For use as a spring line typically midships
35ft black line	2	¾ black double braided	Forward lockers	Primary use for bow line tie
25-ft black line	4	¾ black double braided	2 are in the cockpit and stored by the cleats- 2 extra are stored in the stbd locker behind the black door	Primary use as the stern tie lines
20ft black	2	½" black line	Tender	For use on the tender
400-ft Poly Line	1	3/8" yellow/red		Stern tie line.
50-ft General Purpose Line	2	½" white 3-strand line	Cockpit portside hanger	Supplemental. Required to transit <i>Ballard Locks</i> .
Anchor snubber	1	Mantus anchor snubber	Forward wet locker	Must be used when anchoring to take load off of windlass.
Boat Hook	3	Extendable silver aluminum with plastic hook	1 in cockpit, 1 overhead stbd pilot house door, 1 command bridge	The command bridge boat hook is used to help with dingy and to retrieve and deploy fenders using the loop in the line.

- **Docking Plan.** Determine dock layout, plan the entry/maneuver, and inform the crew on how docking will take place (for example, port or starboard tie, bow in or stern in).
- **Fenders.** Deploy 4 fenders at dock level. Deploy other fenders on opposite side at gunwale height (to fend off adjacent boats just in case docking doesn't go as planned).
- **Line Handling.** Arrange/secure DOCK and SPRING lines in advance. Assign line-handling duties to crew. Under good conditions, an able crewmember may step off (not jump) from the swim step to secure the STERN LINE/MID LINE to dock.
- **Helm Centering.** Before entering the docking area, reduce throttle speed to idle and turn synchronizer off. Activate the thruster. Center the WHEEL to straighten the rudder.
- **Trim Tab Retraction.** Re-position TRIM TABS to the 'Bow-Up' position (press 8 to 10- seconds) to allow stern to move freely.
- **Maneuver.** Rely on the GEARSHIFTS for close-quartering maneuvering. Avoid use of throttles, and wheel unless necessary.

1.8 Fuel

1.8.1 Refueling Boat

Each of 2 fuel tanks holds 225 gallons for total 450 gallons. Briefly turn the ignition keys to accessory to read the Pilothouse fuel gauges.

- ❑ Do not fill at full speed to begin. Raise the volume slowly until you know the tanks can fill at the rate selected. Many fuel docks have high speed pumps which this boat cannot accept at full rate of flow.
- ❑ **Estimate Fill.** Estimate gallons needed for each tank based on fuel gauge readings. For example, if gauge shows $\frac{3}{4}$ full, anticipate 55-gallons; if $\frac{1}{2}$ full, 110-gallons.

NOTE – It is good practice to refuel before the tanks are 1/3 full. The best reason is to avoid the anxiety of searching for a fuel dock.

- ❑ **Fuel Fill Cap.** The FUEL FILL CAP for each tank is located on the deck, aft of the pilothouse doors. Fuel vents are located opening. Remove FILL CAP with the CAP REMOVAL TOOL.
- ❑ **Oil Sorbs.** Have oil sorbs handy to soak up spilled fuel. The fuel dock may provide; if not, oil sorbs are available in the forward engine room.
- ❑ **Diesel Hose.** At the pump, ensure the attendant provides the correct fuel hose – ask DIESEL; hear DIESEL, see DIESEL. Ensure the nozzle is placed into the ‘DIESEL’ deck fill opening on starboard side (not the sewage holding tank). Confirm everything to avoid a catastrophe.

NOTE – On many fuel docks, the hose length is insufficient to reach the opposite side fill cap without passing the hose through the pilothouse or galley. Please do not take the fuel hose through the pilot house! Reposition the boat if necessary.

- ❑ **Pump Flow.** If necessary, position a crewmember to call out the gallons/liters on pump. Place nozzle into the tank opening, and pump evenly. Note sound of the fuel flow. Pumping too fast will interfere with air escaping from the opening, resulting in fuel burping back on the boat and the individual filling it up. As the tank nears full slow down the flow rate, the gurgling sound will rise in pitch. Pay attention to the TANK OVERFLOW VENT on the outside and be prepared to catch spurting fuel with oil sorb. DO NOT TOP OFF TANKS!
- ❑ **Fuel Filler Cap.** Replace each tank fill cap. DO NOT over-tighten. Clean spills with oil sorbs and wipe and wash/rinse any fuel on the gelcoat of the boat. Wash hands with soap and water thoroughly for health reasons.

1.8.2 Fuel Management

The FUEL MANAGEMENT PANEL is located beneath the opening to the front engine compartment. Fuel is directed/returned from/to either tank to the engines and generator via the supply valves. Recheck position of the levers whenever entering or exiting the engine compartment to ensure proper settings.

WARNING – *Normally, all levers are in vertical position during operation, returning fuel to each source tank. If the returning fuel goes to an opposite tank and overfills, the fuel will discharge overboard through the vent – a nasty situation. These levers may be moved accidentally while working in engine room.*

1.8.3 Refueling Dinghy

- ❑ **Estimate Fill.** The internal fuel tank holds 7-8-gallons. Use only non-ethanol gasoline, available at marina fuel docks. Estimate the amount needed by the fuel gauge reading.
- ❑ **Fuel Fill Cap.** The FUEL FILL CAP is located on stbd side of the helm.
- ❑ **Pumping.** Place the nozzle into the tank opening. Pump slowly and evenly. Pumping too fast may result in spurting. There is no need to top off. Ensure fill cap is closed.

2 ELECTRICAL SYSTEMS

Power Distribution. The boat electrical is organized into TWO power distribution systems:

- DC (Direct Current) – 12V boat systems, lights, and electronics, etc.
- AC (Alternating Current) – 120V appliances, like used in households, microwave, stove, etc.

DC System Sources. The DC power distribution system has 5 sources:

- House/Inverter Battery Bank – supports main boat systems, lights, and electronics & inverter operations
- Starboard Engine Battery – Starboard Engine starting
- Port Engine Battery – Port Engine starting
- Generator Battery – Diesel Generator starting
- Thruster Battery Bank (24V) – Bow Thruster operation only.

AC System Sources. The AC power distribution system has 3 sources:

- Shore power – Typically Line 1 (50A) boat receptacle is used. Supports all AC equipment
- Diesel generator – Start switch below AC panel. Supports all AC equipment
- AC/DC Inverter – Switch at DC panel. 'Specific' AC equipment (see section '[Inverter Power](#)')

The electrical distribution systems are controlled via the Pilothouse AC ELECTRIC Panel, the DC ELECTRIC PANEL, the BATTERY SWITCH PANEL in the Salon aft port cabinet, and the Thruster BATTERY emergency switch in the Forward Stateroom.



NOTE – Refer to [Appendix 19.6 Boat Electric Panels](#) for illustrations.

When AC Shore Power or Generator is not used, the DC House Bank batteries provide ‘inverted’ 120-volt AC power to ‘specific’ AC equipment.

Batteries have limited capacity. Monitor the use of electrical equipment carefully. Turn OFF unnecessary devices and lights, and conserve battery power.

Connect to shore power or generator to restore battery capacity through the DC battery charging devices.

AC and DC Panel breakers are labeled for all devices and circuits.

2.1 DC System

2.1.1 Battery Banks and Switches

NOTE – Refer to [Appendix 19.6 Boat Electrical Panels](#) for illustrations.

The 5 BATTERY BANKS supply power for lights, refrigeration, electronics, engine starting, generator starting, and bow thruster:

Battery or Battery Bank	Battery Type	Full Charge Storage
Port Engine Start Battery	AGM	
Starboard Engine Start Battery	AGM	
House/Inverter Battery Bank	AGM	820-AH
Thruster Bank	AGM	
Generator Start Battery	AGM	

The inverter/house batteries have a total capacity of 820-AH

Use DC lighting wisely. A DC device rated 10-amps and turned-on for 10-hours would consume 100-AH (#amps multiplied by #hours equal #amp-hrs). For example, each non-LED light bulb draws 0.8 amps – count the number of bulbs ON, then multiply by 0.8 to determine amp-hr. consumption.

BATTERY SWITCHES are in the BATTERY PANEL in the aft portside cabinet in the Salon. For the bow thruster, the switch is located under bunk in the forward stateroom.

2.1.2 Panel Digital Multi-meter

The MULTI-METER is located on the DC panel. Rotate the battery switch between port, starboard, house 1, house 2, generator

2.1.3 Battery Charge Condition

Battery charge activity can be checked through the DIGITAL MUTI-METER. While a battery bank is charging, the voltage may read from 13.1 to 14.4 volts depending on the battery state-of-charge.

When a battery bank is ‘at-rest’ (not charging), the voltage reading provides a rough indication of the state-of-charge and amp-hour capacity remaining in the battery bank

Battery Meter Voltage at Rest	Approximate Battery State-of-Charge
12.65 volts +	100%
12.47 volts	75%
12.25 volts	50%
11.95 volts	25%
11.70 volts	0%

2.1.4 Battery Charging Systems

2.1.4.1 Engine Alternators

The ENGINE ALTERNATORS provides charging while underway to operate the boat systems (navigation, lighting, sanitation, refrigeration). Excess energy is applied to battery charging. It will take time to fully recharge batteries using the alternators.

An engine speed at about 1000 RPM will activate charging (note voltmeter movement at helm panel). To increase charging output, raise engine speed above 1000 RPM.

Alternator DC Power Output (approximate)

Engine Speed	Stbd Alternator (145-A)	Port Alternator (145-A)
<1000 rpm	0-amps	0-amps
1500 rpm	45-amps	45-amps
2000 rpm	100-amps	100-amps
2500 rpm	130-amps	130-amps
3000 rpm	140-amps	140-amps

2.1.4.2 House Battery Charger

The BATTERY CHARGER provides energy to Port engine battery, Starboard engine battery, Inverter/House Battery Bank

Maximum continuous charge output is 50-Amps DC. The charger will perform its charging cycles automatically.

Inverter Battery Charger

The INVERTER includes an internal charger to charge the house/Inverter bank.

Normally, the INVERTER AC SUPPLY switch and the INVERTER/CHARGER switch are turned ON at the Pilothouse AC Panel to connect Inverter. Turn OFF for maintenance.

The Inverter is located beneath the Salon seat.

2.1.5 Engine Batteries Combiner (Parallel) Switch

A 'PARALLEL' switch, if needed, is located under the stbd lazarette hatch. It is tucked up on the ceiling of the cockpit. Use when an engine does not have sufficient battery power to start.

2.1.6 Thruster Battery Charger & Switch

The THRUSTER BATTERY CHARGER provides power to the Bow Thruster Battery Bank. The bank is a 24-volt system.

The battery charger is located beneath the forward stateroom bunk, starboard side.

The thruster 24-volt battery charger is ON automatically when the boat is connected to Shore Power or Generator. The system is isolated from the boat's 12-volt system - it is recharged by the inverter-charger, shore power or generator.

The THRUSTER BATTERY SWITCH is located on the port side navigation panel in the pilot house.

2.1.7 Circuit Breakers and Fuses

The MASTER CIRCUIT BREAKER for **DC Systems** is located on the BATTERY PANEL in the Salon aft port cabinet. Branch circuit breakers for **anchor windlass** and **dinghy davit lift** are located there. Individual DC **accessory** circuit breakers are located on the Pilothouse DC panel.



2.2 AC System

2.2.1 AC Sources

There are three sources for AC 120-volt power:

AC Source	Source Location	Service Inlets
Shore Power	3x Inlets on Pilothouse Stbd Side. Select breaker position on AC electrical panel. Normally, <u>connection to Line 1 is sufficient for power</u> -- set Line 2 and Line 3 to 'Parallel'	LINE 1 = 50-A LINE 2 = 50-A LINE 3 = 50-A
Generator	Select breaker position on AC electrical panel	50-A
Inverter	Connects automatically when Shore Power or Generator are not in use	

NOTE -- Shore Power and Generator cannot be joined to increase power – the breaker lockouts prevent combination.

The Inverter will provide power to selected AC devices automatically, whenever Shore Power or Generator are not available. See [Inverter Devices](#) section for more information.

Monitor use of AC devices to remain within the capacity of shore power. The total power to be used for AC components should not exceed the capacity of the shore power service. For example, if shore power service is 30-amperes and the total power used for appliances, motors, and lights is greater than 30-amperes, the circuit breaker will trip OFF.

2.2.2 Shore Power

2.2.2.1 Service Connection

Most marinas offer 30-amp & 50-amp service. This boat is a 50-amp 125V boat and using a 50-amp cord with serve your needs best. However, if no 50-amp power is available, use the 30-to-50 adaptor on the shore power pole and then plug the 50A cord between the adaptor and the boat. Always use the EEL locking cord to plug in to the boat. You will need to monitor the power consumption to ensure you do not trip the breakers. Under no circumstances should you use a 50-amp shore power input in to a 30-amp cord - with or without adaptors.

Additional 15-amp (15A), 20-amp (30A) adaptors are available in the Laz storage area.

Shore power INLETS are located on Pilothouse starboard. Normally, use LINE 1 for service and set the AC Panel for Line 2, and Line 3 in “parallel” mode (see service options below).

CAUTION – Attach the shore power cord to the boat inlet first, and then to the dockside service to avoid ‘shock’ injury, should the cord (electrically hot) be dropped into the water accidentally.

Allow slack in power cord to allow for boat/dock movement – this prevents strain on plugs (and arcing). Move cord off pathways; protect from foot traffic; keep out of the water. Coil excess.

Turn ON the DOCKSIDE MASTER switch on the panel. The VOLTMETER on the AC panel should read 110 to 120-volts.

WARNING – Check the electrical polarity indicator. A “red” light indicates reverse polarity and is dangerous – DO NOT engage the DOCKSIDE MASTER switch. Turn OFF the shore power source, disconnect cord, and seek help from marina management.

Turn ON individual AC component breakers only as needed. If the dockside power capacity is exceeded, the breaker will trip. Turn off excess AC devices before resetting the breaker.

2.2.2.1.1 Service Line Options

Normally, LINE 2 and LINE 3 on the Pilothouse AC Panel are operating in “parallel” mode with LINE 1. “Parallel mode” is setup when LINE 2 selector switch points to ‘Line 1-2’ and LINE 3 Selector switch points to ‘Line 1-3’. In this setup, the MASTER breakers for Lines 2 and 3 are disabled.

NOTE – The most common use and the easiest method is using “parallel” mode, delivering 30-A/50-A.

In “parallel” mode, total current being used is the sum of the three AMMETER readings. If the total current exceeds the capacity of shore power service, the LINE1 DOCKSIDE MASTER breaker will trip OFF. Turn off AC components to remain within the service capacity

Only if more shore power service is needed (and available), LINE 2 and/or LINE 3 can be switched to “normal” mode and their respective cord connected to shore power sources to deliver power in their separate AC circuits. In “normal” mode, the current is read on each line’s AMMETER.

2.2.3 Generator Operation

The *Westerbeke* diesel GENERATOR is located beneath the Lazarette center hatch. During normal engine checks, ensure the generator SEACOCK is OPEN and the raw water strainer is free of debris. If used several days, check the oil level dipstick and coolant level inside the portside cockpit locker.

The GENERATOR CONTROL is located on the Pilothouse AC panel. To start the generator, rotate the GENERATOR CONTROL to RUN position. Press and hold the PRE-HEAT/OVERRIDE switch for at least 15-seconds. Then, while pressing the pre-heat switch, rotate the CONTROL knob to START position. Return control knob to RUN position after generator starts. Release the PRE-HEAT switch.

Do not operate starter for more than 15 seconds. Wait 30 seconds, then repeat startup steps.

NOTE – If the starter motor does not crank, check the emergency ‘STOP’ toggle switch (silver-color) located on the power control box at top, aft of generator. Remove the top panel. Set toggle position to ‘RUN’. The switch can become toggled OFF accidentally during maintenance.

To set up AC panel for generator, turn OFF the Line 1 MASTER switch. Slide the breaker lockout protector upward to uncover GENERATOR MASTER switch. Turn ON the Line 1 GENERATOR MASTER switch.

Turn ON the GENERATOR BREAKER switch. The green light will indicate power is available.

Observe reading of 110 to 120 volts on the AC voltage meter.

NOTE -- If power is not indicated, recheck the GENERATOR AC MASTER Switch. If okay, then check the GENERATOR BREAKER on the generator. Remove top panel; look for switch (double toggle white color) at aft end. Check switch position is ON (Up). Toggle the switch OFF, then ON (Up). The switch can trip OFF when output more than 50A or toggled during maintenance.

Turn ON AC device breakers as desired.

Monitor generator Oil Pressure, Water Temperature, and Voltage on the AC panel. The generator will shut down automatically whenever oil pressure and temperature conditions are unsatisfactory.

The Fuel Management Board is setup initially to supply fuel from the starboard fuel tank; however, the fuel source is selectable. The levers should be matched to 'return fuel' to the source tank. Otherwise, fuel would be transferred from one tank to the other, may overflow the tank, and will discharge fuel overboard through the tank vent.

The GENERATOR STARTING BATTERY switch is in the aft cabinet port side of the Salon.

2.2.4 Inverter Power

The INVERTER provides AC power when Shore Power or Generator is not connected.

Two switches on the AC and DC panels control inverter operation.

Panel	Panel Switch Name	Purpose	Switch
DC	Inverter DC Supply	Enabled Inverter Power from House Battery Bank	ON
AC Dual	Inverter AC Supply	Connects inverter to 120-V source	ON

The INVERTER is beneath the salon seat, access is typically only needed for troubleshooting.

The inverter provides power to the following 120-v AC circuits and devices indicated.

AC Panel Switch Device	AC LINE	Inverter?	Key Devices/Notes
Water Heater	LINE 1	NO	
Trash Compacter	LINE 1	NO	
Battery Charger	LINE 1	NO	
Salon/Pilothouse Receptacles	LINE 1	YES	
Galley Receptacles	LINE 1	YES	
Ice Maker	LINE 1	YES	
Bridge Refrigerator	LINE 1	N/A	
Electric Range	LINE 2	NO	
Galley Refrigerator	LINE 2	YES	
Mstr SR/Head Receptacles	LINE 2	YES	
Aft SR/Head Receptacles	LINE 2	YES	
Microwave	LINE 2	YES	
Central Vacuum	LINE 2	NO	
Washer/Dryer	LINE 2	NO	
Engine Heater Port	LINE 2	NO	
Engine Heater Starboard	LINE 2	NO	
Air Conditioner/Salon	LINE 3	NO	
Air Conditioner/Pilot House	LINE 3	NO	
Air Conditioner/Staterooms	LINE 3	NO	
Air Conditioner Relay	LINE 3	NO	
Heater #1 (forward stateroom)	LINE 3	NO	
Heater #2 (passageway)	LINE 3	NO	
Heater #3 (salon)	LINE 3	NO	
Heater #4 (pilothouse)	LINE 3	NO	
Bow Thruster Charger	LINE 3	NO	

WARNING -- Take precautions to avoid contacting DC high current.

3 SANITATION SYSTEM

Use single ply MARINE TISSUE only in the marine heads (toilets) – this is very important. Marine tissue dissolves. “Household” tissue does not dissolve, and it will clog pipes, valves, and pumps. An inoperable head is inconvenient for everyone, as well as a resulting in a nasty, costly repair.

Train crew and children to use the toilets. Monitor activity to ensure NO foreign objects (waste items, paper towels, facial tissue, feminine hygiene, and napkins) cannot go into the toilets – use waste receptacle!

Monitor the holding tank level gauge by the stairs (TankWatch), take immediate steps to remove sewage in the holding tank before it gets completely full - it will back up if you don't take proactive action and no toilets will be usable!

3.1 Marine Toilets

Turn ON the two TOILET switches and the WATER PRESSURE switch on the DC panel.

Use the switches to add water and flush. If lots of TP is used, flush multiple times!

WARNING – *‘Never ever’ put paper towels, facial tissue, tampons, sanitary napkins, household toilet paper, or food scraps into the toilet. Use ONLY marine dissolving single ply toilet paper provided. If efforts fail to restore normal operation, the toilet system will need service - that means, opening the toilet pump and pipes -- a nasty and expensive job. The usual cause is disregard of the ‘never ever’ rule.*

Common usage issues are described below:

If the bowl fails to drain during flush, the pipe opening may be clogged. This opening is very small to protect the system. Turn OFF the TOILET and the WATER PRESSURE switches at the DC panel. Clear debris (poop and toilet paper) from opening. Turn ON the switches and re-flush.

If the bowl fails to fill with water after flushing, check the WATER PRESSURE switch on DC Panel and the status of the water tank. If current water tank is empty, switch to alternate water tank.

3.2 Sanitation Holding Tank

The SANITATION HOLDING TANK capacity is 48 gallons.

Note the sewage production rate of the crewmembers – this is about 1 gallon per toilet flush. Take steps to dispose of sewage frequently. An overfilled tank may break a hose, clog the tank vent, or burst a seal. The result will be indescribable catastrophe and costly repair.

Sanitation Tank Warning

The HOLDING TANK MONITOR is located on the wall by the stairs to the pilot house. Turn ON the HOLDING TANK MONITOR switch on the DC Panel.

WARNING – When the red' light is ON, the tank is FULL and you can no longer use either head. Take immediate steps to empty the tank (see below). Raw sewage may burst through the sensor at the top of tank (or elsewhere), flow into the bilge, release a nasty/unforgettable odor, and result in a hefty cleanup bill.

Do not rely on the 'red' warning light. If there has been much usage, or if in doubt, check the holding tank waste level in the engine compartment starboard side, with a flashlight. The holding tank indicator light will normally turn ON when within 4" from top of tank.

3.2.1 Marine Pump Out

Marine pump-out kiosks are located at fuel docks and sanitation barges. Each provides an opportunity to empty the holding tank. Follow the instructions at the kiosk. In many marinas, "pump-out" services with clever names, e.g., "Fecal Freak", "Sanitation Offloading Solutions (SOS)", can be called via phone and will come to the boat.

Remove the WASTE CAP located on starboard side.

CAUTION -- Check deck fitting cap to ensure it says "WASTE" -- not the "DIESEL" cap.

Most kiosk hoses have a rubber adapter to seal the tank opening. In necessary, attach an adaptor and connect to hose. Turn ON machine, then OPEN the lever on pump handle. CLOSE lever when finished. If water is available, re-fill the sanitation tank partially, and repeat pump out. This helps reduce odors.

Replace the WASTE CAP. Wash down the area. Wash hands.

3.2.2 Overboard Discharge

CAUTION – Be familiar with laws within cruising area, concerning discharging sewage overboard. Puget Sound, including San Juan Islands is a NO Discharge Zone.

To discharge, turn ON the HOLDING TANK DISCHARGE switch on the Pilothouse DC Panel. Depress both MACERATOR ROCKER SWITCHES together on the Pilothouse DC Panel. Watch to the discharge from starboard midship out of the pilot house door and observe discharge until almost empty - do not over pump! Gurgling indicates the tank is empty.

Do not run macerator longer than necessary.

NOTE – A spare macerator pump is stowed in pilothouse, under port side seat.

3.2.3 Sewage Tank Treatment

Biological treatment (*NoFlex Digester*) is available in each head cabinet. Flush granules down each toilet to help neutralize odor (hydrogen sulfide) and to liquefy holding tank sludge for easier pump out. Dosage is 1-tablespoon every day if the head is used. Flush sufficient water to reach the holding tank.



4 WATER SYSTEMS

4.1 Fresh Water

Two water tanks (Tank #1, ~130-gal) (Tank #2, ~50-gal) deliver fresh water to faucets, showers, and toilets. Use tank #1 as the main tank and keep it replenished. Consider tank #2 as a reserve.

4.1.1 Fresh Water Pressure

The FRESH WATER PUMP is in the forward engine room compartment and maintains water pressure automatically. Turn ON the WATER PRESSURE switch on the Pilothouse DC Panel.

If the FRESH WATER PUMP runs after faucets are closed, check the tank monitor on the DC panel to see whether the source tank (normally tanks #1) is empty (see switching tanks below)

NOTE – A spare fresh water pump is stowed in pilothouse, under port side seat. Turn OFF power at DC Panel. Disconnect wires, mounts, and connectors. Reconnect wires properly.

4.1.2 Fresh Water Tanks

Press the WATER TANK rocker switch on the DC Electrical Panel to inspect the level of each tank.

When a tank is empty, the FRESH WATER PUMP in the forward engine room runs continuously. The TANK SELECTOR VALVE is in the forward engine room portside. Rotate valve to a full tank.

To refill the tanks, open the WATER FILL CAPS on the Foredeck. Remove stale or rusty water from hose before placing nozzle into the tank opening. Avoid flushing deck debris into the tank opening.

NOTE – Tank #2 is more difficult to refill, due to slower venting -- fill slowly, allowing air to escape.

4.1.3 Water Heater

The WATER HEATER (*Seaward S-1800*) capacity is 20-gallons. Hot water is produced by:

- AC Power – Turn ON the WATER HEATER switch on the Pilothouse AC Panel
- Engine Heat – Set control unit to ENGINE HEAT while underway

The heater consumes power -- 1500W AC (12.5A). Reduce other AC devices on 50A shore power.

CAUTION – Turn OFF water heater if water tanks are empty to avoid damage to heating elements.

4.1.4 Cockpit Fresh Water Shower

A FRESH WATER SHOWER is located in the Cockpit. The shower provides hot and cold water. Ensure the faucet valves are turned OFF or water will drain into the engine compartment.

4.1.5 Fresh Water Washdown Hose

A FRESH WATER WASHDOWN hose is located in the Cockpit starboard cabinet. Use this to wash food, equipment, shoes, and clothing. Ensure the hose nozzle and faucet are OFF when not used.

4.2 Wastewater (Gray Water)

4.2.1 Sinks

Wastewater from galley and salon sinks is gravity-drained overboard.

4.2.2 Showers

A SUMP PUMP, located in the Passageway starboard beneath forward shower, collects wastewater from Forward Head shower and Aft and Forward Head sinks, and pumps the water overboard. The pump cycles on/off automatically.

The aft shower has a manually operated shower sump. Turn on shower sump on the DC breaker panel and the red switch in the head. Turn off at both locations after shower.



NOTE – If SUMP PUMP stays ON, debris may have built up on the sensor switch. Open the box lid, lift out the cylinder-shaped strainer. Wipe scum from switch and pump. Replace strainer and lid.

CAUTION – If SUMP PUMP fails or you forget to turn it on, wastewater will soak the passageway. Immediately, check:

- The TUB-SINK breaker button at Pilothouse DC Panel – push-in
- To right of pump box, the local 10A fuse holder – if fuse glows red, replace with spare
- The switch or pump -- may need replacement.

4.3 Raw Water

'Raw water' depends on the body of water the boat is floating – freshwater or saltwater. RAW WATER WASHDOWNS are available at 2 locations.

Location	Spigot Location
Bow	Inside Foredeck Locker
Cockpit	Inside Cockpit Cabinet Portside

Turn ON the WASHDOWN switch at the Pilothouse DC Panel. When not in use, turn OFF the switch to remove load on the water pump.

4.4 Bilge

Three automatic and three manual bilge pumps, in pairs, are in the main engine room (AFT), forward engine room (MID), and passageway (FORWARD). Turn ON manual BILGE pumps at DC Electrical panel to operate manual pumps from pilothouse or the bridge. Automatic pumps are always ON (connected directly to house battery) as the first line of defense against flooding.

CAUTION – If RED light displays at either panel, turn ON the paired 'manual' switch immediately to start removal of bilge water. Investigate the cause! Best case, sloshing bilge water tripped a float sensor, causing false cycle. Worst case, the boat is taking on water!

5 GALLEY-SALON

5.1 Galleyware

Utensils are stowed in the Galley portside cabinets and drawers.

Glasses, mugs, dishes are stowed in the china cabinet to the right of the stairs

Pots and skillets are stowed in the sliding drawer beneath the refrigerator.

Pans and oven accessories are stowed in the cabinet beneath the oven.

Small kitchen appliances and cleanup items are stowed beneath the galley sink.

CAUTION – When underway, especially in rough seas, push-in (secure) all cabinet and drawer LATCHES to avoid spilling contents from cabinets.

5.2 Sink Countertop

The countertops are plastic and cannot take heat or knife cuts! Protect countertops and sinks from damage. Use the cutting boards and trivets provided.

Avoid splashes. Keep countertops dry. Remove water puddled next to teak backsplash behind the faucet. Prevent water from flowing around the right of the backsplash onto the salon carpet.

5.3 Range and Oven

The boat is equipped with a 3-burner *Princess* Range and Oven. Turn ON the ELECTRIC RANGE switch at the Pilothouse AC panel.

Lift the entire cook top cover to a vertical position, then let it slide down naturally into the holder slot, then fold the top portion to form shelf.

WARNING – Do not force open or force closure of cook top cover. Ensure the cover is vertical and seated fully into the slot to disengage the ‘safety’ device; otherwise, the range will not operate. When closing, lift the metal cover vertically out of the slot, before attempting to fold flat.

During meal preparation, it may be necessary to turn OFF non-essential AC devices temporarily (e.g., water heater, battery charger) to have sufficient power for galley appliances (including microwave and plug-ins). This will avoid tripping the main AC Circuit Breaker. The range unit itself will use up to 20-amps. Read power on Ammeter 2.

Top burners offer different maximum cooking temperatures. The LEFT and RIGHT burners are ‘High’ 1100-watt burners. The REAR burner is a ‘Medium’ 550-watt burner.

NOTE – During cleaning, the burner elements may become mixed and not match controls. Watt values are stamped on the frame of each element.

The RANGE TOGGLE switch enables burners and oven.

- Flipping switch to 'Top Burners' enables ALL top burners.
- Flipping switch to 'Oven' enables the OVEN, the REAR top burner, and the RIGHT top burner. The LEFT burner will be disabled.

Whenever pre-heating OVEN, allow sufficient time to reach its full, stable temperature, else the upper element may remain on while cooking (like its broiling).

NOTE. To avoid scorching the bottom of baked goods, place baked goods on top of a thermal-insulating baking sheet to shield from bottom heating element. It also may be necessary to cover with foil loosely to shield from top broiling/heating element.

Lights beneath the Microwave can be used to illuminate the cook top surface. Turn ON the MICROWAVE switch at Pilothouse AC panel. Press 'Light' on the Microwave panel to 'Bright' or 'Night'.

Use the Microwave fan to vent odors, smoke, and steam overboard. Turn ON the MICROWAVE switch at Pilothouse AC panel. Press 'Fan' on the Microwave panel to 'High' or 'Low'.

5.4 Microwave

The microwave is a *GE Spacemaker* unit. Turn ON the MICROWAVE switch at the Pilothouse AC Panel.

The microwave uses a large amount of power (up to 15 amps). It may be necessary to turn off other AC devices to avoid tripping the AC Circuit Breaker. Read power consumption on Ammeter 2.

5.5 Refrigeration

5.5.1 Galley Refrigerator-Freezer

The Galley REFRIGERATOR-FREEZER is a *Norcold* 6.3-cu-ft model. It operates on DC power only

- Turn ON the REFRIGERATOR switch on the Pilothouse DC Panel – normally ON

5.5.2 Bridge Refrigerator

The Bridge REFRIGERATOR is a *Isopherm* 2.7-cu-ft model. It operates on DC power and switches to AC power automatically when shore or generator power is available (dual mode).

- Turn ON the ENTERTAINMENT CENTER switch on the Pilothouse DC Panel
- Turn ON the BRIDGE REFRIGERATOR switch on the Pilothouse AC Panel
- Turn ON the local power switch on unit and adjust the temperature

5.6 Coffee Maker

The coffee maker is located under the bar sink. It has a thermal carafe and no hot plate.

5.7 Blender

The blender components are located under the bar sink.

5.8 Trash Compactor

To open the bin, press on foot switch at bottom.

The Hefty big black bags are for the compactor.

Turn ON the TRASH COMPACTOR on the Pilothouse AC Panel. Follow directions on compactor panel. The drawer opens using your foot.

5.9 Ice Maker

The ICE MAKER is located in the Salon starboard. Turn ON the ICE MAKER switch on the Pilothouse AC Panel. The local power switch is reached through finger hole below the door.

Push the ice sensor bar-switch to downward position for continuous ice-making.

The Ice Maker is connected to the Inverter system, so will continue to make ice even when boat is not connected to shore power or generator.

NOTE - Ensure plastic bin remains in icemaker. Should the ice maker be turned OFF, thawing ice will soak the carpet.

5.10 Cooler

An igloo Cooler is located in the cockpit. It is molded, durable, and highly insulated. It doubles as an outdoor bench seat.

The cooler is useful for extra beverages and large perishable food. Replenish ice from the Ice Maker.

5.11 Salon Dining Table

To expand the dining table, slide the 4 lateral support bars outward and flip the table panels onto the supports. Rotate the table to fit the seating area around the sofa.

To change the height of the table, loosen the adjustment knob on the pedestal. Use two persons to lift/jiggle the tabletop upward – it is spring-assisted. Do not separate table from the pedestal. Retighten adjustment knob. To lower table, reverse procedure.

Use the 2 salon chairs for additional table seating.

6 HEATING AND COOLING

There are three systems for heating, and one for cooling.

System	Heating	Cooling
Diesel Furnace	YES	
Cabin Electric	YES	
Marine Reverse Cycle	YES	YES

The *Webasto* DIESEL FURNACE system, rated at 45,000 Btu, uses AC (via shore power. Generator or Inverter) & DC power and diesel fuel. It can be used whenever heat is needed, especially when at anchor. The system has 7 fan heater units, and will take time to heat the cabin fully using the thermostats.

The *King* ELECTRIC CABIN HEATERS are AC-powered and are available when the boat is connected to Shore Power or to Generator. The 4 units provide heating in local zones. These use a lot of power, manage your power consumption at the AC panel.

The *Marine Air Reverse Cycle* system is available when connected to Shore Power or Generator. The 3 units provide ‘heating’ or ‘cooling’ automatically, depending on thermostat setting for each unit. The system can supplement heating on very cold days, or as a quick warmer while the Diesel Furnace ramps up.

It will be necessary to limit the use of cabin heaters or reverse cycle units to remain within the AC service capacity of Shore Power sources. When Generator is used, capacity is less of an issue.

5.1 Diesel-Furnace Heating System

WARNING – Do not to put a rafted boat, the dinghy, fenders, towels, or body parts over the exhaust port on the portside, when using. The exhaust is **VERY HOT** and will cause injury and damage.

Turn ON the SYSTEM HEAT switch on the panel above the Salon china cabinet. Allow about 15 minutes for system to reach operating-temperature --the fan-heaters will then turn ON automatically.

Seven *Webasto* fan-heater units circulate warm air in four comfort zones

Comfort Zone	Thermostat/Control Location
Salon, Galley	Salon starboard by stairs
Aft Stateroom, Passageway, Aft Head	Aft Stateroom
Forward Stateroom, Mid Stateroom, Forward Head	Forward Stateroom Port
Pilothouse	Pilothouse by stairs to bridge

At each thermostat (black digital), note the ‘actual’ room temperature. Press the UP or DOWN button to select the ‘desired’ temperature. Fan-heaters operate with off high and low settings in each room.

When the System Heat switch is turned OFF, the boiler unit and pump will operate for a short period of time to cool-down the system before shutting down.

5.2 Cabin Electric Heating System

Four *King* electric cabin heaters provide zone-controlled heating. A knobbed rotary thermostat (beige-colored) controls each heater.

The cabin heaters will provide sufficient warmth in mild weather. Either AC-shore power or AC-generator power must be available. The most convenient use is when docked in a marina.

WARNING – Do not to block a heating unit screen or place heat-sensitive objects nearby, which may become damaged.

Heater Location	AC Panel Switch Name	Thermostat Location
Forward State Room	HEATER FWD SR	Forward Stateroom portside
Passageway	HEATER PASSAGEWAY	Passageway portside
Salon portside	HEATER SALON	Salon starboard side
Pilothouse portside	HEATER PILOTHOUSE	Bridge ladder amidships

Turn ON the desired HEATER on the Pilothouse AC Panel. At the thermostat, rotate knob to desired setting. It may be necessary to limit use of other AC devices to avoid overloading circuit.

5.3 Marine Reverse-Cycle Heating-Cooling System

Three *Marine Air Reverse Cycle Heating-Cooling* units provide heating or cooling depending upon temperature setting at the *Passport II* digital control thermostats. Each unit works independently.

Heat Zone	AC Panel Switch Name	Thermostat Location
Salon, Galley	AIR CONDITIONER 1	Galley Range starboard
Pilothouse	AIR CONDITIONER 2	Pilothouse Helm starboard
Forward SR, Mid SR, Aft SR	AIR CONDITIONER 3	Forward Stateroom portside

Normally, the AIR CONDITIONER RELAY switch is ON at the Pilothouse AC Panel. When any unit is operating, raw water is discharged from 3 portside ports (one forward, 2 amidships). Check discharge periodically – the intake may become blocked by seaweed.

Turn ON the AIR CONDITIONER switch on the Pilothouse AC Panel for the zone desired.

At the selected zone thermostat, press the 'ON/OFF' symbol on the *Passport* digital control panel to turn ON the control (panel will light up). Press the 'thermometer' symbols to select the 'desired' temperature. The system will heat or cool to the 'desired temperature'. After a few minutes, feel the airflow at the vent. If airflow temperature is not type expected, adjust the temperature setting.

6 ELECTRONICS

Electronic components are controlled from the Pilothouse DC Panel (**Electronics, Auto Pilot, Depth Sounder, & Radar** circuit breakers). Local Power switches may be found on each component.

6.1 VHF Communication

The boat has 2 mounted VHF Radios, and 1 AIS TRANSCEIVER. VHF radio is the primary means for hailing boats or getting emergency assistance. Monitor Channel 16. Set radios to scan ‘weather’ or ‘working’ channels as desired. The AIS transceiver broadcasts the boat’s name, position, course, and speed automatically, and it receives name, position, course, and speed information from nearby AIS-equipped vessels.

Common VHF Marine Channels for Pleasure Vessels in Washington, Canada, and Alaska:

Channel	Purpose and Use	Restrictions
16	International Distress and Calling. Hailing, distress, urgency	None
6	Intership Safety. Ship-to-ship safety communications. SAR Opns	
22A	US Coast Guard Liaison. Establish communication on Channel 16 first	
70	Digital Selective Calling Only for distress	No voice
9	Intership & Ship-Shore ALL Vessels. Pleasure Vessel Calling US	Calling US Only
67	Intership Only for ALL Vessels. Also Ship-Shore Canada	US Puget Sound
68	Intership & Ship-Shore for Pleasure Vessels only	
69	Intership & Ship-Shore for Pleasure Vessels only	
71	Intership & Ship-Shore for Pleasure Vessels only. US Only	Not in Canada
72	Intership. Ship-Shore US Puget Sound Only	No S-S Canada
73	Intership & Ship-Shore ALL Vessels. Canada Only	Not in US
78A	Intership & Ship-Shore for Pleasure Vessels only. US Only	Not in Canada
13	Vessel Bridge to Vessel Bridge. Also locks, bridges, except Seattle	Low Power
11	Vessel Traffic System (VTS) – Victoria, Haro Strait, Turn Pt, Boundary Strait	
5A	Vessel Traffic System (VTS) – Northern Puget Sound	
14	Vessel Traffic System (VTS) – Southern Puget Sound	

NOTE -- The VHF radios are programmed with USA, International, and Canadian channels. The AIS transceiver is programmed with MMSI Code 303505000 to identify ‘Chinook’.

6.1.1 Pilothouse VHF Radio

The pilothouse VHF radio is located above the helm

6.1.2 Bridge VHF Radio

The bridge VHF radio is located in the portside cabinet and has an additional mike catch on the dash to use while underway

6.2 Depth Sounding

The boat has 2 sonar sounding systems: primary and secondary. The primary sounder displays on the Raymarine MFD display. In addition, the Lowrance fish finder is located in the Pilothouse.

6.3 Multi-Function Displays (MFD)

Two *Raymarine* MULTIFUNCTION DISPLAYS (MFD) integrate control and information display of the boat’s sensors and navigation systems.

NOTE – Do not wipe with dry cloth, paper towel, solution, polish, or spray. Wipe smears gently with a clean micro fiber cleaning cloth.

To startup the MFDs, turn ON each unit in the **sequence** below:

- 1) **Pilothouse.** Turn ON ELECTRONICS, AUTOPILOT, & DEPTH SOUNDER switches on the Pilothouse panel. Then, press the power button and allow system to boot up
- 2) **Bridge.** This is a dependent or slave of the unite in the Pilothouse. The unit downstairs must be on for this unit to function properly. To turn it on, follow the same process.

6.3.1 Digital Radar Sensor

The RADAR sensor is a *Raymarine magnum*, 4KW rated 72-nautical miles

6.3.2 Chart Plotter

The Raymarine C127 & C95 uses *Navionics+* (*United States and Canada*) cartography.

6.4 Autopilot

The Autohelm AUTOPILOT has a unit at each helm. They are interactive, so controlling one commands the other. This unit is not integrated with the GPS system.

WARNING – ALWAYS *know* the status of the autopilot – is it on ‘**auto**’(enabled)? or is it on ‘**standby**’(disabled)? *Turning the helm wheel to avoid debris or traffic WILL NOT disengage ‘auto’ -- the boat will maintain course.* Press to ‘**standby**’ button to disable ‘**auto**’.

6.5 USB Charging Ports

USB ports are located at 120-v receptacles for charging electronic devices. Also, USB charger adapters may be used in any 120-v or 12-v receptacle

Outlets	Location	Panel Switch Name
2	Pilothouse port side electronics panel	
2	Integrated with the AC outlet by the stairs to PH	
2	Master stateroom port side near AC outlet	AC Staterooms Switch
2	Bridge in the electronics cabinet	

ENTERTAINMENT SYSTEMS

Chinook has a rechargeable blue tooth speaker which is kept in the TV cabinet

Chinook is having the Entertainment Systems Updated 4-2-24

The following instructions are for the current system that is not working properly.

6.6 Salon Video System

The Salon Video system includes an **LED TV, Direct TV Digital Satellite Receiver, DVD Player, and 2 remote controllers:** 1) Direct TV, and 2) Sony DVD. Stow cabinet doors inward.

Turn ON the GALLEY RECEPTACLES switch on the Pilothouse AC Panel.

- **DVD Player**
 - On Direct TV remote control, set SLIDE button to Direct TV icon (left position)
 - Press DTV & TV power ON button, to turn ON TV.
 - If other than DVD is displayed on TV screen, press TV Input button on remote control, repeating until 'Input1' is displayed. The DVD Player is connected to 'Input1'.
 - On remote control, SLIDE button to 'AV1' to enable DVD control
 - Load a DVD video disk or a CD music disk into the tray, press PLAY function

Turn ON the DC Outlets switch at the Pilothouse DC Panel. Operate **Power, Volume, and Selection** controls on the unit.

- **Mode** – Select between Radio, USB, Bluetooth, or AUX
- **AM/FM** – Press TUNE << >> to seek previous or next strong station
- **USB** – Insert a USB device with MP3 files. Press TUNE << >> to select track
- **Bluetooth** – Enable Bluetooth on iPhone or Android device for pairing. On audio receiver, select Mode to Bluetooth (initial display 'NotPair'). Complete pairing to device name 'Dual Media Player' - Bluetooth PIN is '1234' or '0000'. Receiver will display 'BT On' or 'BT Music'.

ANCHORING & DOCKING

The basic anchoring technique consists of selecting the anchorage location, bottom, and depth; dropping anchor; releasing sufficient 'scope' for the rode; backing up slowly setting the anchor; and assessing how the vessel will drift/rotate. Review anchoring techniques in the *Chapman's Piloting Book*.

6.7 Working Anchor

The WORKING ANCHOR is a Rocna Vulcan anchor mounted on the bow roller. It is attached to **350-ft of 3/8" 'Hi-Test' chain rode** and backed up by **100-ft of 5/8" nylon rode**, via a 360-degree swivel shackle. The chain is marked with a Red (orange)/White/Blue system. 50 ft, orange, 100 ft white, 150 blue, 2nd orange 200, 2nd white 250, 2nd blue 300, 3rd orange 350. After 350' the 5/8 rode is connected, you should not pay out more than 50' of the rode, for a total available working total of 400'.

The chain/rode passes through the HAUSE PIPE to the ANCHOR RODE LOCKER, located behind the mirror in Forward Stateroom. FOOT SWITCHES to the *Muir Cougar* WINDLASS, control the deployment/retrieval of the rode.

6.7.1 Anchor Deployment

Before using the WINDLASS, free the LOCKING CAMS on the winch sprocket. First, lift and free the lever of the aft cam - rotate it backward to the deck. Then, lift the cam on the forward side and rotate it to the deck. The winch sprocket will now rotate freely for power use.

NOTE – Both cams are used if manual retrieval of the rode is necessary. Use the WINCH HANDLE on the lever to aid cranking.

Normally, the clutch on the drum has sufficient drag – if necessary to adjust, use the WINCH CRANK in the forward deck locker to adjust the drag.

Turn ON the WINDLASS POWER switch in the Pilothouse left side – green light will indicate power. If no power, check the WINDLASS MASTER BREAKER Switch in the Salon Aft Battery Switch Panel. At foredeck, uncover the HAWSE PIPE. Uncover the FOOT SWITCHES; note UP/DOWN arrows.

Maneuver the boat to the selected anchor point. Note the water depth on sounder.

Tap gently on the DOWN foot switch and allow the anchor off the bow roller slowly. Maintain tension on rode – do not drop or swing anchor.

CAUTION – Ensure the chain runs freely through hawse pipe. Tangles can trip the 'windlass circuit breaker' and freeze the operation. To free a stoppage, go to forward Stateroom, and lift the mirrored panel cover. Clear tangle. At the Salon Aft Battery Panel, squeeze-in the slide on the windlass circuit breaker. Re-check green light for WINDLASS POWER at Pilothouse Electric panel for power.

Deploy ANCHOR using the 'snub' and 'feel' technique. At the anchor point, deploy anchor to the bottom. As boat backs away slowly, release rode at rate that maintains a light tension. Back the boat at idle to set the anchor. Align shoreline reference points and observe for anchor drag. Redo procedure if a set is not achieved.

Monitor the boat's position to ensure the anchor remains set. With the variety of bottoms in Pacific Northwest waters, this is especially important, especially in strong wind, abrupt change in wind direction, or directional change of water current.

Consider setting a minimum of 4:1 scope. To achieve a 4:1 scope in 25-ft water depth, release 120-ft rode [(25-ft depth + 5-ft freeboard), multiplied by 4]. Compensate for depth changes during the tidal cycle and for holding strength of the bottom (mud, sand, gravel). Consider the swing of nearby boats. In general, the greater the scope, the greater the holding power (especially in unsettled weather). A common fault is too little scope.

Rode	Length (Feet)	color	Chain Mark
Chain	Anchor at surface	none	
Chain	50	orange	
Chain	100	white	
Chain	150	blue	
Chain	200	2 nd orange	
Chain	250	2 nd white	
Chain	300	2 nd blue	
Chain	350	3 rd orange	
Rope	350	Start of rope	Pay out only 50ft more

For overnight stay, use the anchor rode snubber for a safe hookup located in the wet locker by the windlass. Do not rely on windlass cams to prevent the sprocket from free spooling - it can handle the load!

6.7.2 Anchor Rode Snubber

The anchor bridle is used to secure the rode and to reduce jarring and chain noise. The rig is in the Bow Foredeck locker. It includes a 5/16" chain hook, a Shockles Line Snubber, and 20-ft 1/2" nylon line.

Connect to the anchor chain and to each of the forward cleats.

Anchor Retrieval

The windlass can use 100-amps DC power; therefore, operate the windlass only with the engines running to supplement power and ensure control of the boat.

Turn ON the WINDLASS POWER SWITCH at the Pilothouse AC Panel. Turn ON the WASHDOWN switch on the DC Panel.

Free the LOCKING CAMS on the winch sprocket. Uncover HAUSE PIPE and ensure rode will pass freely from the winch sprocket to the chain locker.

Remove the SNUBBER rig. Use foot controls to loosen if necessary

Retrieve the washdown hose from the FOREDECK LOCKER and prepare to wash the rode and anchor as they are retrieved.

Move the boat slowly toward the anchor point, placing slack in the rode. As the boat moves forward, press the UP-pedal switch to retrieve the slack rode, rather than pulling on the rode. Continue to retrieve rode until above the anchor point.

As anchor breaks free from bottom, hold the boat in position, and continue to retrieve rode until anchor is visible. Before the anchor breaks the surface, retrieve slowly to allow anchor to dangle vertically and to avoid striking the boat.

Tap the UP-pedal switch in tiny bursts as the anchor rises. Wash the anchor as necessary. Then rotate and nudge anchor into stowage position on the bow roller; being very careful not to stress rode as anchor lays on pulpit. Connect a flexible tie-cord between the anchor and the windlass cleat to snug anchor securely.

Close the covers on the FOOT PEDAL CONTROLS. Turn OFF the WINDLASS power switch at the AC Panel. Turn OFF and the WASHDOWN switch on the DC panel.

6.8 Spare Anchor

The SPARE ANCHOR is a danforth-Type anchor weighing. It may be used in special anchoring situations, such as a “kedge” to limit swinging, to anchor bow and stern, to stabilize or pull off grounding, or as replacement spare for the working Anchor. It is located beneath the Lazarette port hatch.

CAUTION -- Remove unit from compartment carefully to avoid damage to hydraulic and electrical lines nearby.

6.9 Bow Thruster

The BOW THRUSTER (*Sidepower SE 120/215T*, 24-volt model) is located beneath the forward stateroom bunk. It may be used for positioning the bow during docking or maneuvering in tight spaces.

The main THRUSTER BATTERY SWITCH located on the port electronics panel in the pilothouse. There is an emergency switch (clown nose) under the master mattress to disconnect thruster in case of emergency malfunction.

Operate the thruster from either the pilothouse or bridge. To activate the control joystick, push both ON buttons on the switch simultaneously - the indicator light will turn orange. Move the joystick in the direction port or starboard. The momentum will carry the bow. Turn OFF when not in use. Use the thruster in small bursts, continual usage will overheat the motor and the unit will switch off until cooled down.

CAUTION -- The best practice is to plan the docking maneuver using good docking technique, before committing the bow thruster. The thruster is not intended for prolonged use in current or wind. The electromotor has a thermal switch to shutdown thruster if it overheats, and it will re-engage only when cooled sufficiently.

The thruster will draw objects into its tunnel. Be aware of dock lines or floating debris.

6.10 Mooring Buoy

Typically, mooring buoys are topped with a metal triangle and/or ring. A printed plate indicates the capacity or restriction. Before using, determine whether buoy is “public” and its safety limit. Many buoys in the islands are not for boats of this size and mass. Check before hooking up!

Oftentimes, the metal ring on the buoy can be lifted to attach it to a mooring line. The connected chain is usually heavy, so a strong crewmember should assist. An alternative is to attach a mooring line from the port or starboard side (shorter reach), then guide the mooring line to bow.

The MOORING HOOK is another way to make the initial connection to the ring on a buoy. The hook rig (slender stainless steel frame with attached white line) is located in the bow foredeck locker. Lead the loop end of the hook line from below the pulpit opening and attach to cleat to prevent loss of rig overboard. Grab boat pole and extend. Place hook onto the end, applying slight pull-back pressure on the line to keep the hook on the pole tip. Extend the rig toward the buoy over the boat rail.

The helmsman should maneuver from downwind or down current. It is helpful to have a free crewmember point his/her arm to the buoy continuously. The body language will tell the helmsman the buoy's location relative to the bow as it disappears from his view.

As the buoy, crewmember will insert the hook tip into the metal ring, and set the hook. The mooring hook is adequate for short stay. For overnight, thread another mooring line through the ring and form a bridle between the bow cleats. It may be necessary to assist using dinghy.

To retrieve the hook, let mooring line and hook dangle slack. Poke the boat pole tip into the outer bend of hook and lift clear of ring.

6.11 Stern Tie

It may become necessary to secure the boat's stern to shore when the anchorage is crowded or when swing space is limited.

A spool with 400-ft lightweight propylene line (yellow/red) is mounted on the cockpit ladder.

In anchorages where stern-tie is common, metal rings (most with chain leaders) will be embedded on the shoreline. To setup the stern-tie for 'easy retrieval', run the free-end of stern line to shore with the dinghy, thread the free end through metal ring, and return the free end to the boat, doubling the line.

Tie off both line sections to the same transom cleat. If tied apart, the boat's movement will pull line back and forth through the shore ring and may 'saw' the line. When leaving, untie the free-end and retrieve the line by pulling it through the ring.

7 DINGHY

The DINGHY is an Avon rigid-inflatable boat with 40-horsepower Yamaha. This is a very fast dinghy, so please be careful! . It has a capacity to carry 4-persons, 850-lbs max. Dinghy, motor, fuel, and gear weigh about 650 pounds. Follow procedures below, especially **WARNINGS**, for safe launch and retrieval.

7.1 Dinghy Launch

CAUTION – Before any launch, ensure the aft drain plugs (2 of them!) behind motor is screwed-in. Avoid panic and damage that would ensue if dinghy is sinking.

Normally, the DAVIT circuit BREAKER located in the Salon aft battery switch panel, is ON.

The DAVIT WINCH CONTROLLER is a hand-held unit attached to 8-foot cord and is normally stored on the Pilothouse upper cabinet. Plug the DAVIT CONTROL UNIT cord into the DAVIT WINCH CONTROL RECEPTACLE located on the port-side masthead just forward of the davit boom.

Release the deck tie downs. Hood the davit hook to the main lifting ring on the lifting harness.

WARNING -- Before engaging, ensure the DAVIT CABLE is on top of the davit roller and will run freely. When on shaft, there will be severe strain on cable and risk of breakage - keep well clear underneath and never let anyone ride in the dinghy! A plastic guide is installed help stay the cable.

Carefully, nudge the hand switch to UP position to lift dinghy clear of chocks.

WARNING -- DO NOT allow the pulley block to contact the boom – there will be tremendous strain.

CAUTION – Allow NO person to ride the dinghy or be BELOW the dinghy while lowering or lifting.

Move boat fenders out of way. Ensure good footing – the boat will list to port. Slowly push davit boom outward to right angle while rotating dinghy to point aft. Check clearance alongside, especially space from heater exhaust port. Nudge hand switch to DOWN position. Hold on to bow line of the dinghy to have control of the boat as it enters the water.

WARNING -- The dinghy will pass the Hydronic heater exhaust on port side. Best to turn OFF heater temporarily-check for heat before attempting a launch. DO NOT hover dinghy – continue downward to the water. Move dinghy AWAY soonest. Exposure to the hot discharge will damage the dinghy's Hypalon tube.

Tie off dinghy to the port transom cleat temporarily, being careful not to expose dinghy to exhaust port. Carefully board from swim step. Disconnect lifting harness hooks from the 3 attachment points.

Move the dinghy to the swim step or dock. Use the 2 fenders to avoid damage to the tubes. On the swim step, tie lines loosely to the cleats as needed - don't pull it too tight against the swim step!

CAUTION -- While raising cable with no load, use the full weight of the pulley block to maintain tension on the cable at all times and prevent 'reverse-winding' on the winch drum. If cable should become reverse-wound, the sudden release of the cable under tension may cause damage or injury.

Rotate the davit boom inward. Connect davit boom to the deck tie down eye; remove slack.

WARNING -- When not used, disconnect the DAVIT CONTROL UNIT from the receptacle. If the handset becomes wet, it may short-circuit causing the uncontrolled operation. There will be severe strain on the davit, cable, and dinghy -- damage and injury may result.

7.2 Dinghy Operation

7.2.1 Pre-Checks

Check Power - Rotate main power switch ON beneath the helm seat. Turn key to ON position to check for power indication on battery gauge beneath console.

Check Fuel – Turn key to ON position to check fuel level on gauge beneath console. Uses **non-ethanol gasoline**, normally available at marina fuel docks. DO NOT add oil to the fuel.

Check for Water – Water inside boat may mean the drain plug was not inserted properly before launch. Switch ON bilge pump immediately. Reach over transom into water and rotate/insert the drain plug.

NOTE – Avoid water entering fuel tank during refueling is a common issue. Inspect the fuel-water separator beneath seat - open valve, drain bowl, close valve. Refill bowl by squeezing the primer bulb.

NOTE - If dinghy has been used several weeks, check oil level. Spare oil is located beneath dinghy seat.

7.2.2 Operation

NOTE – WA-State and Canadian laws have minimum ages and personal certification requirements for operating power boats. For example, in WA-State, persons 14-years or older may operate a personal watercraft (PWC) if they have a Boater Education Card. Ensure crew members are trained in safe operation. Be aware of speed, sea conditions, and traffic.

Lower or raise the motor by pressing the POWER TILT switch on the throttle handle. Connect the FUEL LINE securely to the motor. Squeeze the PRIMER BULB until firm.

Ensure emergency STOP SWITCH LANYARD is inserted into the STOP SWITCH on control unit, otherwise motor will not operate. Attach LANYARD to body. Insert the SWITCH KEY.

Set the CONTROL LEVER to the 'neutral' position – the motor will start in neutral only. Turn the main key switch to 'START'. Release key when motor starts.

NOTE – If motor does not crank, ensure the throttle is in neutral position – retry start. If motor cranks, but does not run, push-in the key switch to increase idle setting – retry start. In case of extreme system failure, refer to Tohatsu Manual (cabinet under pilothouse electrical cabinet).

Idle motor for couple minutes to circulate oil and warm. CHECK 'peeing' of cooling water from motor. Idle speed is about 850 rpm; in case of cold engine, idle speed will increase 300 rpm automatically.

WARNING – *Ensure STOP SWITCH LANYARD is attached to operator’s body. Avoid a Coast Guard fine. Be careful not to pull tether during cruise resulting in loss of control, falls, or passengers overboard.*

To move forward, slowly push the CONTROL LEVER to the ‘Forward’ position, while grasping firmly the bar at the bottom of the control lever grip. Continue forward to increase speed.

To move backward, slowly pull the CONTROL LEVER to the ‘Reverse’ position, while grasping firmly the bar at the bottom of the control lever grip. Further movement will increase speed.

Adjust the trim angle of the motor to suit load and sea conditions. Press the POWER TILT button for tilt-up or tilt-down. Choose trim angle that will allow the dinghy to run parallel to the water surface. Use trim within safe limits – excessive trim may lead to unstable operation.

To STOP motor, put the shift lever in the ‘Neutral’ position and run the motor for a few seconds at idle speed. Turn the main switch key OFF.

7.3 Dinghy Retrieval

To retrieve the dinghy, reverse the basic procedure for deployment.

NOTE – *Use the dinghy’s BILGE pump to remove water from bilge. Remove extra gear to reduce weight. The davit is only rated to hold the dingy without any extra weight..*

Tilt the motor UPWARD slightly to avoid damage to the boat deck as dinghy is stowed.

WARNING -- *Before engaging the control, ensure the davit cable is on the davit roller and will run freely. The cable may ride off the roller when slack. If cable rides shaft, there will be severe strain on the cable!*

Deploy the davit boom at a right angle to boat. Let the full weight of the cable pulley block apply tension on the davit cable to prevent reverse-winding.

WARNING -- *The dinghy will pass the Hydronic heater exhaust. Best to turn OFF heater temporarily. DO NOT hover dinghy at the exhaust opening – continue past opening. Exposure to the hot discharge will damage the dinghy’s Hypalon tubes.*

Move dinghy to port side with bow pointing aft, avoiding exposure to heater exhaust port. Loosely tie dinghy to port transom cleat. From swim step, have crew member carefully board dinghy, snap the lifting harness hooks to the dinghy’s 3 lifting cleats, return to swim step, and free the dinghy from cleat. Retrieve slack on the cable. Ensure harness is not entangled with seats, motor, or fuel line.

Ensure good footing -the deck will list to port. Raise steadily. Avoid assistance from below.

Raise the pulley block to about 6-inches from the boom. Use the davit assist tool to help pull in the dinghy. A short cable with a clue handle – it is in the cabinet under the sink on the bridge.



WARNING – Do not make contact between pulley and boom – there will be tremendous strain and it may break the cable!

Rotate the dinghy bow inboard, pointing it across the deck. Grab dinghy firmly, and in one steady motion, pull and rotate the dinghy around the davit boom, leveling bow and aligning keel to the forward chocks. Continue to rotate boom and lower dinghy to center hull on the aft chocks. Check clearance and ensure chock pads face properly for solid contact. Lower dinghy until it rests on the pads.

Relieve tension on the cable and davit but retain sufficient snugness to prevent davit from swinging while underway. Secure the three-deck tie down straps.

NOTE – Ensure **KEY SWITCH** and main **POWER SWITCH** are **OFF**, else battery will discharge.

Remove the DAVIT CONTROL unit from its plug-in and stow it in pilothouse.

WARNING -- Do not leave davit control unit plugged in. If handset becomes wet (i.e., rain or dew), it may 'short-circuit' and operate 'uncontrolled', resulting in severe damage to davit and dinghy.

During rain, open the drain plug on dinghy transom to reduce water accumulation.

7.4 Equipment

7.4.1 Air Inflation Pump

Ensure the air tubes are rigid – no bend, sag, or limpness. Insufficient inflation will cause excess wear on tubes and a less comfortable ride.

The dinghy AIR INFLATION PUMP and HOSE is located beneath the dinghy seat.

Push the hose end into each inlet valve opening. Pump until nearly unable to apply movement to the pump – air pressure in the tubes will be sufficient. Ensure cap is replaced securely on each valve.

SAFETY

Ensure crew members and guests are familiar with safety procedures in case of an emergency.

- Know the location of all LIFE JACKETS, throw rings, and throw lines.
- Know use of FLOATATION devices for non-swimmers and children, as boating law requires.
- Know the location of DISTRESS SIGNALS and how to use them.
- Know the location of FIRE EXTINGUISHERS and how to use them.
- Know how to OPEN and UNLOCK doors and hatches for rapid evacuation.
- Know movement to fresh air if SMOKE or CARBON MONOXIDE alarms sound
- Know how to use the VHF radio 'DISTRESS CALL PROCEDURE' (train crewmembers).

7.5 Personal Flotation Devices

Type II and PERSONAL FLOATATION DEVICES (PFDs) are in two locations: **Pilothouse Port Seat, Bridge Aft Seat**. In addition, Type V Automatic FLOATATION VESTS are available. Encourage crewmembers to wear these vests or belts whenever outside the boat.

	Description	Number	Location
II	Adult PFD	11	Under bridge seating
II	Youth PFD	1	Pilothouse Port Seat
II	Adult PFD	5	Guest stateroom closet
II	Youth PFD	2	Guest stateroom closet
III	Inflatable suspenders	2	Master stateroom closet

NOTE – In Washington, children 12 years and younger must wear U.S. Coast Guard approved life jackets at all times when underway in a vessel less than 19-ft, unless riding in a fully enclosed area.

7.6 Throw Devices

7.6.1 Blue Throw Cushion

A throwable cushion with a 30-ft floating line is located in the cockpit starboard side for immediate use. Have crewmembers practice their method for throwing the device maximum distance.

7.6.2 White Throw cushion

A throwable cushion is between the seat and cabinet of the bridge. This can be used for the Dinghy as well when deployed. Rescue LifeSling

A RESCUE LIFESLING with a 125-ft line is mounted on the Bridge starboard rail. Have crewmember maintain visual contact of victim. Throw the LifeSling float and rope into the water. Maneuver boat, using 'skier pickup' method.

7.7 Fire Extinguishers

U.S Coast Guard approved FIRE EXTINGUISHERS are in the following locations:

Type	Location
1-A:10-B,C	Salon under the stairs to the bridge
1-A:10-B,C	Cockpit near the ladder
5-B:C 1	Master stateroom on stbd bulkhead

NOTE – Show crew members the exact location, so they can act quickly. Aim at the base of flame, using sweeping motion.

7.8 VHF Radio Distress Call

To request emergency assistance, contact the Coast Guard and other vessels through VHF radio.

7.8.1 Using Channel 16

Tune the VHF radio channel to '16'. Press and hold [PTT] switch and transmit information below:

VOICE DISTRESS CALL PROCEDURE

- MAYDAY! MAYDAY! MAYDAY!
- THIS IS 'CHINOOK'
- LOCATED AT [refer to common map reference and/or **Latitude/Longitude** position]
- State **nature of the distress** and the type of assistance required
- Give **other information** that might facilitate a rescue

7.9 Visual Distress Signals

Federal law requires day and night visual distress signals for this boat. Emergency signaling devices are found in orange containers in the upper cabinet in the pilothouse

The EMERGENCY SIGNALS 'ALERT' Kit contains the following:

Quantity	Device
1	12-gauge Flare Gun
6	Hi-Altitude Red Aerial Flares for Flare Gun
1	Signal Mirror
1	Dye Marker Package
2	Whistles

The EMERGENCY SIGNALS 'LOCATE' Kit contains the following:

Quantity	Device
3	Red Handheld Flares (day or night use)
1	Orange Handheld Smoke Flare (day use)

The EMERGENCY STROBE LIGHT has the following features:

Quantity	Device
1	Flashing Strobe Light (day or night use)
1	Flashlight

NOTE – Train each crew member. Signaling may become any crew-member's task in an emergency.

7.10 Emergency Towing

Contact AYC first if situation permits. If cannot, contact BoatUS: **800-391-4869**, or hail **TowBoatUS on VHF 16**. Services include towing from the breakdown location to nearby port; jumpstarts; delivery of fuel, fluids, or basic parts; soft ungrounding assistance; or towing from port to repair facility.

7.11 Medical Aid Kits

MEDICAL AID KITS are located day head cabinet.

7.12 Fire and CO2 Alarms

FIRE and CARBON MONOXIDE alarms are in the salon/pilothouse. The smoke detector is battery powered and the CO2 detector is DC powered and has a breaker on the DC panel.

7.13 Spotlights/Flashlights

A 100,000-cp HANDHELD SPOTLIGHT is at Pilothouse portside. Emergency flashlights are mounted to the walls in the master and guest staterooms.

NAVIGATION

7.14 Charts

7.14.1 Electronic Charts

Electronic charts (*Navionics Platinum 913P*) are available on each Raymarine MFD. The chart set should cover all your cruised need. Additional electronic charts are in the drawer under the chart table.

CAUTION – Electronic charts add to safety and enjoyment, but do not rely solely on them. Practice traditional navigation. Use multiple sources, official charts and chart books (NOAA, Canadian Map Service) in unfamiliar waters.

7.14.2 Official Charts

OFFICIAL CHARTS for Puget Sound, San Juan Islands, and Gulf Islands northward to Port Hardy are on the chart table and in the drawer beneath the Pilothouse starboard chart table.

7.14.3 Cruising Atlas

Use a CRUISING ATLAS for 'planning'. When in doubt, refer to Official Charts.

7.14.4 Chart Books

Various chart books are located on the chart table in the

Tide and Current Tables

The TIDES and CURRENTS reference book (*Ports and Passes*) is located at the Pilothouse navigation table. It contains tide and current information from Olympia in southern Puget Sound to Johnstone Strait in northern Vancouver Island.

The book is also packed with useful information about marine weather, area restrictions, fuel locations, vessel services, and supplies.

The '*Ports and Passes*' CURRENT ATLAS TABLE booklet is the annual supplement for use with the CANADIAN CURRENT ATLAS. It is found at the Pilothouse navigation table or drawer.

7.15 Cruising Guides

Guidebooks for marinas, anchorages, and boating points of interest are found in the Pilothouse aft cabinet above the seat. These include the *Waggoner* Cruising Guide (covering all the Pacific Northwest), *Gunkholing in the San Juans*, *Gulf Islands* Guide, *Desolation Sound* Guide, *South Puget Sound* Guide.

When planning a passage, it is a good idea to make alternate plans in case of delay, inclement weather, comfort, or safety. Use these references for guidance.

7.16 Navigation Tools

BINOCULARS are located in the Pilothouse helm. Replace lens covers to prevent damage.

PLOTTING RULER, DIVIDER, and glass MAGNIFIER SHEET are located at the Pilothouse navigation station drawer.

DOCUMENTS

7.17 Vessel Documents

The VESSEL DOCUMENTS include papers for boat identification, registration, licensing, and recent inspections. These are normally found in the 'AYC Charter Manual'; otherwise, they are found in the 'Boat Documents' red binder in the cabinet in the Pilothouse.

Documents include:

- Coast Guard 'Documented Ship' Official Certificate (Official Number)
- US Customs Annual Registration (decal on Salon aft window)
- Washington DOR Registration (boat)
- Washington State Boat Registration (dinghy)

7.18 Border Crossing

When cruising into Canada, the vessel and the passengers are required to clear through a Canadian Customs 'Reporting Site'. Information on reporting sites, phone numbers, and procedure for clearing Canadian Customs can be found in the *Ports and Passes* Tide and Current book.

NOTE – The nearest Canadian reporting sites are Bedwell Harbor (May-Sep 8AM to 10PM), Port Sidney, and Port Victoria Customs Wharf. Use check-in phone station when staff not present.

When returning to the United States, the vessel and passengers must clear through a United States Customs & Border Protection (CBP) 'Designated Port of Entry'. Locations, telephone numbers, and hours of operation, and procedure for clearing USCBP are found in the *Ports and Passes* book.

NOTE – The nearest US ports of entry into the San Juan Islands are Roche Harbor (seasonal), Friday Harbor (8AM to 5PM), Anacortes (8AM to 5PM), Bellingham (7AM to 6PM), or call After Hours 800-562-5943. Use check-in phone station when staff is not present.

The annual US CUSTOMS Decal is located on the aft Salon window, easily seen from the rear entry.

To avoid delay, have the vessel documents, all passports, and paper/pencil ready, before meeting or calling customs officials.

- **Vessel Official Number:** 1069821
- **Vessel Name:** Chinook
- **Vessel Length:** 52 feet
- **Vessel Make/Type:** Bayliner 4788 Powerboat
- **US Customs Decal Number** (US reentry): located on salon aft bulkhead
- **CA Customs Entry Number & Date** (US reentry): provided by Canadian Customs on entry
- **Master (Skipper):** name, passport number, citizenship, birth date
- **ALL persons aboard:** name, passport number, citizenship, birth date
- **Items Inventory:** liquor bottle count, tobacco, fruits and vegetables, firearms

NOTE – Contact US customs before traveling to Canada if you are unfamiliar with customs laws, especially traveling with children where both parents are NOT present. Minors traveling without both parents require a Letter of Consent signed by another custodial parent. Passport is required.

7.19 Boat Equipment Manuals

Are located under the pilothouse seat near the dash.

CLEANING

7.20 Waste Management Plan

All crew members and passengers must be briefed on the vessel's Solid Waste Management Plan to comply with US Coast Guard regulation.

WASTE MANAGEMENT PLAN for Starlight Express

Person in Charge: Master of Vessel

Solid Waste Management Procedures as Referenced Below:

All the garbage generated on the vessel is put in a garbage bag and disposed of in the trash containers at the harbor at the end of each trip or is given to the tender vessel to shore for disposal. All crew members have been oriented to the requirements of MARPOL ANNEX V by captain, and all new crew are specifically shown the MARPOL V placard and told to keep all refuse stowed on board. Passenger orientation to the vessel includes being shown the location of trash receptacles and mention of refuse discharge regulations.

7.21 Cleaning Supplies

Cleaning supplies are located under the Galley sink or in the Head cabinets.

CAUTION - DO NOT use 'steel wool' or metal scrubbers on the counters, sinks, and galley range – those materials will scratch the polished surfaces.

Clean vinyl with 'vinyl cleaner'.

7.22 Vacuum Cleaner

The CENTRAL VACUUM CLEANER and hose accessories are located in the starboard compartment in the passageway behind the Plexiglas panels.

Turn ON the Vacuum Cleaner switch on the Pilothouse AC panel. The vacuum will turn ON automatically when the hose is plugged into the intake opening of the vacuum cleaner.

Spare bags are located behind the vacuum cleaner unit.

7.23 Washer/Dryer

The WASHER/DRYER is in the port cabinet in the passageway has been Disabled

Deck Cleaning Gear

A DECK BRUSH is located on the cockpit transom.

One fresh WATER HOSE is located in the port cockpit cabinet, behind the black door.

A BUCKET, WASH MITT, and SPONGE are usually located in the cockpit or lazarette.

7.24 Fresh Water Wash Down

Turn ON the WATER PRESSURE switch on the Pilothouse DC Panel.

In the Cockpit cabinet portside is a 50-foot coiled HOSE connected to the FRESH WATER WASHDOWN FAUCET.

On the cockpit transom is an OUTDOOR SHOWER HOSE, which can be used as a hot water source. Ensure the faucets are OFF when not in use, else water will spill into the lazarette bilge.

7.25 Raw Water Wash Down

Turn ON the WASHDOWN switch on the Pilothouse DC panel.

Two RAW WATER wash down outlets are available, one at the Foredeck and one in the Cockpit.

In the Cockpit starboard cabinet, a 20-ft coiled HOSE is connected to the AFT RAW WATER WASHDOWN FAUCET

In the foredeck locker, a 15-ft coiled HOSE is connected to the FORWARD RAW WATER WASHDOWN PUMP

When not in use, turn OFF panel switch.

RECREATIONAL EQUIPMENT

7.26 Barbeque

The BARBECUE is mounted on the starboard rail on the bridge. For safety, do not leave barbecue unattended during cooking. The barbecue creates a lot of heat. Ensure flammable materials are away from barbecue. Cooking greases may burn.

Push-IN on the BBQ CONTROL KNOB, then turn counter-clockwise about ¼-turn to the HIGH flame position. Then, press the barbeque IGNITOR BUTTON (red) rapidly to ignite – listen for flame and feel for heat. Redo process until lit or use the lighter stick from the galley.

If the ignitor button fails to produce spark to ignite burner, use matches or butane lighter. Insert flame into the hole on left side of box, while adjusting control knob.

Turn clockwise to lower flame. Turn counterclockwise for raise flame. To turn OFF, turn the knob fully clockwise. Control knob will pop outward.

7.27 Deck Chairs

Two folding CANVAS DECK CHAIRS are stowed at the cockpit portside near doorway. Use the bungee cord to secure to bulkhead.

Two folding chairs are stowed beneath the seat on the bridge.

8 MAINTENANCE

TOOL kits and REPAIR PARTS are stowed in various locations described below. Return tools to their original boxes and stowage location.

NOTE – Report usage of spares (filters, pumps, parts), so steps can be taken to have these replaced.

8.1 Tools

Tool kits are located beneath the Salon corner seat.

8.2 Filters

FILTER spares are found in two places, under the port pilothouse seat and in the utility room under the stairs to the hallway.

8.3 Manual Bilge Pump

A manual bilge pump is located in the utility room under the stairs going to the hallway.

Appendix A – Boat Information

8.4 Boating Contact Information

AYC Charter Base		
Main Office	800-233-3004	http://www.ayc.com
	360-293-4555	
Coast Guard		
US Coast Guard	VHF CH 16	Hailing channel for Coast Guard
	800-368-5647	Boating information (non-emergency calls)
Emergency Services		
BoatUS Towing Service	800-391-4869	Or hail VHF 16 (membership 20214653)
Emergency Services	911	Police, fire, medical (except cell phones SJI)
Emergency (San Juan Islands)	360-378-4141	For cell phones
WA State Patrol	425-649-4370	Information (non-emergency calls)
US Customs & Border Patrol		
United States Customs	800-562-5943	
Canadian Customs		
Canadian Customs	888-226-7277	Reporting arrival to CA designated port of entry
Weather Reports		
NOAA NWS Marine Forecast (Northern Inland Waters, San Juan Islands)	Website VHF 1 or 4	https://marine.weather.gov/MapClick.php?zoneid=PZZ133
NOAA NWS Marine Forecast ((Puget Sound and Hood Canal)	Website VHF 1 or 4	https://marine.weather.gov/MapClick.php?zoneid=PZZ135#.XqZc42hKhPY
NOAA NWS Marine Forecast (Strait of Juan de Fuca)	Website	https://marine.weather.gov/MapClick.php?zoneid=PZZ131#.XqZdumhKhPZ
NOAA National Buoy Data Center (buoy reports, WA, Canada, Alaska)	Website	https://www.ndbc.noaa.gov/maps/Alaska.shtml
Environment Canada Marine Pacific – South Coast	Website 640-666-3655	https://weather.gc.ca/marine/region_e.html?mapID=02
Environment Canada Forecast (Johnstone Strait)	Web site	http://www.weatheroffice.gc.ca/marine/forecast_e.html?mapID=03&siteID=06800
Environment Canada Forecast (Haro Strait)	Web site	http://www.weatheroffice.gc.ca/marine/forecast_e.html?mapID=03&siteID=06100
Environment Canada Forecast (Strait of Georgia – North)	Web site	http://www.weatheroffice.gc.ca/marine/forecast_e.html?mapID=03&siteID=14301
Environment Canada Forecast (Strait of Georgia – South)	Website	http://www.weatheroffice.gc.ca/marine/forecast_e.html?mapID=03&siteID=14305
Environment Canada Forecast (Strait of Juan de Fuca – East)	Website	http://www.weatheroffice.gc.ca/marine/forecast_e.html?mapID=03&siteID=07003
Fishing		
WA Fishing Hotline (openings/closures)	360-902-2500	http://wdfw.wa.gov/fishing/
WA Shellfish Hotline (openings/closures)	866-880-5431	http://wdfw.wa.gov/fishing/shellfish/
WA State Online Services	Website	http://www.access.wa.gov . Boating information
Boat Services		
Cap Sante Marine	800-422-5794	Cummins parts, Anacortes WA
North Harbor Diesel	360-292-5551	Travel lift, Cummins engine repair, Anacortes WA
Skyline Marine Center	360-293-5134	Travel lift, fuel, Skyline Marina, Anacortes WA
Anacortes Marine Electronics	360-293-6100	Electronics, Satellite TV, Anacortes WA
Wave Point Marine Electronics	360-708-4880	Navigation Electronics (Brent), Anacortes WA

Fuel – Points Northbound		
Skyline Marina, Anacortes	800-828-7337	Chevron (call for appointment)
Cap Sante Marina, Anacortes	360-293-8502	Fido's Fuel Dock, Cap Sante Marina Fuel Dock
Bellingham	360-734-1710	Shell, Harbor Marine Fuel
Friday Harbor	360-378-3114	Port of Friday Harbor Fuel Pier, Shell
Roche Harbor	800-586-3590	Resort Fuel Dock, Texaco
Victoria	250-381-5221	Victoria Marine Fuels, Ltd
Sydney	250-656-1138	Van Isle Marina, VHF 66A
Ganges	250-537-5242	Shell, Ganges Marina
Nanaimo	250-754-7828	Gabe's Petro-Canada Marine
Powell River	604-485-2867	Westview Fuels Fuel Dock
Lund	604-414-0474	Lund Hotel
Egmont	604-883-2298	Egmont Marine Resort
Refuge Cove	250-935-6659	Refuge Cove General Store
Blind Channel	888-329-0475	Blind Channel Resort
Campbell River	250-287-2614	Discovery Harbour Marina, Esso
Lagoon Cove	VHF66A	Lagoon Cove Marina
Echo Bay	250-974-7139	Echo Bay Resort
Sullivan Bay	250-483-6881	Sullivan Bay Marine Resort
Port McNeill	250-956-3336	Port McNeill Marine and Aviation Fuels
Port Hardy	250-949-6551	Quarterdeck Inn and Marina Resort