

OPERATION MANUAL

Adagio

A 57' Carver Pilothouse Motoryacht

Last modified June 2024



*Adagio is a musical term meaning played slowly, but it is also Italian for “at your leisure.”
We hope Adagio brings you relaxation and leisure!*

Welcome aboard!

We are so happy you have chosen Adagio for your vacation! We are sure you will enjoy exploring the rugged beauty of our Pacific Northwest islands on this Carver “570 Voyager” Pilothouse yacht.

Perfect for Pacific Northwest cruising, Adagio boasts many roomy interior spaces including a large salon and galley, pilothouse, and a luxurious master suite, VIP stateroom, and a bunk bed in a third stateroom, all with heating and air conditioning. Adagio is also equipped with a custom hard-top flybridge that can be fully enclosed with removable panels to keep you comfortably shaded from the hot sun and protected from wind while underway or when the weather turns inclement. This spacious flybridge seats 10 comfortably and includes a wet bar for entertaining.

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

TABLE OF CONTENTS

	Page
Section 1: Introduction & General Boat Description	4
About this Manual	4
General Description of this Carver 57' Yacht	5
Section 2: Specifications, Capacities, & Important Numbers	18
Section 3: Checklists & Boat Operation	19
Checklists	19
Engine Inspection & Controls	23
Start-Up & Getting Underway	26
Cruising	27
Anchoring	28
Docking	31
Fueling	32
Section 4: Boat Systems	
Electrical	33
D.C. (House) Systems	33
Batteries	34
A.C. (Shore) Systems	37
Inverter	39
Generator	40
Sanitation Systems	42
Marine Toilet	42
Holding Tank & Y-Valve	43
Water Systems	44
Fresh Water Tanks	44
Fresh Water Pump	44
Hot Water	45

Waste Water	45
Heating and Air Conditioning Systems	45
Galley	46
Dishwasher	46
Stove/Oven	46
Refrigeration/ Ice Maker	46
Barbecue	47
Electronics	48
VHF Radio, Radar	48
Depth Sounder, GPS/Plotter	49
iPad for backup charts and navigation	
AutoPilot	50
Entertainment	51
Starlink WiFi	52
Sonos, AM/FM Stereo Receiver with Bluetooth	52
TV, HDMI Input, Blu-Ray players	52
Dinghy/Outboard	52
Crabbing/Fishing	55
Thru-Hull Diagram	55
Section 5: “What To Do If”	56
Section 6: Safety and Emergency Procedures	58
Life Vests	60
Bilge Pumps/Safety	60

Section 1: Introduction & General Boat

Description

About this Manual

Manual Objective and Limitations

This manual is intended to introduce you to Adagio, its systems and features, allowing you to operate it with the confidence and self-assurance necessary to enjoy your cruising vacation to its fullest. It is not intended to replace a good basic understanding of seamanship, including navigation skills, weather interpretation or boat handling. You are expected to have an understanding of these subjects obtained through other sources, including training, seminars, reading and most important, experience.

There is no way that a small manual like this one can answer every question or give you a solution to every circumstance, foreseen or unforeseen. If you have a question which limits your understanding or handling of this vessel, ask your AYC checkout skipper or contact the office for details (you might make a list of questions as you read the manual, saving them all up to ask efficiently at one time).

How the Manual is Organized

Each section covers a general category as shown on the front page. You will use Section 3, containing checklists, most of all. You should have it available so that each checklist can be used on a daily basis, even after you are familiar with the boat.

Section 5, regarding Emergency Procedures, is the most important, and you should read it, but hopefully you will never need it.

Read this section (Section 1) first to learn about the general details of the boat. The other sections will tell you most of what you need to know to enjoy your cruise to the fullest with safety and confidence.

General Description of this Carver 57' Yacht

Exterior

The Carver 57' "570 Voyager" Pilothouse is a power vessel with a fiber-glass hull, cabin, deck and flybridge, a fiberglass swim step, and stainless steel welded fittings and handrails. The window frames are integral with the vessel's fiberglass with sliding glass panes.



Of note are the easy walk-around decks, which in spite of the wide salon dimensions, still enable safe, secure passage about the boat by passengers and crew. A roomy cockpit section with a storage lazarette beneath and engine room access is especially useful for fishing and for handling the dinghy after it is launched from the boat deck. In the cockpit is also located the barbecue which uses screw-on propane tanks. *Do not store these tanks inside the boat!*



Looking forward along the port side deck. Note the sturdy side rail as well as the rail above the windows. You will be secure as you move about this substantial boat!

A stylish but practical stair leads from the cockpit to the boat deck to ease dinghy handling; when the dinghy is stowed crew will use the stairs from the pilothouse to the flybridge as the dinghy nearly fills the boat deck space.



A look into the lazarette; the ladder eases engine room access.



Steps from cockpit to the boat deck.

On the aft corners of the boat are the port and starboard fuel fills, and on the starboard side deck, the water tank fill plate and the holding tank pumpout deck plates for the two tanks that serve the boat's two heads. Note: heads are on 2 separate systems providing redundancy incase of failure or blockage underway.

Forward on the bow deck is the anchor windlass, with foot switches, allowing chain movement both "up" and "down" electrically. The anchor is retracted into the bow chain roller strut which hangs out over the bow slightly to give better chain clearance from the hull than otherwise possible. After passing over the winch, the chain goes below decks via a hawse pipe in the foredeck. The anchor chain locker can only be accessed through the port side deck compartment. Access has a cover on the side wall of the compartment.



Looking at the anchor windlass and chain. Just above the windlass with the white cover is one of the footswitches; at the top is seen one of the two deck hatches to hold anchor bridle, dock lines, etc. Washdown faucets are here as well.

There are fresh (starboard) and sea water (port) wash-down faucets in the side compartments to rinse the anchor rode with the supplied hoses/nozzle for the anchor chain or boat washing.

At the top of the steps from the cockpit is the boat deck area, reserved for the yacht's dinghy. Since there are no rails here, this area will not be used by crew except for launching the tender. A safety gate in the rail between the boat and flybridge protects the crew. The dinghy is launched with a deck crane (davit), the remote control for which is stowed in the cabinet next to the icemaker on the flybridge forward. The 12' Dinghy is equipped with an electric start/tilt outboard, a center console GPS, nav lights and electric bilge pump.



The ship's bell is also on the flybridge to port.



Adagio is fitted with the proven Lifesling rescue system that can be used with the dinghy's davit.

At the top of the stairway from the pilothouse is the extraordinary flybridge, equipped with many amenities to make your stay on Adagio as comfortable as possible.

Of course here is also the upper helm station. Helm's instruments are part of a wrap-around console, which also carries a duplicate complement of critical navigation gear including radar, plotter, sounder, VHF, etc.



There is substantial seating on the flybridge: An upgraded soft leather helm seat for the captain, a loveseat, and aft, a circular settee with a table that seats six or seven more; and built in to the port side just aft of the bar/hospitality center yet another loveseat. Newly replaced clear panels protect you during inclement weather while not sacrificing the views! Roll them up to let in the fresh air when the temperatures climb in the sunshine.

The incredible flybridge. Door leads to the pilothouse. To right is wet bar with plenty of storage and an ice maker. The seat in the foreground behind the helm chair swivels at the touch of an electric button to face the L-settee that is aft on the flybridge. Note: In the lower right corner of the photo is the flybridge fire extinguisher.



In the cabinet on the starboard side of the flybridge is wet bar, built-in cooler, ice-maker and a storage locker with the davit remote control and other assorted gear.



*Aft on the flybridge, this circular seating area easily accommodates your crew and guests around the table. The seat in the foreground is the same as that in the picture above. Here you also find the first of four **custom wood tables** with beautiful inlaid stone. The clear panels have recently been replaced with versions that **can be rolled up** to adjust the temperature in the flybridge more easily and protect you during inclement weather!*

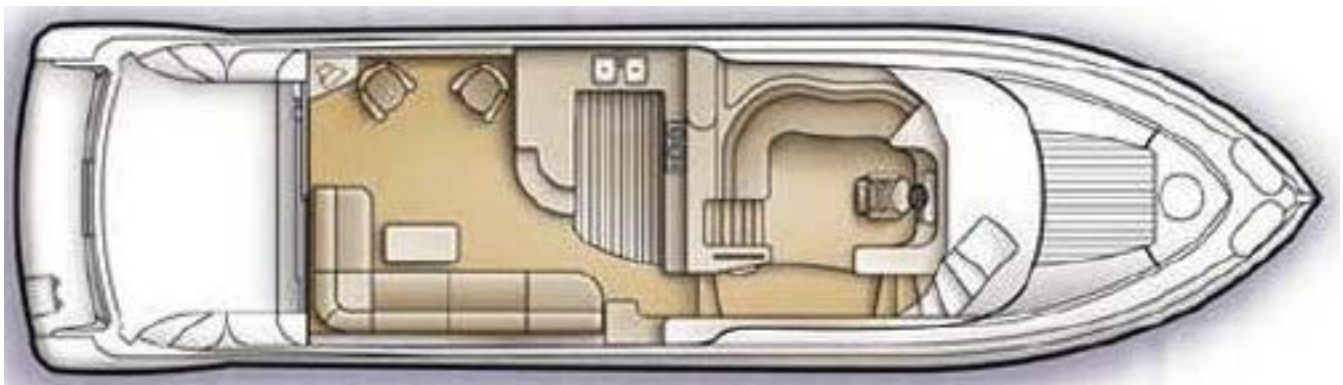
Under the aft circular settee is storage for **life jackets**; **additional PFD's** are in the **VIP** and **master staterooms**.

At the aft end of the boat is a roomy swim platform. It has access to two cabinets; in the port one is the AC Shore Power cable and connections. This connection is selected by the shore power switch in the electric panel; when this cable is to be disconnected, **the master breaker in the AC panel should first be turned to the "off" position** to avoid arcing which could damage the plug contacts. The boat's 50-amp shore power cable is 50 feet long and stays with the boat when away from its home dock. Additional cables are supplied.



There are two retractable cleats on the swim platform to hold fenders to protect the dinghy; raise them by pushing center button (looks like a flathead screw). **Do not use these cleats for dinghy towing: They will break!**

Interior Accommodations



Adagio Main Deck Floor Plan

Main Deck

The boat is entered by the main sliding door aft, or by the entry direct to the pilothouse port side door. **NEW carpet (in 2024) has been installed throughout the interior spaces.** **Please remove muddy/dirty shoes before entering. Be careful to close the doors and lower/latch porthole windows when underway to avoid getting spray in the boat.**



View on entering from the main sliding door in the cockpit. Large L-shaped couch to starboard and pop-up flat screen TV equipped to port. A simple remote raises and lowers the hidden 4K UltraHD SmartTV. If WiFi is available or with the provided Starlink, you can access your Netflix, Hulu, Amazon Prime, Disney+, etc. accounts. An HDMI cable provides connection for your personal devices. A Blu-Ray player and several DVDs provide additional entertainment options.



Soft microfiber fabric hides a queen bed (new memory foam mattress) inside this couch. Here in the salon you find the second beautiful custom wood table, in this case with inlaid wood details. Similar to the flybridge table, it has wings to extend the length and it is height adjustable.

A small recliner completes this very nice gathering spot after a day's cruising. Across from the couch is the entertainment center cabinet that houses the electronics for audio and video; forward of the table is the galley.



The blue bar stools have been replaced with a more comfortable recliner.

It's remarkable how much storage has been provided for the ship's cooks. Numerous drawers plus a built-in stove, microwave/convection oven, NEW (2024) built-in freezer and refrigerator, a NEW (2024) countertop dishwasher plus lots of drawers and cabinets will keep provisions under control and handy.



Instructions for use of the dishwasher are on top of the unit. PLEASE READ THE DISHWASHER OPERATION INSTRUCTIONS CAREFULLY TO AVOID DAMAGE. **Be sure to thoroughly scrape all food debris off plates before loading and ensure the drain tube is secured in the galley sink to avoid flooding.**

Across from the galley flanking the end of the starboard settee a cabinet holds among other items the first aid kit, and forward of it is the ship's stereo system cabinet, while forward of that adjacent to the steps to the pilothouse is the DC control panel.

Up the steps from the salon is the pilothouse, a comfortable, warm and efficient control center for this yacht. With a wraparound, aircraft style control panel, the space features a Flexsteel, Ultraleather helm chair that is six-way adjustable for the skipper's comfort (the swivel lock is under the chair skirt starboard side) The "joystick" on the helm seat has been removed. The helm seat is positioned for excellent visibility while underway -



there is clear visibility aft so that the crew can stay in communication. NEW electronics (replaced in 2023) in the pilothouse helm include Garmin GPS/Plotter, autopilot, VHF radio, radar, depth sounder, electronic engine controls, and controls for the bow and stern thrusters.

Switches for wipers, bilge pumps, defogger, nav & anchor lights and the windlass are on the overhead panel.



The skipper can easily reach the starboard side deck through a marine grade side door as shown in the photo. When exiting, this door must first be pushed out before sliding (**a good hip-bump works!**).

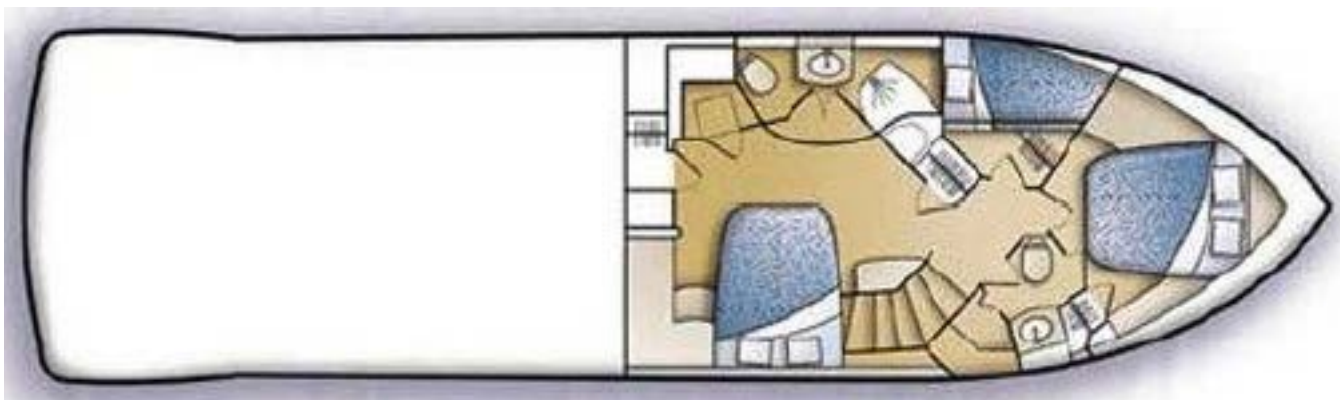


Steps to the flybridge with the AC power panel cabinet at their base.

There is a wrap-around settee aft on the pilothouse level, where you also find the third custom wood table with expansion leaves and height adjustment for morning coffee or a game of cards. *Please pull out leaf supports located under the tables to prevent hinges from breaking!*

Adjacent to the stairs to the flybridge, a cabinet holds the AC electrical panel and on its forward side, are the air conditioning and heating controls for the pilothouse area.

Stateroom Deck



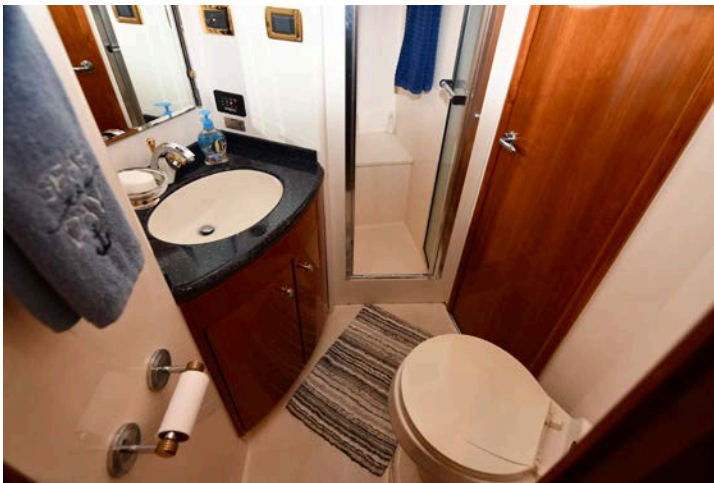
A circular stair leads from the pilothouse to the staterooms on the lower deck. At the foot of the steps the guest head is to the right, the VIP stateroom is forward, the #3 stateroom is to port, and the master stateroom is aft.

The forward VIP Guest stateroom features an island-queen berth with plenty of storage in cedar-lined hanging lockers, drawers and cabinets. It has its own door to the head.



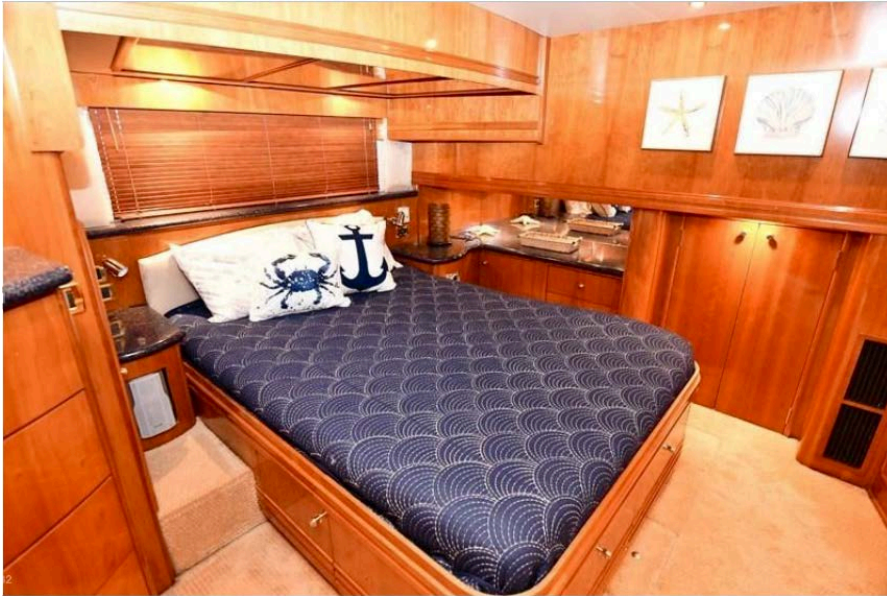
The guest head has a vanity, toilet, stall shower and doors both to the companionway and to the VIP Guest Stateroom forward. **Note: Each head compartment has an emergency switch for the Vacu-Flush toilet.**

Unless a head is inoperative, this switch should always be left on in both compartments! See section on “Sanitation System.”



The #2 guest stateroom has roomy upper and lower berths, made easier to use by staggering them so occupants can sit up before leaving the berth. It has a hanging locker behind the door at the forward corner, and storage in the bedside table and a drawer below the bottom bunk. Access to the “facilities” is across the companionway.

The Master Stateroom aboard Adagio is sumptuous! This full-beam width mid-ship stateroom (the best arrangement for quiet nights at anchor) features a queen-size island berth with lots of locker space, a full size dresser, and plenty of lighting. Across from the berth is the built-in vanity, head, and shower. The washer and dryer are in this stateroom's port aft corner.



Engine Room & Lazarette

Access to the engine room is through the hatch in the cockpit that accesses the lazarette as well. The engine room light is turned on with a button located starboard of the cockpit by the flybridge ladder.

The starboard side of the lazarette has four air conditioning refrigeration units plus a 110-volt AC sea water pump to provide them with cooling water; here also is the aft side of the starboard fuel tank and the Racor filter for the starboard engine, while outboard is the generator Racor filter. Two storage boxes hold the spare anchor line and an extra 50' shore power cord and electrical adapters. **The emergency anchor is also stowed in the lazarette.**

Midships aft in the lazarette are the motor and controls for the stern thruster, trim tab pump, steering gear, autopilot pump, and washdown pump; to port in the lazarette are the port fuel tank, stern thruster batteries and miscellaneous supplies. Note: **bow and stern thruster batteries only charge on shore power.**



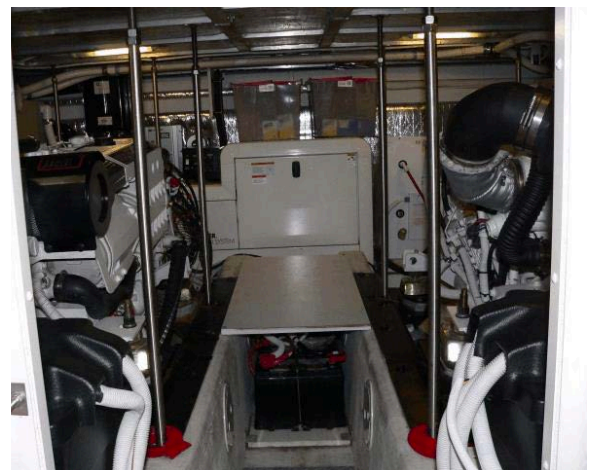
Going forward into the engine room, the twin Volvo 500 hp Diesels are on each side. The engine room layout is fairly symmetrical, with water tanks down both sides, engines in the center each side, generator forward, and easy access to nearly everything.



[above] Starboard lazarette: Air conditioning controls with compressors behind and seawater pump below. Engine spare parts/supplies in the boxes. The starboard lazarette also holds stern thruster batteries & misc. supplies.

[left] Aft center of laz: Stern Thruster motor and controls (the red button is the breaker reset), sea water pump, trim tab pump, and hydraulic steering ram. Air conditioning hose and wiring is in the white bundles to left.

[below] Looking forward into engine room: Volvos each side, Kohler generator at forward end. Bow thruster batteries are under raised bilge floor forward.



Midships forward is the 15.5kw Kohler generator; the cover is lowered in this view. Water heater is to starboard of it. Forward midships is the bilge well with bilge pump and float switch.



Forward midships bilge well with bilge pump and float switch.



Low in forward starboard corner of engine room: Generator sea strainer, fresh water pump, spare oil. The Vacu-Flush pump for the starboard head is in lower right corner of photo.



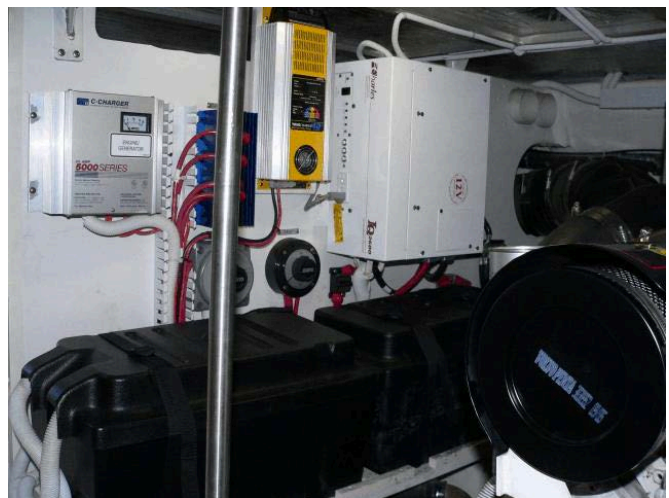
High in the Engine Room forward starboard corner: Fresh water pump on right, corner of water heater left.



Down low, just port of the generator is its battery and, further to port, the port head's Vacu-Flush pump.



[below] Engine room aft port corner. 20-amp charger (left) is for the engine and generator batteries. Blue battery isolator. Yellow charger is the stern thruster charger; the large white box is the 4000-watt sine-wave inverter. Battery switches control port engine, davit.



Port engine outboard: Water tank, engine coolant over-flow tank, blue spare oil cans. (The starboard side is mirror.)



Port forward: Port head holding tank & generator, aqua-lift muffler in front of engine. Stbd head tank is opposite.

Dinghy

The boat is equipped with a four-person Nouvarania 12' RIB-inflatable dinghy with a 40 horsepower Yamaha four-stroke outboard motor, fuel tank, pump and oars. It is stored on the boat deck (aft end of the flybridge). The dinghy is lowered to the water using the deck crane (davit) with its remote control.



Deck Equipment

The boat has mooring lines; a stern/shore line at least 200' long; an appropriate all-purpose anchor with at least 400' of all-chain anchor rode plus an emergency anchor (in the lazarette) with chain and rope rode; washdown hose outlets for both fresh and salt water in the cabinets adjacent to the anchor windlass; a supply of fenders/bumpers with fender storage; an ice chest for picnics, etc; a crab pot or ring with line, float, and bait rigging; a hose for fresh water tank filling and boat washing; and a boat hook (aft).

Safety Equipment

This vessel is equipped with five fire extinguishers, one each in the VIP stateroom and master stateroom hanging lockers, on the flybridge aft of the icemaker cabinet, in the salon by the TV, and an automatic, fixed system in the engine room with emergency control at the pilothouse helm; a ship's bell; flares in the cabinet by the flybridge icemaker and in the pilothouse by the maps; a "LifeSling" forward of the dinghy on the boat deck; a conventional life ring throwable life preserver in the stern; an appropriate supply of life jackets with two each in the VIP and Master staterooms plus a supply on the flybridge under the circular settee; and two VHF radios.



Engine Room Fire Extinguisher emergency control is located on the lower helm. Pull pin and then pull handle to activate.

Section 2: Specifications, Capacities, and Important Numbers

Vessel Name:	ADAGIO
Vessel Official Number:	1150293
Vessel Registration Number:	N/A
Hull ID Number:	CDRNA072G102
Capacities:	
Sleeps six:	Two in each stateroom (recommended)
Sleeps eight:	Two in each stateroom plus two on the pullout couch
Fuel:	800 Gallons in two 400 gallon tanks
Fresh water:	200 Gallons in two 100 gallon tanks
Holding Tank:	100 Gallons in two 50 gallon tanks
Dimensions:	
Length:	59 Feet 2 Inches including swim platform
Beam:	15 Feet 4 Inches
Draft:	4 Feet 9 Inches
Displacement:	52,500 Pounds with full fuel & water
Fluids:	
Motor Fuel:	#2 Diesel
Motor Oil, mains:	15W-40 Chevron Delo Multigrade
Transmission Oil:	30W Chevron Delo Single Grade
Engine Coolant:	50-50 mix, ethylene glycol and water; corrosion inhibitor added
Operating Parameters:	1600 RPM typical speed 10.8 knots (12.4 mph), 12.0 gph 1725 RPM typical speed 11.4 knots (13.1 mph), 14.0 gph^T 1750 RPM typical speed 11.6 knots (13.3 mph), 16.0 gph^T (1700-1800 RPM is a “sweet spot” for this boat) 2000 RPM typical speed 12.5 knots (14.4 mph), 24.0 gph 2200 RPM typical speed 15.5 knots (17.8 mph), 31.0 gph* 2400 RPM typical speed 18.4 knots (21.2 mph), 40.0 gph*

All figures are estimated and may vary. *Planing figures presume boat is placed “on plane”. ^TSpeeds with full tanks, four passengers, approximately 50% trim tabs down.

Section 3: Checklists & Operation

QUICK REFERENCE CHECKLISTS

First Thing Each Day:

- Check engine oil, coolant.
- Check under-engine oil pads. Okay?
- Check fuel tank levels.
- Check holding tank. Need pumping?
- Turn off anchor light if illuminated.
- If leaving location, check iPad is charged, has GPS signal, and maps loaded.

Starting Engines:

- All lines clear of propellers and on deck.
- Start Engines:
 1. Turn one engine key “on” (but do not start)
 2. **Press Engine Control “Key” button until red light by “key” illuminates**
 3. **Press and HOLD “N” button so green blinks, KEEP HOLDING THE BUTTON** as you advance the throttle about 3/4" past detent. Once the throttle is advanced, release the button.
 4. Turn engine key past “On” to activate starter. (3-4 revs before injectors open)
 5. If engine does not start, turn to “off” and repeat that engine’s procedure.
 6. When engine starts, reduce throttle gradually to idle, levers in “neutral”
 7. Repeat steps 3 & 4 for other engine
 8. Lights will be steady red by “key”, and green by “N” buttons.



Engine control “Key” and “N” buttons

Switching Helms:

- Push the “key” button on helm you want to be active.
- Remember to turn both physical keys to off to deactivate both helms.

Leaving Dock: (Only 3-4 minute engine warmup required)

- Shore power breaker in AC panel and on dock “off”, cord removed, and stowed on board.
- **Test bow and stern thrusters are operational** with quick jab. If not, it’s likely the emergency shutoff button (located aft in lazarette) was accidentally pushed in. This is easy to do because of it’s location at the back of a shelf!
- Crew and Skipper have headsets on and connected to each other. **Be sure to secure headsets to life jackets or clothing with clips to prevent loss overboard!**
- Lines removed as appropriate.
- Lines and other deck gear secure/stowed.
- **Doors and hatches closed and secured** as appropriate.
- Fenders hauled aboard and stowed after you’ve left the marina and no longer need a “rover”

Underway:

- Remove and stow headsets. Charge batteries as necessary.
- Helms person on watch at all times. Raymarine chart plotter zoomed out for navigation, iPad zoomed in to watch for hazards.
- RPM under 1400 until engines warm to 140°; RPM not to exceed 2100 RPM.
- Wake effects always in mind.

Approaching Dock:

- Crew and Skipper have headsets on and connected to each other. **Be sure to secure headsets to life jackets or clothing with clips to prevent loss overboard!**
- **Before entering marina**, turn on and test bow and stern thrusters
- Fenders out on appropriate side.
- Trim Tabs “Up” (Bow Up)
- Bow line **OUTSIDE stanchions** and bloused around to midships.

- Engines dead slow, wheel centered for thruster-only maneuvering.
- Mate ready to secure stern first (in most circumstances).

At Dock in Marina:

- Lines secure, including spring lines.
- Trim Tabs “Up” (Bow Up)
- Turn engines off by turning BOTH keys to left
- Then, turn keys 1/4 turn counterclockwise past “off” position **until all lights on BOTH EDC panel are off** (otherwise you will drain the batteries!)
- Water heater breaker off until Inverter current settles (see “Inverters” below).
- Shore power cord connected.
- Shore power switch “On” to appropriate shore power location.
- Shore power confirmed on meters.
- Inverter “On”.
- Electric use monitored for current capacity of shore facilities.

Mooring at Buoy:

- Crew and Skipper have headsets on and connected to each other. **Be sure to secure headsets to life jackets or clothing with clips to prevent loss overboard!**
- Skipper puts starboard side gate next to buoy with mate standing by it.
- Mate loops 20' or so line, such as bow line, through buoy ring.
- Mate holds two ends together, walks up side of boat to bow of boat.
- With buoy held close to bow, line secured to each bow cleat through hawsepipe.
- Turn engines off by turning BOTH keys to left
- Then, turn keys 1/4 turn counterclockwise past “off” position **until all lights on BOTH EDC panel are off** (otherwise you will drain the batteries!)
- Inverter “Off” unless in use or Generator is running.

Mooring at Anchor:

- Crew and Skipper have headsets on and connected to each other. **Be sure to secure headsets to life jackets or clothing with clips to prevent loss overboard!**
- Anchor is lowered from pulpit while boat is backed up slowly away from anchor.
- When desired chain length out (4:1 or 5:1 scope), windlass is stopped.
- Engines reversed “for count of five” until chain pulls up virtually straight. Note: the boat is not held in reverse against a taught anchor chain!
- Turn engines off by turning BOTH keys to left
- Then, turn keys 1/4 turn counterclockwise past “off” position **until all lights on BOTH EDC panel are off** (otherwise you will drain the batteries!)
- Inverter “Off” unless in use or generator is running.

Overnight Checklist in Marina:

- Shore power “On”
- Trim Tabs “Up” (Bow Up)
- Inverter “On”

Overnight at Anchor or Buoy:

- Inverter “Off” to conserve batteries.
- Trim Tabs “Up” (Bow Up)
- Anchor light “On”.
- DC electrical items all “Off” including radios, extra lights, etc.

Upon Arising:

- If at anchor or buoy, Inverter “On” only if necessary.
- If necessary, run generator to charge batteries at anchor or buoy. Inverter “On” if shore power available or generator is running. Turn on heat if necessary.
- Go to top of this Adagio checklist section.

BOAT OPERATION

Engine Inspection

Remember your “**WOBBS**” every morning: **W**ater (Coolant), **O**il, **B**ilges (Inspect and Pump-out), **B**elts and **S**ea Strainer.

! Check the level of COOLANT in the expansion tanks located outboard of each engine on the side of the fresh water tanks. If coolant is needed, determine if there is any sign of a coolant leak under the engine, and if there is, do not run the engine; if no leak, add coolant to the tank from the jug of pre-mixed antifreeze/corrosion inhibitor/water supplied on the boat, located under the coolant tanks.

! Check the level of OIL in each engine by checking the dipsticks located on the inboard side of each engine, at the aft end of the engine itself, fairly low on the crankcase. Use a paper towel from the roll on the shelf aft of the port side engine and disposable gloves (provided in engine room), wipe the stick, reinsert, and take reading. You must remove, wipe, and re-dip the stick to get an accurate reading because the sticks often will be “dry” the first time they are pulled. Look at the etch marks on each dipstick that indicate the proper oil level. The distance between the two marks is about 1.5 quarts. Add only enough oil to bring it up above the “add” mark, say a quart, using the oil provided on the boat, located on the outboard side of the engines. **DO NOT OVERFILL OIL!** Only fill if oil levels are below the ½ way “add” mark. Ask your fleet captain at checkout if you have any questions about the markings on dipsticks. Please use a paper towel or oil rag, not the dish towels! (If you need more oil, buy it! We will reimburse you.) The oil fill on each engine is the cap forward on the top of the engine’s forward valve cover.

! VISUALLY INSPECT THE ENGINE ROOM WHENEVER YOU’RE IN IT, asking yourself, “Does everything look right?” Look at the pads under the engines and transmissions: While some drips are normal, there shouldn’t ever be substantial accumulations of any fluids! Check the general condition of the BILGES, BELTS, HOSES, and FUEL LINES.

! Ensure the valve on each RAW WATER THRU-HULL is in the ‘open’ position (lever in-line with valve).

Sea Strainer Cleaning & Seacocks

CHECK THE SEA STRAINERS ONCE A WEEK, OR IMMEDIATELY IF EITHER ENGINE RUNS “HOT”. The engine strainers and valves are in the aft end of the engine room on each side of the propellor shafts. The genset sea strainer is just to port of the water heater. To check a strainer, shine a



The genset sea strainer, with its through-hull right next to it, forward in the engine room.

flashlight through it. While some “fuzziness” from trapped thin growth is normal, you should see the light clearly on the other side; if obscured, you should clean the strainer. If necessary, close the seacock, open the strainer cover, clean the strainer, and reassemble. **Remember to reopen the seacock.** Confirm water flow from exhaust(s) Check your generator fluids as well.

If a sea strainer needs cleaning, here is the procedure:

1) Look at the base of the strainer near the hull. On the side is a valve lever, with a relatively long handle.

The main engine sea strainers are aft of each engine. The generator sea strainer is to starboard of the water heater at the forward engine room bulkhead.

2) Turn the valve lever so it is perpendicular to the sea strainer (parallel to the hull).

3) Using a wrench from the tool kit, unscrew the top of the sea strainer. Then remove the strainer by pulling it out the top of the assembly. Rinse the strainer thoroughly and, if necessary, remove any debris from the glass housing.

4) Reinsert the strainer, tighten the top cover with the spanner, AND TURN THE VALVE BACK ON —failure to do so will overheat the engine.



Port main engine sea strainer in foreground; its valve is just on the far side of shaft, with blue handle on far side “up”/open.

This entire operation will take 5-10 minutes at most, and will assure you of cool engines.

Engine Controls

The Volvo engine controls provide remarkable capability, **but you should exercise extreme caution when first using them until you are used to their operation!**

Connect the adjacent shift/throttle lever to the engine, engage/disengage the engine synchronizer, allow accelerating the engine(s) without engaging the propellers, and warn if there is a problem with the system.

Button Functions:

“**Key**” = Press to *take control* at a helm location.

“**D**” = Press to test “D” LED (see below for light meaning).



The electronic controls for the engines have six buttons and seven LED pilot lights. There is one of the controls at each helm station.

“N” = Press and hold to move that engine’s lever *without* it operating transmission, so you can accelerate engine without being in gear. **Green light must be blinking to ensure you are in neutral!**

“=” = Used to engage or disengage synchronizer (above 800 rpm).

LED Indications:

Red by Key	=	Indicates this control station is active.
Green by “N”	=	“Steady”, operation normal for this transmission. “Flashing”, in non-shift mode (see “N” above).
Yellow by “D”	=	Lit: Engine control is inoperative: DANGER!
Blue by “=”	=	Lit: Engines synchronized No light: Engines independent.

It is important to note that when pressing the control pushbuttons, you need to press and hold the button for a second or so for it to function! A “quick jab” will not cause the button to operate successfully. The control is designed this way so that it can tell you definitely want to push the button, and have not accidentally bumped it...

Likewise, there is a normal delay when the controls shift gears! When the transmissions are cold, this will be as much as a “count of four” between the control’s going into the “forward” or “reverse” detent and the transmission actually going into gear. After the transmissions are shifted a few times, this delay (built in to protect them from being shifted from forward to reverse or vice-versa too quickly) will be about two seconds.

Here is the operating protocol:

1. Turn one engine key “on” (but do not start)
2. Press Engine Control “Key” button until red light by “key” illuminates
3. Press and HOLD “N” button so green blinks, KEEP HOLDING THE BUTTON as you advance the throttle about 3/4" past detent. Once the throttle is advanced, release the button.
4. Turn engine key past “On” to activate starter. (3-4 revs before injectors open)
5. If engine does not start, turn to “off” and repeat that engine’s procedure.
6. When engine starts, reduce throttle gradually to idle, levers in “neutral”
7. Repeat steps 3 & 4 for other engine
8. Lights will be steady red by “key”, and green by “N” buttons. (See above.)

You will want to be especially careful using these controls until you are comfortable with them and used to their response times; you can be confident that they will operate properly, but you will need to get used to them!

Start-Up

Before starting the engines, do your inspection. The engines should be started from the lower helm station. Ensure GEARSHIFTS are in 'neutral', or the engines cannot be started because of the "neutral lockout". Turn the key clockwise partially until the ENGINE ALARM sounds and pre-heat the engine (if applicable). Turn the key fully clockwise to engage the engine. If the starter does not engage when the key is turned, move the gearshift lever slightly until you find neutral and try again while turning key.

Refer to steps in Starting Engines Checklist above for step-by-step instructions.

If the engine cranks slowly or fails to turn over, check the condition of the battery on the ELECTRICAL PANEL. If the battery is low, run the GENERATOR.

Note -- If oil pressure is low, shut down engine, and inspect engine compartment and look for possible cause (for example, loss of oil.) Caution -- If an engine is overheating or there is lack of raw water expelled in the engine exhaust, stop the engine immediately. Recheck the raw water-cooling system to ensure the seacock is 'open' (handle in-line with valve). Next, check the raw water strainer for debris. Remove the strainer, clean, re-assemble, and reopen the raw water intake valve (seacock). Restart the engine and re-check water flow from the exhaust. If water is not flowing properly, the RAW WATER PUMP may need to be serviced. Seek help.

Shut-Down

Before shutting down, allow the engines to 'idle' for about 5 minutes to cool them gradually and uniformly. The time engaged in preparing to dock the boat is usually sufficient. Ensure each GEARSHIFT is in the 'neutral' position and each THROTTLE is in the 'idle' position.

Refer to steps in Arrival Checklists above for step-by-step instructions.

Getting Underway

DISCONNECT the shore power cord (see 110-Volt next page). Close the PORTHOLES, WINDOWS, and FORWARD HATCH. Turn on your VHF and electronics. ASSIGN crew members their various positions. Once outside the marina, idle the engines while crew brings in fenders and lines. The bow thruster is often helpful to hold the bow to the dock while the bowline is removed.

Refer to steps in Checklists above for step-by-step instructions.

Bow and Stern Thrusters

Adagio has bow and stern thrusters with “joystick” controls at each helm. These will assist you in leaving the slip, maneuvering out of the marina and getting extra close to the dock on return. The thrusters run from their own banks of 24-volt batteries which are charged only by AC. Unless the generator is operating, those batteries get no charging, so the thruster batteries can easily be run down with excessive use if the generator is not on.

To operate the thrusters::

- ! Turn on thrusters by pressing both “on” buttons simultaneously until the lights stay lit;
- ! Then operate the forward or aft “joystick” to run that thruster.

The thrusters only stay “ON” for about four minutes to protect them from overuse. After 4 min, they turn off and you will have to turn them “on” again!

Do not overuse the thrusters! Operating them in “jabs” of 10-15 seconds at a time should be enough...they cannot be run for extended times without shutting down when their thermal overload protective relays open!

Cruising

All close quarters maneuvering should always take place at the FLYBRIDGE HELM helm.

Engage the GEARSHIFTS. Ensure the throttles are in the ‘idle’ position before engaging the gearshifts to avoid transmission damage. Cruising speed is a maximum of about 2100 RPMS. If you run at 1800 RPMS you will cruise at about 12 knots and use only about 18 gallons of diesel per hour. Your speed will vary depending upon the weight and load and weather conditions. TRIM TABS can be adjusted for comfort and visibility by putting in the “bow down” position.

Note -- Avoid higher engine speeds as it causes higher engine temperature, possible damage, and higher fuel consumption. In general, lower RPMs result in much improved fuel economy.

Trim Tabs

The boat is fitted with a set of Bennett Trim Tabs. These are wide “flaps” attached to the aft end of the boat, under the swim step at the trailing edge of the hull, operated hydraulically under the control of the skipper by rocker switches at each helm station with an indicator nearby. At low speeds, up to approximately six knots, the tabs do little, and should be left in the “Bow Up” position (see below). But at speeds over this range, the tabs begin to take effect and will help the operator lower the bow for more efficient cruising.



The two buttons on the indicator bottom edge control light intensity: Press the right button to increase it, the left button to reduce it!

Trim tab indicator, tabs half down.

The best way to adjust the tabs is to lower them while watching the “Speed” indicator to get the highest speed at a given throttle setting by adjusting “Bow Down”. If the tabs are “Bow Down” too much, the steering gets mushy and speed drops off a little, and the tabs should be adjusted “Bow Up” a little. It will take time to make these adjustments; when the buttons are depressed, they need to be held 2-5 seconds each time for change to be felt and observed (the best way to see the effect of the tabs is by the knot meter and by observing the height of the bow relative to the horizon, most easily seen from the lower helm station).

Another technique: When running from the pilothouse, trim the bow down until the horizon is resting on the bow rail; this should be near-perfect!

*Because the trim tabs are so large, **THEY MUST BE IN THE FULLY-BOW-UP POSITION WHENEVER THE BOAT IS TO BE OPERATED IN REVERSE**, otherwise the great water forces against the tabs may damage them severely, even tearing them off the hull!*

Anchoring

Adagio is equipped with an appropriate all-purpose anchor with at least 400' of all-chain anchor rode plus an emergency anchor (in the lazarette) with chain and rope rode. **The anchor chain is painted every 50 feet.**

WINDLASS POWER SWITCHES are located in the pilothouse on the upper console and on the flybridge helm to the left of the steering wheel. At the bow, tap gently on the ‘down’ foot control to provide a small amount of slack in the chain. Tip the anchor just over center and gently begin lowering the anchor. If necessary, guide the anchor over the anchor roller to prevent binding on the pulpit. Be careful of pinch points.

Let out sufficient ANCHOR RODE before setting the anchor. (see below) If the anchorage is crowded put down at least a 3 to 1 scope (60 feet for 20 feet of water), back the anchor in with a short burst from the engine. Then let out additional scope dependent upon conditions. ANCHOR CHAIN BRIDLE is located in one of the bow storage compartments. Install the bridle from bow cleats to chain, slack a loop in the windlass side of the chain.

Before attempting to anchor, select an anchorage with a soft bottom such as sand, mud, or gravel, if possible. Look at the charts and cruising guides for tips on good locations. Then,

choose the spot in the anchorage where you have room to “swing” on the anchor without disturbing other boats. Remember, responsibility for leaving room goes to each successive boat to arrive, for the first boat has priority in the anchorage!

Here in the Northwest, because of the deep waters, all-chain rodes and small bays, we anchor a little differently than in the Gulf of Mexico or Caribbean, for example. First, except in severe weather we use anchor chain scopes of only 4-to-1 or 5-to-1. For example, in water that is 40 feet at high tide in the typical anchorage, we might use 160 feet of chain unless the weather was to be gale force or greater winds.

Second, because of the small bays and steep bottoms, we often rig a shore line from the stern of the boat to shore. The best example of this would be at Todd Inlet at Butchart Gardens. Here is a bay that can accommodate 8 - 10 boats, yet it is only about 150' wide and 200' long! Boats attach their bows to the mooring buoys or, in a few cases, anchor; and then their sterns are secured to rings provided in the steep cliffs overlooking the bay. Boats are thus perhaps only 20' apart, side to side.

Anchoring safely requires two persons, one at the helm maneuvering the boat and one on the bow operating the anchor. Putting the bow of the boat over the spot where the anchor is to be placed after checking the depth on the depth sounder, the windlass foot-switches are used to lower the anchor slowly, watching the chain markings. The anchor chain is painted every 50 feet.

When the anchor is near or on the bottom, the boat is backed away by putting the engines into reverse for 5 seconds: Eddies from the chain indicate motion. Resume lowering the anchor while drifting backwards (watch the eddies and add another burst or reverse if necessary!) until the desired amount of chain is out. Stop paying out chain. Engage reverse for five seconds at a time until the chain starts to pull straight off the bow toward the anchor. A straight chain indicates a “set” anchor!

NEVER pull on the chain for more than five seconds, and never at any engine RPM other than idle! Putting the boat's weight plus its horsepower on the chain forcefully even at idle will bend the anchor and/or damage the mooring gear!

If while checking the set, the chain rumbles and clunks, and seems to release in bursts, it means you're anchoring on a rocky bottom and the anchor is not holding. Be patient: It may not set on the first try, and you'll have to repeat the process sometimes to get a good “bight” on the bottom.

Before raising the anchor, ALWAYS start the engines as the windlass uses large amounts of power. Turn ‘on’ the WINDLASS SWITCH and take up slack to remove pressure on chain bridle. Remove the bridle from the chain. As the boat moves toward the anchor, press the ‘up’ control to take up slack line. Give the windlass short rests as you are pulling it up. If necessary, idle the boat forward with the engines by placing briefly in gear to put slack in chain. Place yourself in position to guide the anchor onto the roller. As the anchor rises, be

careful not to allow it to swing against the hull. Wash it down with the wash down pump before it goes into anchor locker.

Close the plastic covers on the FOOT PEDAL CONTROLS. Turn 'off' the WINDLASS POWER SWITCH.

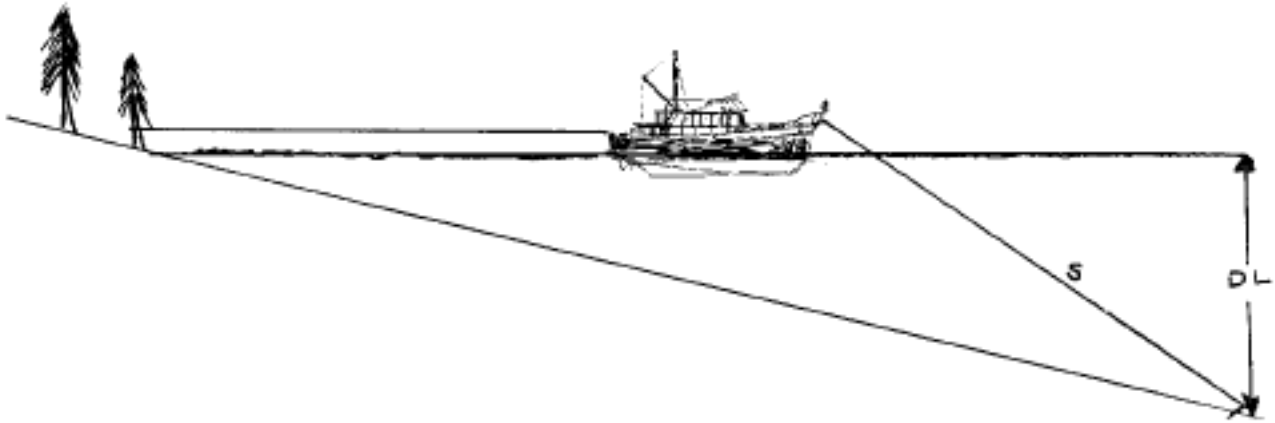
Shore Lines

When a shore line (stern tie) is required, anchors are set 75 - 100 feet from shore, with the boat backing toward shore during anchor-setting. The stern line is put around a tree or through an anchored ring provided in some parks, and brought back to the boat. Adagio is equipped with a stern tie line, located in the lazarette.

During this process, be sure to keep clear of rocks near the shore, and allow for our Northwest tides, occasionally twelve feet, and sometimes 20 feet when further north! Check the present tide, and high and low tides before beginning anchoring: No sense anchoring in 15 feet of water if you're at the "top" of a 15 foot tide!

To get to the shore, you will need to have a dinghy down, and then have your mate keep the boat's stern toward shore with short bursts of reverse gear. Sometimes a helpful boater already anchored will help you by taking your line to shore for you with his dinghy, a neat "good deed" that you might reciprocate. We've met some nice boaters this way!

The stern tie line in the lazarette is long enough to usually allow taking it to a tree, around it, and back to the boat so you don't have to go ashore to untie when leaving. With a crew member keeping the boat in position, take the dinghy to shore pulling the end of the shore line with you. Pass it around a tree, and pull it back to the boat if you can, since then to get away in the morning all you have to do is release the bitter end from the boat, and pull it aboard. Pull the line tight. As long as you've got over 100' total of line out, there is plenty of sag/stretch, and we want to keep the boat in its area! If necessary, put a crab pot float or fender on the line to warn others it's there!



Above is a sketch of a properly anchored boat with a stern tie (in this drawing, S =Scope, which should be at least $4 \times DL$, the Depth at Low Tide).

Mooring Cans

WA STATE limits MOORING CANS to boats under 45' in length.

DO NOT tie Adagio to a mooring can in WA State!!

Mooring cans in Canada may have different rules. If allowed, here is the process for tie to them: Typically, cans have a metal triangle at the top upon which is a metal ring. The metal ring is attached to the chain which secures your boat. IT IS VERY HEAVY. The strongest member of your crew should be picked for this job. Come up to the CAN into the wind or current as you would for anchoring. Have crew members on the bow, one with a boat hook and one with a mooring line secured like a bow line. As you are coming slowly up to the can have the crew holding the boat hook point at the can with the hook so the skipper always knows where it is. Hook the can and bring the ring up to the boat to allow the second crew to thread the ring with the line. Release the hold with the boat hook. If your mooring line is led out the starboard chock bring the end of the line back through the port chock. You will essentially create a bridle with about 10 feet of slack from the chock to the can.

Docking

Prior to docking, rock TRIM TAB switches to the 'bow up' position (8 to 10 seconds) to make slow-speed backing and turning easier. While moving slowly to the dock or mooring location, center the WHEEL (e.g. rudders straight) and use only the GEARSHIFTS and THROTTLES to

maneuver the boat. Use BOW AND STERN THRUSTERS for final docking and maneuvering. Take your time, and keep the boat running “dead slow” so that you can plan each approach. You shouldn’t need to use the throttles at all.

During docking, use the FLYBRIDGE HELM for greater visibility to the stern. Have your crew make ready the lines and fenders and give clear instructions on how you will be docking. HEADSETS ARE PROVIDED FOR SKIPPER AND CREW TO COMMUNICATE EASILY DURING DOCKING, ANCHORING AND MANEUVERING IN CLOSE QUARTERS. **Be sure to secure headsets to life jackets or clothing with clips to prevent loss overboard!** When approaching a dock, have the fenders out as required and have the bow line already rigged and draped back on the side of the boat between the stanchions so it can be reached from the dock. *Never put a line from a cleat over a rail: the boat’s weight will bend or break the rail if it pulls against the line!* Your crew will need to step off from the swim step with the stern line. Often times another crew member will need to be at the bow or mid-ships to hand over the next lines. Engage the bow and stern thrusters in short bursts to hold the vessel while lines are put on the dock.

Fueling Up

OPEN FILLER CAP(S) located in the aft corners of the stern with a DECK FITTING KEY which is kept in the basket in the salon by the stereo.

MAKE SURE YOU HAVE THE RIGHT FUEL! DIESEL! DIESEL! DIESEL! MAKE SURE IT IS GOING INTO THE RIGHT DECK FILL! DOUBLE-CHECK!

Before pumping, have an oil/fuel sorbs handy to soak up spilled fuel. Locate fuel vents if possible to listen for tank becoming full and to know where sorbs may be needed. Also periodically have someone turn on the key to watch the fuel gauge.

Place the DIESEL nozzle into the tank opening, pump slowly and evenly, and note the sound of the fuel flow. Pumping too fast may not allow enough time for air to escape, which may result in spouting from the tank opening. As the tank fills, the sound will rise in pitch or gurgle. Pay attention to the TANK OVERFLOW VENT on the outside of the hull near the tank opening. The sound may indicate that the tank is nearly full. The tank vents will gurgle before the tanks are full, so when the vents begin gurgling, slow down until you hear the fill pipes’ pitch change. Top off carefully, and be prepared to catch spilled fuel. Spillage may result in a nasty fine from law enforcement.

Replace each tank cap. *Caution -- Clean up splatter and spillage immediately for environmental and health reasons. Wash hands with soap and water thoroughly.*

Section 4: Specific Discussion of Boat

Systems

This section of the operating manual will discuss each of the boat's systems in turn.

The systems and major components discussed are grouped and in order as follows:

Electrical Systems

Sanitation Systems

Water Systems

Heating Systems

Galley Equipment

BBQ

Electronics: Navigation Equipment, Radios, and Radar

Dinghy, Davit & Outboard

Entertainment Systems

BOAT ELECTRICAL

DC Electrical System

Concepts

Each year it seems more folks are confused by the operation of electrical systems on yachts than by any other subject! Don't feel discouraged if something isn't clear: You've got company in your confusion. So let's try to cover some theory here first.

Most of the equipment on any boat is run by 12 volt DC electricity from the boat's batteries. This is true because DC should always be available: We have batteries aboard even when

there is no shore power! If the batteries aren't run down, everything should work, just like in the family car.

Since the batteries are used so much, we have to replenish, or charge them. The most important way we do this is by alternators on the ship's engine(s). In most cases, one engine will provide enough electricity in most every case to run everything, and still have some energy left over to add back to the battery, that is, to charge it.

What if the engine(s) isn't running? Then, the batteries are slowly depleted until they have "run down" and there is no more electricity in them . . . a big problem, because then we not only can't run all the stuff on the boat, we can't start an engine to get more electricity.

So a good skipper and crew has "electrical power management" in mind whenever they turn an electrical gadget on or off!

With this in mind then we can state: If we need more electricity than the batteries alone can provide, and if a propulsion engine isn't running, we will need to get our electrical power from an alternative source! That's the reason why we use shore power or use the generator: To keep from running down the batteries. By using battery chargers that get their power from shore power or the genset, we can keep the batteries charged, or, at least, from getting too low.

In modern, luxury cruising boats, however, there is another important factor: Some of the "goodies" we like to have on board such as hair dryers and microwave ovens require ordinary household electricity. This is 110 volts AC. It is different from DC. So if we want to use these things when we're not at a dock, we must have another way to get 110 volts AC, and for this we use the generator or an inverter that takes 12 volts DC from the ship's batteries and makes it into 110 volts DC.

So here's what we've got: A lot of stuff running on 12 volts DC from the batteries. To keep the batteries from running down, we have alternators run by the engines, and battery chargers that get their power from shore power or the genset. For the stuff that runs on 110 volts AC, we have shore power, the generator, or, for making AC out of the batteries' DC, the inverter.

Battery Banks

The batteries on this boat are not just one, big all-purpose battery. To have redundancy, there are actually several "banks" of batteries assigned different tasks.

- A battery located starboard-most at the aft end of the engine room is used to start the starboard engine, while another battery just to port of the center on the aft bulkhead starts the port engine. Another battery just to port of the generator forward in the engine room

starts it. Because these batteries only start the motors, we can't run them down playing the stereo for instance, then be unable to start an engine.

- A group of batteries called "the house battery" are all tied together (paralleled); these are aft in the engine room in two boxes just to starboard of the centerline and at the extreme port side. These run the inverter, all the pumps, interior and exterior lights, horns, navigation and radio gear, etc. In other words, this bank runs the boat's "house". They are also charged when there is shore power or the genset is running by the inverter, which serves as a high-capacity charger.
- Separate batteries (two in each bank, wired in series for 24 volts) for the bow thruster (under the floor just aft of the generator on the engine room centerline) and the stern thruster (in the lazarette to port) work only those accessories, and are charged only by the 24-volt chargers dedicated to them.
- The port and starboard engine starting battery, and the house battery, are also charged whenever either or both engines are running: DC Electricity comes from the engine alternators to a battery combiner and from it to all three batteries.

For instance, if any starting battery is run down and we can't start an engine or the genset, we can still start the other engine and it will begin charging the deficient battery. Then we can start the engine itself that had the once-dead battery. Or we can start the generator, and let it charge all the batteries.

Since a battery works by making electricity through a chemical reaction, one component of which is water, we need to be sure the batteries have water in them; this battery servicing is normally done routinely every few weeks by the boat's owner or charter company.

The DC Electrical Panel

The nerve center of the DC electrical system is the DC circuit breaker panel by the steps to the pilothouse from the salon. On this panel are the switches that control power to the boat's various systems. At the top is the fresh water level gauge and the house battery DC voltmeter.

Just as in your home, most of these switches are true "circuit breakers": They feed power to somewhere in the boat where there is another switch which, in turn, turns the item on and off. An example of this would be the circuit breakers for the spotlight or cabin lights: If the breaker is turned on, the light still won't work unless you turn its switch.

Some of the breakers also serve as the switch for the item. An example of this would be the engine room lights. ("B" means used as circuit breaker, "S" means used as switch AND breaker.)

BREAKER			USE	BREAKER			USE
DC Main	B		DC Main Switch	Pilothouse DC Main	B		Pilothouse Main Switch
Cablemaster	B		(Unused)	Defogger Center	B		To defogger switch
Salon Lights	B		To light switches Salon	Galley Fan	B		To switch in galley
Galley Lights	B		To light switches Galley	Head Fans (2)	B		To switches in heads
Pilothouse Lights	B		To light switches Pilothouse	Pressure Water Pump		S	Turns on fresh water system
Master S/R Lights	B		To light switches Master S/R	Waste Pump		S	To switch at Y-valve.
Guest S/R Lights	B		To light switches Guest S/R	Washdown Pump		S	Turns on washdown system
Master Head Lights	B		To light switches Master Head	Trim Tabs	B		To Trim Tab Rocker Switches
Guest Head Lights	B		To light switches Guest Head	Power Seat	B		To Power Seat Pilothouse
Exterior Lights		S	Turns on exterior lights	Pilothouse Accessories	B		To Misc. Pilothouse Equipment
Engine Room Lights		S	Turns on E/R lights	DC Outlet Pilothouse	B		To Pilothouse DC Outlets
Companionway Lights	B		To light switches	Bilge Blowers (4 switches)		S	Turns on each Bilge Blower
Spotlight	B		To spotlight controls	Helm Accessories	B		To Misc F/B Equipment
Water Monitor	B		Turns on water meter above in panel	DC Outlet Bridge	B		To F/B DC Outlets
Waste Monitor Master	B		Turns on holding tank monitor	Bridge Power Seat	B		To F/B Power Seat
Waste Monitor Guest	B		Turns on holding tank monitor	Autopilot	B		To Autopilot System
				Electronics	B		Flybridge Electronics Main

In general, when on the boat, you'll have the exterior lights, engine room lights, waste pump, and washdown pump breakers "OFF", and all others "ON".

Engine Room DC Panel

In addition to the switches on the DC panel, there is a DC power panel in the engine room on the aft bulkhead just to starboard of the entry from the lazarette.

This panel operates the critical bilge pumps for the boat, and also switches the battery chargers, shower sump pumps, and mounts the windlass and main breakers.

Here are the engine room power panel switches:

NAME		DESCRIPTION
Bilge Pump (4 Switches)	S	Fwd/Mid-Fwd/Mid-Aft/Aft: "UP" = Run automatically by float switches; "MID" = Off; "Down" to run manually <i>Important! Leave in AUTO except in emergency!</i>
Sump Pump (2 Switches)	S	Fwd/Mid-Fwd/Mid-Aft/Aft: "UP" = Run automatically by float switches; "MID" = Off; "Down" = Run manually <i>Important! Leave ON except in emergency!</i>
Electric Heads (Fwd & Aft)	S	"UP" = On "DOWN" = Off <i>Important! Leave ON except in emergency!</i>
Manual Sumps	S	To run sea chest pumps (Seawater System) in case float switch fails
Battery Charger (3 Switches)	S	Port Engine/Starboard Engine/Generator "UP" = On "DOWN" = Off <i>Important! Leave ON except in emergency!</i>
MAIN (1 & 2)	S	MAIN 1: Feeds the DC Breaker panel by the salon-pilothouse steps MAIN 2: Feeds the Pilothouse Overhead switches <i>Important! Leave both ON except in emergency!</i>
Windlass	B	Windlass Circuit Breaker <i>Important! Leave ON except in emergency!</i>

In addition to the power panel, there are two battery switches on each side of the engine room aft bulkhead. The starboard side has switches for the starboard engine starting battery and the house battery, while the port side's switches are for the port engine starting battery and davit.

If you are moored and running from the batteries alone, plan your battery usage carefully. Allow for those 5-10 amp loads which are on much of the time such as the fridges, entertainment electronics, and lighting. Any one of these can run down the batteries if ignored for a significant time, so plan at the start to replenish batteries daily by running the Generator if moored, or the engines underway for at least two or more hours.

AC Electrical System

The AC Electrical System is controlled at two sites, the AC circuit breaker panel and the Inverter control panel. These panels have the switches that control the boat's AC electric systems. In addition, there is an AC voltmeter and AC ampmeter in the AC panel. This allows the skipper to monitor power usage to determine whether the generator or shore power is needed.

Just as in the case of the DC panel, the AC panel has some circuit breakers which are also switches:

BREAKER		USE	BREAKER		USE
SHORE	S	<i>These two breakers select the boat's power source. Pilot lights confirm that power is on.</i>	Washer	B	To Clothes Washer in S/R
GENERATOR	S		Engine Battery Charger	S	Turns on Batt Charger
A/C System Water Pump	B	To Air Conditioning Pump	Coffee Maker	B	To Coffee Maker
A/C Guest Stateroom	B	Air Conditioning Breaker	Receptacles Salon/Master (2)	B	To Outlets
A/C Master Stateroom	B	Air Conditioning Breaker	Range	B	To Electric Range
A/C Salon	B	Air Conditioning Breaker	Microwave	B	To Microwave Outlet
A/C Pilothouse	B	Air Conditioning Breaker	Ent. Center Mast. S/R	B	To Outlets
Pilot Lt: Power Available		Shows power is "on" to Panel	Dryer	B	To Dryer in Master S/R
Pilot Lt: Generator Running		Shows Genset is Running	Bow Thruster Battery Charger	S	Turns on Thruster Charger
Receptacles Galley	B	To Outlets	Inverter Charger	S	To Inverter: See below!
Receptacles Guest S/R	B	To Outlets	Icemaker	B	To Icemaker on F/B
Receptacles Exterior	B	To Outlets	Refrigerator Freezer	B	To Refrigerator and Freezer
Water Heater	S	To Water Heater Thermostat	Entertainment Center Salon	B	To Outlets

Connecting/Disconnecting Shore Power

The two breakers at the top left of the panel select between the shore power connector at the transom and the generator's power. You will see that only one can be "on" at one time! But, of course, both can be "Off".

You will want to turn "Off" the shore power breaker before you connect or disconnect the boat to shore. This is so that you do not draw an arc from the plug due to the load of the boat on the connector's pins: Such an arc will burn the contacts and eventually cause them to overheat when in use, creating a fire hazard.

Once connected to shore power, monitor the AC "line voltage" voltmeter and "line current" ampmeter to be sure you have not overloaded the circuit.

Important Note: If the house batteries are low when you first hook up to shore power, and the inverter is turned on (as it should be), the inverter will begin charging its batteries at a very high charging rate, drawing a lot of shore power current. Until this demand reduces

(see “The Inverter System” below), you should turn “OFF” other high-current AC appliances such as the water heater.

You can then turn on AC appliances as needed. Watch the ampmeter to be sure you don't exceed the dock's available supply, typically 30 or 50 amps.

Here are some estimates of AC power consumption for typical appliances:

Water Heater	15 amps	Inverter	up to 22 amps
Hair Dryer	12 amps	TV	1.5 amps
Coffee maker	10 amps	Cell phone	.3 amps
Microwave	10 amps	Refrigerator & Freezer	7 amps each

The Inverter System

As we said, the Inverter system is used to provide AC to the boat when there is no shore power. In 2023, a NEW inverter system was installed: MULTIPLUS-II 12/3000/120-50 2X120V INVERTER/CHARGER. The inverter can run the refrigerator and freezer, TV in a quiet anchorage, or be used for a hair dryer for a few minutes. But for long-period use of AC by large appliances, the generator must be running or you must have shore power available. That's because the boat's house batteries store about 300-400 amp-hours of electricity, that is, they can produce 100 amps for four hours, more or less.



Inverter control panel by DC panel.

Now the microwave, for example, will draw about 100 amps of DC when using the inverter to run it, so in 15 minutes you use one-quarter of an hour at 100 amps, or 25 ampere-hours. That means that in fifteen minutes, you've consumed almost 10% of the house batteries' stored power. That doesn't include power draw from any other uses such as lights, refrigerator, freezer, etc. But what if you want to cook a roast for 60 minutes? You use up one-quarter of your energy on that one job alone! The davit crane draws an exceptionally large load from the inverter. When in doubt, use the generator.

The inverter is only wired to certain outlets, the microwave, and the refrigerators. It will not run the water heater, boat heaters, air conditioning or battery charger. Electrical portable heaters, particularly, should never be run by the inverter!

But in addition to making AC out of DC, the inverter can do the reverse! If there is AC available from shore power, it will charge batteries! You tell what the inverter is doing by its control panel. The little lights indicate its status:

STATUS LIGHTS LIT	MEANING OF STATUS LIGHTS
“Inverter”	If lit, Inverter is On
“Low Battery”	If lit, inverter supply is low, batteries need charging.
“Over Temp / Overload”	Inverter has shut off do to error condition. Correct condition, reset with ON/OFF Switch
“Charger Bulk”	Inverter is charging batteries at “bulk” or fast rate (+/- 14.2 volts)
“Charger Float”	Inverter is charging batteries at “float” or idle rate (+/- 13.2 volts)

Remember the important note above under “Connecting/Disconnecting Shore Power”: The inverter, if on, will draw a lot of current when bulk charging, so be careful not to overload a shore power circuit. If “Inverter” and “Charger Bulk” are both lit, and the AC ampmeter in the AC power panel shows more than 30 amps (with other loads such as the Water Heater off), this higher load is being drawn from the AC supply by the Inverter!

In summary, the inverter should be on whenever shore power is present, and it may also be left on when underway.

The Generator System

The ship’s Kohler Generator provides 15,500 watts of AC power to the vessel and is mainly used for battery charging, refrigeration, cooking on the range and microwave, heating hot water, and air conditioning. Generally 1 to 3 hours of operation daily will recharge the boat’s batteries.

Given that distances are short in the Pacific NW – one of its appeals – you may only run the main engines a couple of hours on a run day. This may not be enough to recharge the batteries fully since the engine alternators are not as effective a charging source as the generator combined with the inverter. Take this into account in your power budgeting.

The generator is in the engine room at the forward center, and its oil and coolant levels are checked before each charter by the AYC staff. More important when traveling is checking the sea strainer (see previous section) to be sure it has not accumulated substantial debris while the generator was run for extended periods, particularly at anchor.

The generator stop/start controls are at the top of the DC power panel (that this is in the DC power panel is an anomaly)

Starting the Generator:

- 1) Hold down the switch in the top left of the power panel in the “Stop/Preheat” position for 15 seconds (this energizes “glow plugs” to warm the engine’s cylinders).
- 2) Then press and hold the “start” switch until the engine starts. If the engine does not start in 15 seconds, repeat step one and try again. Do not repeat more than twice lest the exhaust system becomes water-locked, possibly damaging the genset!
- 3) Check the generator exhaust (aft of the port engine exhaust pipe at the port side stern of the boat), or listen for it to confirm that cooling water is being pumped from it.
- 4) After a brief warmup of a minute or so, switch the circuit breakers in the AC power panel from “Shore” to “Generator”. You should see the “AC Present” pilot light go on!

Stopping the Generator:

- 1) Switch the “Generator” circuit breaker in the AC panel off. This removes the load for the generator and allows it to cool down.
- 2) After at least a minute to allow the generator to cool down, press and hold the generator stop switch in the DC panel until the generator completely stops.

Generator Problems

The generator monitors its own operation! It has two fault-detection systems: one of these will detect any loss in oil pressure, the other detects overheating. If either condition occurs, the generator will shut itself off, and it then will not keep running when you try to restart it. The start switch overrides the low-oil shutdown while the oil pressure builds.

Do not remove the water fill cap from an overheated engine. Let it cool, then remove the cap slowly with protective clothing on in case high temperature steam escapes. If oil pressure is the problem, check the oil level and top up. However do not attempt to re-start if the oil level is normal and you have checked the cooling system including the raw water strainer – if one of these is not the problem then the shutdown is protecting the engine from damage due to an internal failure.

If the generator will not keep running, call Anacortes Yacht Charters for assistance.

SANITATION SYSTEM

It is important that every member of the crew be informed on the proper use of the MARINE TOILET. The valves, openings, and pumps are small and may clog easily. If the toilet clogs, it is YOUR RESPONSIBILITY!

Always pump the head for children, so you can make sure nothing foreign is being flushed.

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

Head System Overview

The head system on this boat is reliable, straightforward, and easy-to-use. First, a note about discharge of sewage:

It is forbidden to discharge untreated sewage in inland US. waters, an area that includes all US. waters in which this boat operates. The boat holding tank must only be emptied at proper pump-out stations if it is in US. waters.

*(With the exception of certain Canadian Harbors which are no-discharge zones, this rule does not apply in Canadian waters. However, in Canada, courteous practice dictates that the holding tank be dumped only when outside **all** confined marinas or bays, as we are sure the reader agrees!)*

The boat is equipped with electric Vacu-Flush heads. These heads each have a separate pump which macerates waste and puts it either into a holding tank. The holding tank is emptied either of two ways: By operating an overboard macerator pump controlled at the DC power panel and by a switch and Y-valve in the engine room, or by pumping it using a shore side pump out station through the boat's side-deck pump out fitting.

The Vacu-Flush Heads

These premium heads are easy to use, odor free, and very reliable. They work with two separate vacuum pumps and vacuum accumulator tanks. A vacuum is maintained in the tank until the head is used, when the waste matter in the bowl is sucked out of the head by the vacuum, then it is pumped through the system by the head pump, which then also pumps up a vacuum again. Note that *it is this rush of the head's contents caused by the accumulated vacuum that is important to the head's operation!* This sudden rush causes any solid material in the waste stream to be shattered as it passes through the specially-shaped orifice in the bottom of the head. *For this reason, proper head operation requires that the head pedal not be held down for long periods of time. **The Master Stateroom head is particularly***

sensitive. Please flush more than once (allowing time for the vacuum to rebuild) if you need to wipe more than once.

The head uses about a half pint of *fresh* water from the ship's supply with each flush. The head is operated by a the pedal to the left of the head base (as you face the head), and operation is as follows:

- 1) Be sure the switch for the head in the toilet compartment is "On".

The switch in each head compartment should be left on unless you have trouble with the head (see below), in which case you will turn the switch "Off".

They carry this legend:

The top of this toilet switch must be pushed in the "up"/"on" position for the toilet system to work properly. If toilet pump keeps running, consult the captain and vessel manual!

- 2) Before using the head if the waste will be solid, lift the pedal to add water to the bowl;
- 3) Use the head;
- 4) Step on the pedal just long enough to hear the "whoosh" as the head is evacuated and a small amount of water rinses the bowl - - - about 4-5 seconds!
- 5) Releasing the pedal, if you wish to flush again, wait at least twenty seconds or so (until you hear the head pump stop) before flushing again.

As the pedal is released, the ball-valve at the bottom of the head seals it so that the vacuum can be pumped up, the pump will then stop, and the head is again ready for use.

If the head pump runs often or steadily between flushes, it is likely that the seal at the bottom of the bowl did not seal completely: you can tell if there is no water in the bowl. The solution is usually simple: Flush the head again and make sure the pedal comes all the way up when you remove your foot from it; then make sure the water doesn't leak out.

Holding Tank Pumpout, Y-Valve

There are holding tanks in the boat located in the engine room forward on each side; the port head always fills the port tank, starboard head always goes to the starboard tank. *Adagio* is equipped with holding tank indicators in each head compartment so it is easy to tell if the tank is full.

Two deck plates on the starboard side deck allow pumping both the port and starboard tanks at a shore-side waste pumpout station.



Y-Valve on ceiling of Engine Room port forward. Switch for overboard pump (red).

NOTE: the waste pump is small, pumping overboard will take a loooong time. To pump the tanks overboard, you must be in the engine room:

1. Turn “on” the “Waste Pump” breaker in the DC panel by the salon-pilothouse steps.
2. Be sure the “Waste” seacock in the starboard side of the lazarette is “open” (in line with the hose as it enters the valve).
3. In the engine room forward on the ceiling above the starboard tank is a “Y Valve”. Point the handle of this valve at the tank you wish to empty: If the end is alongside the hose to the port tank, you are emptying the port tank; if it point forward an to starboard, you are emptying the starboard tank.
4. Operate the switch by the valve to run the pump until the tank is empty. *Do not let the pump run dry: It will be damaged!* The effluent passes through a the hose and pipe aft to the pump and thru-hull valve.
5. When you are done, re-secure the thru-hull valve and turn off the pilothouse DC panel “Waste Pump” breaker.

WATER SYSTEM

Tanks

There are two polyethylene water tanks located to port and starboard outside the engines in the engine room of the boat. These are filled at a single cap on the starboard side deck of the boat. The two tanks are interconnected, so they will be emptied together at the same rate. A gauge at the top of the DC electric panel tells you the level in the tanks.

Water Pump

The water line from the tanks leads to the boat's fresh water pump in the engine room, starboard side forward of the engine. Provided its circuit breaker in the DC power panel in the salon is "on", this pump will run whenever its built-in pressure switch detects low water pressure. An "accumulator tank" by the pump provides a "pressure head" for the pump, so the pump doesn't need to run so often. Instead, a pump cycle will provide for several minutes of routine water use before pressure diminishes and the pump starts again.

It is a good idea to *turn off* the fresh water pump breaker in the DC panel (labeled "Pressure Water System") whenever leaving the boat for any extended period, lest a dripping faucet or broken hose cause the pump to run and waste your precious drinking water.

Water Heater

After the water pump, water is distributed directly to the cold water faucet lines. In addition, it goes to the boat's water heater. This heater uses either heat from the starboard engine (so you have hot water when underway and after running) or by AC from shore power or the generator; if available and the breaker is "on." The heater is insulated well enough to keep hot water overnight without power, provided you haven't wasted a lot in dishwashing!

Waste Water

Waste water from the sinks and showers (but *not* from the toilets) is dumped overboard in accordance with U.S. and Canadian law. From the various drains, sinks and showers, the water simply flows by gravity down into one of two "sea chests", located under the floor of the Master Stateroom by the hanging locker door and in the lazarette to starboard. Since these sea chests are *below* the water line, built in sump pumps operate to lift this water back above the waterline and dump it overboard. *It is therefore very important that the "auto sump" breakers in the Engine Room DC panel be left "on".*

In the unlikely event that a sump pump fails, drain water will back up in the showers or basins. *Try operating the "Manual Sump" switch on the Engine Room DC Panel to see if the failure was simply a flat switch. If this doesn't solve the problem, contact AYC.*

HEATING AND AIR CONDITIONING SYSTEMS

Air Conditioners

Heating and air conditioning on *Adagio* is provided by four air conditioning systems serving the salon, pilothouse, Master and Guest Stateroom areas. The air conditioning compressors are located in the lazarette, starboard side aft. To operate the units:

- 1) Be sure all *five* breakers are on for the air conditioning pump and the four units in the AC breaker panel in the pilothouse.
- 2) To run more than two units, you will need to have 50-amp shore power, or you will need to have the generator running.
- 3) Set the controls in each area for operation as desired. You can set the controls to automatically switch from heating and cooling, or select heating or cooling manually. You can also set the temperature for the area, and control that area's fan speed.

Hint: In cold weather, because the air conditioners in the “heat” (heat pump) mode are not very efficient, to heat the salon you will need to have the pilothouse air conditioning on, and in the “heat” mode. Turn the fans to the manual-low position and in about ten minutes the air will be warm; then turn the fans back to the “auto” mode. Following this procedure will considerably shorten the time before you get heat!

“Mode” Controls whether the system is heating or cooling. In “Auto”, it will operate as called for by the thermostat.

“Fan Speed” In “Auto”, the fans will speed up or slow down as necessary; at night, this can be annoying. In the “Manual” mode, pressing the button repeatedly varies the speed as shown by the row of LED's under the temperature display.



“Power” Turns unit on and off.

“Temp Select” “Inside” shows present temperature. Set to “Set Point” for setting system temperature for this area.

“Up”, “Down” Use these arrows to adjust fan or temperature.

“Dot” This illuminated dot (in the photo you will see it to the right of “71” in the temperature window) tells you that the system is on.

GALLEY

The galley is fitted with a number of appliances for your convenience. Most of these (like the microwave) are easy to operate, “just like a home appliance”.

Electric Countertop Range

This unit operates conventionally. Keep the glass clean to avoid burned-on food.

Electric Countertop Dishwasher

This unit operates very similarly to at-home dishwashers, except that freshwater must be added to the top of the unit before use. There is a water pitcher for this purpose. The unit will beep to indicate when the water level has been reached. Instructions for use are on the top of the unit.

PLEASE:

- Be sure to thoroughly rinse off food before loading. A seawater rinse works fine to conserve freshwater.
- Only use dishwasher detergent packs (provided). **Never use dish soap.**



MAKE SURE THE DRAIN HOSE IS SECURED IN THE GALLEY SINK



Refrigerator, Freezer

The boat is equipped with NEW (in 2024) efficient under-counter refrigerator and freezer that run on 110 volts AC only. When its compressor is running, it is cooled by sea water pumped through cooling coils. The compact water pump is in the engine room as is the compressor, to keep noise minimal.

Refrigeration is controlled by the thermostat in the back of the refrigerator; set as required *after allowing the refrigerator to stabilize for a few hours after loading.*

The shelves are adjustable in the refrigerator; be careful not to lose the shelf support clips when you are adjusting the shelf height.

Because of its excellent insulation, the fridge will stay cold a long time! If you wish, and you have kept the door closed for the preceding hour or so, you can shut the fridge off at night when at anchor to save batteries; but be sure to turn it on again in the morning!

The freezer operates the same way as the refrigerator.

Ice Maker

Located on the flybridge under the starboard counter, this is a conventional unit. To stop its ice production, lift the arm. It is quite efficient and can produce ice within a half-hour or so.

BARBECUE

Attach a PROPANE BOTTLE to the REGULATOR found in the cabinet with the wood cover in the cockpit. Carefully light the unit, preferably with a long-stem butane lighter. The barbecue generates a lot of heat and cooks hot and fast. Please burn off stuck on food and use the wire brush to remove any food residue when you are done.

*Note: Propane bottles are provided by AYC. If you anticipate needing an additional bottle, please ask AYC staff. Caution -- For safety reasons, do not store an opened propane bottle within the salon or engine compartment. Chances are these will leak slightly once opened and propane gas could settle into low spaces. **Store these bottles in the cockpit cabinet.** Ensure gasoline and flammable materials are not near the barbecue.*

ELECTRONICS: NAVIGATION EQUIP, RADIOS, RADAR

Overview

The boat is equipped with extensive electronic equipment, including VHF radios, two radars, two plotters with GPS receivers, an Apple iPad with GPS and the Navionics app with all local charts loaded, two depth sounders, and an autopilot.

The DC power supply for this equipment is controlled by a single electronics master circuit breaker in the bottom right corner of the DC power panel. Each unit then has its own power switch.

This manual does not attempt to provide operating instructions for any of the electronic equipment. Instead, you are referred to the equipments' own manuals kept in the pilothouse on the shelf.

VHF Radios

The VHF radios are beside each helm station. This is the pilothouse unit.



The VHF radios' controls are at both helm stations, in the salon and on the flybridge. The radios are designed for easy access to Channel 16, which is the hailing and emergency channel in the Northwest. Other buttons allow you to select different channels, weather channels, high and low power, and US/International operation. Your checkout skipper and/or the radio's own instructions will quickly familiarize you with basic operation.

Be sure to re-check the squelch each time you turn it on.

Radar

The boat is equipped with two radar sets. These can be used, combined with the electronic chart units, for operation in restricted visibility, with the radar primarily serving as a device for *collision avoidance* while the chart unit provides *position*.



One of the two identical Radar units.

Proper and safe use of a ship's radar requires lots of practice and careful study. While you are using the boat, you can have the radar on as much as you like to get used to the way it displays images, but for detailed operating instructions we refer you to the radar's own complete manual and details bottom of next page.

Note that charterer's insurance DOES NOT PERMIT OPERATION OF THE VESSEL IN RESTRICTED VISIBILITY. You should confine your use of the radar to familiarization and training only in weather with good visibility.

GPS and Electronic Charting System, iPad

The boat is equipped with two new (2023) Garmin GPS and Electronic Charting Systems to make your location easily identifiable. One unit is at the lower helm and another is at the upper helm. Operation is described fully in its manual on the boat.

REMEMBER: THE ELECTRONIC CHARTING SYSTEM IS NOT A SUBSTITUTE FOR CAREFUL STUDY OF TRADITIONAL PAPER CHARTS. You are required by maritime law to use your paper charts for navigation information, especially since electronic chart technology does not always permit full cartographic details to show, especially underwater hazards. The electronic charts are for convenience only!



Garmin Chart System

In addition, *Adagio* has an Apple iPad Air (black case) with GPS technology and the Navionics app with all local charts loaded for leisurely exploring options and as navigation back-up.

Take some time to familiarize yourself with this app and it will make course plotting and “zoomed in” navigation for avoiding hazards a breeze! **Passcode: ADAGIO (232446)**

Digital Depth Sounder:

Note: Northwest waters are rocky and depths change rapidly. You should be especially careful to study your charts, and then check them often whenever running in lesser depths, so that you don’t hit a rock! Just as our islands “pop up” to heights of 50, 100, or even thousands of feet in a very small distance, so do rocky obstacles underwater!

The digital sounder comes on with the DC breaker to provide a digital readout of depth and speed at both helms. The speed readout is measured with a ‘paddlewheel’. It is an approximate speed in water versus the GPS speed over ground (SOG). Remember when going astern, or when crossing a tide line, turbulent water from the tides or the boat’s screws (or the propellers of another boat) can interrupt the sounding information received by the unit. Be careful!

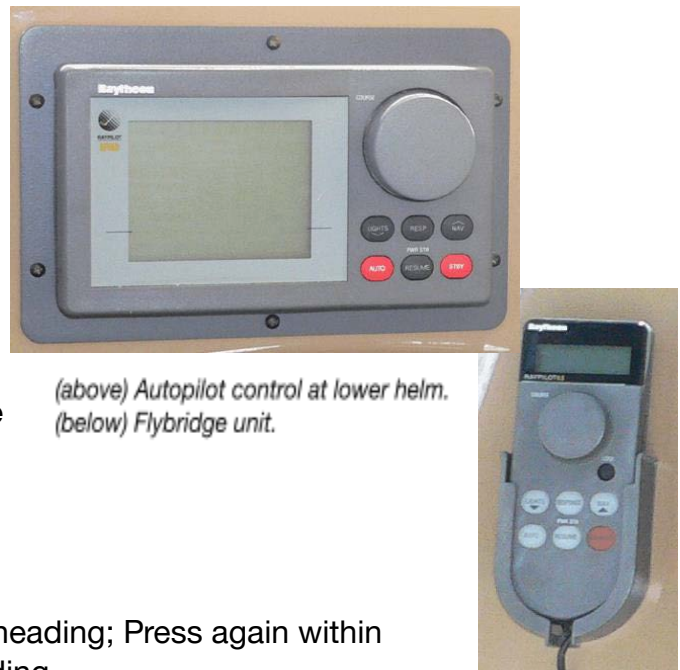
The depth display will flash when unable to get a reading, usually due to excess depth. When *flashing*, the numbers are *totally meaningless and do not represent the last reliable reading!*

Raytheon Autopilot:

The boat is equipped with a Raytheon “Raypilot” Autopilot. The primary control is at the lower helm. A second smaller remote control is at the upper helm on the port side of the console. Although rudder indicators are at both helms in the instrument panels turned on by a switch on the electronics panel, the autopilot also has a rudder display at each location, but for it to work, the autopilot must be on.

Here is the function of each button:

- Lights** Turns the dial lights on/off
- Resp** Allows the operator to adjust autopilot response. *Please do not use, as the pilot is already set correctly for most conditions!*
- Nav** Links the autopilot to the navigation course plotters. **Please do not use this function!**
- Auto** Engages the autopilot to steer your boat.
- Resume** Press once to see the last “Auto” heading; Press again within 10 seconds to go to that last heading.



Stby Disengage the autopilot back to “standby” mode.

Knob Allows you to correct your heading under autopilot control.

The autopilot is also controlled by the “Joystick” on the pilothouse helm seat:

Red Button Disengages the autopilot *only as long as pressed*.

Joystick If tipped left, boat steers left, if tipped right, boat steers right. *Releasing the red button will then hold the new course.*

Basic operation is simple:

- 1) To turn on the unit, push the “Stby” button to be in the “standby” mode. The unit will do a quick self-test, then display its present heading. **The autopilot should be in standby mode when underway, as some of the electronics equipment gets data through it.**
- 2) To engage the autopilot, push and turn the switch to “Pilot”. It will hold the present heading.
- 3) To disengage the pilot, push “Stby”, the unit returns to “Standby”.
- 4) Pressing the standby button on either control takes control at that location. Once in control, that station stays there until the other station takes control by pressing standby.

ALWAYS MAINTAIN A CAREFUL LOOKOUT WHEN USING THE AUTOPILOT! It is an aid to comfortable cruising, not a replacement for an aware, diligent helmsperson! Remember, you can disengage it quickly at any time simply by pushing “Standby”!

ENTERTAINMENT SYSTEMS

Starlink

In the pilothouse, on the half-wall with the galley is a Starlink router for Wifi connection wherever your journey takes you!

Starlink WiFi name: Adagio Starlink

Password: Adagio*570

(passcode is case-sensitive)

Starlink Antenna



Sonos, AM/FM Stereo Receiver with Bluetooth

There are two Sonos speakers (one in the salon by the sliding door and one next to the Starlink in the pilothouse). If you are familiar with Sonos systems, they are easy to add in your cellphone app and allow you to play music from your phone or from a music service like Amazon Music. Download the Sonos app to your phone to connect. Airplay (iPhones) also works with Sonos speakers.



Sonos speaker→



One of the Sonos speakers to the left of the white Starlink router

In the salon, opposite the galley you will find a Harman/Kardon stereo receiver. For easy bluetooth connection, the receiver has a ZIIDOO bluetooth transmitter/receiver. To play from your phone, leave the switch in the RX position, and hold down the button until the blue light flashes. You should then see the device as “BT-6” on your phone’s bluetooth options.

NOTE: TURN DOWN THE VOLUME ON YOUR DEVICE AND THE RECEIVER DURING CONNECTION. If your phone volume is too high, the sound will be distorted. If the receiver volume is too high you may blow out the speakers!

This bluetooth connection doesn’t always work with i-devices (iPhones, iPads). If you have trouble, try a hard wire connection by unplugging the audio cable from the ZIIDOO and using an adapter to plug directly from the stereo receiver into your device. Various adapters can be found in the basket in the salon cabinet opposite the galley.

There are speakers in several locations in the salon and on the flybridge. On the receiver are buttons to control where the music will be played. If you want to distribute sound to the flybridge, in addition to pushing the flybridge button on the receiver, you must also turn the speakers on/off using the controls on the flybridge helm. Volume can also be controlled from this helm.

In the master stateroom is a separate 5-CD changer, cassette player, and stereo with standard operation.

TVs, BluRay players, and connections for personal devices

In the salon, Adagio has a new (2023) pop-up 50” 4k UHD TV. When not in use, the TV is discreetly hidden in a wooden console. Aft of the TV is a storage unit with the remote control

to raise/lower the TV, the TV remote, a BluRay player with remote, several DVDs, games, and a lending library. On the top shelf, there is an HDMI cable that is bad (not connected) - do not use. For directly connecting your personal devices (phone, laptop, etc) use the HDMI cable in the BluRay player. Various adapters can be found in the basket in the salon cabinet opposite the galley. An HDMI to USB-C adapter should already be attached to the cable.

There is also a small TV and BluRay player in the master stateroom. Remotes are located in the drawer below the TV.

DINGHY & OUTBOARD MOTOR

Dinghy

The dinghy aboard this boat is a hard-bottom inflatable, designed to carry up to five passengers safely, with two sharing the seat behind the console, two in front of the console, and one in the bow. For safety, and compliance with U.S. rules, *there should be a life jacket aboard the dinghy for each passenger aboard whenever the dinghy is at sea.* Please be careful when pulling the dinghy ashore to minimize damage and scratches to the bottom.

Remember to raise the outboard with its electric tilt before it hits bottom when landing on a beach!

NOTE: this dinghy is heavy!! It can be moved by two persons if one is on each side and there is some water underneath. If the dinghy is left on the beach in an outgoing tide, you will need several strong people to get it back in the water! Don't "Ram" the beach; you can bump up to the beach gently and step ashore over the bow, pulling the dinghy a little more ashore as each person off-loads.

The dinghy will seldom require inflation as long as the valve seals are maintained and it is not punctured. Should inflation be required, simply pump up the dinghy until it is pretty hard (thumb can deflect a tube by about ½" maximum) using the pump provided on the boat.

Should the dinghy be punctured and you feel competent to make the repair, follow the instructions in the dinghy manual and use the dinghy repair kit also on the boat; otherwise, have it professionally patched at Anacortes Yacht Charters or a dealer's.

Dinghy Davit

This boat has a high-quality electric davit supporting the dinghy. Note that the dinghy is connected to the davit crane at three points via a heavy support bar: Two attachment points just forward of the outboard and one in the bow.



To launch the dinghy:

- 1) Plug the davit control box found in the cabinet on the flybridge next to the icemaker into the receptacle on the davit.
- 2) Remove the dinghy's canvas cover if installed.
- 3) Remove the tiedowns.
- 4) Raise the dinghy, swing it to starboard, and launch it.
- 5) Remove the support bar connecting the dinghy to the crane by unclipping from the boat AND from the davit crane. **It's heavy and can do serious damage or cause injury if left swinging freely!**
- 4) Swing the davit hook back to the boat, secure it, and tension it on the davit, to avoid damage to the yacht from a swinging davit if the boat rolls.

To retrieve the dinghy on the boat, reverse the above procedure. *Be sure to reconnect the tie-downs!*

Retractable Swim Step Dinghy Fender Cleats

On the swim step are two small pop-up cleats, placed to hold the small fenders to protect the back of the boat and the dinghy when the dinghy comes abreast. **Do not use the cleats to tow the dinghy...they are not strong enough!**

There are two small lines attached to the dinghy's flotation pontoons that are handy for securing the dinghy to the swim step. A fender can be swung to protect the motor.

Outboard Motor

The outboard motor for the boat is an 40hp Yamaha four-stroke, electric start outboard. This outboard is a four-cycle motor, that is, *you need not mix oil with the fuel, it uses regular gas only.*



The dinghy fuel tank filler cap is on the starboard side just forward of the driver's seat, labeled "GAS".



Under the seat are emergency oars, the battery and the red battery switch.

To check the motor's oil, remove the cover by pulling out the lever just under the aft-side handhold molded into the motor cover. After this lever is released, you can lift the back of the cover and unhook it. You will see the oil fill cap on the aft side of the engine, and the dipstick on its starboard side. (Adding oil is tricky: you may need to use a funnel to avoid spilling it.) Do not overfill! There is outboard oil stored in the lazarette.

CRABBING & FISHING

Always check the fishing and crabbing requirements before you leave on your cruise. You will need a license. Many areas are CLOSED to crabbing and fishing on certain months.

CRAB AWAY FROM THE BOAT! Lines can get wrapped around props. Fish-flavored cat food with the pop-up ringed lids or frozen chicken backs work the best for a nice neat way to bait the ring. After 15-20 minutes, retrieve the crab line and ring quickly. Be certain of water depth before lowering crab rings or pots; make certain the buoy line is long enough for the

depth. Measure the crabs using the CRAB MEASURING GAUGE normally located in the lazarette. Keep the male crabs of proper size (usually 6 ¼ inches across the carapace). We recommend cracking open and rinsing the viscera in the seawater before cooking. Boil crabs about 12 minutes to cook. ***Please cook crabs on the outdoor BBQ or with fans running and doors/windows open to avoid fishy smells in the cabin.***

After using, wash equipment thoroughly with fresh water (available on the bow or from the cockpit shower faucet). *Note -- Please do not store wet rings and gear inside the boat.*

THRU-HULL LOCATIONS

TBD

Section 5: “What to Do If”

ANCHOR CHAIN WON'T COME OUT OF CHAIN LOCKER

The anchor chain is continuous, secured at both ends, and cannot tangle. But sometimes a pile of chain will fall over, and one loop of chain will fall through another loop. Usually you can clear this by grasping the chain where it exits the hawse pipe from the chain locker with your hands, and pulling it up or down to “jiggle” the loop out of the chain; you may have to retrieve some chain to do this, in order to have enough slack to jiggle it! There are also access ports to the chain below the windlass in the bow lockers, use these to reach the coiled chain and unjam it. *Caution: Turn off the windlass breaker to protect your hands when manhandling chain!*

ANCHOR FOULED, CAN'T RAISE IT

This can happen if you “pull the boat to the anchor” with the windlass. You should move the boat under power until it is over the anchor, or, even better, slightly ahead of it before hauling. Usually this will clear it. Otherwise, take a line and form a fixed, loose loop around the chain. Weight the loop, and lower it down the line until it reaches the bottom, sliding down the chain. Then, using the dinghy, take the line forward past the anchor so that you can pull the anchor out, opposite the direction its flukes are pointing. This should help you to pull the anchor free.

ANCHOR WINDLASS WON'T TURN

If the motor isn't running, is the circuit breaker by the lower helm on? If the motor is running, is the clutch tight? Use the anchor windlass handle in the salon first aid cabinet. Windlasses are equipped with a shear pin to protect them: if you sheared the pin, you will have to haul the anchor by hand using the emergency handle.

If the windlass motor is running but the chain wheel is not turning, check the clutch:

Remove snap-on black cover on windlass capstan. Check large screw in center. Has it loosened? Tighten it to engage the clutch more firmly, and replace cover.

BATTERIES (HOUSE) KEEP RUNNING DOWN

Have you run the engines enough? Is something left on (like the engine room or mast lights, too many electronics, etc.) that is too great a load for the time you were not charging? Are you using the inverter for big jobs? Use the stove or shore power. Have you had the inverter on whenever plugged in to shore power? You must, for the house batteries to charge!

ENGINE OVERHEATS

Is the drive belt for the water pump intact? Spare belts are in the engine room spares kit. Is the sea strainer clogged? See that section in this manual. Is the impeller shot? If sea strainer is clear and belt is good, this is likely. Change (spare in spares kit) or call a mechanic. *Do not run engine if it overheats!*

ENGINE WON'T START

If the starter does not turn, is the transmission in neutral? Try jiggling the shift lever while pushing the start button. Check battery, battery switches. Try starting with the battery switch set to "both". If the starter turns, assume fuel problem: did you bump a fuel valve on the manifold at the back of the engine room? Make sure all are open, if one was closed, re-prime engine or call a mechanic if you can't do this (see Volvo engine manual). Remember, the starboard engine has its *own* battery!

FOG DELAYS RETURN

Call AYC by telephone or VHF marine operator and advise for instructions.

HEAD WON'T FLUSH

Is breaker on? Turn it on. Have you over-filled the holding tank? Pump it to allow more effluent to enter it. See the "Heads" section of this manual. If all else fails, just use only the other head.

HIT A FISH NET

Engines in Neutral: don't try to back off, you may foul the net more. Try pulling the boat back with the dinghy & outboard. Get assistance from the fisherman. *You are responsible for damage you cause to a net!*

HIT A LOG OR ROCK

See **EMERGENCY PROCEDURES**, next chapter.

PROPELLER FOULED OR DAMAGED

Best thing: Have the prop checked by a diver or dive it yourself if able. Check for vibration. Try turning the shaft by hand in the engine room, both should be turn-able with the engine in neutral. Is the shaft noisy, or does it load the engine? Do not use that side or call Vessel Assist. See emergency procedures, next chapter.

WATER (FRESH) WON'T FLOW

Is there water in the tank? Is F.W. Pump breaker on? If capable, check pressure switch on pump, run manually if necessary.

Section 6: Safety & Emergency Procedures

Protect your lives first!

Put on life jackets

Contact the Coast Guard with an emergency "MAYDAY" call.

If adrift, prepare to anchor to keep the boat from drifting into danger. If

the boat is really sinking, consider "beaching it" if necessary.

Launch the dinghy and prepare to board if necessary. If an engine is available and you have time, mount the outboard engine and load its fuel tanks. Take a handheld VHF radio, if available. Be sure to wear life jackets!

Then, worry about the boat!

In a true emergency, you certainly are authorized to call for immediate commercial assistance as minimally required to assure the safety of you and the boat.

It is not an emergency, however, if neither you nor the boat are at risk. For all non-emergency assistance or mechanical repairs done by others, Anacortes Yacht Charters MUST give prior approval for you to be reimbursed!

If you think it may not be an emergency:

If you have any concern about your long-term safety, contact the Coast Guard, either normally or using an urgent "PAN" call. Tell them that you are calling to advise them about your situation, so they can keep in touch.

Be sure that the status and safety of the boat and crew is someone's responsibility while you sort out the boat's problem. For example, delegate your mate to keep a watch for hazards, or to operate the boat on course slowly while you deal with the difficulty.

If necessary, call Anacortes Yacht Charters for help.

Over the years, most problems with charter boats are caused by misuse! Holding tanks overflow because they aren't checked; heads clog because foreign matter (especially facial tissues and tampons) are put in them; engines fail because they run out of fuel, then must be "purged" to re-start. Use the boat carefully, and you'll avoid these problems.

Almost all problems that are not operator-caused, i.e., that are boat deficiencies, are caused by pumps that fail, hoses and belts that break, and seawater strainers that get clogged. Generally, these problems are annoyances, and usually they are inconvenient, but they still *can* happen. Try to stay calm, collected, and be a professional. It will make everyone's day a better one!

Hitting a Log, Rock, or Debris ----- Please Don't!

Hitting a log is a real risk in our Northern waters because logging, and "log rafts," are such a big part of our commerce.

If you hit a log:

- Did you put a hole in the boat? Idle the engines, then think: usually, you can tell just by where the noise of the hit came from. Check the bilges (don't forget the lazarette area, where the rudder posts are) after putting the engines into idle and/or neutral, if necessary.

If you did "hole" the boat, go immediately to the "If an Emergency" on the preceding pages.

- If no hole, and still idling, is the boat vibrating?

If "yes," put each engine into neutral in turn, identify and shut down the offender. Then continue on one engine. Call Anacortes Yacht Charters after you reach the closest safe harbor. If no vibration at idle, slowly accelerate one engine at a time. Is there vibration on either?

If "yes," run at idle or on only the good engine, to reach a close, safe harbor. Then contact Anacortes Yacht Charters.

With a twin-screw boat, the damaged running gear can't be used after hitting an object. However, if while under way on one engine the other engine's propeller shaft rotates by itself because of water passing over its propeller, then you must let the unused engine idle in neutral so that its transmission has lubrication, and the cutless bearings on the damaged shaft are lubricated. This is still true whether the boat has dripless shaft seals or a standard shaft "log".

When running on one engine with the other idling as required, be sure that the idling engine is pumping water through its exhaust pipe.

- If there is no vibration on either engine, you probably did no running gear damage. Congratulations! Our diver will check your vessel's bottom upon your return, just as after every charter.

Life Vests

Remember there are 6-8 “horse-collar” style life vests stowed under the flybridge seats, with two more in the master stateroom cubby beside the bed. A few additional jacket-style life vests are in the master and VIP stateroom closets. A few should always be out and ready. Your flares and safety equipment are located at the lower helm by the maps and under the wet bar in the flybridge. Additional flares are under the seat in the dinghy.

Bilge and Parts

Adagio is equipped with an AUTOMATIC BILGE PUMP. The master switch is located on the electrical panel. Normally, the switch will be left in the AUTO position. You may occasionally hear the pump operate due to condensation and water from the shaft log accumulating in the bilge.

An AUXILIARY HAND OPERATED BILGE PUMP is operated ----- in the cockpit using the handle provided for that purpose (-----location). This is used only in emergency situations.

The ENGINE SPARES BOX (plastic blue color) is stowed in the lazette, aft port side. This includes oil filter, raw water impeller, pump parts, injectors, and other small parts.