# Grand Adventure

**A 42’ Grand Banks Motoryacht**

Operating Manual  
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Warning!

This notice is a part of this manual, and is placed here to warn you as an owner, crew member or passenger on this vessel that the author of this manual assumes no responsibility for any errors or omissions herein, and represents only that the writings and illustrations herein represent his “best efforts” to provide a comprehensive overview of the vessel, so that it can be operated by a person who has the necessary experience and/or training to operate such a vessel given the additional information herein.

You should be aware that this operating manual is provided as a convenience to the owner(s), crew members and passengers on this vessel, and is not complete in every detail. Given the complexity of this boat and its systems, there is no way that all conditions, contingencies, and operating details can be covered, both because of space limitations and because of ordinary oversight as contingencies are speculated upon by the author. Likewise, it is possible either through oversight and/or changes in the vessel as a result of additions, modifications, or deletions to or of equipment since publication of this manual, that items discussed will operate differently than described, be absent from the vessel, or be added to the vessel without discussion in this volume.

As a vessel owner, crew member or passenger on this vessel, you are here at your own risk, and the author of this manual has no responsibility for your actions whatsoever. If you do not feel competent to undertake any or all operations detailed herein, do not undertake it/them; get help from a competent person.

I thank you, (and my lawyer thanks you.)

Joseph D. Coons

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About the Author

Joe Coons is a retired AM-FM broadcasting station owner and computer systems corporate executive who throughout his life was involved in communications and mechanical, electrical, and electronic systems. He cruised his own boat on the Hudson River and Lake Champlain when a teen and in his early twenties, and during the 70’s and 80’s accumulated some 2,500 hours as an instrument-rated private pilot. Beginning in 1986 he became seriously involved in boating as a boat owner, subsequently working in a “retirement career” as a broker, also commissioning vessels, operating a charter fleet, checking out boat charterers, and training new power boaters. He has held a 50-ton Coast Guard Master’s license, and operated his own boats and a substantial number of others from 26 to 70 feet in the near-coastal waters of Washington State, British Columbia, and Alaska. His “helm time” exceeds 8,000 hours. In addition, he has trained hundreds of boaters in the skills of vessel operation.
Section 1: Introduction & General Description

Manual Objective and Limitations

This manual is intended to introduce you to “Grand Adventure”, its systems, and features, allowing you to operate it with the confidence necessary to enjoy your cruising vacation. It is not intended to replace a basic understanding of seamanship, including navigation skills, weather interpretation or boat handling.

This manual cannot answer every question or give you a solution to every circumstance. If you have a question, ask your NWE 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 at one time).

General Description of this Vessel

Exterior

The Grand Banks 42’ Motoryacht is a traditional yacht design, with fiberglass hull, cabin, and flybridge structures, a teak swim step, teak decks, rails, and gunwhale caps, and stainless steel welded fittings and handrails.

The vessel has easy walk-around decks, enabling secure passage about the boat.

On the side decks are the two fuel fills, one port-side and the other starboard. A holding tank pump-out deck fitting is on the starboard side deck. The water tank fills are on the forward side to port. Be sure to confirm you’re using the correct fitting!

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 pulpit. After passing over the winch, the chain goes below decks via a hawse pipe in the foredeck. Just aft of the windlass is a deck box that stores the shore power cord.
There are shore power connections (with an adjacent fuse holder) at both the bow and stern, selected by the shore power switch in the AC electric panel; when this cable is to be disconnected, the switch should first be turned to the “off” position to avoid arcing which could damage the plug contacts. The boat’s 30-amp shore power cable is 50 feet long and stays with the boat when away from its home dock.

On the “sun deck” you will find the permanently mounted barbeque with its own propane tank, and on each side is a deck box with various vessel essentials such as spare line and crab pot floats. Fender racks are forward on this deck.

The fly bridge has seating for passengers as well as the upper helm station. In addition to the helm’s controls and instruments (including GPS, depth sounder, VHF, and autopilot remote), the console has storage for the ship’s canvas and a shopping cart. Within the storage compartments beneath the seats you will find extra life jackets, the propane tank for the ship’s stove and the emergency anchor and line.
**Interior Accommodations**

Both entry doors are fitted with stainless locks, and have stainless catches affixed to the cabin sides to hold them open. The doors should be closed when underway to avoid getting salt water inside the doorways. The starboard and port door steps have storage beneath for shore power cord adapters, ship’s bell, deck key, etc.

Just forward of the starboard door is the helm station with electric switch panels adjacent and electronics panel above; on the helm itself are the ship’s radar, and GPS/plotter. In the helm cabinet is storage for tide tables, navigation tools, charts, and a laptop computer that is to be used for navigational purposes only. To starboard of the helm are the battery voltage display, windlass circuit breaker/switch, AC and DC outlets for accessories, and an AC Voltmeter and Ammeter.
Just aft of the starboard door is a small locker with four drawers and a cabinet where the coffeemaker, toaster and blender are stored. Above this is the diesel heat switch and thermostat. Under the settee is storage for galley items and two heater outlets for the salon. There are two cushioned teak armchairs as well.

To port aft in the salon is the entertainment center which houses the Surround Sound System, the TV/DVD player, and a fire extinguisher above. Under this cabinet is an under-counter freezer (which can be used as a fridge if the thermostat is set warm enough).

The galley has a propane stove with oven, a large stainless sink, a refrigerator and a microwave. A large pull-out shelf is above the refrigerator. The stove burners and oven have a push-button “igniter” to light them.

There are three staterooms on Grand Adventure. The forward stateroom, down the companionway steps includes two large V-berths with an insert to make a big berth; a hanging locker, and 2 drawers under each berth. There is a fire extinguisher above the head of the starboard berth. Moving aft from the stateroom to starboard is the forward head compartment with its own shower stall (with a drain switch in it) and Masterflush head and basin with vanity and with a medicine cabinet above.

Across from the forward head is the guest stateroom with access via a sliding pocket door. Here are a port side double berth, a bed table dresser with 4 large drawers, and a hanging locker at the bed’s foot.
The aft stateroom has an island-queen berth. To starboard of the berth is a bed table cabinet with a drawer and locker and in the forward starboard corner the compartment with the stall shower. In the shower compartment there is a large wall cabinet; the drain switch is inside it. Just outside the compartment hangs a fire extinguisher.

To port of the berth is a dresser with six drawers. Forward of this is the head compartment with vanity/sink and Master Flush head. In the center of the stateroom between the companionway steps and the shower compartment is a large hanging locker in which is stored the vacuum cleaner, first aid kit and file cabinet with equipment manuals. The berth has drawers beneath including a large chart drawer. There are also two heater outlets located there.

*Most spares are stored in the steps to both the forward and aft staterooms.*
Engine Room

Access to the engine room is through the floor hatches in the salon. Engine room lighting is turned on by a breaker in the ship’s DC power panel by the helm.

The 210-hp Caterpillar 3208-NA engines are to each side.

On the outboard starboard side are batteries, engine muffler, and Diesel furnace. Forward of the starboard engine is its sea strainer. Aft of the starboard engine is the fuel tank sight gauge for the starboard fuel tank. The Racor fuel filters for filter) and the generator are mounted on the side of the tank, with the fresh water pump and accumulator tank aft of them.

In the center of the engine room is the 8KW generator, and the genset battery. A tool box is located forward of the generator.

To port in the engine room are the water heater, the two refrigeration compressors and the port engine muffler. Aft of the port engine is the port fuel tank with sight gauge, and mounted on the tank’s side is the Racor filter for the port engine. Just behind the engine are two sea strainers, for the generator and the refrigeration water pump. Just forward of the engine itself is its sea strainer, a paper towel bracket, and a flashlight.

The engine shafts lead from the transmission couplings through the hull via shaft logs/packing glands.
**Dinghy**

The boat is equipped with an RIB- inflatable dinghy with 9.9 HP Honda four-stroke, electrical start, outboard motor (requires no oil/gas mixing), fuel tank, and oars. **Do not** let the davit arms contact the transom when launching or securing the dinghy! Be sure to secure dinghy to boat with attached strap.

**Deck Equipment**

The boat has mooring lines; a stern/shore line reel; an appropriate all-purpose anchor with at least 300’ of all-chain rode plus an emergency anchor with chain and rope rode; fenders/bumpers; a crab pot; a hose for fresh water tank filling and boat washing; and a boat hook. A trash compactor and additional electric refrigerator/freezer are on the flybridge.

**Safety Equipment**

This vessel is equipped with three fire extinguishers, one each in the forward stateroom and aft stateroom and another in the salon to port aft; flares (in the step); an appropriate supply of life jackets located in the hanging lockers in each stateroom; a first aid kit (in the master stateroom hanging locker); and VHF radios at each helm station as well as a handheld VHF at the helm. Additional life jackets are under the seats on the fly bridge. Charter clients with children under 90 pounds should bring appropriate life jackets for them.
Section 2: Specifications, Capacities, & Important Numbers

Important Data For This Boat:

Vessel Name: Grand Adventure
Vessel Official Number: 984244
FCC Ships License Call Letters WDF6109
Hull ID Number GNDD12271192

Capacities:
- Sleeps six: Two in each stateroom
- Fuel: 600 Gallons in two 300 gallon tanks
- Fresh water: 240 Gallons
- Holding Tank: 30 Gallons

Dimensions:
- Length overall (LOA): 46 feet
- Beam: 14 Feet 1 Inches
- Draft: 4 Feet 2 inches
- Displacement: 34,000 Pounds (Empty)

Fluids:
- Motor Fuel: #2 Diesel
- Motor Oil, mains: 15W-40 Chevron Delo Multigrade
- Transmission Oil: 30-weight Single Grade
- Engine Coolant: 50-50 mix, ethylene glycol and water; corrosion inhibitor added

Operating Parameters:
(All estimated)
- 1600 RPM 8.0 knots 4.5 GPH
- 1800 RPM 9.0 knots 6.0 GPH
- 2000 RPM 10.0 knots 9.0 GPH
- 2200 RPM 11.0 knots 13.0 GPH
Section 3: Checklists & Maneuvering Suggestions

First Thing Each Day:
- Check engine oil and coolant.
- Check under-engine oil pads.
- Check fuel tank levels with Tank Tender gauge on panel above lower helm or open valves on top/bottom of sight gauges in tanks in engine room to check them.
- Check holding tank indicator in aft head.
- Turn off anchor light.
- Check battery voltage - if 12.0 V or less, start generator.

Starting Engines:
- All lines clear of propellers and on deck.
- Throttles retarded to idle, shift levers in “neutral”.
- Stop solenoid switch “On”.
- Engine power switches “On”, start engines.
- If engines do not start, see “What to Do If”.

Leaving Dock: (Only 3-4 minute engine warm-up required.)
- Shore power switch “Off”.
- Shore power cord removed, stowed on board.
- Step stool aboard, if used.
- Lines removed.
- Fenders hauled aboard and stowed.
- Lines and other deck gear secure/stowed.
- Doors and hatches closed and secured.

Underway:
- Helmsperson on watch at all times.
- RPM under 1400 until engines warm to 140°; RPM never to exceed 2400 RPM.

Approaching Dock:
- Fenders out on appropriate side.
- Bow line OUTSIDE stanchions and bloused.
- Engines dead slow, rudder centered for engine-only maneuvering.
- Mate ready to secure mid-ship and stern lines.

Arriving at Dock in Marina:
- Lines secure.
- Step stool out, if needed.
- Shore power cord connected, shore power switch “On”.
- Shore power confirmed on AC meters by starboard door.

Arriving at Mooring Buoy:
- Hook buoy ring with boat hook.
- Loop 20’ or so of line, through buoy ring.
- Hold two ends together, walk up side of boat to bow.
- With buoy held close to bow, line is secured to each bow cleat through hawsepipe.

Mooring at Anchor:
- Start generator prior to using windlass.
- Lower anchor while boat is backed up slowly away from anchor.
- Scope 4:1 or 5:1.
- Engines reversed for “count of five” until chain pulls up straight. Note: Do not hold the boat in reverse against a taught anchor chain!
Generator Starting/Stopping:
  • Hold “Preheat” button for 15 seconds, then “Start” button.
  • After one minute for warmup, turn power selector from “Off” to “Gen”.
  • Stopping: Power selector from “Gen” to “Off”, wait one minute for cool-down.
  • Hold “Stop” button until stopped.

Overnight Checklist in Marina:
  • Shore power “On”.

Overnight at Anchor or Buoy:
  • Anchor light “On”.
  • Electrical items all “Off” including radios, lights, device chargers, etc.

In Morning:
  • Start generator for battery charging.
  • Go to top of this Grand Adventure checklist.
Maneuvering & Operating Suggestions

Docking & Undocking

Usually it’s easier to dock bow in. Have your mate at the side rail opening, ready to step off and secure the stern and mid-ship lines. It is the skipper’s job to put the boat next to the dock so the mate needn’t jump.

Approaching a dock, have fenders out as needed and have the bow line already rigged, passed through its hawse pipe, 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! When the mate’s ashore, the line can be easily reached!

Maneuvering in a Harbor

Because the boat has twin screws, center the rudder and steer with the engines only! The props are so large that the boat will respond well except in high winds just with use of the propellers in forward and/or reverse. 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.

Filling the Fuel Tanks

Fuel each tank, taking the hose around the fore-or-aft deck to reach the outside fill pipe (don’t drag the hose over the decks or teak rails: have someone help you handle it). Make sure you open the correct filler caps! Fill both the tanks completely but do not spill fuel! You can control the flow rate by sound, as the fill pipes make the characteristic “getting to the top of the bottle” pitch change. 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.
Anchoring

Anchoring can be accomplished safely with a minimum of fuss if you are prepared. Or, if you are not ready, it can be stressful and dangerous for you or the boat.

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. The first boat has priority in the anchorage.

Here in the Northwest, because of the deep waters, all-chain rodes and the small bays, we anchor a little differently than in the Gulf of Mexico or Carribean. We use anchor chain scopes of 4-to-1 or 5-to-1. For example, in water that is 40 feet at low tide, we might use 160 feet of chain unless high winds are forecast.

Because of the small bays and steep bottoms, we often rig a shore line from the stern of the boat to shore.

Remember to start the generator before using the windlass. The windlass is a huge drain on the batteries and you may have to raise the anchor a few times to get a good bottom hold.

Anchoring safely requires two persons, one at the helm maneuvering the boat and one on the bow operating the anchor. Put the bow of the boat over the spot where the anchor is to be placed. Lower the anchor with the foot switch.

The anchor chain on is over 300’ feet, with distances from the anchor marked as follows:

10’ - red, yellow, red
50’ - yellow
100’ - red

Yellow markings at every 50’
Red marking at every 100’
10’ from end - red, yellow, red

When the anchor is about to reach bottom, back the boat away by reversing the engines for 5 seconds: eddies from the chain indicate motion. Resume lowering the anchor while drifting backwards (watch the eddies, adding bursts of reverse if necessary) until the desired amount of chain is out, then stop paying out chain. Engage reverse for five seconds at a time until the chain starts to pull straight off the bow to 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, or 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 to get a good “set” on the bottom.

Be sure the locking lever is secure in a notch in the windlass to lock it in place.
Shore Lines

When a shore line is required, lower the anchor 100 to 200 feet from shore, with the boat backing toward shore during anchor-setting. The stern line is put around a tree, and brought back to the boat.

Be sure to keep clear of rocks near the shore, and allow for the tide. Check the present tide, and high and low tides before beginning anchoring: Do not anchor 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 the dinghy down, and then have your mate keep the boat’s stern toward shore with short bursts of reverse. Lower the dinghy prior to anchoring.

The shore line is on a hose reel on the sundeck, and is long enough to 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 possible. Pull the line tight. If necessary, put a crab pot float or fender on the line to warn others it’s there!

Here is a sketch of a properly anchored boat with a shore line (In this drawing, S=Scope, which should be at least 4 x DL, the Depth at Low Tide):
Section 4: Specific Discussion of Boat Systems

This section of the operating manual will discuss each of the boat’s systems.

- Main Engines & Sea Strainers
- Dinghy, Davit & Outboard Motor
- Fresh Water System;
- Electrical-AC, Electrical-DC, Generator and Inverter;
- Heads and Holding Tanks;
- Heating System;
- Galley Equipment

Main Engines & Sea Strainers

The main engines on the boat are two Caterpillar 3208-NA Diesels. Each produces a maximum of 210 horsepower.

On engine start, no long warm-up is required! Three or four minutes is sufficient.

The engines require a regular, daily check. Please perform the following items each day:

- **CHECK THE OIL.** The oil level should be between the two marks on the dipstick. The dipsticks are located on inboard forward end of each engine, and the stick “pulls out” upward. Use a paper towel from the roll provided, wipe the stick, reinsert, and take reading.

  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. (If you need more oil, buy it! We will reimburse you.) The oil fill on each engine is a cap with a “T” handle (which is turned several turns to loosen) on the starboard valve cover. After reinserting, be sure to tighten the cap!

  DO NOT OVERFILL the crankcase (above the “full” mark), as these engines will quickly waste excessive lubricant. If oil is required often, check under the engine carefully to be sure there is no oil leak, and if there is, have it corrected promptly.

- **CHECK THE COOLANT LEVEL.** The heat exchanger coolant tanks are marked to tell you if additional coolant is needed. The level of the tanks varies greatly as the engines heat and cool. Use only the provided 50/50 mix for diesel engines if required.

- **VISUALLY INSPECT THE ENGINE ROOM,** 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 SEA STRainers ONCE A WEEK,** or immediately if either engine runs “hot”.

  The engine strainers are just forward of each engine. The refrigeration sea strainer is just forward of the port engine propellor shaft packing gland, near the generator strainer. To check a strainer, shine a 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.

- **CHECK THE TRANSMISSION OIL LEVEL** once every two weeks. It is unlikely that any oil will need to be added, so do it cautiously. Be sure to check under the transmission for leaks! Low transmission oil is a serious matter.

  With the engine idling, and at operating temperature, remove the transmission dipstick. Wipe it with a towel, reinsert it, and take a reading. If the level is below the add mark, stop the engine, add a pint of the same oil used for the engine crankcases through the plug in the top of the transmission case, and then start the engine and measure again. Do not overfill, for to do so could cause the seals to “blow out”. Use single-30- weight oil.
Maximum RPM of the engines is 2800 RPM. Maximum cruise is 2400 RPM. Vessel hull design and powerplant engineering dictate that higher RPM operation is very inefficient on semi-displacement vessels like this one.

The following values are approximate:

<table>
<thead>
<tr>
<th>RPM</th>
<th>Gallons per hour, Total both Engines</th>
<th>Speed, Knots</th>
<th>Nautical Miles per Gallon</th>
</tr>
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<tr>
<td>1600</td>
<td>4.5</td>
<td>8.0</td>
<td>1.77</td>
</tr>
<tr>
<td>1800</td>
<td>6.0</td>
<td>9.0</td>
<td>1.5</td>
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<tr>
<td>2000</td>
<td>9.0</td>
<td>10.0</td>
<td>1.1</td>
</tr>
<tr>
<td>2200</td>
<td>13.0</td>
<td>11.0</td>
<td>.85</td>
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As you can see, each extra knot is very expensive once you have passed “displacement speed” on the vessel hull.

**Sea Strainer Cleaning and Seacocks**

The sea strainers protect the engine, generator and refrigeration cooling systems from water-borne debris which might block internal equipment passages.

To clean a sea strainer:

1. Look at the base of the strainer near the hull. On one side is a valve lever with a relatively long handle; on the other side is a “T”-shaped knob. Loosen the T-knob two turns. The valve itself may begin to “weep” sea water, do not be alarmed.
2. Turn the longer valve lever so it is perpendicular to the sea strainer (parallel to the hull).
3. Tighten the T-handle; the weeping will stop.
4. Using the same spanner you use for the fuel and water tank deck caps, 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.
5. Reinsert the strainer, tighten the top cover with the spanner, AND TURN THE VALVE BACK ON — failure to do so will overheat the engine. BE SURE TO TIGHTEN THE T-KNOB ON THE VALVE SO IT IS SECURE.
6. Double check that the valve is open. FAILURE TO DO SO WILL RESULT IN ENGINE FAILURE!

**Dinghy, Davit & Outboard Motor**

**Dinghy**

The dinghy aboard this boat is a hard-bottom inflatable (RIB), designed to carry up to six passengers. For safety, and compliance with U.S. rules, there must be a life jacket aboard the dinghy for each passenger whenever the dinghy is in use.

Please be careful when pulling the dinghy ashore on beaches to minimize damage and scratches to the bottom. Don’t “Ram” the beach; you can bump up to the beach gently and step ashore over the bow. YOU WILL WANT TO PRACTICE RAISING THE OUTBOARD BEFORE YOU BEACH THE BOAT!!

The dinghy will seldom require inflation. Should inflation be required, pump up the dinghy until it is firm (thumb can deflect a tube by about ½” maximum) using the pump stored in the deck box.

The dinghy may be washed out while hanging on the davit using the saltwater wash spigot near the windlass and a long hose.
Dinghy Davit

The dinghy davit holds the dinghy horizontal above the swim step and water, and lowers it gently by electricity. Here is how to use it:

1. Start generator before using windlass;
2. Remove the web strap securing the dinghy to the davit;
3. Be sure the drain plug is in the dinghy;
4. Turn the davit power switch on. It is located next to the swim platform steps and has three positions: up, off, and down.
5. Raise the dinghy enough to disengage the safety cable, then lower the dinghy;
6. Unsnap the hooks supporting the dinghy and raise the davit and hooks well clear of the water.
7. To hoist the dinghy on the davit, reverse the above procedure. Do not let the davit arms contact the transom when launching and securing the dinghy! Secure the dinghy to the boat with the attached strap.

Outboard Motor

The outboard motor for the boat is a Honda 9.9-hp outboard. It is a four-stroke motor: DO NOT MIX OIL WITH THE GASOLINE!

The motor is equipped with an electric and manual start. To start the motor, first open the fuel tank vent and pump the squeeze bulb until firm. After shutting off the motor, close the fuel tank vent. FAILURE TO CLOSE THE VENT ALLOWS WATER TO ENTER THE FUEL TANK.

Tank Tender

Concept

Grand Adventure is equipped with a “Tank Tender” fuel and fresh water tank measuring system. It is on the overhead panel on the port side; in addition, there are sight gauges on each of the fuel tanks (there are no sight gauges on the water tanks). The Tank Tender measures the height of the liquid in inches in each tank.

To operate the Tank Tender:

1. Hold in the button of the tank you’re checking;
2. While holding in the tank button, pump the right hand “pump” button with several full strokes, watching the needle. Pump until you can’t make the needle go higher (if the tank is full, the indicator may go past the top end of the scale).
3. While holding in both the tank button and the pump lever, take the reading, Diesel is on the outer scale, water on the inner!

Reading the Fuel Tanks

The fuel tanks read 28” when full.

Reading the Water Tanks

Tank 1 - Aft Water Tank - reads 17” when full; 2.5” when empty

Tank 2 - Forward Water Tank - reads 21” when full; 6” when empty REMEMBER: THESE ARE NOT EXACT READINGS. THEY ARE ESTIMATES ONLY!
Fresh Water System

Tanks

The fresh water tanks are located in the forward and center bilges of the boat. You need to fill the tanks individually through the two water fill pipes on the port, side deck. Although they must be filled separately, the tanks are interconnected to empty uniformly when used. Water levels may be monitored using the Tank Tender System. Be sure to open the correct deck fitting and do not put water in diesel tanks!

Water Pump

The water line from the tanks leads to the boat’s fresh water pumps in the engine room, starboard side aft by the fuel tanks. Provided its circuit breaker is “ON”, these pumps will run whenever its built-in pressure switch detects low water pressure. The toggle switch on the front of the pumps platform will select which pump is active. The two yellow handled valves at the back of the pump platform need to be turned to select the appropriate pump. Follow the direction of the arrows for the flow of the water.

Water Heater

The water heater uses two energy sources, (1) heat from the port engine, so that whenever the boat is running or has recently run, there is hot water; and (2) 110 volts AC from the generator or shore power, and the breaker is “on”. The heater is insulated well enough to keep hot water overnight without power.

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 sink basins, the water simply flows by gravity overboard. Since the floor of the showers is below the water line, built in shower sump pumps operate to lift this water back above the waterline and dump it overboard.

It is therefore very important that the “drain pump” breaker in the DC panel be left “On”, and that the switch in each shower compartment labeled “drain pump” also be “on” (pulled out) during a shower. Note that the aft “drain pump” switch is inside the cabinet of the shower compartment!
Electrical: AC, DC, Generator & Inverter

Concepts

More people are confused by the operation of electrical systems on yachts than by any other subject! Don’t feel discouraged if something isn’t clear. 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. If the batteries aren’t run down, most equipment should work, just like an automobile.
- Since the batteries are used so much, we have to replenish, or charge them.
- If the engines are not running, the batteries are slowly depleted until they have “run down” and there is no more electricity stored in them.
- You must have “electrical power management” in mind whenever you turn any electrical equipment on or off.

It is very important to check the battery condition at night and in the morning. If we need more electricity than the batteries provide, and if an engine isn’t running, we will need to get our electrical power from an alternative source. That’s the most important reason why we plug the boat in to shore power or use the generator. By using battery chargers, we can keep the batteries charged.

Some of the items 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, a device that takes 12 volts DC from the ship’s batteries and makes it into 110 volts AC.

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 generator. For the equipment that runs on 110 volts AC, we have shore power, the generator or the inverter.

Battery Banks

The batteries on this boat are not just one, big all-purpose battery. There are actually several “banks” of batteries assigned different tasks.

The engines have their own start battery. This battery is not used by anything else and cannot be selected away from the engines. This battery is charged by the starboard engine alternator when this engine is running (you can see the voltage on the voltmeter on the helm), or is charged by the battery charger if it is on when there is shore power or the generator is running.

A second large bank of batteries is located on the starboard side of the engine room and is called “the house battery”. It is charged by the alternators, the generator or shore power.

The generator has its own independent battery for starting.

The DC Electrical System

The DC circuit breaker panel is by the helm. On this panel are the switches that control power to the boat’s various systems. On the right of the panel are the switches for the engine(s) and the battery selector switch.

The battery selector switch on this panel should always be left in the “House” position.

NEVER switch this to “off” with any engine running!

The Anchor Windlass switch is right of the helm. This switch should be “ON” only when using the anchor windlass.

Above the windlass switch is a switchable battery voltage meter. #1 is the starting battery; #2 is the house batteries, and #3 is the generator battery.
**DC Power Outlets**

To the right of the helm is a cigarette lighter outlet to plug in any DC accessories.

**Link 10 DC Power Monitor**

On the port side of the helm panel is a Link 10 DC Energy Monitor. This unit displays only house battery operation.

Across the top are the green L.E.D.'s that indicate the state of the batteries’ charge, from “empty” on the left to “full” on the right. (The lights do not correspond to words below them, i.e., a flashing LED on the right means the batteries are “Full”).

There are two buttons on this unit’s panel, “SEL” and “SET”. You will use only the “SEL” button! When pressed, it cycles the monitor through the “V”, “A”, “Ah” and “t” steps, illuminating the small LED’s, representing “Volts”, “Amps”, “Amp-Hours”, and “Temperature”.

In the “A”, “Amps” mode, the unit displays the rate of charge or discharge of the house batteries; a “-.” sign appears when the battery is discharging, no sign when charging.

Look at the monitor just before bed when at anchor, to warn you if you’ve left something on. If nothing is running, voltage should be about 12.6 - 12.8, fully charged.

In the morning check the voltages before you start using more DC energy. If the voltage is 12.0 or less, start the generator!

**The AC Electrical System**

The AC Electrical System is controlled at two sites, the AC circuit breaker panel and the inverter control panel. In addition, there is an AC voltmeter and AC ammeter located by the helm.

*Extra outlets are on the helm’s right side, inside the sliding door on the flybridge, and aft of port topside bench seat.

**Connecting/Disconnecting Shore Power**

The large AC shore power selector switch on the AC circuit breaker panel is used to determine the source of AC power for the boat. This switch should be left “OFF” whenever you are connecting or disconnecting the boat to shore. This is true 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.

It is important to note that the “TEST” button should be pressed immediately after connecting to shore power! If the Reverse Polarity Light lights, it indicates that the shore power supply is mis-wired. You should remove the shore power cable immediately.

Once connected to shore power, monitor the AC voltmeter and ammeter to be sure you have not overloaded the circuit.

*Important Note: If the batteries are low when you first connect to shore power, the inverter will begin charging the batteries at a very high charging rate, drawing a lot of shore power current. Until this demand reduces, 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 ammeter to be sure you don’t exceed the dock’s available supply, typically 30 amps.
Here are some estimates of AC power consumption for typical appliances:

<table>
<thead>
<tr>
<th>Device</th>
<th>Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Heater</td>
<td>15</td>
</tr>
<tr>
<td>Hair Dryer</td>
<td>12</td>
</tr>
<tr>
<td>Coffee maker</td>
<td>10</td>
</tr>
<tr>
<td>Microwave</td>
<td>10</td>
</tr>
<tr>
<td>Inverter</td>
<td>up to 22</td>
</tr>
<tr>
<td>TV</td>
<td>1.5</td>
</tr>
</tbody>
</table>

The Inverter System

The Inverter system is used to provide AC power to the boat when there is no shore power or the generator is not running. For long-period use of AC by large appliances, the generator must be running or you must have shore power available. The batteries do not store enough power for high usage.

Now the microwave, for example, will draw about 100 amps of DC when using the inverter to run it, so in six minutes you use one-tenth of an hour at 100 amps, or ten ampere-hours. That means that in six minutes, you’ve consumed 10% of the house batteries’ stored power. That’s okay. But what if you want to cook a roast for 30 minutes? You used up half your energy on that one job alone! That’s too much use for the inverter, and the propane stove should be used, or the generator run.

For a short task, the inverter is great. It is only wired to the AC outlets and the microwave. It will not run the water heater.

*Portable electric space heaters should never be run by the inverter; start the generator or use shore power!*

In addition to making AC out of DC, the inverter can do the reverse. If there is AC available from shore power or the generator it will charge the batteries.

The inverter should always be left on. You can monitor the inverter on the control panel.

Inverter L.E.D. Status Lights

- **“PWR”**
  - This is lit if there is AC available for battery charging (from shore power or the generator). “FAULT” will light if the system detects a problem: See the manual.

- **“CHG”**
  - This will blink rapidly just after shore power or the generator comes on, indicating the unit is getting power but is not yet charging; it will be steady on if the Inverter is charging the batteries; off if the charger is not on nor is it charging; and blink slowly if the charger has insufficient AC power to charge the batteries in which case you will need to reduce the AC load or start the generator.

- **“INV”**
  - This will be “ON” if the inverter is on and supplying power to AC equipment on the boat; it will blink slowly if the inverter is on, but there is no equipment drawing power from it; and it will be off if the inverter is not on.

Inverter Control Buttons: *Touch a button to “wake up” the display before anything will work!*

- **On/Off Charger:**
  - Controls the charger function of the inverter. Should always be left “On”.

- **On/Off Inverter:**
  - Controls the inverter function. Should always be left “On”.

- **Shore:**
  - Pressing this button will display the present maximum power the charger will require from the boat’s shore power connection; options are 5, 10, 15, 20, 30, and 50 amps. For example, you might normally want it on “20”, but if limited to a small dock connection, may want it at “10” so that you don’t trip the dock circuit breaker.

- **Meter:**
  - This button sets the display to show DC amps and voltage to/from the batteries. “Meter” is the most informative setting to use on battery only, on shore power or generator.
AGS / Setup / Tech: Do not use these soft-keys.

If on battery power only: Full voltage is 12.8. If the voltage goes below 12.0V, the batteries are at half voltage. If they proceed to be drained any lower, the batteries or boat equipment may be damaged. Start the generator.

Note: If the inverter is overloaded, it will trip its circuit breaker. Reduce the AC load by turning off items and then reset the breaker!

The Generator System

The ship’s Northern Lights Generator provides 9,000 watts of AC power to the vessel and is mainly used for battery charging and an AC power source.

The generator exhausts out the port side and is very quiet.

The generator is in the engine room, and its oil and coolant levels are checked before each charter by the NWE staff. Access to these is by unlatching and removing the starboard side panel on the generator’s sound-shield cabinet. More important is checking the sea strainer to be sure it has not accumulated debris while the generator was run for extended periods.

Starting the Generator:

1. Hold down the “PREHEAT/BYPASS” switch in the AC control panel by the helm for 15 seconds (this energizes “glow plugs” to warm the engine’s cylinders).

2. While continuing to press the “PREHEAT/BYPASS” switch, press the “START” switch and hold until you hear the engine start. Continue to hold down the “PREHEAT/BYPASS” switch for a few more seconds.

3. After a brief warm-up of a minute or so, switch the shore power switch in the AC power panel to “GEN”. You should see the “AC Present” pilot light go on.

Stopping the Generator:

1. Switch the Shore Power switch to “Off”. This removes the load for the generator and allows it to cool.

2. After at least a minute to allow the generator to cool down, press and hold the stop switch until the generator comes to a complete stop.

Generator Problems

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

If the generator will not keep running, call NW Explorations for assistance.

If checking the generator oil, it must be dipped twice to get an accurate reading. The first check will indicate low or no oil!
Heads & Holding Tanks

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. (This rule does not apply in Canadian waters. However, in Canada, courteous practice dictates that the holding tank be dumped only when outside confined marinas or bays.)*

The boat is equipped with two MasterFlush Marine heads. These heads each have a separate macerator pump which macerates waste and puts it into the holding tank. The holding tanks are emptied either of two ways: by operating an overboard macerator pump controlled at the DC power panel, or by pumping it using a shore side pump out station through the boat’s side-deck pump out fittings.

The Dometic MasterFlush Heads

These premium heads are easy to use, odor free, and very reliable. They work with a macerating pump for each head.

These heads use about a pint of fresh water from the ship’s supply with each flush.

Each head is operated by a pair of “rocker” switches on the nearby vanity.

- **Normal Flush**: Press the left switch (the one with a cartoon-toilet with the arrow down to empty the head and add water to the bowl thereafter.

- **Add water**: Press the top of the right hand rocker switch and release when enough has entered.

- **“Dry Bowl”/Empty Toilet**: Press the bottom of the right hand rocker switch and hold until the bowl empties completely.

*Only things which were eaten or drunk or the toilet paper supplied with the boat should be put in the heads! Facial tissues, tampons, and other foreign matter will clog the system. If these heads are used properly, they are very reliable. Failures are virtually always due to mis-use!*

Y-Valve

The aft head only is equipped with a Y-valve; it is on the side of the port fuel tank. When it is fore-aft, it connects the aft head to the holding tank; when athwart-ship, it connects directly overboard. *Do not change position of this valve.*

Holding Tank Pumpout & Macerator Pump

There is a holding tank on the boat located in the engine room aft of the generator. Sewage from each head goes to the holding tank. If dumped overboard from this tank, the effluent passes through a through-hull valve on the starboard side of the boat.

The boat is equipped with a holding tank quantity indicator in the aft head compartment. so it is easy to tell if the tank is full. Check this indicator daily, and *do not flush if full!*

There are two ways to empty the holding tank;
1. Turn on the macerator pump timer switch located below the windlass switch right of the helm. It takes about 15 minutes to empty a full tank.

2. Use a shore side pump out station by connecting it to the “Holding Tank” deck fitting on the starboard side deck.

**Heating System**

**Operating the Furnace**

The boat is equipped with a Webasto Hot Water Heating System. This furnace burns diesel fuel from the engine tanks and uses about a pint each hour when running. The furnace (or, when it is running, the starboard engine) heats water which is circulated throughout the boat. Individual blowers, each with its own “off-low-high” switch, then forces the air into each area of the boat from small heat exchangers in each area.

The furnace is controlled by a master switch and digital thermostat above the starboard door pillar. There is also a “Furnace Pump” breaker on the AC panel which should always be left on as it operates the furnace circulation pump.

The furnace will run with shore power, generator or with the inverter’s invert function.

The furnace switch has three settings:

- **Off**: The heating system is “all off”
- **System Heat**: The Diesel Furnace will supply heat if called for by the thermostat
- **Engine Heat**: The starboard engine (if running) will supply heat if called for by the thermostat

Select the desired setting and set the desired temperature.

*The first time the furnace runs after the master switch is turned on it will take approximately fifteen minutes while the furnace starts and brings the circulating water to the needed temperature before the fans start heating the boat: Be patient! (The furnace’s has a built-in computer controlling its functions.)*

*If the furnace comes on and heats up for only a short period of time before it turns off again, one possible cause is that the furnace circulation pump is not on which causes the furnace to overheat. If the furnace pump breaker is off, turn it on and attempt to run the furnace again.*

*In the “Engine Heat” position, the heat will come on more quickly if the engines have been running.*

*Caution: The furnace exhaust is located on the starboard side of the boat! Care should be taken not to block this outlet with fenders or get too close while rafting due to the very high temperature of the exhaust gases from the furnace. A hanging exhaust deflector is located in the locker under topside helm.*
Galley Equipment

Propane Stove

The boat is equipped with a FORCE 10 propane stove with top burners and a thermostatically-controlled oven and broiler.

There is a manual gas valve on the propane tank on the flybridge. This valve is used only when exchanging/filling tanks. There is also a second valve, a “solenoid valve”. This electric valve is controlled by a switch in the galley you can shut off the propane supply to the stove at its source when it is not being used.

In addition, each stove burner including the oven is fitted with a “thermocouple”, a heat-sensing device that also controls the gas flow. If the burner goes out for any reason, the thermocouple will shut off the fuel automatically.

TO LIGHT A BURNER:

1. Be sure the propane valve circuit breaker in the DC panel is on.
2. Turn on the over-the-stove “Propane” switch (when you do this, the pilot light on the switch panel will light, and you will see the red area on the switch).
3. Turn the knob for your selected burner to “light”, pushing it in until the burner lights. *Sometimes if the tank has been changed, it may not light immediately. Keep trying for a few seconds before fuel reaches the stove after purging air from the pipe.*
4. After the burner lights, continue to hold the knob in for a few seconds while the thermocouple heats up before adjusting the flame to the desired intensity.

TO LIGHT THE OVEN:

The oven burner flame is controlled by the oven thermostat. It is lit in the same manner as the top burners. *Note: If the automatic striker does not work for either of the stove burners or the oven, use a striker stick or match to light them.*

Refrigerators & Freezers

The boat’s galley is equipped with an efficient “cold plate” refrigerator that runs on 12 volts DC only. When the fridge compressor is running, it is cooled by sea water pumped through cooling coils. The compact water pump is in the engine room as is its compressor. The “cold plates” actually store the cold, and, when combined with the excellent insulation, the compressor only needs to run an hour or two a day.

Refrigeration temperatures are 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.

Turn the thermostat knob to the black line and it will keep the temperature at approximately 38-42 degrees Fahrenheit.

The shelves are adjustable in the refrigerator. The freezer operates on the same principle.

On the flybridge, a 12-volt DC freezer/refrigerator may be used as either a freezer or refrigerator by adjusting its thermostat setting.
Electronics: Nav Equipment, Radios & Radar

VHF Radios

Two independent VHF radios are at the main cabin helm and the fly bridge. The radios are designed for easy access to Channel 16 which is the hailing and emergency channel. Other buttons allow you to select different channels, weather channels, high and low power, and US/International operation. Your checkout skipper and/or the radios’ manual will quickly familiarize you with basic operation.

Radar

The boat is equipped with a radar set. This unit is used for operation in restricted visibility, serving as a device for collision avoidance.

Proper and safe use of a ship’s radar requires a lot 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 manual.

*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 good visibility.*

Turn off the radar in congested areas.
Furuno GPS/Plotter System

The boat is equipped with an Furuno GPS and Electronic Charting System.

Two units are installed, one at each helm; they are identical and independent with separate antennas.

Do not remove the SD chip!

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. The electronic charts are for convenience only!

Please keep the cover on the fly bridge unit when not in use, overnight, and in wet weather!

Laptop Computer Navigation System

A laptop computer loaded with Coastal Explorer navigational software is located at the helm. It is intended to be used by those familiar with PC based navigational systems. The user guide may be found by clicking on the help (?) icon on the top right of the screen.

Please abide by the following restrictions:

- DO NOT use the computer for any other purpose. DO NOT remove the computer from the boat.
- DO NOT remove any connections from the computer. DO NOT make any internal configuration changes. DO NOT use this computer for internet access.

Note: The Furuno plotter must be on for the laptop to receive a GPS signal.

Autopilot

The boat is equipped with a Comnav 1001 autopilot.

1. To turn on the unit, turn the switch by the helm to “standby”. The unit will do a quick self-test, then display its present heading.

2. To engage the autopilot, turn the switch to “Pilot”. It will hold the heading.

3. To disengage the autopilot, turn the switch back to “Standby”.

4. To use the flybridge remote control, the autopilot must be on at the helm station in the “standby” position. Then hold down both the red and green buttons on the remote control for three seconds or so until the small dot on the display moves from “Master” to “Rem”. Now the remote is in control.

5. To restore control to the helm, hold down its two buttons in the same way until the dot moves to “Master”.

6. The rudder position indicator only works if the autopilot is on!
**ALWAYS MAINTAIN A CAREFUL LOOKOUT WHEN USING THE AUTOPILOT!** It is an aid to comfortable cruising, not a replacement for an aware, diligent helms person! Remember, you can disengage it quickly at any time simply by turning the switch to “Standby”!

**AIS (Automatic Identification System)**

This boat is equipped with Class B AIS. The system is automatic and no inputs are required by the operator.

This system allows other vessels equipped with AIS to share and automatically update their position, speed, course and vessel information. This information is displayed on both Furuno GPS Plotters and may be selected on the laptop navigation display.

AIS is a valuable tool to aid your situational awareness and help prevent collisions. Your checkout skipper may demonstrate its use and the operating manual is onboard.

Please DO NOT make any changes to the AIS configuration. Power to the AIS is through the DC circuit breaker labeled GPS/AIS. The AIS transmit blocking switch that is located underneath the electronics panel should always remain in the “ON” position.

**Depth Indicators**

There are depth sounder displays at both helm stations. **This boat draws approximately 4.5 feet of water.**

Because our waters are sometimes very deep, the depth sounder will not display or will stay on a high depth reading when the water’s depth is beyond its capacity.

At the lower helm, there is a Furuno graphic depth sounder.

Remember when backing up, or crossing a “tide line”, that turbulent water from the tides or boat’s screws (or those of another boat) can interrupt the sounding information received by the unit. Be careful!

*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 depths of 50 feet or less, 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 horizontal distance, so do rocky obstacles!*

**Entertainment System**

The surround-sound entertainment system has a TV, XM Radio, DVD player and iPod dock.

- This system uses AC power even when turned off. To conserve power when you are not using the System, you should unplug the components.

- A cooling fan is located in the surround sound cabinet. It can only be shut off by unplugging the amplifier.

- Please be courteous to other boaters nearby by keeping volume moderate, or “off” in the evenings.

- TO OPERATE THE SYSTEM, REFER TO LAMINATED CARDS THAT ALSO HAVE THE XM RADIO CHANNELS.
Section 5: “What to Do If” for Some Specific Concerns

Anchor Chain Won’t Come Out or Go Into 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! It is rare when this will not clear the jam. The other solution: go below and clear the tangle in the chain locker. **Caution: Turn off the windlass breaker to protect your hands when manhandling chain!**

If the chain will not feed into the locker, open the cover door to the chain locker and, reaching through the 3” round hole in the locker partition with a stick or the emergency windlass handle, push over the chain stack that’s blocking the chain feed opening.

Can’t Raise Anchor

This can happen if you “pull the boat to the anchor” with the windlass. 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 on? If the motor is running, is the clutch tight?

Batteries (House) Keep Running Down

Have you run the generator enough? Is something left on (like the engine room or mast lights, too many electronics, etc.) that is too great a load. Make sure the Inverter circuit breaker in the AC panel is “On”. Start the generator.

Engine Overheats

Is the drive belt for the water pump intact? Spare belts are in the spares kit. Is the sea strainer clogged? If sea strainer is clear and belt is good, the impeller is damaged. Spares are on the boat. Change or call a mechanic. Do not run engine if it overheats!

Engine Won’t Start

If starter does not turn, confirm the transmission is in neutral. Try jiggling the shift levers at both stations while pushing the start button. Check the battery voltage. Start the generator and charge the batteries. If the starter turns, assume a fuel problem. Call NWE.

Fog Delays Return

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

Furnace Inoperative

If the green light doesn’t come on when the furnace is in the “System Heat” or “Engine Heat” position, the 30-amp fuse may have blown. It is in the engine room to starboard aft of the last battery in the bank. If this is OK, contact NWE for assistance.
Head Won’t Flush

Is the breaker on? Have you over-filled the holding tank? Pump it out to allow more effluent to enter. If all else fails, use 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

Have the prop checked by a diver. Check for vibration. Try turning the shaft by hand in the engine room, both should be turnable with the engine in neutral. Is the shaft noisy? 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?
Section 6: 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. Take a handheld VHF radio, if available. Be sure to wear life jackets! Take your valuables.

Then, worry about the boat!

In a true emergency, call the Coast Guard.

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, NW Explorations 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.

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 problem.

Here is a checklist for solving the problem:

(A) Isolate it;
(B) Get the manuals;
(C) Get parts;
(D) If necessary, call NW Explorations for help.

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.

Most mechanical problems are caused by pumps that fail, hoses and belts that break, and seawater strainers that get clogged.

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:

- Throttles idle and out of gear immediately.
- Did you put a hole in the boat? Check the bilges. If you did “hole” the boat, call the Coast Guard.
- If no hole, and still idling, put each engine in gear in turn to identify the damaged side. Then continue on one engine. Call NW Explorations after you reach the closest safe harbor.
- With a twin-screw boat, while under way on one engine the other engine’s propeller shaft rotates by itself because of water passing over it’s propellor, 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.

If there is no vibration on either engine, you probably did no running gear damage.
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