OPERATIONS MANUAL

HARMONY

39’ BAYLINER

Welcome aboard!

We are happy you have chosen “HARMONY“ for your vacation. We are sure you will enjoy cruising the lovely islands of the Pacific Northwest. HARMONY is a 3988 and is one of the most popular models. She was built in 1997.

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

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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. Check the OIL level in each engine by checking your dipsticks on the inside centerline. Look at the etch marks on each dipstick that indicate the proper oil level. **DO NOT OVERFILL OIL!** Only fill if oil levels are below the ½ way mark. Please use a paper towel or oil rag, not dish towels! Check the general condition of the BELTS, HOSES, and FUEL LINES.

Ensure the valve on each RAW WATER THRU-HULL is in the **'open'** position (lever in-line with valve). Observe the glass of each RAW WATER STRAINER for debris. If necessary, close the seacock, open the strainer cover, clean the strainer, and reassemble. Remember to reopen the seacock. Check your generator fluids as well.

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". THROTTLES should be run up and down and then brought almost back to the idle position. Insert both keys into the IGNITION SWITCHES.

Turn the key clockwise partially until the ENGINE ALARM sounds and pre-heat the engine. Wait for the Preheat buzzer and lights to come on after lights change and sound pitch changes about 10 seconds, Turn the key fully clockwise to engage the starter. 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. Repeat for 2nd engine. Confirm oil pressure at 40-45 PSI and coolant temp no higher than 180 to 190 degrees. Check for water discharge at stern exhaust. If there is no water at exhaust or low oil pressure, SHUT down engine and look for the problem.

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.

Move the THROTTLE to raise the engine speed to 1000 rpm on the TACHOMETER. Warm the engine for about 5 minutes before engaging transmission. Observe the readings of the gauges. The oil pressure will register about 40-45 PSI. The engine temperature should rise slowly.

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.

Cruising

All close quarters maneuvering should always take place at the upper helm. Much better visibility.

Engage the GEARSHIFTS. Ensure the throttles are in the 'idle' position before engaging the gearshifts to avoid transmission damage. Cruising speed is 1400 RPM to a maximum of about 1800 RPMS. If you run at –1400 RPMS, you will cruise at 8-8.5 knots and use only ---5.5 gallons of diesel per hour. Your speed will vary depending upon the weight and load and weather conditions. TRIM TABS can be put in the "bow down" position.

Note -- Avoid higher engine speeds as it causes higher engine temperature, possible damage, and higher fuel consumption.

Docking

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. Often times your crew will need to step off from the swim step with the stern line. Another crew member will need to be at the bow or mid-ships to hand over the next lines.

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.

Shut-Down

Before shutting down, allow the engines '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. Turn off engines by turning keys counterclockwise.

Fueling

OPEN FILLER CAP(S) located stern quarters port /starboard with a DECK FITTING KEY which is kept in the cabinet under galley counter facing salon door.

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 oil/fuel sorbs handy to soak up spilled fuel. You should have a rough idea of the number of gallons you will need by the engine hour indicator. 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. Top off carefully and be prepared to catch spilled fuel. Spillage may result in a nasty fine from law enforcement.

Replace each tank cap. Turn on the blower before starting the engines. *Caution -- Clean up splatter and spillage immediately for environmental and health reasons. Wash hands with soap and water thoroughly.*

BOAT ELECTRICAL

110-Volt AC/DC Panel

The electrical system is divided into two distribution systems: 110-volt AC and 12-volt DC.

Battery Switches

The systems are controlled from the AC / DC ELECTRICAL PANEL located aft starboard near entry door in salon. If needed, make sure the BATTERY SWITCHES FOUND-Engine room, aft starboard bulkhead are turned on. These should be left on at all times during your cruise. When not connected to shore power, batteries provide all power. Therefore, monitor the use of onboard electricity carefully with your voltmeter located at the DC panel and on the face of the inverter / charger unit port side near stereo and thermostat for electric heater and turn off electrical devices that are not needed.

Most breakers are labeled with colored dots. Green signifies “usually on”. Red is “usually off” Blue dots are water pressure or water-related like pumps. Yellow signifies electronics or items to use cautiously. No dots are breakers signify irregular use or use with discretion.

Shore Power

SHORE POWER supports all AC equipment and receptacles on board, as well as the battery chargers. To connect to shore power, plug the two-pigtail attached to 30-amp POWER CORD into the boat starboard aft of house and then into the dock receptacle. Check the power rating/plug size of the nearest dock receptacle (that is 50-amp, 30-amp, 20 amp, or 15 amp). If necessary, add a CORD ADAPTER located salon storage cabinet. Turn the dock power on. Cords coming off the bow can be wrapped loosely around the bow line.

At the ELECTRICAL PANEL, flip the SHORE CIRCUIT BREAKER on after selecting shore power on rotating selector. Check for reverse polarity. Then turn on appropriate breakers for battery charger, refrigeration, water heater. Watch your voltmeter for load. If the load exceeds voltage, you will pop your breaker. If this occurs, wait to turn on one of your systems (i.e., water heater) until your use of volts drop.

If your outlets fail to work, check your GFI's to make sure that they have not been tripped.

Inverter

The INVERTER provides AC power to the 110-volt receptacle plugs (i.e., the microwave oven) when the boat is disconnected from shore power. The inverter does not provide power to the water heater or the battery charger. Your inverter panel is located at port salon with an on/off switch. Make certain that it is on. The inverter is in the engine room.

The inverter's power source is the DC house or inverter batteries located in aft engine room. The quantity of DC power is limited to the capacity of these batteries... Therefore, running hair dryers, toasters, coffeepots, space heater, etc. will quickly discharge the house/inverter batteries. Use these items VERY SPARINGLY! Monitor your battery usage very carefully!

Recommend running the generator while using these appliances

When connected to shore power, the inverter automatically becomes a battery charger for the 12-volt HOUSE BATTERIES. Should you detect the inverter failing to charge the house batteries, check the circuit breaker in the AC Panel. And the inverter control panel.

Generator

To start your GENERATOR, first check that your generator's fluids are topped off and the raw water intake is open. The generator controls are at the AC electrical panel in salon. First pre-heat the generator for about 20 seconds. Then while still pre-heating turns the switch to start. Hold the switch in that position while the generator catches. (about 5-10 seconds). Make sure water and exhaust is exiting.

After the generator is running, turn your AC distribution switch to the generator labeled dockside or generator breakers both lines (or ship). Then turn on AC systems as you would on shore power one system at a time.

To turn the generator off, first take off the load by turning off AC breakers. Then turn off the main AC distribution switch. Lastly kill the generator by switching generator switch to "off" until it dies.

House Battery (12-Volt) System

The 4 battery banks support 12-volt DC power: 1) port engine battery 2) starboard engine battery 3) house battery bank 4 and 4) Generator battery

The BATTERY SWITCHES are in the engine room Normally, leave the ENGINE/ GENERATOR and HOUSE SWITCHES in the 'ON' position. *Note -- Do not change the position of the switches while the engines are running, or the alternator diodes will be damaged. Change positions with the engines off.*

Your 12-volt panel shows all the systems supported by your batteries. Primarily you will be turning on the breakers for your water pressure and engine room lights. All other systems are always on, and the panel just has fuse holders to check if something is not working. Bilge pumps should always be left on. Your independent breakers such as propane and should always be turned off after every use.

House Battery Bank & Switch

The HOUSE BATTERY BANK provides power for all DC systems, except the engines and automatic bilge pumps. When disconnected from shore power, all 12-volt devices drain the house battery. Use devices as needed. The DC voltmeter on the DC panel can be switched between Port, Starboard, and House Battery banks to measure charging or resting battery voltages.

When a battery bank is being charged, the voltage will read from about 13.1 volts to 14.4 volts depending upon state-of-charge of the battery bank. When the battery bank is at rest, (that is, not being charged), the voltmeter can give a rough indication of the state-of-charge of the battery bank.

All batteries are charged by the engine ALTERNATORS while underway. The engine/house batteries are charged by the BATTERY CHARGER when connected to shore power. Ensure the Battery Charger and Inverter circuit breakers at the electrical panel are ON. The GENERATOR will also charge the batteries

Voltage (Wet Cell Battery)	Battery State
12.65 volts	100%
12.47 volts	75%
12.25 volts	50%
11.95 volts	25%
11.70 volts	0%

SANITATION SYSTEM

Marine Toilet

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 RESONSIBILITY!
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.*

To use the toilet in the guest head, move the SELECTOR SWITCH to the 'left' (wet bowl). Lift the PUMP HANDLE 3 to 5 times to wet the bowl. After using the toilet, lift the PUMP HANDLE to wet the bowl again. Then, move the PUMP LEVER to the 'right' (dry bowl). Pump to remove water from the bowl. Flush sufficiently to move effluent in the hoses; heavy effluent may clog hoses. Clean the toilet as necessary.

Should the toilet pump handle squeak or stick, it needs to be lubricated. Put a couple of squirts of 'pump lube', salad oil, or dish soap into the toilet. Pump the toilet dry slowly, to draw the lube into the handle unit.

The forward MASTER head is a VacuFlush model, it uses fresh water to flush at ½ gallon per flush. Make sure the water pressure is on and fill the bowl by lifting the foot pedal with the top of your shoe. To flush, push down on foot peddle and let is spring up solidly.

The TOILET THRU-HULL is located base of stairs leading below from salon under removable hatch f you need to shut off the water to the toilet. Clean the toilet as necessary.

Holding Tank

The sanitation HOLDING TANK holds approximately 35 gallons. Be aware of the rate of waste production. (about 1/2 gallon per flush) With an overfilled tank, it is possible to break a hose, clog a vent, or burst the tank. The result will be an indescribable catastrophe and an EXPENSIVE FIX for you. Empty the tank EVERY OTHER DAY to avoid this problem.

The HOLDING TANK is located center line under stairs it may be subject to a visual check with a flashlight or the "watermelon" test by thumping it. There is a tank watch warning light located at the AC/DC panel but do not rely upon this as they often get clogged.

The only way to empty holding tank is at the Marine Pump-Out Station, remove the WASTE CAP located Stbd Fwd of Pilot House – DO NOT CONFUSE WITH WATER TANK. Insert the pump-out nozzle into the waste opening. Double-check your deck fitting! Turn on pump and open valve located on handle. When pumping is finished, close the lever on the handle and turn off the pump. Remove from deck fitting.

If there is a freshwater hose on the dock, rinse the tank by adding 2 minutes of water into tank. Then repump to leave the tank rinsed for the next charter. This also eliminates head odors.

WATER SYSTEM

Fresh Water Tank(s)

The FRESH WATER TANK holds 100 gallons. Observe the water level by –viewing water tank gauge at AC/DC panel. Waste water from the sinks and shower drains overboard through various thru-hulls usually located under the sinks.

To refill the tank, remove the WATER CAP(S) located Starboard midship. Avoid flushing debris from the deck into the tank opening. DO NOT fill water and diesel at the same time!

Fresh Water Pump

The WATER PRESSURE PUMP is located in the engine room. Activate pump at the DC panel by turning on the breaker. If the water pump continues to run, you are either out of water or might have an air lock and need to bleed the system by opening a faucet. If you run out of water SHUT OFF YOUR HOT WATER HEATER on the AC panel. Serious damage can occur!

Hot Water Tank

The HOT WATER HEATER has a 20-gallon capacity tank and is available when connected to shore power, Generator or via a heat exchanger underway. To use on shore power, flip on the water heater circuit breaker on the AC electrical panel. Do not use the water heater if the water tank level is very low.

Shower

Before taking a SHOWER, make sure water pressure and shower sump breakers are on. Take only very short “boat” showers (turning off water between soaping up and rinsing). To keep shower tidy wipe down the shower stall and floor. Check for accumulation of hair in the shower and sink drains. An additional FRESH WATER SHOWER is located aft near the gate door to the swim step. Ensure that the faucets and nozzle are completely off after use.

Bilge Pumps

The 6 bilge pumps are usually always in auto position. Both helm stations have rocker switches and warning lights. If a switch is left on at one station, it overrides the other station so make sure you have all switches in auto mode, a blue light indicates manual override.

GALLEY

Stove/oven

Your vessel is equipped with a 3-burner stove and oven. It is powered by propane. To use this appliance, you must confirm the valve on tank is open, located on flybridge at cubby under helm station where your feet are. In the galley to the left of the stove is the Propane safety switch. This must be on to open the remote valve on tank at flybridge. Ignite desired component by pushing the dial and holding in as gas is release use small propane lighter found in galley drawer . Make sure you turn off the breaker at galley to close LP tank valve automatically.

Refrigerator / Ice Maker

The REFRIGERATOR is dual voltage (12-volt and 110-volt power). It will automatically use 110-volt power when the shore power is connected; otherwise, it will operate on 12-volt power. Monitor the use of the refrigerator when the engines are not charging the 12-volt battery system. The local power switch is located below the front door. It can be turned down to the lowest position when anchored or moored or turned off when turning in for the night. the switch on the outboard unit inside refer controls both units.

Built-in Cabin Heat (AC)

ELECTRIC HEATERS are available when connected to shore power or generator they are located in the – salon, mid-stateroom and forward stateroom. Make sure the AC power breaker on the AC panel is on. They are controlled by white dial thermostats in each compartment

ELECTRONICS

SIMRAD SYSTEM (MFD)

Both helms have a Multi-Function display. All navigation, depth radar are in this system

Depth Sounder MFD

There are 2 DEPTH SOUNDERS in the Simrad MFD.The sounder should provide reliable readings in shallow waters. If in doubt, switch it off, then turn it back on to reset the sounder. If your reading is blinking, it is FALSE reading. False readings can occur in depths of more than 200 feet or in areas of string currents or tides.

*Remember to **ALWAYS** consult your charts for depth!*

Radar

To operate the RADAR, press the radar button on the home screen of the MFD button to turn the radar on. Remember you are not allowed to travel in FOG or in serious wind conditions.

VHF RADIOS

There are two VHF radios on vessel. They must be independently power on by rocker switch at each helm location

The Simrad auto pilot

Power on auto pilot at individual unit. The unit will need input from the Simrad MFD for guidance. You push the auto button to have the unit engaged and standby to disengage. You cannot steer the vessel by hand if the unit is in engage mode. You can make minor course corrections with dial on the face of unit. Turn off or to auto when docking or maneuvering. The auto pilot will also show you rudder direction and degrees at bottom.

Note *–GPS and AUTO PILOT are considered navigation aids. Do not rely on it. Compasses, charts, and dividers are the tools to plot position, course, and speed. THESE SYSTEMS WILL NOT AVOID ANY VESSEL OR DEBRIS AND CANNOT SEE ROCKS OR REEFS.*

ANCHORING

The primary WORKING ANCHOR is a Danforth style and is attached to 280 ft chain and 10 ft nylon rode passed through the deck from the ANCHOR LOCKER located in forward berth area. Turn on the large windlass power break er at the AC/DC panel in salon. If there is an anchor keeper, release it.

Windlass At the bow, tap gently on the 'down' foot control to lower the anchor. If necessary, guide the anchor over the anchor roller to prevent binding on the pulpit.

Anchor Chain Color Coding

Let out sufficient ANCHOR RODE (chain and nylon line) before setting the anchor. Colored markers are placed every 30 feet on the chain. 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.

Before raising the anchor, ALWAYS start the engines as they use large amounts of power. Turn 'on' the WINDLASS SWITCH and 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. 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 if you have a wash down pump before it goes into anchor locker.

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

The SPARE ANCHOR RODE is located in the Aft Stbd Lazarette. Attach the rode securely to the chain shackle.

Mooring Cans

The State Parks allow you to pick up the MOORING CANS in the parks for a fee. You need to register and pay at the kiosk usually located at the heads of the docks. Mooring 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 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 side. You will essentially create a bridle with about 10 feet of slack from the chalk to the can.

BARBECUE

The BARBECUE and MOUNTING BRACKET are STORED ON AFT DECK.

Attach a PROPANE BOTTLE found in bag hanging from stern rail to the REGULATOR found IN LOWER SALON DRAWER. Carefully light the unit, preferably with a long-stem butane lighter. The barbecue generates a lot of heat and cooks hot and fast.

Note: 2 Propane bottles are stocked by AYC. They can be found you will need to purchase one if extras are not found on board. 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. Ensure gasoline and flammable materials are not near the barbecue.

DINGHY & OUTBOARD MOTOR

Your DINGHY with a 5 hp engine is stored on the upper aft boat deck. It has a capacity of about 800 pounds (motor, equipment, and ----- people). Attach the davit cable to lift sling, untie the tie downs and activate windlass by rotating black dial on motor. Lift the dinghy over the port side and slowly lower to the sea. Disconnect the lifting hook,

REMEMBER TO MAKE SURE DINGHY PLUG IS IN BEFORE LAUNCHING. NEVER LAUNCH THE DINGHY WITH A PERSON IN THE DINGHY. MAKE SURE ALL CREW ARE CLEAR OF DINGHY BEFORE LOWERING.

WE NEVER RECCOMEND TOWING THE DINGHY but if towing your dinghy, always keep it tight to the boat any time that you slow down or stop, assign one of your crew members as the “dinghy” person to be responsible for taking up slack. You don’t want to wrap a propeller.

Coast Guard regulations state that any child 14 and under must wear a life jacket in a dinghy. It is a good idea for EVERYONE to follow this rule.

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 pop-up ringed lids work the best for a nice, neat way to bait the ring. After 15-20 minutes, retrieve the crab line and ring quickly. Measure the crabs using the CRAB MEASURING GAUGE normally located in the lower salon drawer. Keep the male crabs of proper size (usually 6 ¼ inches across the carapace). Boil crabs about 12 minutes to cook.

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

OTHER: Safety & Bilge Pumps

SAFETY should be paramount in your daily cruising. A MAN OVERBOARD DRILL should be discussed and perhaps even practiced with a life jacket. Remember your life jackets are stowed on the flybridge seats-. A few should always be out and ready. Your flares and safety equipment are located –In the safety locker in salon with 1st aid.

Harmony is equipped with 3 AUTOMATIC BILGE PUMPS, You may occasionally hear the pump operate due to condensation and water from the shaft log accumulating in the bilge.