



FHL Boat Manual

Rules for the Use of Boats at UW FHL

(last updated February, 2012)

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General FHL Dock and Boating Policies

On the Dock

Children 12 & under must wear lifejackets and be *accompanied by a parent/guardian* on the pier, floating docks, and boats at all times. Adults must wear lifejackets on the boats (both row and motor) at all times, with the exception of the R/V Centennial.

Rowboats

Visitors no longer have autonomy, and must receive an in-person verbal orientation before using the rowboats. This includes weekend groups, field trip students, Whiteley scholars, etc. If you're wondering whether this applies to you, the answer is YES! If not scheduled ahead of time for groups arriving after business hours or on a weekend, then rowboat use (without an orientation) is NOT permitted.

Rowboat age limits: the minimum age to checkout a rowboat without an accompanying parent/guardian is 16.

Rowboat passengers *under 14 years old* must be accompanied by a parent/guardian (not just a user who is 16+).

Exceptions may be granted when specific cases are discussed with the Boating Safety Officer (BSO).

Motorboats

As of January 1, 2012, **anyone operating FHL's motorboats is required to carry a WA State Boater Education Card** in addition to the FHL motorboat course you may have already attended. You must provide us with a copy of your Boater Ed card to keep on file. Go to <http://parks.state.wa.us/442/Mandatory-Boater-Education> (<http://parks.state.wa.us/442/Mandatory-Boater-Education>) for details on how to get a card. Exemptions: individuals over age 40 are exempt from needing a card in 2012. In 2013 the exemption age will be individuals over age 50, and finally in 2014 only those born before Jan 1, 1955 will be exempt.

Instead of waiting for a scheduled FHL motorboat course, we are now doing **individual checkouts** for those who have WA Boater Ed cards and need to operate FHL motorboats for research purposes – contact the BSO for more information. If it's been more than **6 months since you last used an FHL motorboat**, check with the BSO before your trip to see if there are any equipment updates or policy changes you need to know about.

The procedure for **reserving motorboats** remains the same as it has been: the reservation calendar in the sign-out shed on the dock will be used on a first-come/first-served basis. Wherever scheduling conflicts arise, priority will be given to FHL faculty, students, and staff. Any research that requires reservation of more than 5 days of boat use within a given month must be discussed with and cleared by the BSO or DSO.

If you need to gently **“land” a motorboat onshore** for a beach seine or sampling/collecting purposes, talk to the BSO first. Also, be aware that we now require that you **“tend”** the boat at all times – no walking away from a beached boat! – you'll now need an extra person with you on these trips.

Motorboat age limits: the minimum age to get motorboat certified is 18. Exceptions may be granted on a case-by-case basis by the BSO for younger users who have prior boating skills or experience. Passengers must be at least 6 years old and, from ages 6 – 12, be accompanied by a parent/guardian.

Levels of Boat Use at FHL

1. A **Level I** orientation/check-out refers to use of *rowboats* for research or recreational activities. Anyone at the labs who has been briefed in person (by the BSO, a marine tech, or the caretakers) on general rules and sign-out procedures may use the rowboats. Visitors no longer have autonomy, and must receive an in-person verbal orientation before using the rowboats.
2. A **Level II** check-out refers to use of the labs' five *motorboats* for research-related activities only. In order to be checked out at this level, users must be trained by a marine tech – either individually or in a group – including a knowledge-assessment quiz and a practical component operating at least one of the motorboats. These requirements may be waived by the marine tech if a boat user has already demonstrated experience and proficiency.
3. A **Level III** check-out refers to use of the labs' motorboats as a *tender to SCUBA divers*. In order to be checked out at this level, users must receive some basic training in the use of oxygen for SCUBA emergencies in addition to all the requirements described for Level II. This training can be done by the “lead” diver on a trip reviewing emergency equipment with the boat tender prior to their first dive trip. All the information on the “Level III boat tender to divers” form must be covered (see [Appendix 2](#)); this form must be signed and submitted to the boat safety officer prior to the first time the boat user tends divers. A scientific diver who has been certified for oxygen can automatically be considered a Level III boat user once they have been checked out for motorboat use.

Rules for Rowboat Use

(row boaters need only read this section)

1. Rowboats may be used for research or recreation. In order to use them **you must be briefed in person**, either as part of a group or individually, by the BSO, a Marine Tech, or one of the Caretakers.
2. The **minimum age to checkout a rowboat** without an accompanying parent/guardian is 16. Rowboat **passengers** under 14 years old must be accompanied by a parent/guardian (not just a user who is 16+). Exceptions may be granted when specific cases are discussed with the Boating Safety Officer (BSO).
3. There are **two rowboat types**: the smaller ribbed Walker Bay boats = 2 adults max, and the larger smooth-sided rowboats = 4 adults / 550 lbs max. The rowboats will sink if flooded, so sign out multiple boats if you have a larger group!
4. **Life jackets** must be worn and fastened by each person in a rowboat anytime it is not tied up to a dock, including children. Child-sized lifejackets are in the eastside boat shed. This is a Coast Guard rule, and you are personally subject to Coast Guard inspection and fines.

5. **Rowboats must be signed out before leaving and signed in upon return.** Sign-out sheets are in the westside boat shed. This is the only means we have of knowing where a missing boat and its occupants may be. Be generous with your Estimated Return Time, leave a contact #, and feel free to call if you'll be overdue. Please **take your phone along if possible** — plastic bags for cell phones are available on the shelf under the sign-out podium. Rowboats cannot be reserved, so there is no need to check the reservation calendar.

6. **Check the weather forecast before you leave the dock.** These websites are best:

- <http://forecast.weather.gov/shmnrn.php?mz=PZZ133> (<http://forecast.weather.gov/shmnrn.php?mz=PZZ133>)
- http://www.wunderground.com/US/WA/Friday_Harbor.html
(http://www.wunderground.com/US/WA/Friday_Harbor.html)

Or, consult a Marine Tech, call the Port Office (360-378-2688), or listen to your radio. Boat use is not permitted under gale or storm conditions, and is restricted under a small craft advisory. Be conservative; the weather can change very quickly. A tide chart is posted in most lab buildings and in the boat sign-out shed. At their peak, the tides in the channel are too strong to row against, so row boaters should plan their trips accordingly.

7. **Do not take a rowboat outside of the harbor** without first consulting the BSO or DSO. See the red line on the chart on the wall of the sign-out shed – this is our definition of the “harbor” and is the default rowboat boundary. You may circumnavigate Brown Island by default, but venturing along the FHL shore past the Pumphouse (on the point) requires permission.

8. If you plan **to land on a beach**, take one of the older rowboats (with smooth hulls), and use extra care when landing. Gravel beaches often have larger rocks that are hard to see. Consider the phase of the tide when leaving your boat on shore... the incoming tide may wash it away when you aren't looking!

9. When taking a **rowboat to town**, be sure to moor it at the dinghy dock set aside for small boats at the base of the pier (see marina map in the boathouse). Never tie up at the Customs dock. If you take the boat to town, YOU are responsible for bringing it back.

When the rowboats are temporarily tied to a dock (like the dinghy dock in town), **“ship” the oars** – take them out of the oarlocks and lay them in the boat. Unshipped oars can break by bumping into the dock or being smacked by another boat. You may leave the lifejackets in the boat while you walk around town.

If anybody in your party is drinking alcohol in town, assign a “designated rower” to stay sober and make sure everyone gets back safely. **If you've all had too much to drink**, please leave the boat in town. Walk back to FHL or call a taxi, and when you arrive at the Labs make sure to **SIGN-IN at the boat shed by writing “back in 24”** for the actual return time. Then **go back in the morning and get boat!**

10. When you return to FHL: pull your rowboat onto the floating dock, **flip it over against the stack of other boats**, and reattach the strap that holds the boats down in stormy weather. If you can't do this yourself, get help. Do not leave the rowboats in the water! (Stack strap can be omitted in the summer.)

11. Clean up the rowboat as necessary when finished. **Sign the boat back in**, and hang up lifejackets in the boathouse!

12. If you are taking a **rowboat out after sunset**, be sure to take along your personal flashlight or headlamp that can be turned on to show your position to an approaching boat in sufficient time to prevent a collision. This is a Coast Guard rule, and you are personally subject to Coast Guard fines.

13. Remember that **fishing is restricted in the UW Marine Preserve**. See Preserve boundaries on the map in the sign-out shed and consult Washington State fishing regulations (a license is required to fish, and can be obtained in town at King's Marine or West Marine).

Violation of these standards will result in loss of row boating privileges.

Rules for Motorboat Use

(motorboats are for research purposes only)

Who can use motorboats

1. Motorboats can only be used for approved **research** projects. Only certified faculty, staff, independent investigators, and students may operate the motorboats (no visitors).
2. You must meet with the BSO for a check-out/certification before you use FHL's motorboats for the first time. As of January 1, 2012, **anyone operating FHL's motorboats is required to carry a WA State Boater Education Card** in addition to the FHL motorboat course you may have already attended. You must provide us with a copy of your Boater Ed card to keep on file. Go to <http://parks.state.wa.us/442/Mandatory-Boater-Education> (<http://parks.state.wa.us/442/Mandatory-Boater-Education>) for details on how to get a card. Exemptions: individuals over age 40 are exempt from needing a card in 2012. In 2013 the exemption age will be individuals over age 50, and finally in 2014 only those born before Jan 1, 1955 will be exempt. If it has been more than **6 months since you used the boat**, see the BSO for an update on equipment and procedures. If you are unsure about any aspect of boat operation, do not hesitate to ask the BSO.
3. The minimum age to get motorboat certified is 18. Exceptions may be granted on a case-by-case basis by the BSO for younger users who have prior boating skills or experience. **Passengers must be at least 6 years old** and, from ages 6 – 12, be **accompanied by a parent/guardian**.

Choosing the best boat for your needs

4. Passenger/weight limits in boats must be followed without exception. This may be different than posted on the manufacturers' specifications. See instructions for ~~particular boats~~, or on the ~~website~~.
5. Make boat reservations on the calendar in the sign-out shed by writing:
 - boat name – times you need (e.g., "10:30-3")
 - your name
 - contact info (phone/email/lab)

To cancel a reservation you don't plan to use, erase or cross it out. If it's a half hour past someone's reservation time and there is no sign of activity around the boat they reserved, it is **considered "fair game" and you may take it**. If there is a phone # listed on the calendar you might call the reserve-e out of courtesy.

6. Boats with fiberglass hulls (Bufflehead, Grebe) should **never** be beached. Rocks (sometimes hidden in a gravel or sandy beach) will damage these hulls. If you need to go ashore by boat, take the Gregor or one of the older rowboats. Use extra care when landing. Under special circumstances the Auklet or Coot may be beached, but consult the BSO first.

When / where you can go

7. All excursions beyond Cattle Point (south), upper San Juan Channel between Limestone Point and Spring Passage (just north of Jones Island), or the passage between Upright Head and Foster Point (east) **must be cleared in advance by the BSO**. For example, this includes trips to East Sound or Roche Harbor. See the yellow lines on the chart in the boat sign-out shed for the regular FHL radius of operation.

To get permission for a trip outside of this area, ~~fill out a float plan~~ and submit to the BSO **at least 24 hours before your trip**. You are required to **carry a VHF radio** on all trips beyond the yellow lines, and if you're tending divers make sure that they put a **second oxygen bottle** in the O2 kit. There are radios available to borrow. Check with the BSO or DSO if you would like to borrow one.

8. **Check the weather forecast before you leave the dock**. Gale or Small Craft Warnings should be posted in the boat sign-out shed. If the warning board is not up but the weather looks questionable, check these websites:
 - <http://forecast.weather.gov/shmrn.php?mz=PZZ133> (<http://forecast.weather.gov/shmrn.php?mz=PZZ133>)
 - http://www.wunderground.com/US/WA/Friday_Harbor.html (http://www.wunderground.com/US/WA/Friday_Harbor.html)

Or, consult a Marine Tech (phone numbers listed in the boat shed and in the dock office window).

Boat use is not permitted under gale or storm conditions, and is restricted under a small craft advisory. Be conservative; the weather can change very quickly. A tide chart is posted in most lab buildings. During spring tides, currents may exceed 4 knots in some areas – take this into account when planning your trip.

9. If you need to gently **“land” a motorboat onshore** for a beach seine or sampling/collecting purposes, talk to the BSO first. We **require that you have a “tender”** for the boat at all times (just like divers are required to do so). You’ll need an extra person with you on these trips so that somebody is dedicated to making sure the boat doesn’t get swamped or stranded by the tide – no walking away from a boat onshore!

10. **All motorboat excursions that will extend beyond sunset must be cleared in advance with the BSO.** All boats must display running lights after dusk. See the BSO before you take out a motorboat after sunset to discuss your plans, make sure you know how to turn on the running lights, and that the bulbs aren’t burned out. This is a Coast Guard rule, and you are personally subject to Coast Guard inspection and fines. In addition, FHL requires you to **carry your own personal flashlight or headlamp** on the motorboats after sunset.

11. Remember, **fishing is restricted** in the UW Marine Preserve. See Preserve map in the Boathouse and consult Washington State fishing regulations (a license is required).

Sign-out & reporting problems

12. **All boats must be signed out before leaving and signed in on return.** The sign-out sheet is in the westside boathouse on the pier. When signing out, check the reservation calendar to make sure someone else hasn’t reserved the boat you are taking. Fill out a line of the sign-out sheet completely (except for “actual return time”), including the *pre-trip inspection of propeller and skeg*.

13. Report these problems ASAP to the BSO or directly to the Maintenance department:

- any major boat or motor problems (dead bilge pump or battery, leaky fuel line, etc)
- shortage of the main fuel supply (i.e., when one chamber of the fuel shed tank is empty)
- fraying of the starter rope on the Gregor

This can be relayed via email, phone, or by leaving a note in the main office. Less time-sensitive items can be recorded on the sign-out sheet in the “needed repairs” column, including things like stubborn bow winches, stuck hatch latches, etc.

Gas, oil, & engines

14. Before each trip, gas tanks must be filled from the large red tank in the fuel shed and transported down to a boat. All FHL outboard engines use straight gasoline (not pre-mixed with oil), **except the one on the Gregor**. The Gregor uses pre-mixed gas that can be found in red plastic cans (marked pre-mix) on shelves in the gas shed. **Carry these down to the Gregor and pour into its unique gas tank.**

Two-cycle engine oil must be added to the reservoir on the Grebe before every trip, but not to the Auklet, Bufflehead, Coot, or Gregor.

15. When you fail to vent a gas can, it creates a vacuum that makes it impossible for gas to flow to the engine. Make sure the gas cap is vented every time you switch cans. Close the vent **ONLY** when carrying / moving a gas can – *leave vents open on full and empty cans stored in the fuel shed, on docks, and on boats.*

16. Engine temperature must be monitored **continuously** during engine operation. A strong stream of water should be flowing from the engine housing. Check the flow before leaving the dock and periodically while under way. Engine RPMs and exhaust smoke should be monitored for signs of overheating. **If the coolant stream stops:** turn off the engine and check for kelp, plastic bags, or other debris that may be blocking the coolant intakes (near

propeller). If blockage can be identified and coolant stream returns, you may proceed cautiously while monitoring engine, otherwise get help (see **Emergencies**). **Never** operate an engine that has overheated or has an impeded flow of cooling water.

Emergencies

17. If a boat you are operating breaks down:

1. call FHL (360-378-2165) for assistance,
2. attempt to contact another vessel for a tow back to Friday Harbor, or
3. contact someone on shore and request that FHL be called for assistance.

After business hours or on the weekend, call down the list of “Emergency Phone Numbers” that can be found in each of the boat’s first aid kits, and on laminated cards on a shelf under the sign-out sheets in the boat sign-out shed. **DO NOT attempt to operate an engine which is not running properly.**

18. If your boat has broken down and you are adrift, deploy an anchor. It may be necessary to paddle close to shore in order to get the anchor to “bite” (reach the bottom). **Deploy an anchor only from the bow (front) of the boat, never the stern** (see **Anchoring** section below).

General safety

19. If you are unfamiliar with the marine Rules of the Road, a good rule of thumb is to “give way” to all vessels that are on an intercept course with you. Make an early and decisive change of course or slow down to avoid a crossing situation. **Drive defensively** — assume that other boat operators are oblivious of your presence. Never assert right-of-way over the ferries or floatplanes – go around them. If you would like to learn proper boat handling and navigation rules, free evening classes are taught on a regular basis by the local Power Squadron, or you may consult *Piloting, Seamanship, and Small Boat Handling* by Chapman in the FHL library.

20. **Life jackets must be worn** by every person *while underway*, and must be *on board* for each person in a boat at anchor as well as for divers wearing zipped-up drysuits. A diver wearing a wetsuit or whose drysuit is unzipped must wear a lifejacket. This is a Coast Guard rule, and you are personally subject to Coast Guard inspection and fines.

21. Operate all motorboats **very slowly** in the vicinity of FHL. Do not open up the throttle to get up on plane until you are well clear of the FHL breakwater and past the new floating mesocosms. Be particularly watchful for swimmers, snorkelers and divers around the dock and breakwater. Snorkelers and divers should be flying a dive flag from the southwest corner of the pier (near the crane), but frequently forget.

22. There is a great deal of material floating on (and just below) the surface of the water in this region. A log can put a hole in your boat; an almost-invisible plastic bag can clog your cooling water intake. **Be very cautious, and as vigilant as if you were driving on a freeway.**

Anchoring

23. To anchor, put the engine in neutral and then **DROP the anchor** and chain over the side of the boat – don’t throw it. After the anchor has hit bottom, let out some more line to allow for proper “scope” (line angle). Ideally this length is 5x the water depth so that the anchor tugs horizontally, not up. Tie the line off to a bow cleat (NOT near the stern) using a SIMPLE docking knot with one locking hitch. You should be able to release the line in a hurry if necessary. Then, reverse slowly away from the anchor to make sure it bites.

24. When you’re ready to **retrieve the anchor**, make sure you turn on the boat’s engine first! If you are unable to pull up the anchor, release the line with its marking float and let a marine tech know where the anchor was left. In an emergency, the anchor line may be cut if the knot can’t be released (a knife can be found in the dry bag along with the first aid kit, and usually near the helm also).

25. If you use an anchor, please **coil the line backwards into its bucket** when finished so the next user can deploy the line quickly and easily – DON'T leave it in a knotted heap.

26. Boaters/divers working near shore may use a stern anchor as well, so that the boat won't swing into the rocks with shifting winds or currents. **ALWAYS anchor primarily from the bow**, using a stern anchor only secondarily. Consult the BSO for additional advice on anchoring techniques.

Violation of these standards will result in loss of boating privileges.

Auklet, Bufflehead, and Coot

(see also "General" rules)

1. In the Auklet, maximum weight limit is 1,600 lbs and the maximum number of people is 8 (when the large overhead lift is bolted on, capacity is reduced to 1,400 lbs and 7 people). In the Bufflehead (A.K.A. the Whiteley Boat) AND the Coot, maximum weight limit is 1,000 lbs. and the maximum number of people is 6.

2. First aid kit, flares and fire extinguisher are in the aft storage boxes on the Auklet and Coot, and in the bow section of the Bufflehead.

3. On the Auklet and Coot, make sure **front ramp** is firmly closed before getting underway.

4. Prep the boat

- Check **gas level**. These boats use straight gasoline (not mixed with oil) from the large red tank in the gas shed below Lab 2. They all have 4-stroke engines and oil does not need to be checked or added (the BSO will do this).
- Turn **battery switch** to on. In the Auklet, the battery switch is in the compartment beneath the console and steering wheel (use "Battery 1" or "Battery 2" but NOT 1 + 2 together). In the Bufflehead the switch is in the starboard side stern corner. In the Coot, it is inside the starboard stern hatch. **Turn these off when finished with the boat.**
- Lower engine by pressing the toggle switch on the side of the throttle handle; on the Auklet you will need to raise the engine fully to take weight off its "**kickstand**" before flipping it up so you can lower the motor. If the Bufflehead or Coot engines don't seem to want to lower, check to see if the kickstand is down.
- Connect gas line to one of the tanks and pump bulb on gas hose until it is firm.

5. Starting procedures

- Even when cold, simply turning the key should start the engine. If it doesn't want to start, pull up on the cold-start/idle lever and push in the ignition key briefly to choke the engine. Turn the key again.
- Once engine has fired, bring the idle lever to an intermediate position. If engine starts to stall, push the choke again. **Do not let engine race at high RPMs after starting.** After about one minute pull the cold-start throttle lever all the way down. Engine won't shift gears until this is done. When you return, note the engine's grouchiness on the sign-in sheet.
- If engine floods (you will smell gas and probably see a sheen on the surface of the water), disconnect gas line from engine and turn on engine until it starts – then reconnect gas line. If this doesn't work, just wait ten minutes or so for excess fuel to evaporate.
- It's important to idle the engine at the dock for 5 minutes to warm it up.
- While depressing the shift-lock, push the shift/throttle lever forward and reverse for respective gears; continuing to move it in either direction increases the speed.

6. Once you are well clear of the breakwater, advance the throttle sufficiently to just bring the boat up on plane. Higher throttle settings waste fuel and do not greatly increase speed.

7. While cruising, be very attentive to avoid floating debris. Wood can damage the prop or hull, and seaweed or plastic may plug the cooling intake of the motor. When steering to avoid obstacles while at high speed, do not quickly turn "hard over" to one side, as this could throw a passenger or gear out of the boat. Large wakes from ferries or yachts should be encountered nearly head-on (perpendicular to the wave front) to minimize rocking of the boat. Slow down, if necessary.

8. **Engine temperature must be monitored continuously during engine operation.** A strong stream of water should be flowing from the engine housing. Check this flow before leaving the dock and periodically while under way. Engine RPMs and exhaust smoke should also be monitored for signs of overheating. If the coolant stream stops turn off the engine and check for kelp, plastic bags, or other debris that may be blocking the coolant intakes (near propeller). If blockage can be identified and coolant stream returns you may proceed cautiously while monitoring engine, otherwise get help. **NEVER** operate an engine that has overheated, or has an impeded flow of cooling water.

9. The Auklet and Coot have automatic **bilge pumps** below deck that can also be switched on using a black toggle switch on the dash console. On the Auklet, the switch is above the steering wheel and on the Coot it is below. If you notice excess water in these boats, check the scuppers at the rear of the deck and in the stern, which may be clogged with debris. The Bufflehead also has an automatic bilge pump; if there is a significant amount of water in this boat it means that the float switch circuit is faulty, the pump died, or the battery is dead. Try activating the pump using the switch to the left of the steering wheel, and be sure to notify the BSO or Maintenance upon your return. If activating the switch doesn't pump out the water, **DO NOT OPERATE THE BOAT**; notify the BSO or Maintenance.

10. When shutting these boats down, turn off the ignition key. Before turning off the battery switch, **raise engine** using the toggle switch on the side of the throttle handle. In the Auklet: once engine is all the way up, flip down the "kickstand" and then lower the engine slightly so its weight rests on the stand. **THEN TURN OFF THE BATTERY SWITCH.**

11. Clean up the boat, check that the anchor line is neatly coiled in its bucket, adjust the dock lines so they are secure (but not squeaky tight) and have sufficient spacing to prevent bumping nearby boats.

12. Return life jackets (hang them up!), sign in the actual time of your return, and note any problems on the sign-out sheet. Urgent problems should be immediately brought to the attention of the Marine Tech or the Maintenance crew.

NEVER beach the Bufflehead.

Talk to the BSO about circumstances under which you might gently "land" the Auklet or Coot onshore, keeping in mind that you (or someone else who is boat-certified) will need to "tend" the boat at all times. No walking away from a beached boat!

Grebe

(see also "General" rules)

1. Maximum weight limit is 1,000 lbs. Maximum number of people is 4.

2. Make sure the first aid and flare kits are onboard; look for them in the center console (there's a door down low on the port side...see BSO if you can't find them).

3. **Prep the boat:**

- Two-cycle engine oil gets consumed along with fuel as the motor runs and must be added separately to the reservoir. If it's up, lower engine by pressing the toggle switch on the side of the throttle handle, then **CHECK THE OIL** level: remove the round black cover from the top of the engine housing, and then the yellow screw-plug under that. Note the "operating level" hatching on the dipstick and if necessary **add regular BLUE-colored 2-cycle engine oil**. There's a funnel and an extra quart of oil onboard in the port

hatch on the center console (which can be re-filled either from the oil tub in the boat sign-out shed, or from larger containers in the fuel shed). Re-check the oil level during long trips.

- The Grebe takes straight gasoline (not pre-mixed with oil) from the large red tank in the gas shed below Lab 2. Connect gas line to one of the tanks and pump bulb on gas hose until it is firm.

4. Starting procedures

- If engine is warm (or hot) simply turning the key should start the engine. Don't turn starter for more than 8-10 seconds at a time; wait 30 seconds in between tries.
- If engine is cold, the *cold-start/idle lever must be raised fully* and the electronic choke activated. *Push the ignition key* in to choke the engine. Turn key to start engine.
- If engine floods (you will smell gas and probably see a sheen on the surface of the water), disconnect gas line from engine and crank engine until it starts – then reconnect gas line. If this doesn't work, just wait ten minutes or so for excess fuel to evaporate.
- Once engine has fired, reduce the cold-start lever to an intermediate position. If engine starts to stall, push the choke again. **Do not let the engine race at high RPMs after starting.**
- After about one minute the cold-start lever can be lowered all the way. Engine won't shift gears until this is done.
- It's important to ***let engine idle at dock for 5 minutes to warm it up***, or the Grebe will die when you shift into gear.
- To move shift lever into gear squeeze the red/blue bar under the handle.

5. Once you are well clear of the breakwater, advance the throttle sufficiently just to bring the boat up on plane. Higher throttle settings waste fuel and do not greatly increase speed.

6. While cruising, be very attentive to **avoid floating debris**. Wood can damage the prop or hull, and seaweed or plastic may plug the cooling intake of the motor. *When steering to avoid obstacles in the Grebe while at high speed, do not turn sharply as this could throw a passenger out or even capsize the boat.* Large wakes from ferries or yachts should be encountered nearly head-on (perpendicular to the wave front) to minimize rocking of the boat. Slow down.

7. **Engine temperature must be monitored continuously during engine operation.** A strong stream of water should be flowing from the engine housing. Check this flow before leaving the dock and periodically while under way. Engine RPMs and exhaust smoke should also be monitored for signs of overheating. If the coolant stream stops turn off the engine and check for kelp, plastic bags, or other debris that may be blocking the coolant intakes (near propeller). If blockage can be identified and coolant stream returns you may proceed cautiously while monitoring engine, otherwise get help. **NEVER** operate an engine that has overheated or has an impeded flow of cooling water.

8. The Grebe's **bilge pump** is activated using a pull knob in the console to the left of the wheel; pull it out to activate the electric pump in the stern, and make sure the rubber hose expelling water is directed outside of the boat. **PUSH THE KNOB IN WHEN FINISHED**, or you will burn up the bilge pump.

9. When shutting down, turn off the ignition key. Clean up the boat, check that the anchor line is neatly coiled or flaked, adjust the mooring lines so they are secure (but not squeaky tight) and with sufficient spacing to prevent bumping nearby boats. **ENGINE TILT rule-of-thumb** for the Grebe: when you are finished, leave this engine in the same position you found it. It often leaks oil when tilted up, but the prop acquires growth if left in the water all the time so the BSO decides when to tilt the motor.

10. Return life jackets (hang them up!), sign in the actual time of your return, and note any problems on the sign-out sheet. Urgent problems should be immediately brought to the attention of the BSO or the Maintenance crew.

NEVER beach this boat.

Gregor Aluminum Boat

(see also "General" rules)

1. Maximum of 4 persons (550 pounds: equivalent to 2 divers with full gear and a boat tender without gear, or 4 persons without gear). The 6-person manufacturer limit is not appropriate for marine conditions. Flotation is provided by foam under the seats. **As with all FHL boats, wear your lifejacket.**

2. **There is no first aid / flare kit or anchor stored on board.** An extra emergency kit marked 'Gregor' is available in the boat sign-out shed. There should be a spare anchor and bucket of rope on the dock near the tide gauge, or on the float next to the Auklet. NEVER borrow another boat's only anchor without leaving some kind of note on the ignition console or at the sign-out sheet to let potential users know.

3. **Gasoline for this boat is pre-mixed with two-cycle oil. There is a supply in the fuel shed on shelves in red plastic cans labeled "pre-mix."** Carry these down to the Gregor and pour into its unique gas tank. It's a good idea to check the pre-mix cans 24 hours before you plan to use the Gregor, so you can let the BSO know if the cans aren't full.

4. Prepare the motor

- Flip the tilt lever on the starboard side of the motor mount to the down position (icon shows boat with motor down)
- Pull upward on the back of the motor to release it, then slowly lower it into the water.
- Connect the fuel line and pump the bulb until it is firm. Check the arrow on the bulb to ensure that the line is connected in the right direction.
- Crack the seal of the fuel tank cap (if unvented) to equalize the air pressure.

5. Start the engine

- Make sure that the shift lever is in the neutral (vertical) position.
- Pull out the choke control (omit this, if the engine is already warmed up). Do not adjust the fuel richness control; black round knob with pointer.
- Advance the throttle by turning the tiller handle clockwise. Pull the starter rope out slowly to determine its full extent of travel and to check for fraying. Do not attempt to start the motor with a frayed rope – report it to Maintenance.
- Then, let the rope retract and pull it briskly/roughly 3/4 of its full travel.
- Repeat as needed, trying different positions of the choke, and ensuring that the throttle remains advanced. If it will not start in about a dozen tries, get help from a marine tech or the Maintenance crew.
- Once the engine starts, quickly push in the choke and then reduce the rpms by returning the throttle handle counter-clockwise. As the engine allows, continue to slow the throttle to an idle.
- **Let the motor idle for a full 5 minutes before leaving the dock.**

6. **Engine temperature must be monitored continuously during engine operation.** There is no temperature gauge or warning alarms for overheating. The operator must frequently check that there is a strong flow of cooling water spraying from the lower starboard side of the motor. If this flow is obstructed by a piece of kelp, plastic bag, or malfunction, STOP THE ENGINE IMMEDIATELY! If the cause of the blockage (e.g., kelp) can be identified and removed, you may proceed cautiously with frequent checking of the cooling water. **If the cooling water cannot be restored, DO NOT OPERATE THE MOTOR;** flag down a passing boat for a tow home, row ashore, and/or ~~call the FHL for assistance~~ (see p. 10).

7. After the engine has warmed up, untie the boat, shove away from the dock, and (making sure that the engine is at idle) move the shift lever forward or backward as needed to maneuver. Leave (and return to) the dock slowly, watching carefully for divers or people working at the edge of the floats. **If you are operating the boat alone, attach the kill switch cord to your belt; it will stop the engine if you are accidentally thrown from the boat** (it has happened before!).
8. Once you are well clear of the breakwater, advance the throttle sufficiently to just bring the boat up on plane. Higher throttle settings waste fuel and do not greatly increase speed.
9. When up on plane, the **bilge plug** may be removed to drain any water in the bottom of the boat. Keep the plug in your hand, so that you don't forget to replace it before slowing down and coming off plane!
10. While cruising, be very attentive to avoid floating debris. Wood can damage the prop or hull, and seaweed or plastic may plug the cooling intake of the motor. When steering to avoid obstacles while at high speed, do not quickly throw the tiller hard over to one side, as this could throw gear or a passenger out of the boat. Large wakes from ferries or yachts should be encountered nearly head-on (perpendicular to the wave front) to minimize rocking of the boat. Slow down.
11. If you will be **beaching this boat**, use extreme care. Select a gravel or sand beach, and be attentive to avoid rocks in the water or nearly buried by the sediment. While still in deeper water, disconnect the fuel line, flip the tilt lever, and raise the engine. Put the oars in the oarlocks, and row ashore. Consider the phase of the tide, and drag the boat up the beach to a point where it won't float away on an incoming tide during the length of your stay (but not so far that you can't get it back to the water). Carry the anchor up the beach and secure it.
12. On return to FHL, **disconnect the fuel line**, flip the tilt lever, and raise the engine.
13. Clean up the boat, check that the anchor line is neatly coiled, (you may leave the oars on board), adjust the mooring lines so they are secure (but not squeaky tight) and with sufficient spacing to prevent bumping nearby boats.
14. Return life jackets (hang them up!), sign in the actual time of your return, and note any problems on the sign-out sheet. Urgent problems should be immediately brought to the attention of the BSO or the Maintenance crew.