



## Dragonfly Safety and Precautionary Notes

### Propeller Safety

Do not get near the propeller. As an operator, be aware of anyone or anything that can contact the propeller. Some examples of items that have passed through propellers have included gloves, animals, push poles, jackets, limbs, ropes, wire, aluminum cans, nails, small tools and various engine parts. Any of these can result in serious vessel damage and possible bodily harm. Air currents can lift items from the bottom of the boat and the propeller can eject them with terrific force through the bottom of the boat. Safety and prevention of propeller damage requires that all equipment remain secured when underway. Consider using large waterproof containers or coolers to enclose all loose items. It is the responsibility of the operator to secure all equipment and instruct all passengers of safety precautions before starting the engine.

Operators should be aware of the column of propeller driven air (prop-wash) behind them that can lift and tumble canoes, turn over trash cans, soak equipment, throw debris, blow fledgling birds from nests and irritate bystanders. If you get caught behind an airboat, face away and duck your head, close your eyes and wait for its departure. However, it is always best to position your airboat away from others and not behind their propeller.

Avoid handling an unsecured propeller. When dealing with aircraft engines, the propeller could spin under compression. Aircraft engines can run with the magnetos on and the ignition device turned off. Therefore, when the magnetos are not grounded, the engine could start if the propeller is moved. There are a few circumstances where propellers must be moved for inspection, engine work, travel, or storage. In these cases precautions include:

- Ensure that magnetos/ignition are in the OFF position.
- Allow the engine to cool down.
- Use a loop of rope or use a boat paddle to position the propeller.
- Individuals entering the cage for repairs should take the keys out of the ignition, remove the battery terminal, turn the battery selector switch to OFF position, and tie the propeller off to a strong cage support.
- Be aware that exposed exhaust manifolds and pipes are hot and pose a burn or fire hazard.

## Safety Equipment

Airboats are considered vessels and most meet the Class A and Class 1 safety requirements for recreational vessels. The following safety gear must be worn or be on board at all times while operating airboats. Additionally, a Float Plan must be filed with a reliable person.

- U.S. Coast Guard-approved personal flotation devices (PFDs) and all U.S. Coast Guard-required equipment.
- Ear protection that meets or exceeds OSHA standards.
- Appropriate eye protection
- First-aid kit.
- B-1 type approved fire extinguisher.
- Cell Phone in water-proof buoyant case
- Drinking Water

## Airboat Preoperative Checklist

Before departure, a pre-operation check on the airboat must be conducted. This enables the operator to find possible deficiencies or shortcomings that will otherwise go unnoticed. All too often, accidents occur due to a person's neglect for conducting pre-operation checks. Accidents, injuries and mechanical breakdowns can often be avoided by simply performing maintenance and general inspections of the airboat before operation. The following checklist alone does not provide sufficient information to operate an airboat safely. Safe operation requires demonstration and practice as well. This is a reminder checklist for trained and experienced operators.

### Preoperative checklist

- **Trailer hookup**
  - o Boat and trailer safety chains
  - o Trailer lock
  - o Boat to trailer tie downs
  - o Refer to DSL Boating Policy for more details
- **Airboat (Do these checks, preferably, at the storage facility)**
  - o First, make sure magneto switches (aircraft) and battery switch (automotive) are in the OFF position and remove key from ignition
- **With Engine Off, Check**
  - o Fuel level, fuel leaks
  - o Propeller for cracks, dents, bolts for tightness
  - o Rudders and fittings
  - o Hull for any loose equipment or foreign matter
  - o Engine and engine compartment for any loose fittings, nuts, bolts, etc
  - o Engine mounts
  - o Cage, engine stand and seat stand for cracks and breaks
  - o Engine oil level
  - o Radiator fluid level and clamps and hoses for tightness and wear (*automotive*)
  - o Communications equipment
  - o Polymer and rivets (Steel flex where applicable)

- **Start engine and run for about two minutes**
  - o Check for
    - ③ Firing of both magnetos (*aircraft*)
    - ③ Oil and fuel line leaks
    - ③ Coolant leaks (*automotive*)
    - ③ Check all gauges while boat is running
- **Shut engine off**
  - o Recheck oil level
  - o Check navigation lights
  - o Check trim tab
  - o Load all safety gear, PFD's, hearing protection, etc
  - o Make sure bilge pump is operational
  - o Insert drain plug

## Weather

Weather conditions can change very rapidly. Airboat operators are in a very high risk group and should use precautionary measures to avoid storms.

- Prior to field operation, operators should know the weather forecast that has been predicted for the area they are to be working in as well as surrounding areas. It should be noted, however, that weather forecasts can change drastically within a two hour time frame. When in airboats, operators should constantly monitor changes they see or feel in the atmosphere.

Weather changes generally move in from the west, so keep a watch in that direction. Some additional indicators of declining weather conditions may include rising humidity, clouds lowering and thickening, clouds increasing in number, clouds moving from east or northeast toward the south, static on AM radio, strong winds in the morning, and wind shifts from north to east. If an operator is in doubt of weather conditions at any time, he or she should radio the field station to get updated information.

If a thunderstorm is seen in the distance, airboats should move to shore immediately. When observing lightning, you can easily calculate the distance between you and the storm by multiplying the seconds that elapse between a flash of lightning and a clap of thunder by 0.2. A five-second delay would mean that the storm is about 1 mile away.

In addition to lightning and rain, thunderstorms often bring rising winds. Airboats should be docked as soon as possible under these conditions. If caught in foul weather, operators should reduce speed and head for the nearest shore that can safely be approached.

- If an airboat is caught in a thunderstorm, battery jumper cables make a good emergency ground by clamping one end to the antenna and dropping the other end into the water.

Another weather feature that is of particular concern to boaters is fog. Fog is, in effect, a cloud that is on or near the ground. Fog is likely wherever an area of cold water exists. For this reason, fog can form on lakes, rivers, and canals where cold water flows through areas with very moist air. The cold water will cool air near the surface causing fog.

Fortunately, weather forecasters can predict fog with high reliability. Marine weather forecasts include information about anticipated fog. As weather forecasters normally do not give this information, airboat operators should always get the marine forecast before departing. When in foggy areas, airboat operators should operate with their strobe lights on and double check that their red warning flags are up and in place. Since visibility is lowered, special precautions should be taken to drive slowly and avoid blind spots as much as possible until the fog lifts.

Signs of changing wind patterns or strong winds can be seen while approaching open areas or breaks in tree lines. Operators should look for changes on the water surface such as ripples. Breaks in tree lines should be approached with caution to avoid sudden wind gusts that may be present. Props often emit a slightly different noise in different wind patterns and experienced operators will be able to notice a difference. Whatever the situation, extreme caution and care should be taken whenever sudden wind gusts are encountered.

- Wind gusts often will change direction or appear suddenly and without warning in canals.

If an operator is traveling down a waterway and a sudden wind gust suddenly pushes the airboat in a different direction, the operator should slow down immediately. If there are no objects in the airboat's path of travel, the operator should let the wind push the airboat in the same direction as the wind and let the airboat slow down until proceeding forward. If an object is in the path of travel, the operator should slowly steer the rudders against the wind to avoid a collision.

## **Heat Stress**

In addition to electrical storms, fog, and wind; heat also plays a very vital role in daily operations. Heat stress is a serious potential health hazard. Heat stress can quickly result in death. With temperatures hovering in the nineties, in addition to high humidity, heat creates a great strain on the body. While performing strenuous work in the heat, the body can lose up to 1- 1½ quarts per hour. This means that it is possible to lose anywhere from 1 to 12 pounds daily when doing strenuous work.

The solution to this problem is obvious. Workers must drink enough water to replace the water lost from sweating. Cool water is the ideal fluid replacement. Workers should drink every twenty minutes whether you are thirsty or not. Thirst is a poor indicator of these conditions, because by the time thirst is felt, the problem already exists. The use of salt or salt tablets is not recommended. Salt tablets cause stomach irritation, which may include nausea and vomiting. Workers should also wear loose clothing, use umbrellas for shade, and take regular breaks for water and rest, and apply sunscreen, as needed.

If at any time a person is feeling over heated, that person should find shade, be given plenty of fluids to drink and be carefully monitored until conditions improve. The following table lists the three main types of heat emergencies, symptoms and treatment, in order of severity.

**Note: Heat exhaustion can quickly proceed to heat stroke. Treat all heat emergencies as serious.**

| HEAT ILLNESS           | SYMPTOMS   | TREATMENT   |
|------------------------|--|---|
| <b>Heat Cramps</b>     | painful muscle spasms  | administer lightly salted water by mouth, consult a physician     |
| <b>Heat Exhaustion</b> | skin clammy and moist<br>coloring pale and muddy             | remove to cooler area   |
|                        | fatigue, nausea, headache<br>may feel faint                  | administer fluids by mouth<br>(if conscious)                      |
|                        |  | get medical attention immediately<br>call 9-1-1                   |
| <b>Heatstroke</b>      | hot, dry skin; red<br>mottled or bluish                      | immediate cooling of victim by<br>immersing in chilled water      |
|                        | high, rising body<br>temperature: 104 degrees<br>F or higher | wrap victim in wet clothing while<br>fanning with cool, dry air   |
|                        | mental confusion, loss<br>of consciousness,<br>convulsions   | call 911 immediately informing<br>them that heat emergency exists |
|                        | Do not administer fluids                                     | monitor vitals  |

## Maneuvering and Navigation

While operating an airboat in a canal or lake, airboat operators will be constantly maneuvering and navigating their way out of various tight spots and corners. Rough waters, stationary obstacles, and other boats will make maneuvering more difficult. Knowing proper maneuvering and navigation techniques is important due to the following:

- Knowing where you are and where you are going
- Knowing the area and locations of possible trouble and blind spots
- Knowing how to give directions to your location in case of emergencies
- Knowing ways to avoid situations in which the boat may tip or undercurrent
- Knowing proper ways to avoid other boats and obstacles

Initial training of airboat operations should be conducted in shallow water ranging from 6 inches to 2 feet deep and free of obstacles. In this depth of water, learning to operate the boat will be easier. If mistakes are made, a trainee will be less likely to get in trouble in shallow water. Instructors who are training personnel on airboat operations should train at a slow pace ensuring that all the safety steps and proper airboat operations are covered thoroughly.

Due to the flat design of the bottom of airboats, it is not recommended that an opened hull airboat be operated in extremely rough waters, or in waves over 1½ to 2 feet. Waves at this height can easily ascend over the boat, resulting in submersion. Therefore, special care should be taken when turning corners or slowing where wake can easily capsize or sink the boat. In emergency situations where waves exceed 2 feet, the operator must continue, without stopping or turning (when appropriate), until the boat is out of the adverse conditions.

The bouncing that waves create on an airboat can be lowered by adjusting the trim tab. Newer airboats are fitted with electrical trim tabs that can be adjusted by the airboat driver. The operator should adjust the trim tab to the level that produces the smoothest, safest and most comfortable ride. Caution: Trim tabs need to be adjusted when making turns; therefore, the position of the trim tab needs to be corrected, prior to turning. Trim tabs in the lower position may cause the boat to veer off course, causing abrupt movements.

When traveling at higher speeds, an airboat creates a wake with waves exceeding 2 feet in height. When coming to a stop, the driver of the airboat must gradually slow down before coming to a stop ensuring that the wake does not ascend the top of the boat from the rear. While approaching the stopping point, the driver should keep the accelerator partially down to "outrun" the wake. It is important that operators plan stops well in advance.

- Stopping often requires a long distance and drivers need to consider this distance especially when in narrow canals or tight areas.

When turning the airboat, the driver must be sure to avoid the wake that is created. Waves can easily ascend over the side of the boat. The waves strike the airboat with enough force to flip the boat over if it is perpendicular to the wave.

- The threat of waves ascending the top of an airboat is lessened if an operator turns the airboat at a 45 degree angle into the oncoming waves.

Wake from other boats is also a concern. Oncoming power boats (traveling at excessive speeds) will often not see other boats until they are within a close distance. When they see the boat they turn sharply creating wake which is often capable of swamping an airboat. Whenever possible, the airboat operator should turn the airboat so that it faces the oncoming wave. This will eliminate the possibility of the wave coming over the side of the airboat where it is more vulnerable. This should only be done however, when the oncoming boat has passed and the threat of colliding has passed.

Extreme caution and care should be made when approaching dry area or areas that appear to be caked with mud. Operators should approach these areas at low speeds. If upon entering the trouble area you feel the airboat getting stuck, turn the airboat around and do not attempt to cross. Navigating in these muddy areas should be done carefully as the operator does not know exactly how an airboat will operate under these conditions.

If the airboat is stopped on dry mud or any area that is shallow enough for the boat to rest firmly on its bottom and the boat will not move, use the following procedures: With the engine running at idle, push the rudder control forward. After pushing the rudder control fully forward, hold it in position with the throttle down for about 2 or 3 seconds. Rapidly pull the control fully to the rear and repeat the same procedure while holding it fully to the rear, keeping the throttle fully depressed. This may give it just that little extra bit it takes to get it moving.

There will be times when you may wish to cross a dry area and you may think it will give you some problem in sticking the boat. In this case it would be advisable to get up close to the area that you are going to cross with the back of the boat, now accelerate away from the area that you wish to cross rapidly, thus the propeller will force the water across the dry area and wet it down. You might repeat this technique a couple of times to get the area saturated with water. After doing this you will find that the boat will move across it very rapidly and without finding yourself up in the center of it stuck.

## **Other Boats and Obstacles**

Most non-fatal boating accidents are the result of a collision with another boat or an object in the water, such as rocks, pilings, or debris. During a five-year span from 1987-1991, 16,934 collisions with other vessels, fixed objects, or floating objects occurred in the United States. In these accidents, 788 people lost their lives. Knowledge, common sense, and courtesy could have prevented most of these accidents.

Prior to entering a lake or canal, operators shall ensure that a minimum of one red flag is present and in the upright position on the airboat. These flags should be kept as clean as possible. Flags that have become soiled with dirt and oil should be replaced with new flags that are brighter and easier to see. This simple procedure may be the last defense in avoiding collisions in congested areas. Operators should also check unfamiliar areas for locations of wakes and dams.

Every airboat shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and the risk of collision.

Every airboat operator must constantly be aware of approaching trouble areas and proceed at a safe speed so proper and effective action can be taken to avoid collision. To determine safe speed, an airboat operator should consider such things as visibility, traffic density, including concentration of fishing vessels, direction/velocity of wind, water conditions, and the proximity of navigational hazards, etc...

- When entering a new area with an airboat, an operator should carefully examine the area for possible trouble spots.

Problem areas may be found by maneuvering through the area at low speeds. This also gives other boaters in the area an opportunity to see that you are present, avoiding potential collisions. Such obstacles as debris, fence posts, and blind spots should also be inspected. When water levels are low, rocks, branches and fence posts that were once under water, begin to emerge from the surface and are high enough to be an obstacle, but low enough to be unseen. The inspection of the work area should be done at a low speed. Obstacles that can be removed should be removed immediately.

When traveling in canals or narrow waterways, operators should stay to the right of the waterway as much as possible. This is especially important around corners where there are blind spots. Corners should be taken slowly, wherever visibility is restricted to ensure no traffic is coming from other directions. While navigating the airboat, the operator should continually be looking in all directions for possible trouble areas that may be approaching and be prepared to maneuver in open areas, if necessary.

## **Lifesaving/Open Water Retrieval**

Most boating fatalities are the result of capsizing or falls overboard. Approximately 90 Percent of fatalities are the result of drowning, and nearly 80 percent of fatalities in boating accidents were the result of not using a personal flotation device. During the Years 1987 to 1991, 1,298 people drowned from falling out of boats. Most fatal Accidents are the result of capsizing, falls overboard, and collisions and are a sudden, unexpected occurrence. A PFD could save your life, but it is of little use if you don't wear it.

The National Safety Council statistics show that drowning is the second leading cause of accidental death for those between the ages of 17-44. Most of the 6,000 to 8,000 people drown annually never intended to be in the water and were unprepared. Sadly, most drownings occur within a few feet of safety.

The following is helpful information to prevent drowning.

When selecting a PFD, read the label to make sure it fits your size and weight. Try your PFD on to make sure it fits properly and check to make sure it is Type II Coast Guard approved. To ensure your PFD stays in good condition follow these points:

- Wear your PFD at all times while in the boat
- Don't alter your PFD; if it doesn't fit, get a new one
- Don't put heavy objects on your PFD or use it as a kneeling pad
- Let your PFD drip dry before putting away after each use
- Never dry your PFD on a radiator, heater or any other direct heat source
- Put your name on your PFD (use permanent ink or marker)

In the event of an airboat capsizing the following rules apply. If you are out in a large body of water, do not try to swim to shore; instead stay with the boat until help arrives. The shore is usually further away than it looks and most boats will stay afloat. It is easier to spot an overturned boat in the water than a swimmer. Only leave the safety of the boat as a last resort and after carefully assessing the situation.

