



OPERATOR'S MANUAL
SERVICE AND PARTS
REFERENCE

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To Our Friends at Door County Rescue,

Welcome to the Hovercraft America family. Hovercraft America is a family owned organization dedicated to the manufacturing of the highest quality hovercraft possible. Hovercraft America was formed to respond to the demands of the marketplace that insisted upon a quality built vehicle to provide many hours of enjoyment and with the strength and dependability for the demanding commercial application.

Although the hovercraft has been around for many years, it's our desire to manufacture a hovercraft that is technically superior both in design and quality. We feel our product stands alone in the light commercial category of hovercrafts, with each craft handbuilt and quality controlled to our own Hovercraft America industry leading standards.

The more time you spend flying this hovercraft the more you'll come to appreciate the pre-engineered stability, safety and integrity that surrounds you. You, our customers are our most important asset and we value the trust you have placed in us in acquiring one of our units. We won't let you down.

Thank You,

Jim & Mary Jane Gralton



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America-5

The America-5 is an Integrated Air System Hovercraft. This system consists of one fan, which provides air for both lift and propulsion.

The lift or "Air Cushion" is produced by ducting 30% of the fan's air downward. This air circulates around the hull of the craft and exits through port holes facing each individual skirt segment. The S-skirt system is known as the extended segment type. Each segment is separate from its neighbor and allows for maximum flexibility when passing over obstacles. Skirt damage is confined to individual segments, which are easily serviced.

Operating controls are as simple as possible, consisting of a throttle for engine speed, handlebars for rudder control, and a lever to operate the braking system.

The self-colored glass fiber hull is built on a solid block of polyurethane foam which is sealed-in, to provide buoyancy and a very strong lightweight base to the craft.

The America-5 was designed for simplicity and ease in service, maintenance, and operation.

With only one engine driving one fan through an HTD belt drive system, you will soon learn all there is to know about your Hovercraft's operation.

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AMERICA-5 SPECIFICATIONS

| | |
|--------------|---|
| HULL | Gel-coat colored reinforced fiberglass |
| DECK | Gel-coat reinforced fiberglass |
| LENGTH | 16' |
| WIDTH | 7' |
| HEIGHT | 60" (w/o light bar) |
| WEIGHT | 1000 lbs. (dry) |
| ENGINE | Mazda (rotary) gasoline, liquid cooled, electric start |
| HORSEPOWER | 130 |
| FAN | 9 blades, 36" diameter |
| GAUGES | Tachometer, coolant temp., oil pressure, voltmeter, hour meter |
| MAX. SPEED | 45 m.p.h. |
| MAX. PAYLOAD | 1/2 ton (1000 lbs.) (Including passengers) |
| MAX. PERSONS | 5 |
| AIR CUSHION | 6" - 11" |
| SKIRT SYSTEM | Type S - 83 segments |
| FLOTATION | Polyurethane - closed cell foam |

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| | |
|--------------------|---|
| FUEL CAPACITY | 8 U.S. Gallons |
| FUEL CONSUMPTION | 3 U.S. Gallons per hour |
| OBSTACLE CLEARANCE | 9 inches |
| TRAILER | Fly on-off, swivel, available in different colors to meet your needs. |

NOTE: Hovercraft America, Inc. reserves the right to change or modify specifications without notice.



Operating Instructions



INTRODUCTION TO HOVERCRAFT OPERATION

Everyone has a preconceived expectation of how a hovercraft should perform. However, we would like you start with a clear and open mind. We will show you the realities of hovercraft as we guide you through your first flights. Our objective is to show you how to travel safely on a variety of surfaces, including land, water, ice, and snow. The sensation of flying a hovercraft is probably unlike anything you have experienced. Like any power-driven vehicle, they are not toys. They require respect and an awareness of the surrounding environment. As you become more proficient at operating your hovercraft, you will discover a sense of accomplishment that accompanies learning a skill few people possess. You will become more relaxed, and your ability to master new techniques will improve. It won't be long before you discover a new freedom of travel.

As with any new subject, we will take you on a brief overview of "the basics" before delving into the operation of your hovercraft.

HISTORY:

The invention of workable hovercraft dates back to the early 1960's and the first practical application was in the large (200 ton) European cross channel ferries. Earlier U.S. military research had resulted in the use of the PAK-VEES in Vietnam. Now the Coast Guard and the U.S. Navy have major contracts for the supply of patrol hovercraft (Surface Effect Ships) and LCACs (Land Craft, Air Cushion). Recently, military hovercraft have received increased media attention due to their widespread use in Desert Storm and Somalia. Finally, the hovercraft has come of age.

HOW IT WORKS:

Your hovercraft has a 4 cycle gasoline engine. It is independently mounted, and directly coupled through a flexible ring to the bottom pulley of the thrust frame. This drives the top pulley and fan through a toothed drive belt.

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The fan blades are set at the optimum angle for thrust, and the number of blades is in balance with engine torque and power output.

About 30 percent of the air thrust is directed through the hull opening behind the fan (splitter) into the space between the inner and the outer hull molding, called the plenum. It enters the skirt through a series of holes around the edge of the outer hull (one for each skirt segment). This "lift-air" has sufficient pressure and volume to lift the entire structure of the hovercraft, with its payload, and keep it suspended. The lift-air is held captive under the hull by the skirt which hangs down to the ground. Each skirt segment can deflect individually when passing over bumps, so that very little lift air is lost on choppy water or uneven land. However, it is not designed to climb stairs or traverse harsh terrain, so you should stay on smooth surfaces whenever possible.

The hull is made of two large fiberglass and resin moldings using extra-strong, woven fiberglass instead of the usual chopped strand mat. The edges of the top and bottom hull moldings are bonded together, and an aluminum angle is riveted around the hull. This gives added strength while providing upper attachment points for the skirt segments. The bottom of the segments are attached to the hull with replaceable skirt ties, which are designed to detach when pulled hard, so as to prevent the segments from ripping if they get hung up on obstacles. It is only a matter of a few seconds to replace a tie.

Once off the surface, the hovercraft is easily maneuverable by hand or under its own thrust power. Most of the air flow from the fan is used for thrust. It passes over the air straighteners in the back of the fan duct, which prevents the flow from corkscrewing. This results in a straight thrust line.

The hovercraft is steered by a combination of the air rudders behind the fan and body-weight displacement. Steering characteristics vary according to the surface you are traveling over (see operating instructions). The air rudders are moved by turning the handlebars right or left.

Stopping is accomplished by progressively releasing the twist grip throttle on the handle bars and allowing the vehicle to coast to a stop. On most surfaces, you can also turn around 180 degrees and accelerate the fan against the direction of motion until you stop. This technique requires practice in an open area.

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The unique Air Brake System works by blocking the thrust air. By applying the brakes and coasting to a stop, the craft can maintain full air cushion. This will allow you to gently lower it onto any surface. The application of the braking system can also allow the craft to hover in place.

The maximum speed of the hovercraft varies according to surface conditions. On hard, flat surfaces like ice, very little lift air is lost, and there is hardly any skirt drag, so the craft moves quickly. Long grass, on the other hand, is rather porous, so more lift-air is dissipated and the skirt drag is greater. This slows the vehicle and makes turning more sluggish.

On water, snow and ice, the wind can have a noticeable effect on the direction of the craft. Slopes can have a similar effect on the direction of travel. The hovercraft must be steered to off-set these factors, all of which is part of the skill and fun of operating the unit.

Now that you have a general idea as to the factors that affect hovercraft flight, we will introduce some of the components and terminology you will encounter in this manual:

STATOR VANES: The blades which serve to redirect the air into a straight-line thrust.

BAG SKIRT: Older versions of hovercraft used these continuous skirts, which look like an inner tube.

SEGMENTED SKIRTS: A skirt made up of individual pockets, segments or fingers, each separately supplied with lift-air. Your hovercraft is equipped with a Segmented Skirt System.

DRAG FLAP: A flap under the rear skirts which prevents the rear skirt segments from picking up water and increasing drag.

FAN DUCT: The circular structure around the fan which boosts its efficiency and houses the Stator Vanes.

HOVERHEIGHT: The height of the hull bottom above the surface while on

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pocket, both while stationary and at speed.

HUMP: When starting on water, the lift-air creates a saucer in the water equal in weight and displacement of the craft. Climbing out of the depression is called flying over hump.

ON CUSHION (OR ON POCKET): The position of the hovercraft when the hard structure is clear of the surface riding on its cushion of air.

P-CLIPS: Plastic clips, mounted to the lower hull, which allow the lower portion of skirt segments to be attached to the hull.

SKIRT TIES: Plastic ties which hold the skirt segment to the P-clip on the hull.

TRIM: The posture of the hovercraft when flying or floating. This may be nose-up, or nose-down, or leaning left or right. Ideally, the craft should be slightly nose-up.

The basic knowledge you gained from the introduction above is about to be put to good use, learning to fly your hovercraft! If you have never flown a hovercraft before, and do not plan on taking advantage of the Factory Training, please read the next section *carefully* before attempting to fly your craft.

OPERATING YOUR AMERICA-5

Operating a hovercraft is a totally new experience to most people. Therefore, a certain amount of practice is necessary.

SAFETY PRECAUTIONS:

The hovercraft is a versatile working vehicle, which most people can learn to master with a little practice. However, like skiing or windsurfing, **IT HAS TO BE LEARNED.** You cannot just jump in and blast off.

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Here are some of the important SAFETY PROCEDURES:

1. **READ THE MANUAL.** The hovercraft is like no other vehicle you have ever operated, and it is vital to understand how it behaves. The operator's manual gives you basic guidance.

2. **TAKE LESSONS.** Training in the basic operation of your hovercraft is available from your dealer. After half a day's training, you can perfect your skills on your own.

3. You should **GO SLOWLY** until your confidence and experience level grows. Watch your speed at all times as it can build up very quickly, especially with a tail wind or on ice.

4. **KEEP ALL SHIELDS OR GUARDS IN PLACE.** The fan has a mesh shield which must be in place at all times when the engine is running. The exhaust and engine are guarded and these guards should only be removed for servicing.

5. **WEAR PERSONAL FLOTATION DEVICES (LIFE JACKETS) AT ALL TIMES.** The hovercraft flies easily from land to water, travels on thin ice, mud flats and other areas where it is dangerous to walk.

6. **FLY CAREFULLY.** Keep speeds well within your ability to control the vehicle. Allow yourself plenty of space when learning new maneuvers. As with any powered transportation, you must be aware of your obligation to others. This includes operating in a safe manner without causing concern by way of either noise or speed.

In addition to these basic precautions, there are three very important points to remember about flying a hovercraft:

1. The front of the craft will not always be pointing in the direction of travel, even for an expert. Be aware of where the nose is pointing and concern yourself with the direction that the craft is actually travelling.

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2. Your rudders only work if thrust air is flowing over them. They will not work if the brake flaps are closed. Control is a combination of rudder and throttle movement. The more power you have, the more rudder response you get; however, you should not use high power levels needlessly.

3. Do not concern yourself initially with the brake lever. It is a refinement you will use to great advantage when you are more experienced. Incorrect use will cause confusion during the early learning stages.

PREFLIGHT CHECKS

Check your local municipalities and government agencies for licensing and/or registration requirements.

To ensure a safe and successful flight, you should perform these *preflight checks*. This will verify that your hovercraft is operating correctly.

- Ensure sufficient fuel for your trip, and check the fuel system for leaks.
- Check skirt segments for attachment to craft, tears, and wear.
- Check the hull for damage.
- Check engine oil and fluid levels.
- Check that the drain plugs are in place, and fit snugly.
- Check the engine compartment air intake grids (located under the rear seat) for obstructions (leaves, grass, etc.)
- Make sure all controls are operating correctly. Check the rudder and brake controls at both ends for binding and loose attachments.
- Secure all cargo and equipment, leaving nothing which could be sucked into the fan.

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- Check that the fire extinguisher is in place and charged.
- Always remember to wear hearing protection!

FUELING, STARTING, AND MANEUVERING:

The fuel requirements are: Unleaded gasoline of 87 octane or higher.

Before starting the engine from cold, set the choke.

Turn the starter key. When the engine starts, release the choke and turn the throttle grip to keep the engine speed at a fast idle until the engine runs smoothly. Do not run the engine at full throttle until warm.

The craft can be operated with the side-by-side seat, or without the seat if the pilot and passenger sit one behind the other. One person alone should sit towards the bow if they are under 200 pounds for better trim. Place passengers accordingly for proper flight attitude. Weight must be distributed evenly, front to back, side to side.

By running the engine a little over a fast idle (3,000 r.p.m.), the fan will fill the skirt and lift the craft sufficiently for it to be moved by hand, e.g. if it is in a confined space (garage, driveway, etc.).

When the throttle is released the twist grip will return automatically to the idle position, the lift-air will dissipate, the craft will lower itself to the ground, and it will come to a halt. To stop the engine, simply switch off the starter key.

OPERATION ON LAND

Land surfaces (without snow) vary greatly with regard to their effect on hovercraft. Generally speaking, only relatively smooth surfaces are suitable. Rocky, bumpy or jagged surfaces are generally unsuitable. Long, steep grades should be avoided if possible. The craft works well on sand or on asphalt, but each surface has a specific effect on the craft's operation. Dry sand creates a lot of dust, and asphalt (except for short distances) will wear the skirt segments

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rather quickly. Short grass, mud flats, and parklands are generally very suitable. Porous surfaces like tall grass, bracken, and reeds create a lot of drag and loss of lift-air, which requires more power. Open spaces are generally preferred. In learning to make turns, it is essential to give yourself plenty of empty space. The first thing to realize is that all hovercraft, unlike wheeled vehicles, boats and airplanes, go not only forward, but sideways and backwards just as fast.

TRAINING YOURSELF ON LAND

You can operate the craft from a sitting or kneeling position. Never stand in the craft while it is in motion. Always stop and start on a level surface if you can.

With the engine running at a fast idle the hovercraft lifts almost clear of the ground. Further engine acceleration will cause the craft to move forward unless the Air Brake is applied. When the Air Brake is applied, slight movement is possible. If the passengers are located so that the craft is well trimmed, it will fly in a straight line when the rudders are straight. If one passenger is heavier than the other, or the craft is started on a slope, it will drift to one side. This can be corrected by rudder movement in the opposite direction.

A good way to expand you operating skills is to set up a line of marker cones, and to practice weaving in and out of them so as to master steering and throttle control. Another useful exercise is to place two cones 100 yards apart and fly from one to the other executing a 180 degree turn, using the fan as a brake so as to stop just before reaching the target cone. Grass or water are good surfaces for beginners to learn basic skills on, because control is easier than on snow and ice.

To make a turn, you turn the rudders in the direction you want to turn towards. The more you turn the rudder, the sharper you will turn. Sometimes you may want to stand up to maneuver slowly around obstacles. This should only be done by a qualified pilot with many hours of flight time. Never use a lot of force to operate the rudders. Because the rudders are behind you, the rear of the craft steers first. Always maintain or increase power in a turn, and use it to your advantage.

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To stop, reduce power with the craft travelling forwards (nose first) until your speed drops. Cut power as you approach a standstill, and the craft will sink to the surface and be stopped by the friction of the hull runners. You can also stop by doing a 180 degree turn and using fan thrust to slow your speed. A technique that requires space and practice. Avoid setting the craft down on any surface when it is travelling sideways, as it may tip over.

The hovercraft will start from a stationary position on most grades up to fifteen percent with no trouble. However, if you are stationary facing up a slope, and you lift off the ground at only a fast idle, you may not have enough thrust to go forward. Due to the craft's very low friction, you may just glide backwards downgrade. Give more gas and you will move up the grade; or by increasing throttle and giving rudder at the same time, you can generally turn the craft around to face downgrade. The craft will climb short grades if you start out on cushion and compensate with power and thrust angle.

Travelling across a slope is more difficult, as you always tend to slide in the direction of the slope. You generally need to angle the craft up-grade to stay at the same level traveling across the slope. This requires some practice.

When turning on a grade, it is advisable to make the turn going up the grade, which permits you to speed up the fan to make the turn without speeding up the craft. This will give you greater control of your speed and the rudders during the turn.

SURFACE APPRECIATION is an essential element in successfully operating any hovercraft. Carefully observe the surface ahead and plan your operating strategy before you reach the area. For example, when approaching a steep ramp to leave the water, slow the hovercraft so as to have full power and full cushion for coming out of the water and climbing the ramp. **IN AN EMERGENCY**, when approaching an unavoidable obstacle for example, rapid deceleration is possible. Cut the throttle or switch off the key so that the lift-air is removed and the hull drops to the surface and slows the vehicle. This technique must be used with caution, however. Depending on the type of surface, the craft may slow down so fast as to take you by surprise if you are not prepared. This is especially true over water, mud, or other viscous surfaces. You will find it easiest to practice this technique on water, starting at low speeds, until

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you are familiar with how the craft will react.

OPERATING OVER WATER

- * NEVER GO ON WATER WITHOUT WEARING AN APPROVED FLOTATION DEVICE.
- * NEVER STAND WHEN FLYING THE CRAFT ON WATER.

Water is an excellent surface for hovercraft. If the water is smooth, there will be little skirt friction, and the hovercraft will reach speeds in excess of 40 m.p.h., although slower is always safer.

To start on water close the Air Brakes. Give adequate throttle to come up on cushion quickly. Then wait approximately 5 to 15 seconds to allow the water in the plenum to vacate. At this time, apply full power to get over "Hump". You can make 180 degree turns for slowing or stopping on water as on land.

You will soon find that gentle turns create less spray. Turning too sharp will cause the craft to fall off pocket. As a general rule, it is wise to keep the engine speed at a fairly constant level to maintain a steady hoverheight. Sudden or severe variations of the engine speed make the craft more difficult to control. However, with practice and utilizing the Air Brake, this difficulty is easily overcome.

When the craft is operated at higher speeds over water, care must be taken not to release the throttle suddenly, because the resulting drop in skirt pressure may allow the collapse of the front skirts and cause a "plow-in", a sharp stop or turn. To avoid this, reduce forward motion progressively and reduce the engine speed slowly or make 180 degree turns to reduce forward speed. Angling the craft will also help slow it. More on the subject of "plow in" and how to bring the craft back to its proper attitude is covered on the Warning page at the end of this section.

In general, hovercraft will not create a wake after it is "over hump". The

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skirt will cause a few ripples, but these are too small to spread.

Choppy water will have little effect if the waves are less than the hoverheight. More severe chop may be more difficult to negotiate, and cause sufficient spray that visibility will be reduced. Higher speeds are not advisable under these conditions.

In the ocean or on large lakes, the craft can, with experience, be steered between breakers and over large rollers. Beginners should stay away from these conditions, however. The determining factor in negotiating rollers is the wave-length of the roller. If they are close together, the craft will start to lose lift-air in the troughs. This is also true of waves. If the "chop" is more than 12 inches high, it may slow the craft until it eventually comes off cushion. When these conditions start to occur, you should head for calmer water.

The hovercraft has full flotation capability and a shallow draft. You may safely switch off the engine and float (wave conditions permitting). Its broad-beamed hull provides a stable platform. In choppy conditions or through rocking of the craft, water may enter the open cavity between the inner and outer hulls. This will not have a significant effect on the craft. When restarting the engine, it is advisable to run it at increased power, to blow the water out of the hull cavity and skirts. It will soon come up on cushion and attain normal hoverheight.

When going from land to water, there are several techniques depending on the slope of the ramp. If the slope is gradual, it is admissible to approach the water straight away. Give a burst of full power just prior to entering the water, to prevent the nose from plowing in, and to reduce skirt drag. This will ensure that you enter the water above "Hump Speed", so the transition will be smooth. If the slope is fairly steep, it is a good strategy to slide into the water sideways using half power. This will avoid loss of lift-air as the craft bridges the slope into the water.

When going from water to land, it is good practice to slow nearly to a stop in the water some distance from exit point, then accelerate so as to leave the water slowly with full cushion, allowing you to maneuver the craft with complete control after exiting. Always exit up a bank at right angles to the waterline.

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Cruising and exploring up rivers is an ideal application for the hovercraft. It does require proper preparation and planning, however. The following is a useful check list:

- Check out all control functions and carry out all routine maintenance tasks before starting.
- Ensure that an emergency repair kit is on board sufficient to change spark plugs, repair the skirt system, or handle any other minor repairs. This should include spark plugs, skirt ties and skirt segments, P-clips, rivets and a small tool kit. A suggested flight repair kit is listed at the end of the manual.
- Store a tow rope, an oar and an anchor.
- Check battery charge and fuel supply.
- Identify refueling points along the route, or carry a spare fuel supply for extended range.

One advantage of the hovercraft is that it is unaffected by the direction of flow of a river. It will have very little effect on the speed or fuel consumption of the hovercraft once it is airborne. Care must obviously be used in fast flowing rivers to avoid projecting boulders. Logs and rapids should generally be avoided. It must not be forgotten that the craft will be carried downstream immediately if it is dropped to the surface or loses power. Only extremely proficient pilots should fly in these conditions.

OPERATING OVER SNOW AND ICE

Both snow and ice are generally excellent surfaces for hovercraft. Proper clothing, such as a ski-suit or snowmobile suit is the minimum level of protection, while a Mustang Floater suit is optimum (available through your dealer). A ski cap or mask/full face helmet should be worn. Warm, waterproof boots and gloves are recommended.

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SNOW: You soon learn that snow surfaces vary greatly as to their affect on the hovercraft. Powdery snow blows about a lot, and if it is more than 12" deep, it may slow the craft considerably. Blowing snow will be captured by the fan and blown into the plenum. If damp, the snow may pack into the hull and skirts. It must be cleared out after each long flight with a water hose, or it may become solid ice. This can become a serious problem. The radiator and the plenum should be checked frequently for load up. Never transition from land to water when this condition begins to arise.

Hard pack snow is ideal, and exerts very little drag, so that you must allow plenty of room for drift turns. Even when you release the throttle and the craft lands on the snow, it may continue to skate on its bottom runners. Stopping is best accomplished by turning the craft around (180 degrees) so that it is going backwards, and speeding up the fan to act as a brake (the same as on water).

Drift during turns, the effect of wind, stopping distance, slopes, etc., are all exaggerated on hard snow compared with grass or water. Practice is required in wide open spaces until you have mastered these techniques.

CONTROL ON ICE: Smooth ice creates a situation where the hovercraft is virtually free of all friction. Moreover, the skirt may cause the surface of the ice to melt momentarily, and create an airtight seal all around the skirt segments so that minimal lift-air is used. Very high speeds can be built up on ice, so you must make a conscious effort to control your speed until you have had plenty of practice at stopping using 180 degree turns. In windy conditions, it is important to lean outwards rather than inwards on turns, to prevent wind from getting under the hull and lifting the edge. In general, moderate speeds are advisable on ice until you have mastered the techniques of control.

To make the transition from ice to open water, you must greatly reduce your forward speed. Give full throttle just before reaching the water to create the maximum amount of cushion. Always fly bow-first from ice to water.

DANGERS ON ICE: The wave motion set up under the ice by a hovercraft traveling at slower speeds can break ice up to 2 inches thick. This may endanger the lives of other people on the ice. It is therefore essential to

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stay away from people whenever possible. With the hovercraft stopped on ice, it may be tempting to get out of the craft. Remember, though, that the pressure exerted by the craft with its large footprint is relatively small, whereas your foot is a point load that may break the ice. Only get out if you know it is safe.

EXTREME COLD CONDITIONS: In conditions of extreme cold, it is important to check engine R.P.M. at frequent intervals. This is to ensure that the engine is operating at full power. Occasionally, a choke may freeze in the open position so that performance is reduced. If this happens, simply lubricate it with a silicone spray or de-icing agent.

Consult your dealer or Hovercraft America, Inc. for technical assistance and the availability of extreme-condition options.

OTHER ENVIRONMENTAL EFFECTS

The effect of WIND on hovercraft operation is quite noticeable. A tail wind will increase your speed and make it more difficult to slow the craft. The nose will tend to touch down more quickly when the lift-air is reduced, although the relatively high skirt pressure of the hovercraft will minimize the effect. Side winds will affect the trim of the craft and cause it to go off-course. You can compensate by steering against the side wind. Remember, it is always easier to turn into the wind. Head winds slow the craft, and gusty winds may lift one side of the craft if the trim is not equalized. This last effect will be counteracted by the wide beam of the hovercraft.

TRANSPORTING THE HOVERCRAFT

The special fly-on trailer is designed for easy operation. The low platform height made possible with the torsion suspension, combined with the angled sideboards, enable you to fly on and off the tilted trailer without veering off side-ways.

Before unloading the craft, make sure you park in an area with ample

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maneuvering space behind the trailer. You may need to turn the craft around or otherwise move after unloading. The extra space will also be needed later to reload the craft. There usually is no need to unhitch the trailer. To unload, remove the pivot safety pin, then remove the two tailgate pins, allowing the gate to drop. Place the pivot pins in a location where they will not be lost. Start the engine and carefully fly the craft off the trailer.

To load your hovercraft, remember that the engine end must ride on the tongue. Therefore, you must pivot the trailer to its loading position. Position the craft at a distance of about 20 feet from the rear of the trailer. Raise and pin the tailgate end you flew out of. Tilt and pivot the trailer so you may load on the tongue end. Pull the tailgate pins, and allow the tailgate to drop. In some cases, you may need assistance in loading, and keeping the trailer pitched at the proper angle. Align the nose with the trailer while approaching this position. Bring the craft on cushion, then apply power as needed to push the craft onto the trailer. Use small amounts of power to gently nudge the nose of the craft against the headboard. Be careful not to crush the skirts. It will stop the craft at the correct point of balance. Make sure the hovercraft's Air Brakes are set in the open position so as not to create drag when travelling down the road. Secure the craft with two ratchet type tie-downs (recommended) running across the craft's beam. Smaller ratcheting straps are also recommended for each side of the nose. Be sure to fasten all pins, trailer tongue, tilt latch, and both tailgates before driving away. If you plan on towing your hovercraft often, consider purchasing a Hover Cover to protect the equipment and finish from airborne debris.

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At all times you must be aware of your obligation to others, to operate in a responsible manner without causing concern by way of either noise or speed.

WARNING

In common with other hovercraft, when operating your America-5 at high speed, it is essential that the correct trim be maintained. The bow should always be higher than the stern.

Failure to maintain this trim attitude may, under certain circumstances, result in the bow of the craft dropping down, (off pocket) possibly resulting in the collapse of the bow section air cushion, which will cause a "plow in."

Extra care should be exercised when travelling fast downwind.

If you note that the bow of the craft is beginning to drop, it may indicate a potential plough in and is a warning signal to apply your braking system, with throttle, to bring the bow back up to safe operating trim.

From all of us here at Hovercraft America, we wish you a safe and hoverly day!

Thank You!

Hovercraft America, Inc.

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Service Reference



WARRANTY

To the original retail purchaser, Hovercraft America, Inc., warrants this product against defects in materials and workmanship with respect to the items and for the periods specified below.

ENGINE WARRANTY

The Mazda Rotary Engine is warranted for 6 months or 100 hours from the date of purchase. This warranty covers manufacturer's defects and workmanship only. It does not cover engine failures due to: accidents, improper operation, blade or belt RPMs set higher than factory recommended limits, improper oil level, submersion in water, or any other type of misuse or negligence. All engine and blade parts must be dealer installed in order to maintain factory warranties. Repair parts are available from the manufacturer.

FAN ASSEMBLY WARRANTY

Warranty does not cover failure resulting from misuse, noncompliance with U.S. Coast Guard safety regulations, or negligence, including, without limiting, the generality of the foregoing accidents, exceeding RPM limits, submersion, racing, and any other type of improper operation.

Installation of blade parts must be completed by an authorized dealer to maintain this warranty. Only original replacement parts must be used. Fan blades are not covered by this warranty once the craft has been put into operation. Fan warranty term is 6 months or 100 hours.

CRAFT WARRANTY

Your hovercraft carries a conditional 90-day warranty covering workmanship and defects. This warranty does not include damage due to misuse, accidents, negligence, or submersion in water. This warranty expressly excludes skirt segments, skirt ties, fan blades or fan belts.



DESCRIPTION OF WARRANTY RIGHTS

From the date of purchase through the applicable warranty period, Hovercraft America will replace, without charge to the original retail purchaser for labor and/or replacement parts, any warranted item which is found to be defective.

During the applicable warranty period, the craft shall have been regularly maintained and serviced in accordance with the manufacturer's service schedule, and all warranty inspections and repairs must have been performed by a Hovercraft America authorized service dealer or by the Hovercraft America service center in Germantown, WI.

During the applicable warranty period this vehicle shall not have been used for racing and shall have been subjected only to proper use for this type of vehicle. Furthermore, this vehicle shall not have been operated in any way which, in the judgement of Hovercraft America, affects the performance, stability or capability of the craft to meet its normal design function.

Rental operations are strictly and explicitly excluded from warranty coverage.

Any craft that has had any of its serial numbers or hour meter altered, defaced or removed will not be covered under this warranty.

GENERAL DISCLAIMER CLAUSE

This warranty is expressly in lieu of all other warranties and conditions expressed or implied including the warranties of merchantability and fitness for use and all other obligations or liabilities on our part, and we neither assume, nor authorize any other liability in connection with the sale of this product. In no event shall the seller be liable for any loss, inconvenience, or damage, whether direct, incidental, consequential, or otherwise resulting from any breach of any express or implied warranty or condition.



A WORD ABOUT MAINTENANCE

This schedule lists the required maintenance for your hovercraft. Your craft needs these services to retain its warranty, dependability, performance, and safety.

We at Hovercraft America want to help you keep your craft in good working condition, but we don't know exactly how you'll fly it.

Because of all the different ways people use their craft, maintenance needs vary. You may even need more frequent checks and replacements than you will find in the schedules. Please read the information and note how you fly. If you have any questions on how to keep your craft in good condition, see your hovercraft dealer. Your dealer can be relied upon to use proper parts, fluids, and procedures. If dealer parts are not available, factory parts always are. Please note the order forms enclosed. For faster service, phone calls are always welcome.

NOTE: Your rotary engine incorporates oil injection lubrication for the apex seals in the engine. It is not uncommon for the engine to "puff" when you start it. Very slight oil consumption will be noticed.

It is not uncommon for your craft to have 2 to 3 hours reading on the hour meter. This is due to pre-delivery setup at the factory.

During the assembly procedure your craft has had a thorough option and mechanical runup by a qualified hovercraft technician. All final adjustments are made at the factory. Any re-adjustments without prior factory approval will be immediate cause for warranty cancellation.

Before beginning operation of the craft, refamiliarize yourself with the flight instructions in this manual, and remember, **SAFETY FIRST.**

Following our basic maintenance guide will allow you many hours of safe and enjoyable flight.

Never skip a step because you don't have time!



SCHEDULED MAINTENANCE SERVICES

The maintenance services in this booklet are based on the assumption that your craft will be used as it was designed:

- To carry passengers and cargo within the limits shown on the specifications sheet in the beginning of this manual.
- To be driven on suitable surfaces within the crafts designed limits.
- To be fueled with unleaded gasoline with a minimum of 87 octane.

EXPLANATION OF SCHEDULED MAINTENANCE SERVICES

The services listed in the maintenance schedules are explained on the following pages. After services are completed, fill in the scheduled MAINTENANCE LOG at the end of this schedule. When the following maintenance services are performed, make sure the required parts are replaced and all necessary repairs are done before flying your craft. Be sure to use the fluids and lubricants described in this manual.

CAUTION

If you are not an experienced mechanic, any adjustments or alterations to the drive train or fan assembly without prior factory approval will void all warranties expressed or implied.

HOOD AND ENGINE COVER WELLNUTS

If wellnuts consistently loosen, a small drop of removable lock-tight can be applied. Do not overtighten wellnuts. Turn down until snug with 1 to 2 more turns to set.



AIR BRAKE COVER WELLNUTS

Same procedure as hood and engine cover well nuts.

SPARK PLUGS

Replace spark plugs with the type listed under *service intervals* (RN179BC) for the rotary engine. Do NOT over torque the plugs. The rotor housings are an aluminum alloy and threads can be damaged easily.

WATER PUMP BELT

Inspect the belt. Look for cracks, fraying, wear, and proper tension. Inspect coolant hoses for leakage, cracks, hardening, swelling, and chafing. Replace as needed.

CARBURETOR JET ADJUSTMENTS

The only carburetor adjustment that the factory allows the owner of the craft to maintain without voiding engine warranties is the idle adjustment. Any further adjustment must be handled by a qualified technician. Note: if the idle is set too high, it will cause the craft to stay on pocket, which may cause serious injury.

ENGINE MOUNTING NUTS AND BOLTS

Engine motor mount nut and bolt torques vary per craft. Therefore, there is no specific torque range. All of these nuts and bolts have removable lock-tight installed on them and are hand torqued tight by our factory technicians. Please call the factory or local dealer if any problems or questions arise.

AIR BRAKE CABLES

All air brake cables should be visually inspected for any unusual wear or binding. These cables have no lubrication points. A small dab of cable-ease or lithium grease on exposed cable slides help to protect the ends. Visually inspect all cable ends and cotter pins for any unusual wear. Replace immediately. In freezing conditions, these cables can freeze tight. Never wash a craft, then leave it in sub-freezing temperatures. It is possible to thaw cables mounted in the plenum by leaving the engine idle, or slightly above idle. This blows warm air through the plenum, depending on conditions.

THROTTLE CABLE

Same visual maintenance as air brake cables. Except that this cable can be, and should be, periodically lubricated. A quality cable lubricant can be purchased at any certified auto parts store. The lubrication point can normally be accessed at the engine.

CHOKE CABLE

Same as throttle cable.

STEERING CABLE

Same as throttle cable.

AIR FILTER

Replace or inspect the air filter at the specified intervals. The element is of the washable foam type. To clean, remove the two end nuts from the air cleaner cover. Carefully slide out the element. Using a water sprayer (such as those commonly found on kitchen sinks), spray the *inside* of the element to wash off the particles which have collected on the exterior surface. Blow the element

dry with an air gun. Clean the filter or replace it more often if the craft is operated in dusty or sandy conditions.

OIL AND OIL FILTER

As we all know, the oil is the life blood of the engine. Particular care should be taken to follow oil and oil filter changes at scheduled service intervals. To change the engine oil, work only with a **COLD ENGINE**. Slide an oil absorbing pad under the engine's oil pan. Five towels are supplied with your starter kit. Others are available through your dealer or Hovercraft America. Unscrew the drain plug from the lower right side of the engine, and allow approximately one quart of oil to flow onto the pad. Screw in the drain plug one turn, and remove the pad. Insert a new pad beneath the engine and repeat until all the oil is drained. The proper oil for most applications is SAE 10W-40. Fill the crankcase with four quarts of oil, then check the level on the dipstick. Add oil until the level reaches the upper fill mark on the dipstick. For filter changes, apply a thin film of engine oil to the gasket. Do not use grease. Screw the filter onto the base until gasket makes contact, then tighten two thirds of a turn by hand. Do not use a wrench to tighten the filter. Start the engine and check for leaks.

COOLING SYSTEM SERVICE

Drain, flush and refill the system with a new coolant solution. The solution must be a 50/50 mixture of distilled water and a high quality non-phosphate ethylene-glycol base antifreeze. This should be done by a qualified hovercraft technician so as not to allow vapor lock.

FUEL FILTER REPLACEMENT

Replace the fuel filter at the specified interval. Or, change the filter as soon as it becomes clogged causing fuel pressure to drop.

CAUTION: You can be burned and seriously injured if fuel under pressure sprays out of the fuel line and something ignites it. Before you change the fuel filter, wrap a shop towel around fuel line connection and disconnect it. This will relieve pressure in the fuel line. Then, as you remove the old filter, wrap a shop towel around the fitting to collect any fuel that comes out. Be sure to put the shop towel in an approved container.

ELECTRICAL WIRING

Visually inspect electrical wiring for chafing or rub-through. Anything in question can be shifted over or protectively wrapped with a quality electrical insulation or tape. Any further adjustment to the wiring harness, related components, switches, or gauges will immediately void all warranties unless previously approved by the factory.

SKIRTS

Inspect skirt segments for abrasion, rips, stitching separation, misalignment of P-clips, damaged tie wraps, and missing skirt clips. This craft is equipped with two types of skirts. "A" skirts are found along the sides and front, while "B" skirts are located around the rear of the craft. Note the location of where the "A" skirts end and the "B" skirts begin. The pages following will show you A & B skirt location along with a skirt attachment diagram and installation procedure.

INSTALLATION OF SKIRTS

1. Separate skirts into separate groups:

A skirts (64) (front and sides)

B skirts (19) (around the rear)

2. Center the skirt with the air feed hole in hull, lap the top of the skirt over the skirt rail, attach a clip to one side, line up the second skirt centered on

the next hole, then overlap and attach a clip (center of skirt must be placed over center of hole).

3. As shown on the drawing, place a clip on either side of lapping clips. This will make a pattern of 3 clips at each joining of skirts.

4. Insert a skirt tie through each sleeve of each skirt. Each skirt side gets it's own tie wrap, so you will end up with two tie wraps on each P-clip.

Note: The extra length of the plastic tie should point towards the rear of the craft.

5. Slide tie through hull P-clip and pull tight. Skirt tension should be taut without distorting or straining the fabric.

NOTE: Plastic ties are used for several reasons:

- They will loosen or break before the skirt is torn.
- They are easy to install and replace.
- They will not corrode.

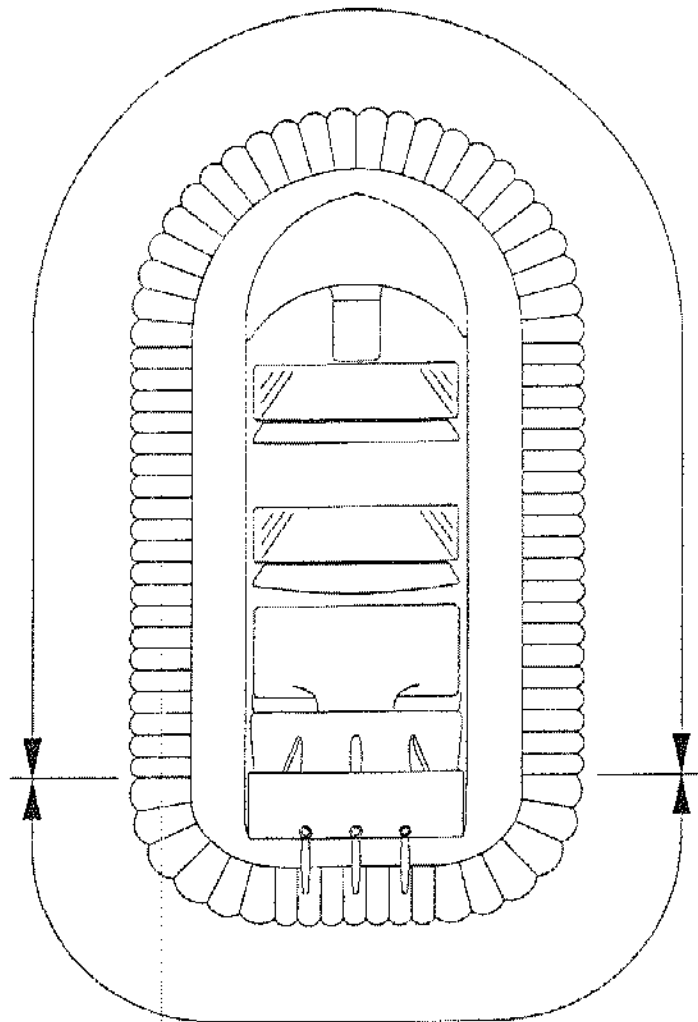
6. Attach the Trimloc along the top of the rail over the clips and skirts, then press down firmly.

NOTE: After ten (10) hours of operation, re-tensioning of skirts may be needed. Refer to step 4 above.

REMOVAL OF SKIRTS

To remove the skirts, simply reverse the steps above.
(See following pages for skirt installation diagrams.)

'A' Skirts (64)

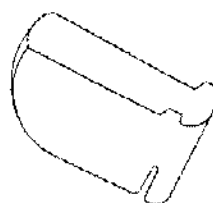
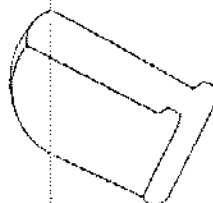


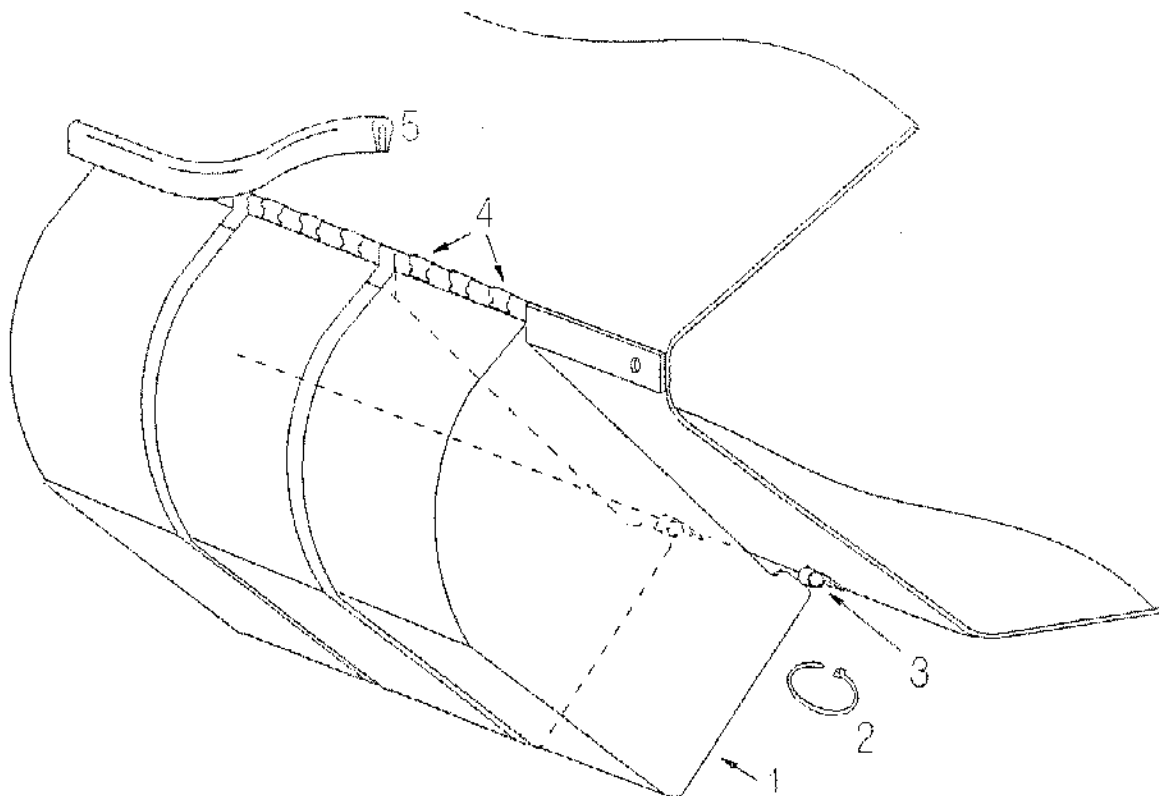
'B' Skirts (19)

Skirt types

'A' Skirt

'B' Skirt





| Ref. No. | Part No. | Description | Qty. |
|----------|----------|---------------------------|------|
| | SP-090N | Skirt set | 1 |
| 1 | SP-091N | 'A' Skirt | 64 |
| | SP-092N | 'B' Skirt (not shown) | 19 |
| 2 | SP-093N | Skirt ties (2 per skirt) | 2 |
| 3 | SP-094N | P-Clips (2 per skirt) | 166 |
| 4 | SP-095N | Skirt clips (3 per skirt) | 166 |
| 5 | SP-096N | Trim-Lac | 166 |

FAN HUB BEARINGS (retorque)

To access fan hub bearings for retorque, remove the access plate from rear stator assembly. Remove the dust cap and cotter pin. Visually inspect the spindle and bearing. Tighten the adjusting nut while rotating the fan (with the ignition off, batteries off, and spark plugs removed from engine). Rotate the prop until it binds slightly. All parts are now properly seated. Back off the adjusting nut until the cotter pin can be inserted through the first hole in the nut and spindle. Be careful not to over-tighten.

The fan should spin freely. Bend the ends of the cotter pin around the adjusting nut. Tap the dust cap into the bore. Be sure it is squarely seated and filled with clean grease. Reinstall inspection cover. It is not unusual to periodically adjust spindle bearings, and it is a necessary procedure to inspect regularly.

BILGE PUMP

Before starting the engine, turn the ignition switch to the "accessory" position, then turn the bilge pump switch to the "on" position and carefully listen for light humming noise. Immediately turn the switch off. If a light humming noise is not heard, a further inspection should proceed by a qualified technician.

DRIVE ASSEMBLY

The drive assembly is one of your most important maintenance areas. Included in the drive assembly is a flywheel plate, roto-flex bushing, block bearings, block bearing grease fittings, taper lock drive pulley, drive shaft keyway, driven spindle, driven spindle bearings, drive hub (which carries driven spindle bearing races and bearings), spindle washer, castle nut, dust cap, and HTD drive belt. All of these components work together to make one complete unit. Proper alignment should be handled by a qualified hovercraft technician. It is a good maintenance habit to consistently check tightness of all nuts and bolts related to this assembly. When this has been accomplished once or twice, it becomes second nature.

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All of the bolts on this assembly have had removable lock-tight installed at the factory. If removed, the same procedure should be followed for reinstallation.

DRIVE BELT TENSION

The drive belt tension has been correctly set at the factory. Adjustments should be made only by a Hovercraft America technician. A loose drive belt is immediate cause for concern. The craft should not be flown until a qualified hovercraft technician has inspected it.

HOSE CLAMPS

Hose clamps are one of the most maintenance free items on the craft. However, a loose hose clamp, whether it be fuel, oil, coolant, or vacuum, can cause serious damage. This is not a maintenance item that should be taken for granted. Following the maintenance schedule will give you many hours of pleasurable flight.

FIRE EXTINGUISHERS

Visually inspect the gauge. Any fire extinguisher carrying Coast Guard approval will qualify for use in this craft if replacement is necessary.

SKIDS

The skids are replaceable by simply drilling out the 3/16 rivets, replacing the damaged skid with a new factory replacement, drilling new 3/16 holes, and applying new rivets. The aluminum skids are a very important part of the craft. They protect the bottom fiberglass hull from making contact with the majority of landing surfaces. The craft CAN NOT be operated with any of the three skids missing or damaged.



FUEL TANK CONNECTIONS

Fuel tank connections can be accessed by releasing fuel tank side latches, removing the center seat, sliding the fuel tank back a couple of inches, and tightening the fuel tank inlet clamps, fuel line clamps, and vent line clamp. Next, reposition the tank, draw down the latches, and reinstall the center seat.

RUNNING LIGHTS

In many instances, your hovercraft operation is governed by marine regulations. Bow and stern lights should be operative at all times. Bulbs are easily replaced by removing the plastic covers and inserting a new bulb. Replacement bulbs are available through the factory.

RUDDER AND SHUTTER LINKAGES

All rudder and shutter linkages are assembled with metric bolts and lock nuts. Linkages are attached to fiberglass components and nuts are torqued tight. There can be no freeplay where the linkages bolt to the fiberglass. All pivot points on the linkages must have a 1/32" gap when tightening the nuts to allow for free operation.

RUDDER AND SHUTTER END BOLTS AND LOCK NUTS

Initially, it is a good maintenance procedure to frequently check these bolts and lock nuts for tightness. Failure to do so can cause the rudder and shutter bolt holes through the fiberglass to enlarge, which results in rudder and shutter components being misaligned, chafed, or even locked in place. If this situation does occur, please contact your local dealer or manufacturer for proper repair procedure. A minimum of 1/8" of the threads should be exposed from rudder and shutter ends to the lock nut.

After any adjustments, make sure all lock nuts are hand torqued tight allowing no movement of bolt or washers on the fiberglass mounting surfaces.

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A light dab of lithium or wheel bearing grease applied at the end of the rudders and shutters will be ample lubrication. Corrosion is not a problem on the threads because they are stainless steel.

DECK CARE

Washing:

1. Hose down craft with low pressure spray.
2. Wash entire craft with soapy water. Use a soft brush on the vinyl and skirts.
3. If the craft has been used in salt water, it is important that the engine and fan are rinsed, and if possible sprayed with a light coating of oil (WD-40 or equivalent).

NOTE: Do not use an abrasive cleaner

WAXING

- Standard car or boat wax can be used with excellent results.
- The new poly coatings work very well, but may tend to spider web as the craft puffs up when the engine is started.
- If oxidation is occurring, a mild body lacquer compound can be used to polish the fiberglass before waxing.

SKIRTS

The skirts and fiberglass will fade slightly due to the sun's ultraviolet rays, so we recommend covering the entire craft with a tarp. A custom "hover cover" is available through your dealer or the manufacturer. If no tarp is available,

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spray the skirts with either Armour-All or Scotchguard; both products have a U-V inhibitor that can prevent some of the fading.

HULL CARE

The hull is built out of fiberglass with a colored gel-coat finish. It is reinforced at stress points with additional layers of fiberglass and coremat. It is very strong and durable, but common sense should be used while flying to prevent damage from occurring. Do not fly over high exposed objects that could gouge or tear through the bottom.

UNDER COAT REPAIR

Small scratches and blemishes can be buffed out with either fine wet sandpaper (1000 grit or finer) or body compound lacquer. A gel-coat repair kit is available to repair larger abrasions that cannot be buffed out. This kit consists of:

- Bottle of gel-coat(order colors)
- MEK peroxide (hardener)
- 1.5 oz. fiberglass mat
- 1 qt. fiberglass resin
- Sandpaper (various grits)
- Instructions

A small amount of acetone is also needed, but it is unlawful to send it by U.S. Mail or UPS, however it is readily available at any local hardware or auto parts store.

STORAGE OF CRAFT

Please use the following steps as a guideline if storing craft for a long duration.

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1. Replace the engine oil and filter. This will insure that fresh, clean oil is circulated through the engine before an extended period of dormancy.
2. Wash the entire craft. It is preferable that a coat of wax is applied.
3. Coat entire engine with WD-40 or equivalent.
4. Empty the carburetors and fuel lines of gas. Disconnect the fuel line. Disconnect the electric fuel pump. Plug the end of the fuel line and tighten the fuel line clamp. Start the engine and run it until it stalls.
5. Disconnect the batteries. This prevents the batteries from discharging or voltage draining. If the craft is to be stored for several months, remove the battery.
6. Elevate the entire craft from the ground if it is to be left outside on grass or tarmac. Regardless of the storage location, the craft should be 4 to 5 inches higher in front to allow any condensation to drain. Open the two drain plugs under the rear seat. Do not close them until returning craft to service.
7. A full length tarp that covers the skirts is recommended to prevent the fiberglass from oxidizing or the skirts from fading due to ultraviolet rays. A custom Hover Cover is available through Hovercraft America that fully protects the craft from U-V or weather damage.
8. Do not store gas in the tank unless it is treated with a gasoline preservative.
9. If parking the craft in freezing weather, be cautious of the fact that it can freeze in. To avoid this, fly the craft onto two 4x4 pieces of wood to keep it from resting on the frozen surface.
10. Cover the exhaust outlet.

RETURNING THE CRAFT AND ENGINE TO SERVICE

Returning the craft and engine to service by correctly preparing it for another season will assure many hours of trouble-free operation. To prepare the engine for use, follow this procedure:

1. Inspect all fuel lines and replace any that appear to be loose, swollen or cracked. Reconnect the fuel line that was disconnected (Reconnect power to the fuel pump.)
2. Inspect the in-line fuel filter and replace if necessary. Inspect that fuel tank vent is clear (side of craft). Fill fuel tank with fresh gasoline.
3. Inspect spark plug leads and distributor caps for wear and tightness. Replace distributor caps that appear to be worn or loose.
4. Inspect distributor cap and rotor for condensation, corrosion or burn lines. Replace if necessary.
5. Inspect the water pump belt for tightness, cracks or fraying. Adjust or replace as required.
6. Remove cover from exhaust outlet.
7. Charge the battery for several hours, overnight if possible, on a slow charge of not more than 2 amps. This will bring the battery back to full charge, as well as removing any light sulfate which may have formed during storage. A slow charge must be used. Fast charging not only shortens the battery's life, but also produces large amounts of explosive Hydrogen gas.

To prepare the craft for service follow this procedure:

1. Reinstall both drain plugs under seat.
2. Visually inspect the entire craft.

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3. Note it's last scheduled maintenance done, and what is coming due.
4. Check all fluid levels.
5. Start the engine, let it idle for 5 minutes, and note the operation of all gauges. Any unusual or foreign sounds are cause for immediate shutdown.