



# OPERATORS AND SERVICE MANUAL



[www.HovercraftDepot.Com](http://www.HovercraftDepot.Com)  
561-274-2247

## WARNING

It is important that you read and understand this manual before operating your Scat Hovercraft. Please take time to go over each section. If you have questions, please contact your authorized Scat dealer listed below:

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## SCAT HOVERCRAFT WARRANTY INFORMATION Engine Warranty

The Rotax 277 Engine is warrantied for 6 months from date of purchase. This warranty covers manufacturers defects and workmanship. It does not cover engines operated improperly, RPM's set up past factory limits, lack of proper oil/gas mixture or submersion in water. Spare parts are available from the factory. Dealer must install engine and blade parts in order to maintain factory warranties.

## CRAFT WARRANTY

The Scat Hovercraft carries a conditional 90 day warranty covering workmanship and defects. The warranty does not cover misues, damage thru accidents or submersion in water.

## SERIAL NUMBERS

The engine and craft numbers are used to register your craft. These numbers are the only means of identifying your craft from others of the same model, and may be needed when ordering parts. In case of a theft, authorities will require engine and craft ID numbers.

## OWNER AND DEALER INFORMATION

This is your Warranty Registration Card. It contains important information about your Scat.

For warranty service, you will be required to provide proof of the warranty registration date of your vehicle. The information contained on this page will provide the servicing dealer with all the information he needs to initiate warranty service. Keep this manual in a safe place.

SELLING DEALER'S STAMP & DATE

### WARRANTY REGISTRATION CARD

Owners Craft Identification Number \_\_\_\_\_

Owners Engine Identification Number \_\_\_\_\_

Owners Name \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Selling Dealer \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Delivery Date \_\_\_\_\_

The Contents of this manual have been reviewed with the purchaser.

Dealer's Signature \_\_\_\_\_

## WARNING

The Scat is primarily a water craft, so it is prudent to expect the driver or passenger to be a competent swimmer. Do not travel off-shore further than you can swim.

## A PERSONAL FLOTATION DEVICE

A U.S. Coast Guard approved life preserver must be worn by operator and passenger when operating on waters under Coast Guard jurisdiction. A basic ski belt type flotation generally does not qualify as an adequate flotation device. A full vest type is recommended. Check local regulations to see what type of life preservers may be required.

## WARNING

Your Scat is a form of aircraft, not a toy. It does, in a sense, fly. Some states may prohibit operation of this high powered craft by a minor. Check your state and local boating regulations.

## ENGINE

The engine installed in your craft has been chosen for its strong construction and ability to produce power at lower RPM than many other engines. Being a two cycle engine, it has very few moving parts and is self lubricated. Very little maintenance is required.

## ENGINE BREAK IN PERIOD

**With a new engine**, use an oil mix ratio of 32:1 for the first 10 gallons of fuel. During this time the engine should not be allowed to work hard but should be progressively allowed to rev higher up to full throttle. When run in, the engine can reach full revs. Normal fuel mixture after break in is 50 to 1 or 1 pint oil to 6 gallons of gas. (See Chart)

Review engine manual for break in instructions.

## OIL

Any outboard (2 stroke) motor oil may be used. When mixing the gas and oil, a 50/1 gas-to-oil ration is necessary.

## CAUTION

Failure to add oil to the gas will result in permanent damage to your engine. Moisture can form in tanks left dormant for long periods of time. Water in your fuel system can also cause damage. If you suspect moisture in the tank, throw it away, better safe than sorry.

## WARNING

Don't fill the gas tank completely to the top. Expansion of the tank in warm weather may cause overflow of fuel.

## STARTING THE ENGINE

1. Connect kill switch.
2. Choke engine.
3. Prime fuel by squeezing primer bulb; open breather valve.
4. Take up slack in recoil rope then pull.
5. After engine has started and run a few seconds, return choke to off position.
6. Allow engine to warm up before lifting off.

## GAS/OIL MIXTURE CHART

Gallons	Ounces of Oil (50/1)
1	2.5
2	5
3	8
4	10.5
5	13
6	16

(CAUTION)

## GAS

Do not use gasohol, racing fuels, or fuel additives. Such fuels may damage the engine and/or fuel system.

Rotax recommends regular leaded gas although unleaded is acceptable.

## WARNING

A fire extinguisher must be carried when operating your Scat. Check with your Dealer for the proper type and installation.

## RIDING INSTRUCTION

Your hovercraft requires skill to operate safely. Be sure you have received instruction from your dealer. Your dealer has been trained to teach you to ride safely.

### YOUR FIRST LIFT OFF

The ideal site for your first lift off is an open water area or a large, flat grassy area.

**Caution: Do not operate at full throttle on land.**

The nose of the craft should be slightly up. If not, move back some on the seat. At a slow speed, practice turns. This can be accomplished by leaning left and turning rudders to the left for a left turn. Repeat several times. Practice right turns. Remember—**Do not quickly reduce throttle when traveling sideways on land.**

Do not carry a passenger until you have achieved proficiency. Use your body weight when turning like you would with a motorcycle. You will note that you can control the craft appreciably by leaning to one side. This is because you are causing skirt drag on the down side and allowing air to escape from the raised side which has a thrust effect.

Once you are confident at slow speeds, try maintaining a course and set yourself a route to follow, e.g. between the goalposts on a football field or around two markers in the water. Practice this until you are confident you can stop the craft smoothly and where you want to.

Wind has a marked effect on the operation of your craft.

**Remember it takes longer to turn when traveling down wind or down slope, than into the wind or up a slope.**

Remember—when turning a Hovercraft as with a boat you are steering the rear of the craft. This causes the back to swing out, as opposed to the normal front end steering of a car.

### OPERATING YOUR SCAT

Operating a Hovercraft is a totally new experience to most people, therefore a certain amount of learning is necessary. There are 3 basic rules:

1. First and most important while learning, GO SLOW... until your experience and confidence grow. Watch your speed at all times as speed can build up very quickly.
2. The bow of the craft will not always be pointed in the direction of travel (even for an expert).
3. Your rudders do not work unless air is flowing over them. Therefore control is a combination of trim, and rudder/throttle control.

### STOPPING DISTANCE\*

Rider Weight	160 lbs.....	58 ft.
	200 lbs.....	54 ft.

\* Stopping Distance from full throttle - approximately 35 miles per hour. Stopping procedure - sitting back in seat and releasing throttle. Capacity, wind and conditions may affect stopping distance.

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**Alcoholic Beverages:** Operating your Scat takes balance and judgement. Use good sense. Don't drink and operate your craft. You wouldn't fly and drink!

## OPERATING IN SNOW

Snowy conditions provide an exciting ride on your hovercraft. However, blowy (powdery) snow will melt on contact with the muffler, exhaust manifold, and engine. The moisture will then freeze on these spots causing a potential damage to the blades if they were to break free. Care should be taken to clear the ice from your Scat after each use. Also, carefully check these areas during operation for loose ice.

## STOPPING AT HIGHER SPEEDS

There are several ways of stopping, depending on the circumstances. Normal stopping on land or water is achieved like most vehicles by judging speed and distance and reducing throttle accordingly.

In an emergency situation, providing you are traveling in a straight line, quite rapid deceleration is possible, especially on water.

On water additional braking is achieved by leaning forward and forcing the bow down.

At intermediate speeds, an effective method is to 'twizle turn' i.e. swing the craft through 180 degrees and sustain full power. This is achieved by opening the throttle wide and swinging the rudders hard over one way.

When the craft has turned about 120 degrees quickly apply full opposite rudder. **NEVER close the throttle quickly when traveling fast sideways over land. Remember possibly the most dangerous condition for any hovercraft is to be taveling fast, down wind, over land and executing a tight turn.** If that moment the engine fails or the craft hits an unseen object you may very likely be thrown out. The answer is in your hands. Do not do it. Caution is the solution.

## HUMP SPEED

All hovercraft experience a phenomenon known as hump speed. It can be likened to a speed boat being able to get up and plane.

A hovercraft statistically hovering over water creates a depression in the water equal in area and weight to itself. As the craft moves forward it moves the depression with it. This causes a lot of drag until the craft achieves approximately 6 - 8 mph at which it gets over the hump and leaves the depression behind. In normal weather conditions and with the correct payload you may not even be aware of this transition. However, if the wind is very strong or you are exceeding the recommended payload you must be aware of this situation.

Obviously this will only happen on water from a standing, start, therefore, if you can get back on land or on a jutting sand bar you will soon get up to speed and then be able to go back on to the water. Alternately turn

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down wind, get over the hump, then make a gradual turn keeping over hump speed.

While getting over the hump in adverse conditions do not wiggle rudders about. Sit still and lean slightly forward and give the craft time to accelerate.

Note: Hump drag increases in shallow water.

When turning on land — **slowdown**. The dangers on water are considerably reduced, especially if you lean your body into the turn. It is advisable to carefully try emergency stops on water at various speeds.

## GRADIENTS AND WINDS

Hovercraft have no surface contact, consequently they are virtually frictionless. Because of this they are affected by wind to a much greater degree than any other vehicle. This is one of the reasons why hovercraft often do not point directly in line with the direction of travel. It is necessary to 'head off' for wind and gradient. Crossing a slope has to be done 'crab wise', holding yourself on the slope by your thrust.

Remember when going down a steep slope you can always go down backwards and use your thrust to brake. This method is often useful when using a slipway into crowded moorings.

Experience is the only way to evaluate the slope climbing ability of your craft. With the correct payload from a standing start SCAT will maintain a climb of approximately 1 in 8.

Steeper gradients can be taken at speed as your momentum will carry you up. The important point to watch for is the bottom angle of the gradient. You must judge your speed to allow the bow of the craft to raise at the start of the incline.

## HILLS AND SLOPES

Your hovercraft can negotiate hills and slopes but caution should be taken while learning the skills necessary to go up and down inclines. CAUTION is the best solution to avoid accidents.

**CAUTION:** Never stand behind a hovercraft when it is operating. Care should also be taken when lifting off to check for people behind your craft. Objects or the fan thrust may cause injury or discomfort to bystanders.

## WATER SPRAY

If you opted for water the first time you will get wet. However, take heart. In fair conditions you will soon learn to operate without any problem. Spray is caused by air escaping from underneath the skirt segment tips. This is easily corrected by body weight distribution or throttle setting.

When accelerating on a standing start on water, use the throttle slowly and experiment in reducing the spray by leaning the craft toward the spray. It is possible to operate with an absolute minimum of spray and although you will initially get wet you will soon learn how to operate successfully.

# *Maintenance and repair*

## **POINTS TO REMEMBER**

Unless you know the terrain you are operating over — be careful.

Even mud flats can be deceptive, very often there are concealed gullies and hollows. From your low position they are not always obvious. Always be aware of your fuel situation and the state of the weather.

In general you are safe operating on open sea. Consider the advisability of carrying life saving equipment e.g. flares, life jacket, fire extinguisher, etc.

If you are planning a long trip it is advisable to inform another person of your plans to return.

A HOVERCRAFT IS A UNIQUE VEHICLE HAVING ABILITY TO TRAVEL ON LAND AND WATER AT EQUAL SPEED.

YOU KNOW THIS, BUT A LOT OF PEOPLE DO NOT. THEREFORE EXERCISE CAUTION WHEN APPROACHING A CROWD BEACH. AT ALL TIMES YOU MUST BE AWARE OF YOUR OBLIGATION TO OTHERS, TO OPERATE IN A RESPONSIBLE MANNER WITHOUT CAUSING OFFENSE BY WAY OF NOISE OR SPEED.

## **PLEASE NOTE:**

This section of your Service Manual is intended for the general upkeep and care of your SCAT Hovercraft. Engine repair, fan blade replacement, belt replacement, and other repairs must be done by your Authorized Scat Dealer. Like any machine, preventative maintenance will extend the life of your SCAT. Your dealer has a recommended schedule of procedures for preventative maintenance.

## **FAN BLADE REPLACEMENT**

If your blades are damaged during operation, shut engine off immediately. Replacing the blades must be done by your Scat Dealer. Attempting to replace the blades yourself will void engine and craft warranty.

## **FAN BELT REPLACEMENT**

Fan belt must also be replaced by your Scat Dealer in order to maintain warranty.

Note: If you have questions concerning service, call your dealer.

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# CLEANING YOUR SCAT HOVERCRAFT

1. Remove fan guard (keep track of guard clips).
2. Remove engine guard, close breather valve on gas tank.
3. Spray with water.
4. Wash with gentle soap.
5. Rinse with water.
6. Wipe dry with soft cloth.
7. Spray all moving parts with WD40®.  
Include air filter to enhance drying.
8. Replace fan and engine covers.
9. Wax fiberglass areas on a regular basis to protect your craft.

## NOTE:

**Washing:** Your craft should be washed after each use. A mild soap and lots of water can help maintain the life of your Scat.

After washing, a thorough spraying with WD40® will help protect engine and moving parts.

**Waxing:** You can use a protective car or boat wax on your Scat on a regular basis. A cover is recommended if your Scat is kept outdoors.

**Skirt Maintenance:** Spray the skirts after each use with plain water. No special soap is needed. Check for tears, worn spots, and all clips and ties. Constant exposure to the elements, especially the sun, will prematurely wear out the skirts.

\*Note: Make sure the breather valve on the gas tank is closed while wasing your Scat. Water in the fuel tank can cause permanent damage to the engine.

## SKIRT SEGMENTS

The skirt segments are of different types, (see drawing for position). To change a damaged segment remove outer trim by pulling off. Remove the 3 clips by using a suitable tool i.e. pliers. Cut off the 2 plastic straps tying the inner attachment. Replace new segment in reverse order.

Usually damaged segments can be repaired and reused at a later date. In an emergency any type segment will suffice if you don't have a correct one.

When fitting the new plastic straps insure that you have inserted the strap in the right way. Gently tug the strap to ensure the ratchets have held. The straps have been chosen for their strength so that they will break, to minimize damage to the skirt segments. When trailering your craft, if the segments can touch the wheels, it is advisable and convenient to tuck sideways the bottom of one segment up into the top of its rear neighbor, continuing so until sufficient segments are clear.

## TRANSMISSION

The power transmission belt is pre-set and requires no maintenance or adjustment.

In the event of a belt failure, to replace the belt observe the following procedure. **CAUTION:** Failure to follow this procedure may result in damage to the belt.

Remove two top engine frame mounting nuts.

Pivot forward the top of the engine frame, if necessary disconnecting the exhaust manifold to give more movement.

Remove the dust cover from the center of the fan hub.

Remove the cotter pin and take off the fan shaft nut. Carefully take out the washer and taper bearing. The fan hub assembly will now slacken on the shaft and can be removed.

Fit the new belt over the bottom pulley and fan shaft. Ensure the belt is correctly engaged on the bottom pulley and by rotating the fan feed the belt over the top pulley.

This section on the transmission is for emergency purposes. If you have transmission problems, take your Scat to your dealer.

## CAUTION

Assemble in reverse order. When adjusting the fan shaft nut, tighten up until firm resistance is felt then slacken off just sufficiently to fit new cotter pin. Replace the dust cap.

## CAUTION

Do not crimp the belt or force it over the pulley flange, to do so will result in rapid belt failure.

This procedure should be done by your Dealer but is listed here for emergency purposes.

## RUDDER CONTROLS

These controls are very simple, using a standard marine push/pull cable.

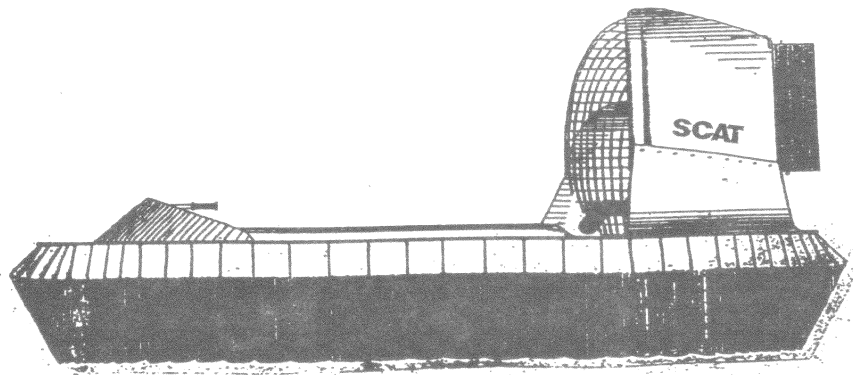
Access to the forward linkage is via the dry storage hatch, visible when the front seat is removed.

Light oil lubrication of rudder linkage is required periodically.

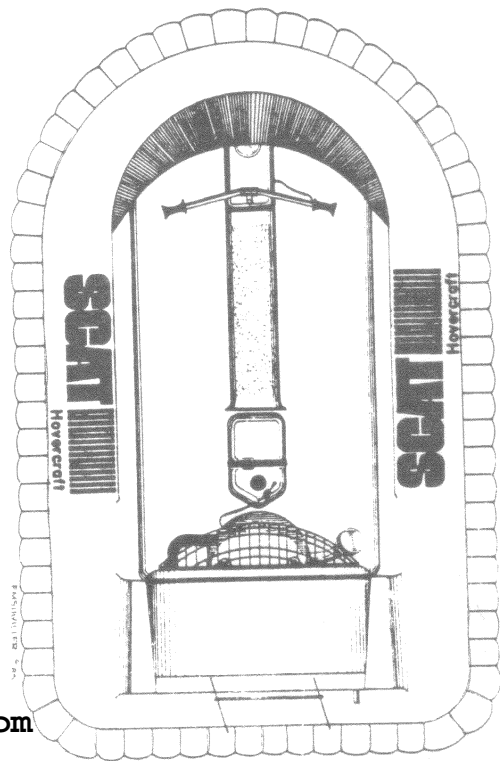
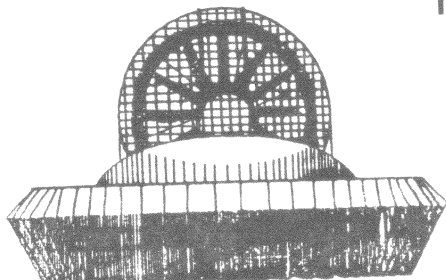
## SCAT OPERATING LOG

DATE	TOTAL OPERATING HRS.	SERVICE/DATE/TYPE	REMARKS	ACCUM/HRS.

DATE	TOTAL OPERATING HRS.	SERVICE/DATE/TYPER	REMARKS	ACCUM/HRS.



**SCAT HOVERCRAFT, INC.**  
10621 N. KENDALL DR.  
SUITE 210  
MIAMI, FL 33176  
305-274-SCAT



**WWW.HovercraftDepot.Com**  
561-274-2247