
DIVER PROPULSION VEHICLE (DPV) USER MANUAL



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This manual is no substitute for a proper training in how to dive with an underwater scooter.

Should you have any questions or comments regarding this manual, please contact:

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Local Distribution

The local (translated) version of this manual is made available by the responsible distributor.

Please check the Marine Tech website for your local distributor.

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* The product photo on the cover contains optional accessories.

1 INTRODUCTION

1.1 CONGRATULATIONS!

By purchasing the Seacraft underwater scooter (“scooter”) you have chosen one of the best products available on the market today.

The Seacraft scooter (DPV - Diver Propulsion Vehicle) is an additional element of diving equipment used for faster movement and increased range diving. The Seacraft scooter is designed for use only by persons trained in this field and having the appropriate diving certification obtained as a result of the completion of diving courses organized by authorized certification bodies.

In the event of a discrepancy between the rules for use the scooter set out in this manual, and used, developed or communicated to you in the course of training by diving organizations, please contact the manufacturer of the Seacraft scooter (**office@seacraft.eu**) in order to explain it.

Before operating the Seacraft scooter, carefully read this manual and follow all instructions given. Manual and proof of purchase should be retained, easily accessible after purchase.

The manufacturer reserves the right to change the specifications of the device without prior notice.

The current version of the manual is available for download at *www.seacraft.eu*.

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3 GENERAL SAFETY RULES

3.1 WARNINGS, LABELS AND PICTOGRAMMS ON THE SCOOTER

For the safe and proper use of the Seacraft scooter every user is obliged to familiarize himself/herself with the warnings, labels and pictograms placed on the device.

Caution +++ Caution +++ Caution



Every Seacraft scooter is marked with a number of labels and warning signs and information. **Their removal from the surface of the device is prohibited.** The scooter user is required to replace worn or damaged labels and pictograms with new, for which the manufacturer or distributor can be contacted.

The following is placed on the scooter:



Read the instruction before the use!
Information on use in the manual!



Use of the item is prohibited by children and adolescents under 18 years of age!
Store and operate out of the reach of children!



Important information! / Caution, danger!



Li-ion

Li-ion batteries must be disposed of in accordance with all local and national regulations. If the batteries are not properly disposed of, they could pose a risk to human health or the environment.



After the service life, the device must not be placed along with other household waste.
Device must be disposed of in accordance with applicable regulations!



Caution during air transportation!
Observe the restrictions applicable to equipment in air transport!



Do not allow the scooter to overheat!



Caution, fast spinning, dangerous element!
Do not insert hands or any other items to the area of the device's propeller!

3.2 USING THE SCOOTER SAFELY

Caution +++ Caution



Rules for safe use of scooters are subject to compulsory diver training hence the user should first and foremost follow the rules provided during specialized training on how to use a scooter.

Below, only some elements related to the safety and use of the Seacraft scooter are presented.

- Please read the manual as it contains important precautions, warnings and information. It is essential that it is carefully and fully read before using the scooter.
- The scooter may only be used by persons with appropriate training in this field. It is strongly forbidden to use the scooter without obtaining special qualifications for diving with a scooter.
- Using the scooter for purposes other than those specified in this manual or in violation of the rules set out in this manual may result in serious personal injury or even death.
- It is forbidden use the scooter to descend and to pull you to the surface of water.
- Monitor the propeller. Do not put hands in the propeller area as it may injure you.
- For carrying the scooter always use the handle, do not carry or pull the scooter by the nozzle.
- Always check the level of batteries before entering the water.
- Remove all objects from the vicinity of the scooter 's nozzle and propeller before every dive in order to prevent them from being drawn into scooter 's power unit.
- Using DPV charger in a manner inconsistent with manual instructions, in particular in conditions of high humidity or when the power cord is damaged may present a risk to the user's health of life. Do not touch any part of scooter 's charger with wet hands.
- It is forbidden for children and adolescents under 18 years of age to use the scooter, or to leave the device unattended.
- Before transporting scooter, ensure it is packed in a way that prevents it from damage during shipping.

3.2.1 SAFE DIVING WITH A SCOOTER

3.2.1.1 BEFORE BEGINNING EACH DIVE, YOU NEED TO DO THE FOLLOWING

- Charge the battery to full (see “Charging Procedure” on page 26).
- Balance the scooter (see “Balance and Trim of the Scooter” on page 30).
- Make a decision regarding the point of return for your dive according to air consumption, water temperature etc.
- Check, if your regulator needs to be adjusted.

With some regulators, you need to make sure, that the second stage does not give a free flow, when the main membrane is pressed by the raised water pressure caused by the scooter’s speed. To avoid a free flow, the breathing resistance of most second stages can be adjusted. Make sure to adjust both second stages (if present).

3.2.1.2 DURING EVERY DIVE, YOU NEED TO DO THE FOLLOWING

- Control the battery charge level on a regular basis, taking into account the required battery level for the return dive.
- Use the scooter with optimal, medium speed, which allows for longer battery life.
- Control the level of air consumption on a regular basis. Too fast flow rate or incompetent use of the scooter may result in activating the regulator and thus the loss of breathing gas.
- Control the level of hypothermia. The fast pace movement of the diver with an scooter can lead to faster than normal cooling of the body by increasing the exchange of heat with the environment.
- The scooter is only to be used moving under water on a horizontal plane at a constant depth.
- Follow the safety rules relating to the determination of the time of return; i.e.:
 - Adjust your decision regarding the turning point (return), taking into account the air consumption and battery discharge of the scooter.
 - Regularly check and control the level of the battery discharge.
 - Follow the rules learnt during training concerning DPV usage organized by recognized training organizations.
 - Follow the below procedures in case of scooter failure.

3.2.1.3 HOW TO REACT IN CASE OF SCOOTER FAILURE WHILE DIVING

In the case of **automatic shutdown** of the scooter while diving **and / or lack of reaction to start attempts**, do the following:

- Immediately abort the dive and (maintaining appropriate procedures) ascend to the surface.

In the case of the **scooter blocking and / or the inability to switch it off with the main switch**, do the following:

- Perform the necessary decompression stops swimming with the scooter or
- Unhook the harness / cut off the harness and abandon the scooter or
- If the diver has a sufficient supply of air, in a controlled manner lean the front of the scooter on the bottom of the water tank or on other permanent items in the water and wait until the battery power of the device runs out or
- Abandon the scooter under water if its towing would be impossible or too burdensome.

Caution +++ Caution



It might be a good idea to prepare a buoy or a similar signaling device to mark the scooter's position in case you have to abandon it.

3.2.1.4 AFTER THE END OF A DIVE, FOLLOW THIS ROUTINE

Caution +++ Caution



Intense diving with a scooter lasting longer than a normal dive can cause fatigue and hypothermia even with experienced divers. So, be prepared to assist them.

- Assist the person using the scooter when leaving the water.
- Ensure that the person using the scooter has help while the scooter is being transferred, e.g. to the boat or to the shore. Failure to follow the aforementioned instructions may cause injury.

3.2.2 POTENTIAL RISKS AND SOLUTIONS DURING THE USE OF THE SCOOTER

Caution +++ Caution +++ Caution



This Seacraft scooter offers you a variety of configuration settings, to adapt the scooter to your skill level and to the diving conditions. By doing so, you will avoid unexpected/unpleasant situations.

It is recommended, that you make active use of these settings (see “Configuring the Scooter Settings” on page 47).

Also, train to get to know your scooter. Learn how to stop it fast and how to control it responsibly.

3.2.2.1 YOUR PERSONAL SKILLS AND YOUR PHYSICAL / MENTAL STATE OF THE DAY

Even if you are an experienced diver, do not overly rely on your skills, when you are not familiar with this scooter. Consider the following:

- Take your time to get to know this scooter step by step, in order to avoid a so-called “task overload”, that could distract you from controlling your dive. Hence, it is recommended, that initially you use scooter without accessories and in lower gears.
- Do not exaggerate your first dives with the scooter with regard to maximum depth, diving time and water temperature.
- Plan for a higher air consumption than normal, because you might experience a completely new and exciting way to dive.
- Return to the shore or boat in planned intervals (observing the general rules of diving), in order to talk about your experiences and to change the scooter settings step by step.

3.2.2.2 SCOOTER AWARENESS

If you have no or little experience with scooters, you should remind yourself every now and then during the dive, that you are connected to a powerful and somewhat bulky object.

Observe the rules for entering and leaving the water (see “Entering the Water With the Scooter” on page 32), and make use of the scooter’s safety settings (see “Setting the Security Options – Time Lock” on page 52).

3.2.2.3 UNCONTROLLED DESCENT / ASCENT

Do not use the scooter during descent and ascent. You might lose control of your descent or ascent speed, which can lead to severe injuries or decompression sickness. Therefore switch off the scooter during these phases of your dive or at least put it into **BLOCKED** mode (see “Transition From Standby Mode to Blocked Mode” on page 37).

3.2.2.4 DEVIATING FROM THE PLANNED DIVING DEPTH

Using the scooter during a dive, you should always keep in mind that the use of this device can greatly mitigate errors in determining correct buoyancy, which, when stopping the scooter may cause sudden, uncontrolled ascent or descent of the diver. Accordingly, each time before using the scooter check the neutral buoyancy of the scooter. When being pulled by the scooter, regularly check your depth by means of your diving computer or with the scooter accessories.

The scooter is only to be used to move in the water on a horizontal plane at a constant depth.

3.2.2.5 IMPROPER SPEED

Never underestimate the power of your scooter, which directly translates to a horizontal speed much higher than you might be used to. Hence, always select the right gear for the given situation. Please note, that you may also reduce the scooter power in the configuration settings. If you do, the scooter will not provide its full power, if you select the highest gear (see “Setting the Maximum Scooter Power” on page 50).

3.2.2.6 PROPELLER-RELATED PROBLEMS

Caution +++ Caution



A rotating propeller is a dangerous element.

Despite the intrinsic security it may cause serious injury.

Never insert, place hands or any objects into the scooter nozzle or rotating propeller blades. It is recommended not to remove the stator.

Again, never underestimate the power of your scooter, which directly leads to a considerable water displacement. Therefore, adapt your personal trim and your relative position to the scooter accordingly (see „Assembling the Harness” on page 32). Make yourself familiar with the important aspects regarding the propeller (see „Safety Rules Regarding the Scooter’s Propeller” on page 15).

3.2.2.7 ACCESSORY- AND EQUIPMENT-RELATED PROBLEMS

Make sure, that all accessory parts used on the scooter and all parts of your diving equipment are properly fastened and do not create a problem while using the scooter.

3.2.2.8 A SEACRAFT SPECIALTY: SILENT RUN

Your Seacraft Scooter will run considerably more quiet than other scooters on the market.

With this scooter, it is very likely that even an (also silent) rebreather diver will see you under water, before he/she hears you. So, do not rely on other divers being aware of your presence, because they hear the „typical” buzzing scooter sound long before they see you – they will not.

3.2.2.9 ANOTHER SEACRAFT SPECIALTY: DYNAMIC AND INSTANT ACCELERATION

With your Seacraft scooter, you may select, how the scooter will accelerate – slowly, normal or fast (see “7.3.4 “Selecting the Engine Operation Mode7.3.4” on page 51). In addition, you may configure the scooter to instantly switch to the highest possible gear (and back to the previously selected gear), if a short sprint is required (see “Setting the Security Options – Fast Unlock” on page 55).

3.2.2.10 AND YET ONE MORE SEACRAFT SPECIALTY: THE REVERSE GEAR

Unlike other scooter models on the market, this Seacraft Scooter allows you to move backwards under water, by being „pushed“ by the scooter (if the reverse gear [R] was activated in the configuration options – see “Setting the Security Options – Fast Unlock” on page 53).

Before you activate the motor in gear [R], prepare yourself for the effect of the reversed water flow through the drive unit:

- Look behind you and make sure, that there is enough space for manoeuvring.
- Make sure, that no part of your equipment is hanging down into the stator area.
- With one hand, hold the lower part of the scooter's nozzle, to push it away from your body in 2-points. Simultaneously this will tension the harness lines, to prevent them from being “swallowed” into propeller. Tense the muscles in the arm with the hand holding the scooter. Remember, that the scooter will push you now, so you should put on a certain „resistance“.

3.2.3 SAFETY RULES REGARDING THE SCOOTER'S PROPELLER

Caution +++ Caution



A rotating propeller is a dangerous element.

Despite the intrinsic security it may cause serious injury.

Never insert, place hands or any objects into the scooter nozzle or rotating propeller blades. It is recommended not to remove the stator.

3.2.3.1 BEFORE USING THE SCOOTER, OBSERVE THE FOLLOWING ROUTINE:

- Ensure that none of the elements mentioned above can become entangled in the scooter propeller.

3.2.3.2 WHILE USING THE SCOOTER, OBSERVE THE FOLLOWING ROUTINE:

- Regularly check whether loose items of equipment are located at a safe distance from the scooter propeller and there is no danger of entanglement of these elements in the scooter propeller mechanism.
- Take special care when maneuvering the scooter in an area with rich vegetation or low visibility waters, where there are obstacles such as: nets, cables, wrecks. It is recommended to turn off the scooter until you leave the area with the above characteristics in order to avoid the possibility of entanglement of those elements in the mechanism of the scooter propeller.

3.2.3.3 ENTANGLEMENT OF FOREIGN OBJECTS IN THE PROPELLER MECHANISM

In the case of entanglement of ropes or other unwanted items into the scooter propeller mechanism, users of the device should first of all try to solve the problem under the water by taking the following actions:

- Turn off the scooter.
- Untangle or (if possible) cut unwanted items tangled in the scooter propeller.
- The removal of unwanted items is greatly helped by removing the propeller under water (see "Assembling / Disassembling the Drive Unit" on page 70). Note, however, not to use cutting tools if the propeller is removed, as this could damage the engine.
- Start the scooter again and choosing the shortest way back, take the return course.

If the foreign objects cannot be removed successfully, proceed as follows:

- Turn off the scooter.
- Independently tow the blocked scooter choosing the shortest way back.
- Ascend to the surface, whilst maintaining usual safety rules.

3.2.4 ETHICAL AND ENVIRONMENTAL ASPECTS

Keep the following in mind, while using the scooter:

- Exercise caution in context of caring for the natural underwater environment.
- Pay attention to the appropriate position of the scooter and fins while swimming past delicate underwater formations, so that equipment and diving accessories do not damage elements of flora or fauna.
- Avoid direct contact between the scooter and the bottom/sea bed; making contact with the bottom may result in deterioration of visibility under water, damage to flora or fauna, as well as blocking the scooter propeller (e.g. silt or sand getting into the mechanism as a result of the scooter contact with sea bed).

Worn or broken elements of the scooter must be disposed of in accordance with the applicable laws. Used batteries which are a component of the scooter must be returned to the manufacturer or supplier of the equipment or given to a collection point for used accumulators and batteries or electronic scrap.

3.3 SAFETY RULES FOR MAINTENANCE, STORAGE, TRANSPORT AND PREPARATION

3.3.1 MAINTENANCE

The scooter user is obliged to apply principles of maintenance to the equipment owned. Proper maintenance of the scooter is essential to avoid dangerous situations caused by the poor technical condition of the device. The scooter owner is obliged to apply the following principles of maintenance to the device:

- Before using the scooter the user should make himself/herself familiar with its structure, method of operation and rules of use described in this manual.

- Before using the scooter and after use, every time, the user must perform a thorough inspection of the state of the entire scooter housing, elements of which may be subject to leaks (especially the seals).
- During use of the scooter the user should adhere to the principles of proper charging of the battery according to the rules defined in this manual (see “Charging Procedure” on page 26).
- After using the scooter thoroughly rinse it in clean, fresh water. During this operation special attention should be paid to the drive system - any foreign bodies like sand, salt or other should be removed from all of its components (see “ Maintaining the Scooter After Use” on page 68).

3.3.2 STORAGE

Caution +++ Caution +++ Caution



This scooter is equipped with a smart battery control system that will pro-actively check the battery and minimize/eliminate problems. If the battery has been fully charged before, the scooter can be stored several months without disconnecting the battery cable.

Nevertheless, the manufacturer cannot foresee all possible situations during storage. For additional safety during storage, it is recommended to always disconnect the battery cable before longer storage periods.

- For the entire period of use the scooter should be stored in a cool, dry and dark place, out of the children’s reach.
- Before long storage and after prolonged periods unused it is recommended to carry out a detailed check of the scooter and perform maintenance works (see “Maintenance at the End of the Diving Season” on page 68).

3.3.3 AIR AND GROUND TRANSPORT

Caution +++ Caution +++ Caution



For air transport, international rules require the battery to be disconnected!

This scooter is equipped with a smart battery control system that will pro-actively check the battery and minimize/eliminate problems. If the battery has been fully charged before, the scooter can be stored several months without disconnecting the battery cable.

Nevertheless, the manufacturer cannot foresee all possible situations during transport. Hence, it is recommended to always disconnect the battery cable before transporting the Scooter.

See also “Transport Restrictions” on page 29.

- In preparation to transport the box containing the scooter, every time, ensure the scooter is secured against free movement in the hold.

- To maintain full working order, the scooter should be transported using dedicated accessories offered by the manufacturer of the scooter i.e. the base, suitcases, bags and/or boxes.
- In cases of sending the scooter package by mail or courier service (especially by air freight), it is essential to read the rules and restrictions on the transport of lithium-ion batteries.
- In preparation to transport the consignment containing the scooter be careful in the protection of the nozzle or other parts of the scooter against its deformation (e.g. by crushing the above-mentioned elements of the scooter by other goods or heating over 60° C).

3.3.4 TRANSPORT BY SEA (DIVING BOAT)

Caution +++ Caution +++ Caution



The following procedure relates to transporting the scooter from shore to dive site. If you need to ship the scooter by sea, the same rules as for air and ground transport apply.

Before transporting the scooter, follow this routine:

- Ensure, that the scooter is ready for use.
- Ensure that the device is turned off and properly secured.
- Ensure that the device is adequately protected against direct sunlight.
- Ensure that the scooter is secured against free movement on vessel's board.
- If there is possibility that the scooter may get wet during transportation, make sure that the scooter is correctly assembled and water tight.

3.3.5 PREPARING THE SCOOTER FOR USE

Safe use of the scooter depends on its proper preparation and use in accordance with the principles described in this manual. During the period of scooter usage, only original items of scooter equipment and dedicated accessories supplied by the manufacturer should be used. In the event of any faults in the proper functioning of the scooter or where there is doubt as to its proper operation, the user should immediately stop using the scooter.

Caution +++ Caution +++ Caution



It is forbidden to:

- Independently modify and / or repair the scooter by the user or any other unauthorized persons
- Throw or hit a scooter as well as to use an excessive force when assembling and disassembling the device
- Use elements which are non-original and non-dedicated to a particular model such a charger, screw, battery, etc.
- Leave the scooter which is ready to work under water unattended or within reach of children or persons untrained to use it.

4 SPECIFICATIONS

4.1 TECHNICAL DATA

Model	FUTURE BX750	FUTURE BX1000	GHOST BX1500	GHOST BX 2000
Working time at nominal speed	>260 min.	>350 min.	>525 min	>700 min
Working time at maximum speed (gear 9)	>70 min.	>95 min.	>140 min.	>220 min.
Maximum distance	>11,7 km	>15,7 km	>23,6 km	>31,5 km
Dimensions in millimeters	845x360x410	845x360x410	800x360x410	800x360x410
Housing diameter	160 mm	160 mm	208 mm	208 mm
Weight without battery and ballast	10 kg	10 kg	12 kg	12 kg
Weight with fresh water battery and ballast	15,9 kg	15,9 kg	22,9 kg	22,9 kg
Battery (Li-ion) capacity	750 Wh	1000 Wh	1500 Wh	2000 Wh
Nominal battery voltage	32,4V	32,4V	32,4V	32,4V
Maximum battery voltage (after charging)	37,8V	37,8V	37,8V	37,8V
Minimum battery voltage (after discharging)	26V	26V	26V	26V
Charger operating voltage	230V, 50 Hz, 240W	230V, 50 Hz, 240 or 400W**	230V, 50 Hz, 400W	230V, 50 Hz, 400 or 900W**
Average time of charging 90%	3 h	5 h or 3 h	4 h	6 h or 3 h
Average time of charging 100%	4 h	6 h or 4 h	5 h	7 or 3,5 h
Maximum static thrust	>340 N	>340 N	>340 N	>340 N
Maximum speed	>1,6 m/s	>1,6 m/s	>1,6 m/s	>1,6 m/s
Maximum depth (std. version)	150 m	150 m	220 m	220 m
Tested depth (std. version)	250m	250m	300m	300m
Correct displacement (with adjusted ballast)	Neutral	Neutral	Neutral	Neutral
Level/Trim (with adjusted ballast)	Neutral	Neutral	Neutral	Neutral
Scooter operating temperature***	-5/+45°C	-5/+45°C	-5/+45°C	-5/+45°C
Scooter storage temperature	-25/+50°C	-25/+50°C	-25/+50°C	-25/+50°C
Temperature whilst charging	+10/+40°C	+10/+40°C	+10/+40°C	+10/+40°C

* Applicable in terms of a diver in a twinset 2x12, in a dry suit, in fresh water. Range tested for optimal speed.

** Depending on the order.

*** At temperatures below 0°C, due to the properties of lithium cells, the battery capacity and hence the scooter's performance can be significantly reduced. It is a reversible process - after raising the temperature of the battery to temperature level above 0°C the capacity of the battery returns to the nominal value.

4.1.1.1 IMPORTANT REMARKS

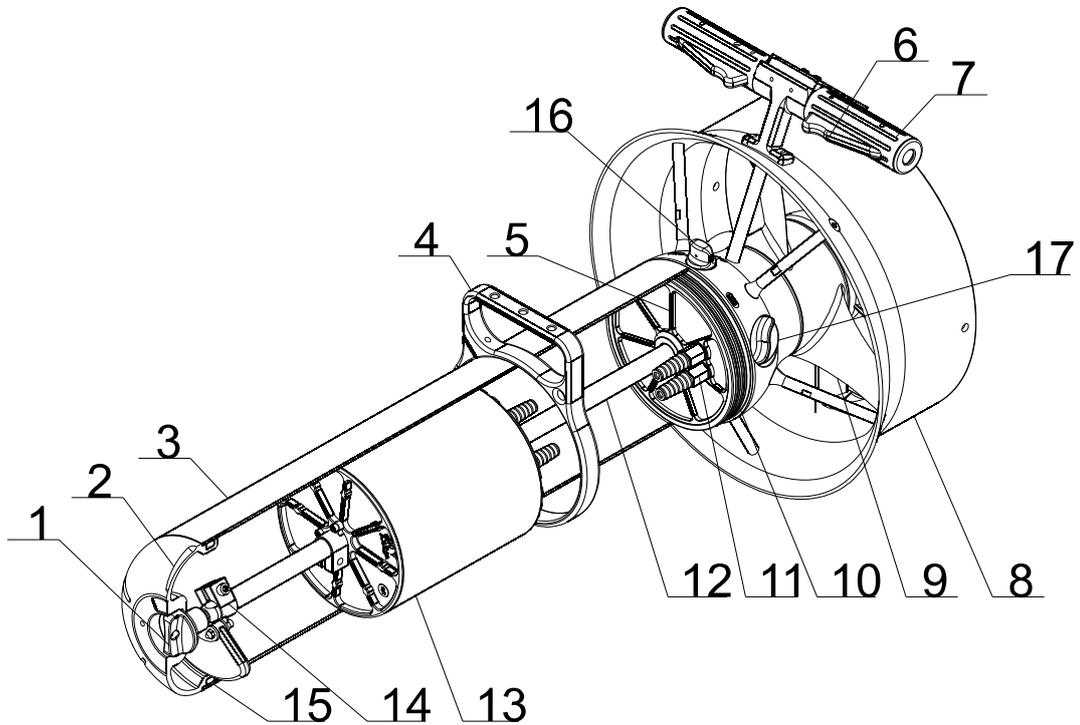
The manufacturer claims that the laboratory data relating to the technical specifications of the Seacraft scooter may differ from the data obtained in real operating conditions in the field.

Note

Potential discrepancies in terms of certain scooter operating parameters may be the result of differences in the equipment and the level of training of the scooter user, charge status and consumption of the scooter battery, velocity profile of the flow, local conditions (e.g. water temperature and speed of ocean currents), the temperature at charging, type of charger, the technical condition of the device, the degree of regularity of servicing the equipment, the degree of scooter's wear, and many other factors.

5 SCOOTER COMPONENTS

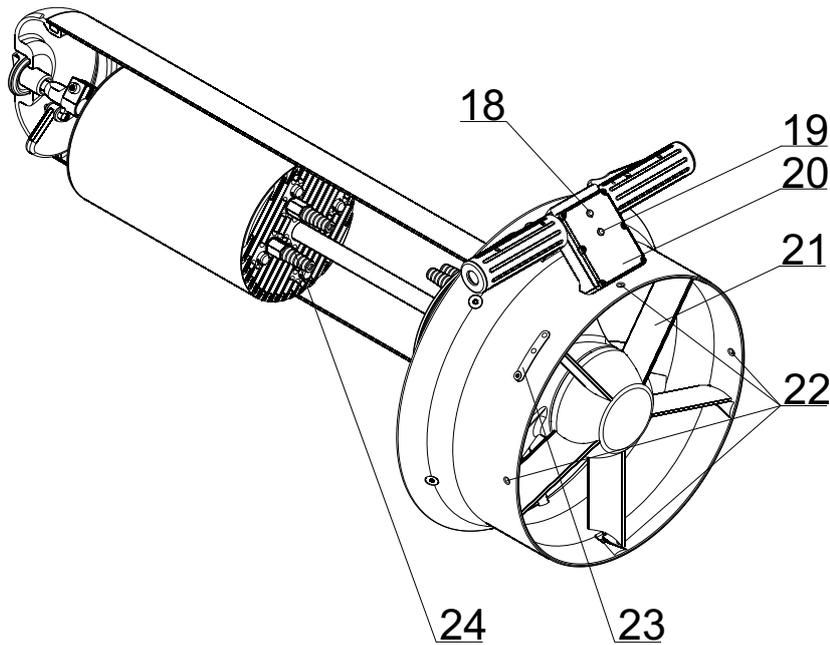
5.1 BASIC SCOOTER COMPONENTS, PART 1



Drawing 1. Summary of basic scooter components

- | | |
|-----------------------------------|------------------------|
| 1. Cap nut | 10. Housing seal |
| 2. Cap | 11. Power cables |
| 3. Housing cover | 12. Guideway shaft |
| 4. Transportation bracket | 13. Battery |
| 5. Housing lid | 14. Ballast |
| 6. ON/OFF button (left and right) | 15. Cap seal |
| 7. Steering handle | 16. Main switch |
| 8. Nozzle | 17. Charger socket cap |
| 9. Marine propeller | |

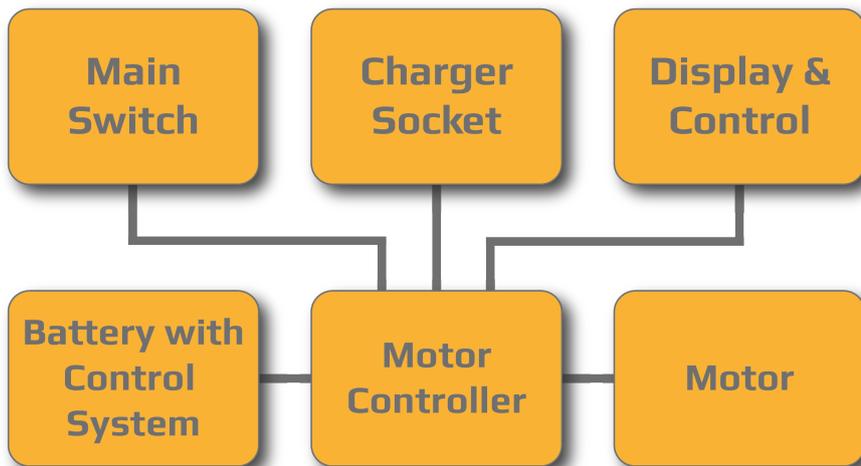
5.2 BASIC SCOOTER COMPONENTS, PART 2



Drawing 2. Summary of basic scooter components

- 18. Gear up button
- 19. Gear down button
- 20. Graphic display OLED RGB
- 21. Post swirl stator
- 22. Harness fastening holes
- 23. Stator lock button
- 24. Clamp fixing the battery position

5.3 ELECTRONIC COMPONENTS



Drawing 3. Scooter block diagram

5.3.1 MOTOR CONTROLLER

The brushless motor (BLAC, BrushLess Alternating Current) controller's task is to produce a three-phase voltage which is used to power the motor. The motor controller communicates with the display and control module in order to obtain information about the chosen gear and transmits information on operating parameters of the scooter display module e.g. the state of the battery, propeller speed, the electricity consumed by the scooter, battery voltage, etc.

5.3.2 DISPLAY AND CONTROL

A modern graphical OLED display RGB is used in the construction of the scooter. The display module contains buttons for controlling the operation of the scooter. All control elements are non-contact.

5.3.3 MAIN SWITCH

The scooter is equipped with a non-contact sensor responsible for turning the device on and off. Operating the scooter in SWITCHED OFF mode is characterized by very low power consumption, so it is not necessary to unclip the battery from the scooter after each use, and thus it is not necessary to disassemble the scooter every time it has been used. An exception to this might be transporting the scooter (see "Air and Ground Transport" on page 17).

5.3.4 BATTERY WITH CONTROL SYSTEM

The scooter is powered by a battery made up of rechargeable lithium-ion batteries. The scooter battery voltage is always in a safe range for the user. The battery is equipped with a BSM system (Battery Management System), which compensates the voltage across all the cells and a PCM system (Protection Circuit Module) that protects the battery against overload, overcharging and excessive discharge.

5.3.5 CHARGING SOCKET

The scooter has an external charging socket, thanks to which there is no need to disassemble the scooter in order to recharge the battery.

Caution +++ Caution +++ Caution



Always make sure, that the charging socket plug is correctly inserted and tightened after charging!

Make sure, the seal is clean and not damaged!

5.3.6 MOTOR

The motor works fully immersed. The solution completely eliminates leakage through the drive shaft, thus allows to avoid using expensive and easily failing seals, it also eliminates heating up of the interior and enables the device to work at much greater depths and with much more power than other diving scooters available on the market today.

5.4 BATTERY AND CHARGING SYSTEM

5.4.1 GENERAL INFORMATION

The scooter uses a modern lithium-ion (Li-Ion) battery built with high current cells supplied by a known manufacturer.

5.4.2 BATTERY PARAMETERS

The Seacraft scooter battery has 9 group of cells with a total voltage of 37,8V (value after charging). The voltage level of the battery is secure and compliant with applicable standards. Due to the very high current capacity of the battery use caution when performing any work and manipulations that are associated with the scooter battery. A characteristic feature of Li-Ion batteries is a natural decline in their capacity, which occurs with increasing amounts of charging and discharging cycles and the passing of time.

Note



It should be remembered that Li-Ion batteries at temperatures below 0°C show decreases in capacity, which must be taken into account when planning a dive in such conditions. At temperatures below -20°C, a significant decrease in the battery capacity may prevent the scooter from working properly. After heating the battery to an above-zero temperature, the battery capacity returns to its nominal value.

Caution +++ Caution +++ Caution



When using the Seacraft scooter it is recommended to use the battery which is built into the original (purchased) version of the device.

The manufacturer is not liable for potential damages caused by use of the scooter with a battery other than the original one.

When using a Seacraft battery different than the original battery built in the scooter, it is necessary to read the enclosed leaflet and instructions for use of the said battery.

Never use or carry a battery showing signs of mechanical damage.

5.4.3 RECOMMENDATIONS FOR USE

The battery should be stored in a cool place, regularly reviewed and maintained in accordance with the instructions described in this manual (see "Battery" on page 66). This will prevent premature aging of the battery.

5.4.4 RULES FOR BATTERY CHARGING

Caution +++ Caution +++ Caution



Charge the battery using only the original chargers provided by the manufacturer of the scooter. The manufacturer is not liable for the consequences of use of other chargers. Use of chargers other than those specified by the manufacturer may cause a threat to life or property.

You need to read and understand the separate charger manual before charging the battery.

Battery life in the original version of the Seacraft scooter is estimated at approx. 300-400 cycles and a period of 3-4 years. After that period, the battery will continue to work, however its capacity may be reduced due to natural battery capacity decrease. To check precisely the condition of your battery, contact your closest service point.

Usage patterns of the scooter and battery charging affect its durability. Adherence to the manufacturer's guidelines guarantee extend of the battery life and the safety of the scooter usage.

Among other things, the battery charging time depends on the following factors:

- Charger model
- Remaining charge
- Battery state
- Ambient temperature

Note



Charging the Li-Ion battery can be carried out regardless of the state of the charge level.

For safety reasons, regardless of the battery charge level, it is recommended to charge it before each use.

Storing a battery, which is discharged to 0% for prolonged time, may lead to irreversible damage.

Charging the battery is carried out with the use of the charging socket (drawing 1, pos. 17) without necessity of disassembling the scooter into parts.

5.4.5 CHARGING PROCEDURE

- Unscrew the charging socket cap (drawing 1, pos. 17).



Charging Socket Cap

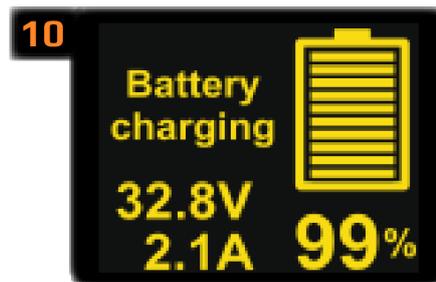
- Check whether there are no impurities or traces of moisture in the charging socket (e.g. as a result of condensation of water vapor). Clean/dry socket and cap as required.
- Connect the charger to the power source 230V AC, wait c.a. 30 seconds and turn it on using main switch.
- Plug in the charger plug into the charging socket on the scooter.

Note



Further proceedings depends on the type of charger used. To secure the safety and durability of the device the user should adhere to the guidance contained in the charger manual.

After starting the charging process the OLED display will show information about the percentage of battery charge level with voltage and charging current.



Note



In some cases, despite ending the charging process the display may indicate 95-99% charge level, which means that the battery is fully charged.

The reason for this difference is, that the internal capacity calculation algorithm is calibrated after the battery has been fully charged.

5.4.6 AFTER COMPLETION OF THE CHARGING PROCEDURE

- Switch off the charger.
- Disconnect the charger from the mains.
- Remove the charger plug from the charging socket of the scooter.
- Check the condition of the seal, the cleanliness of the charging socket and the thread on the cap.
- Lubricate the seal with grease supplied by the manufacturer.
- Screw the cap into the charging socket until resistance is met.

Caution +++ Caution +++ Caution



There is no need to use any tools to tighten the cap.

Even minor impurities in the battery charging socket (e.g. dust, sand) may lead to the scooter's unsealing and result in its flooding and serious malfunction.

5.4.7 RECOMMENDATIONS FOR USING, MAINTAINING AND DISPOSING THE BATTERY

The battery should be stored in a cool, dry place; the optimum storage temperature of the battery is approx. 10°C. Storage of the battery at temperatures above 30°C significantly reduces its life.

It is forbidden to store the battery in places exposed to direct sunlight, in heated, closed and unventilated spacer (e.g. vehicles) and near heating appliances.

Note



Do not format the new battery.

This means that this battery does not need to be charged and fully discharged several times in order to reach its full capacity.

This was a common procedure with NiMH cells. Modern Li-Ion cells do not require this.

The factory version of the scooter battery (purchased by the user) is ready for use after the initial charge, which takes place in the manufacturing plant. The manufacturer loads and tests each battery, providing the customer with the battery charged to approx. 20%.

Caution +++ Caution +++ Caution



It is forbidden to use the scooter with a defective battery as well as with battery which is discharged or overheated (e.g. as a result of exposing the scooter to sunlight).

Each time, in the event of a warning message shown on the OLED display regarding the battery the user should immediately stop working with the scooter and choosing the shortest way, finish the dive. Depending on the severity of the error message, consider having the scooter serviced by an authorized service center.

Observe the following:

- Charging the scooter battery to approx. 90% significantly prolongs its life cycle.
- The user should not lead to a situation where the battery is discharged completely.
- Do not use the scooter in top gear only as it shortens the battery life.

In case the user can foresee, that the battery will not be used for 6 months or longer:

- Charge it to approx. 50%; this is the optimum charge level, which means the life of the battery decreases slowly.
- Dismantle the scooter by removing the housing cover (Drawing 1, pos. 3) and detaching the battery from the scooter.
- In case the device is stored at high temperatures, under which the accelerated self-discharge is taking place, the user should check the battery level once a month, and in the case of discharge below 40% recharge the battery to approx. 50% of capacity.

If the scooter battery reaches a voltage lower than the critical value, please contact the manufacturer or the scooter distributor to verify whether it is possible to restore its functionality.

Note



Please note, that this way to damage the battery is rather theoretical, because to do so, you would have to discharge the battery by using the scooter until it shuts down automatically. Afterwards, you would have to store the scooter for several months without charging the battery. Only then, the battery would reach the critical limit.

The decrease in battery capacity over time is a natural feature of all batteries, including Li-Ion batteries. The user should keep in mind that over time battery capacity is getting lower, which means that the maximum swimming time with the scooter on a charged battery is reduced. When planning a diving trip with a scooter the user should take into account the wear and tear of the battery.

Note



It is recommended to have the scooter serviced every 12 months by an authorized service center, in order to evaluate the battery.

Caution +++ Caution +++ Caution



It is forbidden to use a charger other than the charger recommended by the manufacturer of the Seacraft scooter.

Using chargers other than the original one may result in:

- Irreversible damage to the battery;
- Reducing the battery life cycle;
- Explosion, fire in the scooter or other dangerous situations.



The battery is a **product, which after use becomes waste, hazardous** to people, animals and the environment. It is prohibited to place used batteries in containers for domestic waste.

The used battery is recyclable and should be disposed of in properly labeled containers, dedicated to specialized points of receiving the used electronics, returned to the manufacturer or scooter supplier.



OBSERVE THE AIR TRANSPORT RESTRICTIONS AND WARNINGS FOR LI-ION CELLS AND BATTERIES!

5.5 TRANSPORT RESTRICTIONS

Transferring and carrying Li-Ion batteries of large dimensions using a mass transport is subject to regional and national legal regulations. As a rule restrictions in transport of these items are applicable only in the case of air transport. In the case of transport by land the aforementioned restrictions are not valid. Therefore, **each time before sending packages containing the Seacraft scooter refer to local regulations for restrictions on the carriage** of certain items or contact your carrier, distributor or the manufacturer of the scooter for detailed information on restrictions on transport of Li-Ion cells and batteries.

Note



For safety reasons, it is recommended to transport the battery charged up to approx. 20%.



During transportation the battery must be protected against mechanical damage, particularly crushing. Damage of this type poses a fire risk.

Never use or carry a battery showing signs of mechanical damage.

6 USAGE INSTRUCTIONS

6.1 PREPARATION FOR USE

The scooter is composed of two main elements (drawing1, pos. 2)

- The cylindrical part, in which battery and ballast are located.
- The drive unit comprising a body with a motor and an propeller and nozzle with the steering handle. The propeller in the outlet portion is protected by the post swirl stator, which simultaneously provides protection for the propeller while it is working; It is possible to remove the post-swirl stator and dive without this element but for safety reasons it is not recommended.

6.1.1 BEFORE THE DIVE

6.1.1.1 BALANCE AND TRIM OF THE SCOOTER

The selection of ballast and scooter's trim is an individual matter, depending on the preferences and needs of the individual user. Please note that the buoyancy of the scooter and thus the ballast weight is dependent on the chemical composition (salinity) and temperature of the water in which the diving will take place.

In order to achieve proper buoyancy and trim of the scooter the user should properly select and distribute the weight of the additional elements of ballast in the form of internal or external scooter ballast (see "Accessories" on page 72).

The manufacturer provides internal preliminarily balanced and trimmed. The standard equipment of the scooter contains an additional ballast thanks to which the user can ballast and trim the scooter in any water.

When using internal ballast, balance and trim should be performed by appropriate movement of the battery and installation of internal ballast. To do this:

- Stand the scooter up vertically on its nozzle.
- Unscrew the cap nut on the seal and then slide off the housing cover



Cap Nut

Caution +++ Caution +++ Caution



Now, you start working with the rather heavy battery.
Exercise caution when moving this heavy object, to avoid injuries.

- Loosen the clamp fixing the battery position and move the battery in the desired direction. Sign in the form of an arrow with the word UP, should be directed with an arrow towards the steering handle (top of the scooter), the battery with the arrow sign and "Bottom battery" inscription means that battery should be positioned with the arrow down to the scooter.
- Fix internal ballast and / or move to the desired position and fasten the clamp fixing the battery position.

Note



Choose the battery and weight position carefully, since even small deviations can cause an improper trim.

Keep in mind that balancing with internal ballast may require several attempts to select mass and positioning of the ballast.

- Check/clean all seals and lubricate them with grease recommended by the manufacturer.
- Replace the housing cover.

Caution +++ Caution +++ Caution



Make sure, that the housing cover o-ring slides correctly under the housing cover.

- Check whether the seal is under the cap nut; in its absence it should be replaced and then lubricated with grease.
- Tighten the cap nut until the point of resistance.

6.1.1.2 ASSEMBLING THE HARNESS

The harness, in the form of link with swivel eye carabiners, should be threaded through the two fastening holes located on the edges of the nozzle. The harness should be adjusted before diving according to the user's preferences using the harness belt tensioners supplied by the manufacturer. The manufacturer's original tensioner's shape allows easy adjustment of the harness length even by a diver wearing thick gloves.

Note



You may check the correct harness position as follows:
On the water surface, attach the scooter to your diving gear and lay behind the scooter as if you were starting it.

Slightly bend your arm(s) holding the control handle (in an angle of approx. 30°).

If you can now see the OLED screen on the main handle and read the displayed information, the harness is set correctly and may be optimized later.

6.2 OPERATING THE SCOOTER

6.2.1 ENTERING THE WATER WITH THE SCOOTER

Caution +++ Caution +++ Caution



Before the first dive using the scooter it is essential to read the instructions carefully and learn about the scooter operation - turning on and off, control of gear changes and warnings displayed on the OLED screen. Before entering the water with a scooter, make sure the scooter is working properly and that the battery is charged.

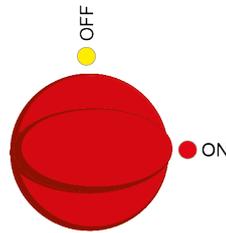
The method of entering the water with the scooter should be adapted to the individual skills and abilities of each diver, using one of the following safety procedures (according to situation):

- The scooter is placed in the water, the diver enters the water.
- The diver enters the water, the scooter is given to the diver by a third party.

For safety reasons it is prohibited to jump into the water with the scooter.

6.2.1.1 PROCEDURE FOR HANDLING THE SCOOTER

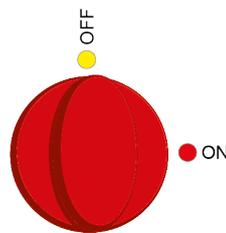
- Turn on the scooter using the main switch (Drawing1 pos. 16) by choosing **ON**.



- Attach the scooter using the special harnesses.
- Descend with the (deactivated) scooter to the planned dive depth.
- Change from BLOCKED mode to active working scooter mode.

6.2.2 STARTING THE SCOOTER

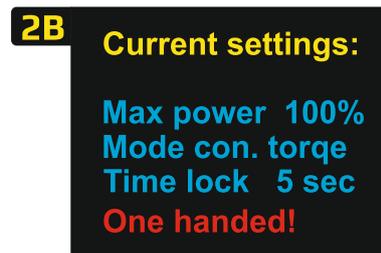
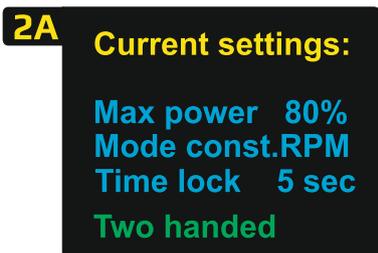
The scooter is equipped with a contactless main ON / OFF switch located in front of the nozzle on the cylindrical part of the scooter (drawing 1, pos. 16).



After setting the switch to the **ON** position, on the OLED display located on the handle of the scooter the following will appear in sequence:



Manufacturer Logo



Settings, depending on mode

Note



Note, that when activating the Direct Start function, screens 2A and 2B are not displayed when switching on the scooter (see “Setting the Security Options – Direct Start” on page 54).

6.2.2.1 DESCRIPTION OF ABBREVIATIONS USED IN SCREENS 2A AND 2B

Max power	<p>Maximum power of the scooter set by the user Possible range: 60-100%</p> <p>See “Setting the Maximum Scooter Power” on page 50.</p>
Dynamics	<p>Characteristics of the dynamic shift chosen by the user Possible choice: normal, fast, slow</p> <p>See “7.3.4 Selecting the Engine Operation Mode” on page 51.</p>
Time lock	<p>Time set by the user, after which the release of the handle will automatically block the scooter by selecting gear [0] (possible range: 3-60 seconds) and transiting to STANDBY mode.</p> <p>See “Setting the Security Options – Time Lock” on page 52.</p>
Two-handed – screen 2A	<p>The control mode set by the user – scooter controlled with two hands See “Setting the Security Options – One-handed / Two-Handed Steering” on page 52.</p>
One-handed - screen 2B	<p>The control mode set by the user – scooter controlled with one hand. See “Setting the Security Options – One-handed / Two-Handed Steering” on page 52.</p>

6.2.3 METHODS TO CONTROL THE SCOOTER

The user may choose from these control methods:

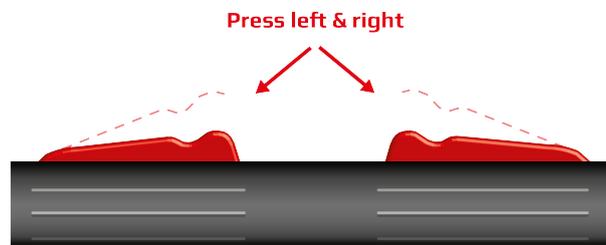
- Two-handed steering – The scooter is controlled with two hands
- One-handed steering – The scooter is controlled with one hand

Caution +++ Caution +++ Caution



For safety reasons, the manufacturer recommends selecting the two-handed control mode (the variant indicated on the display of the scooter as "Two-handed"). It is the factory setting in every Seacraft scooter.

Selecting the "Two-handed" mode means that to turn on the motor of the scooter the user must simultaneously press the buttons on the left and right side (drawing 1, pos. 6) of the control handle.



In order to be able to use the scooter with one hand (variant indicated on the display of the scooter as "One-handed") the factory settings must be changed. Information about changing the default setting to "One-handed" appears on the display screen as the red warning "One-handed". For a description of how to change the mode See "Setting the Security Options – One-handed / Two-Handed Steering" on page 52.

6.2.4 3 STEPS TO START DRIVING THE SCOOTER

For safety reasons, the process of starting the scooter requires 3 steps:

1. Activating the machine with the main switch introduces the scooter in **BLOCKED** mode and does not allow the scooter to work.
2. Unlocking **BLOCKED** mode takes you to **STANDBY** mode (gear [0]), which also does not allow the scooter to work.
3. In order to start the scooter's motor it is necessary to select gear [1-9] or reverse gear [R] and to press any button (**ONE-HANDED** mode) or both buttons (**TWO-HANDED** mode) on the scooter steering handles (drawing 1, pos. 6, 7).

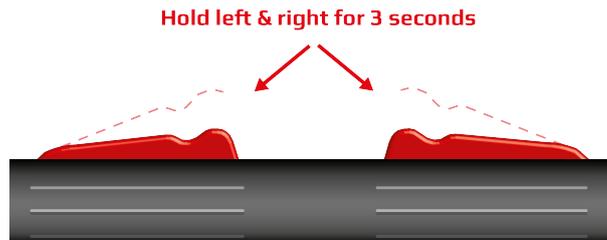
6.2.5 TRANSITION FROM BLOCKED MODE TO STANDBY MODE

After the scooter has been turned on using the main switch, screens 1, 2A or 2B are displayed. Next, the symbol of a red padlock will appear on the display (screen 3), which means the scooter is in **BLOCKED** mode. In this mode, the gear cannot be set and the motor cannot be started.



BLOCKED mode screen

To switch from **BLOCKED** mode to the main menu in **STANDBY** mode, proceed as follows: Simultaneously hold the two buttons on the scooter steering handles for 3 seconds (drawing 1 pos. 6, 7).



After completing the above steps, screen 4 (**STANDBY** mode) is shown on the display:



STANDBY mode screen

This screen indicates the gear currently selected ("0" yellow), the battery icon showing the percentage of the battery charge (0-100%) and the current working hours of the scooter motor in minutes.

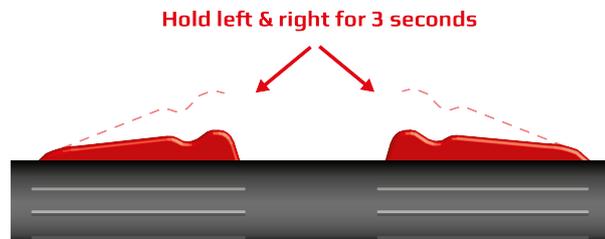
Note



In this mode, pressing any button on the scooter steering handles will not activate the scooter motor, because there is no gear selected.

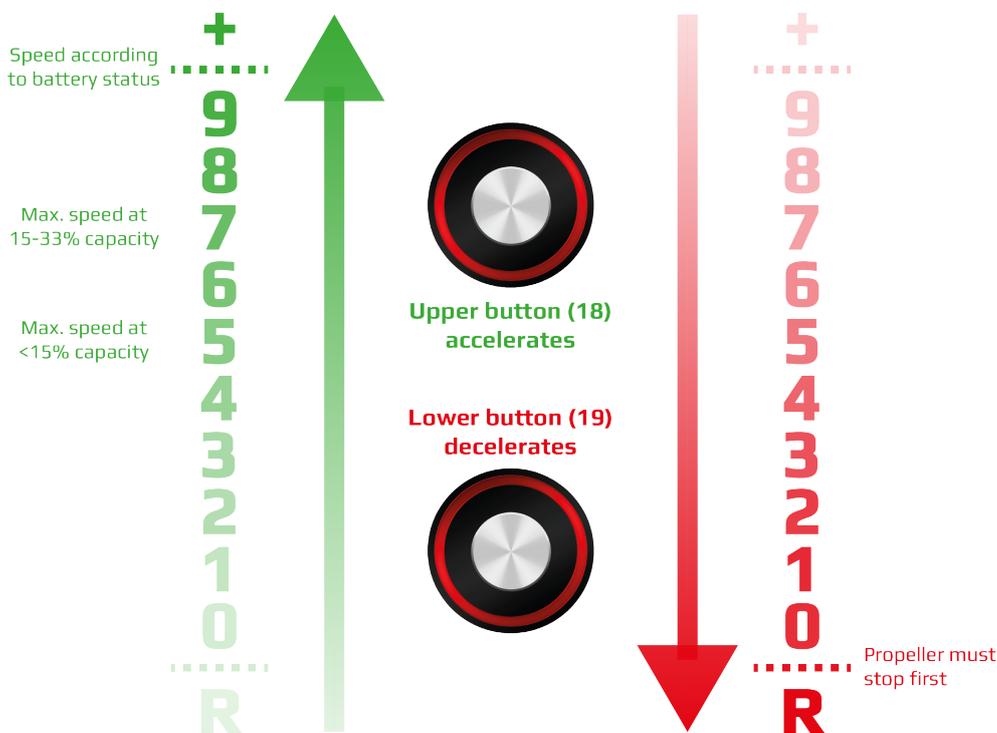
6.2.6 TRANSITION FROM **STANDBY** MODE TO **BLOCKED** MODE

To avoid unwanted activation of the motor, while performing other tasks during a dive, activate the **BLOCKED** mode. To do so, switch to gear [0], and hold both buttons on the steering handle down for 3 seconds.



6.2.7 SETTING THE SCOOTER GEAR

The scooter is capable of operating in “10 + 2” gears (gear [0-9], overspeed [+]) and reverse [R]. After starting, the scooter automatically is in **STANDBY** mode (gear [0]) in which the scooter motor does not run. Shifting gear is possible using two piezo buttons (drawing 2, pos. 18, 19) located directly above the display (drawing 2, pos. 20).



Pressing the top piezo button (drawing 2, pos. 18) causes the gear to move higher and pressing the bottom button (drawing 2, pos. 19) will lower it. Each pressing changes the gears by one step.

Note



Note, that the user may configure the maximum power output of the scooter. Hence you might not always experience the “real” power the scooter is capable of, when selecting a gear.
See “Setting the Maximum Scooter Power” on page 50.

6.2.7.1 CAPACITY-DEPENDENT MAXIMUM GEAR

For the safety of users, to optimize the scooter's energy consumption, and to extend the its range, the motor controller will possibly limit the maximum available gear.

- At 34-100% of the available capacity of the battery, the battery on the screen 5 is green, it is possible to run in every gear.
- At 15-33% of the available capacity of the battery, the battery on the screen 5 turns orange, it is possible to run in maximum gear [7].
- With less than 15% of the available capacity of the battery, the battery on screen 5 turns red and it is possible to run in maximum gear [5].

6.2.7.2 OVERSPEED GEAR

The scooter provides you with a special overspeed gear [+], that uses all available power to drive the propeller to the maximum RPM (revolutions per minute) possible in the given situation.

The overspeed gear [+] can be activated by pushing the button 18 while running in gear [9].

Note



Note, that the maximum possible RPM depend on several factors, such as battery status, battery/motor temperature, maximum power setting etc.

Hence, the maximum possible RPM will vary.

Caution +++ Caution



Make use of the overspeed gear advisedly, since this gear puts a considerable load on battery and motor.

Repeated use of this gear will reduce the scooter's range faster, which might collide with your dive plan.

Be aware, that driving the scooter at high speed requires your full attention and shortens the available reaction time.

6.2.7.3 REVERSE GEAR

The reverse gear [R] is a Seacraft specialty, unknown with other scooters on the market.

Using this gear faces you with new challenges, so make yourself familiar with them. See "And Yet One More Seacraft Specialty: The Reverse Gear" on page 15.

Note



Please note, that the reverse gear [R] is only available when it has been activated in the scooter configuration, see "Setting the Security Options – Reverse Unlock" on page 53.

The reverse gear [R] is only available after setting gear [0], when the propeller has stopped, and pressing button 19.

Caution +++ Caution +++ Caution



Use the reverse gear [R] with caution and only for short periods, since the propeller will slightly bend in the opposite direction compared to normal use.

This could lead to the propeller touching the stator.

6.2.7.4 AUTOMATIC RE-SET TO NEUTRAL

Leaving the scooter without any operation (no pressure on the buttons / and the steering handle) for a period longer than the preset auto-lock time ("Time Lock" function) will automatically set the scooter into gear [0] in **STANDBY** mode.

Note



Time Lock is an important safety feature which protects the user against accidental and unintentional powering on the motor during its use under water. See "Setting the Security Options – Time Lock" on page 52.

6.2.7.5 SEAMLESS GEARSHIFT

Changing the scooter gear happens smoothly (without any jolt).

Caution +++ Caution +++ Caution



If irregularities are found when changing gears or operating the scooter during a dive, the user should immediately return to base by selecting the shortest safe route.

Consider having the scooter serviced by an authorized service point.

6.2.8 STARTING THE MOTOR

After setting a gear, the motor can be started, depending on the selected mode.

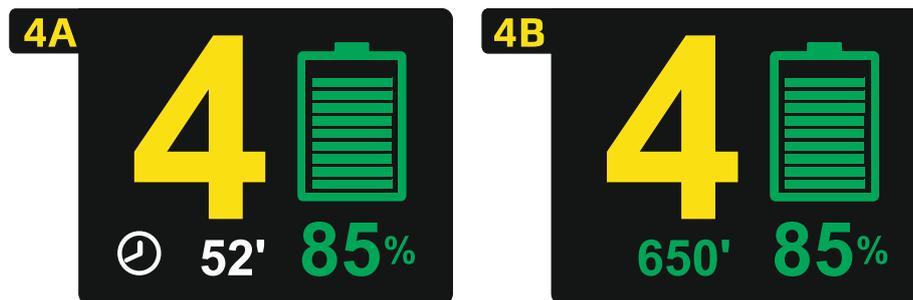
Note



Note, that you may configure, how fast the scooter motor will reach the maximum speed of the selected gear by changing the dynamics setting.

See “7.3.4 Selecting the Engine Operation Mode” on page 51.

This is a comfort setting to adapt the scooter’s behavior to your personal preferences and also a practical feature for students.



Screen 4B shows the estimated remaining run time, based on the current engine load. The internal electronics measures the average current drain, and every 6s it will calculate how many minutes of driving time remain at this level.

The calculate is based on measuring the estimated remaining battery capacity, taking into account the installed battery type (which must therefore be chosen carefully in the settings - see 7.3.13).

The displayed remaining runtime is only indicative only and should not be used as a basis for any decisions, that could influence your life. Remember to abide by all dive-planning rules learned in your DPV training.

However, should you have to re-plan your dive on short notice or encounter an unusual situation (e.g. towing a partner in variable currents), the remaining run time might be a critical tool, supporting you in selecting the optimum speed.

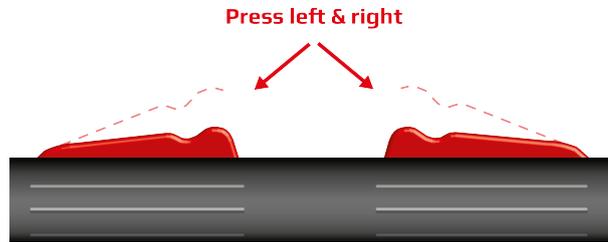
Note



When the engine load drops below 1.5A (approx. 50W, depending on the battery status), the remaining run time will not be displayed. The same applies, if the DPV is not being driven under water.

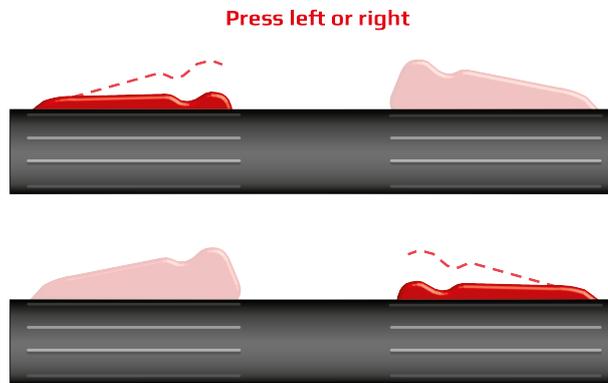
6.2.8.1 TWO-HANDED MODE

In case the user chooses control with both hands (**TWO-HANDED** mode), the scooter can be operated only with both hands, i. e. the user needs to press both buttons to start the engine (recommended for beginners).



6.2.8.2 ONE-HANDED MODE

In case the user chooses control with only one hand (**ONE-HANDED** mode) the scooter can be operated with one hand or both hands. This mode implies that to start operating the scooter can be done by pressing either button on the steering handle.



This also means that the propeller will spin as long as the gear is not 0 and at least one button is pressed. This allows for changing the hand that controls the scooter on the way.

Caution +++ Caution

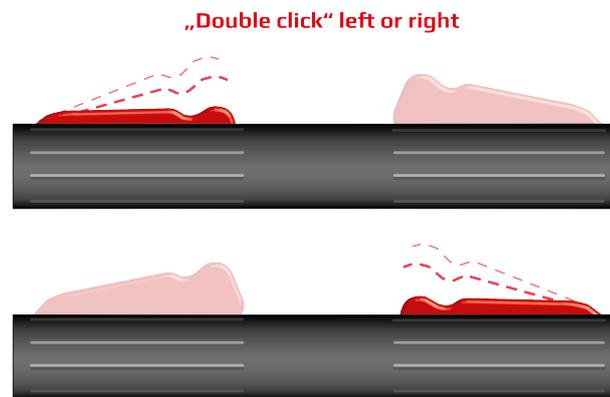


The **ONE-HANDED** control mode indicates an increased risk of the other hand or body damage in case of unforeseen circumstances and accidental touch of the propeller.

6.2.8.3 FAST UNLOCK

When the **FAST UNLOCK** function is activated and scooter is in gear [0] (**STANDBY** mode), it is possible to quickly start the scooter with the last-used gear.

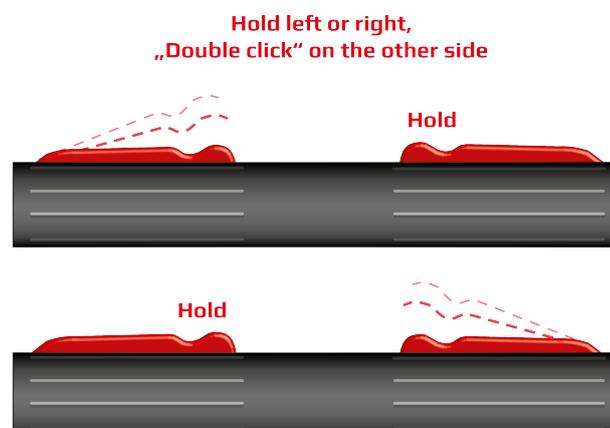
To do this, press either the left or right button on the steering handle twice in less than 0.5 seconds.



See “Setting the Security Options – Fast Unlock” on page 55.

6.2.8.4 INSTANT ACCELERATION

When using gears 1-8 and having one of the buttons on the steering handle pressed, the user simultaneously presses the other button on the steering handle twice and quickly – like a “double click” with a computer mouse. Then, the scooter will immediately shift gear to the highest possible gear, i.e. [9], [7] or [5], depending on the battery status.



Note



The time between taps on the button must be less than 0.5 sec.
 Rapid gear acceleration is only available with **FAST UNLOCK** function enabled.

To return to the gear before the acceleration, simply repeat the “double tap” on one side.

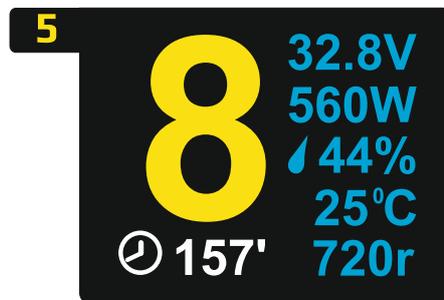
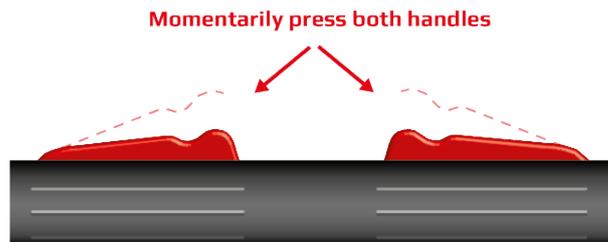
Caution +++ Caution +++ Caution



This function allows you to quickly switch back and forth between 2 gears while driving, e.g. for a short sprint.
 Use this function advisedly in order to avoid dangerous situations.

6.2.8.5 SHOWING / HIDING PARAMETERS ON THE WAY

Quickly press and release both buttons on the control handles (less than 1 second) will display the operating parameters of the scooter on screen 5:



Parameter display

In addition to the gear number (yellow), the following additional information is displayed:

32.8 V	operating voltage (V)
560W	power drain (W)
44%	humidity in electronics chamber (%)
25°C	control system temperature (°C)
980 r	motor revolutions (RPM)
257'	current motor working hours (minute)

Caution +++ Caution +++ Caution



Should you notice a humidity value of more than 70 % during your dive, it is recommended to return to base using the shortest safe route.

When you have returned to shore, check the inside of the scooter for humidity. Also, check the seals for contamination and damage.

Note



A hint to optimize your position behind the scooter:

If you are familiar with the scooter (and not distracted by other tasks), take a look at the current used while driving the scooter.

The more resistance you put against the scooter, the more amps it will need. So, if you optimize your position behind the scooter, the displayed amp value will drop.

In this way, the scooter offers you an integrated “trim optimization” display.

In order to hide these parameters again, simultaneously, quickly press and release both buttons on the control handles (less than 1 second).

6.2.9 STOPPING THE MOTOR

In order to stop the scooter temporarily, just release the buttons on the steering handle.

The scooter motor will stop immediately. Pressing any button on the steering handle again during the time range shorter than the one set on screen 7C1 (**TIME LOCK** option, 3-60 seconds range) will allow to activate the motor and thus continue driving.

To stop the scooter for a longer period, switch to **STANDBY** mode follows:

- Set gear [0] using button 19 at the display or
- Wait for scooter **AUTO LOCK** to happen, without pressing any button on the steering handle.

As a result of each of the abovementioned actions the scooter gear will be reset to [0], the scooter will go into **STANDBY** mode. In such case even if the user accidentally presses the steering handle it will not activate the scooter’s motor.

6.2.9.1 PARKING THE SCOOTER UNDER WATER

To stop the scooter under water and secure it against accidental power-on, the user should put it in **STANDBY** or **BLOCKED** mode (see “Transition From Standby Mode to Blocked Mode” on page 37). This can be done (depending on needs and situation) in the following ways:

- Set gear [0] using button 19 at the display or
- Wait for scooter **TIME LOCK** to happen, without pressing any button on the steering handle (see “Setting the Security Options – Time Lock” on page 52).
- Turn off the scooter using the main switch.

Caution +++ Caution



Please note that disabling with the main switch is the safest form of stopping the scooter.

After completion of a dive with the scooter, always turn off the scooter by setting the main switch to the **OFF** position.

6.2.10 LEAVING THE WATER WITH THE SCOOTER

Procedure for handling the scooter after completing a dive:

- Turn off the scooter using the main switch by choosing **OFF**;
- Attach the scooter e.g. to the boat ladder;
- Pull the scooter out upon coming out of the water or hand it directly to a person on the shore or in the boat, avoid staying under the extracted scooter.

Caution +++ Caution



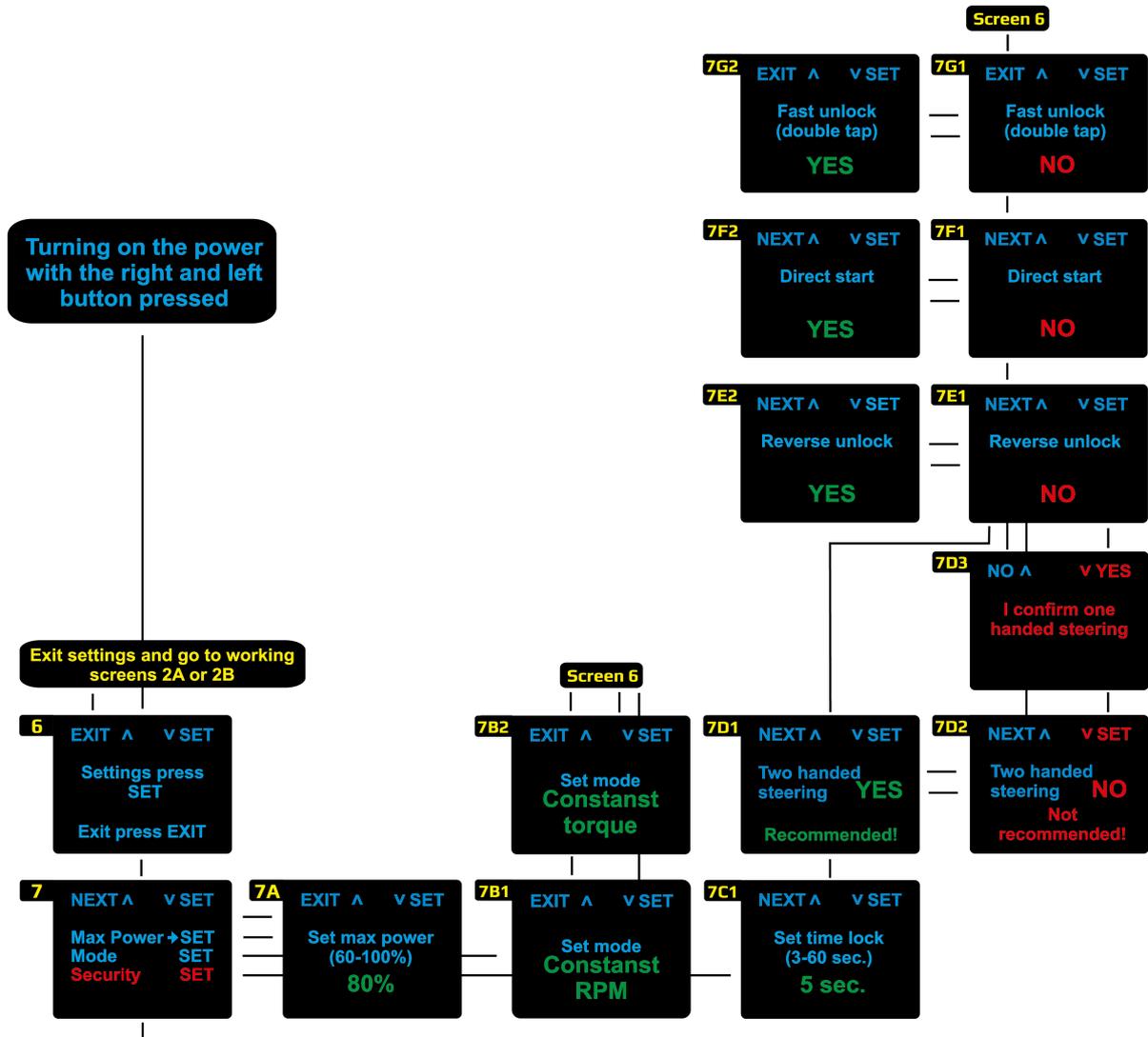
It is forbidden for the diver to independently come out of water with a scooter. Intensive diving using the scooter lasting longer than a standard dive can cause fatigue even in divers with extensive experience.

Due to the large mass of the scooter, all operations with the scooter should be carried out with proper precautions.

7 CONFIGURING THE SCOOTER SETTINGS

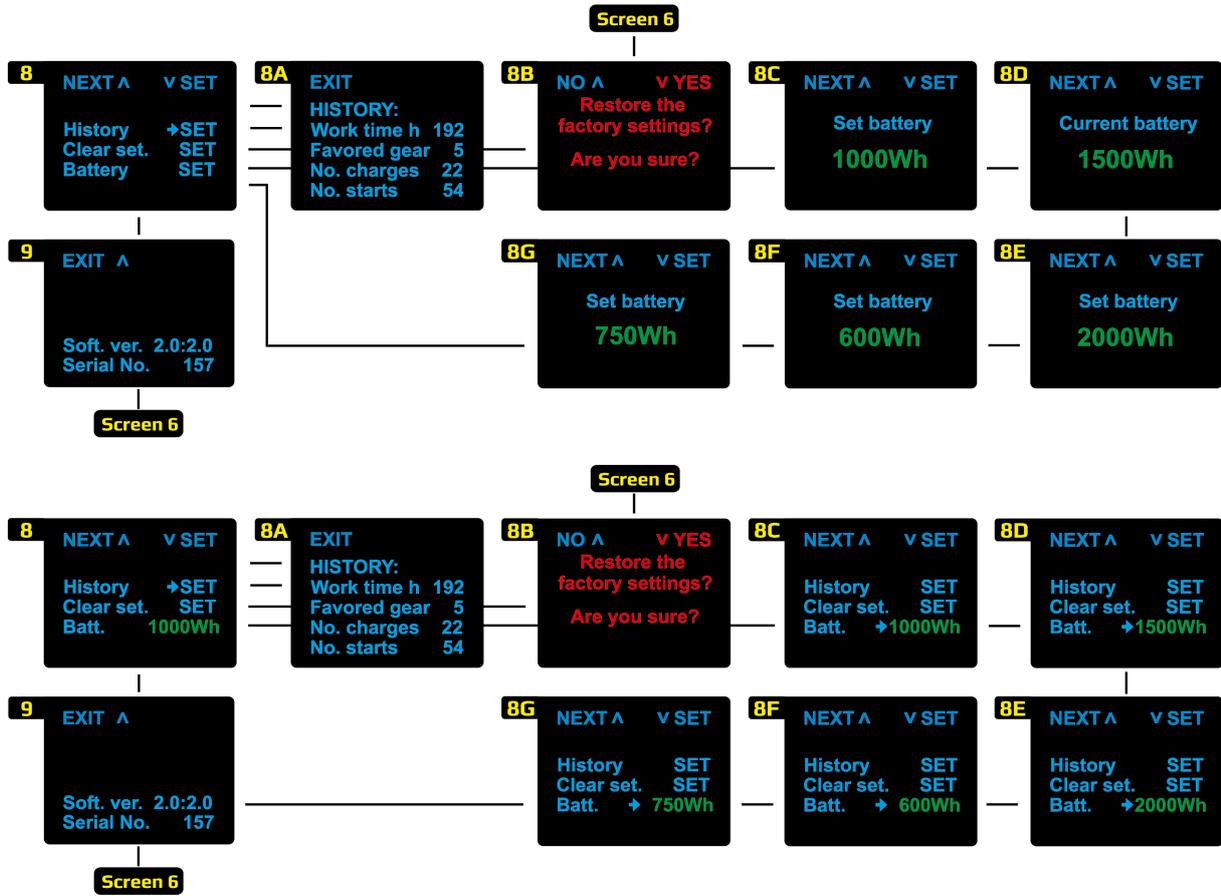
The scooter parameters can be configured individually

7.1 CONFIGURATION OPTIONS – OVERVIEW PART 1



Pressing **Next** in Screen 7, will take you to screen 8 (see next page).

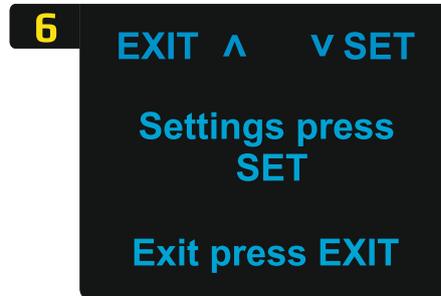
7.2 CONFIGURATION OPTIONS – OVERVIEW PART 2



7.3 CONFIGURING THE SCOOTER – STEP BY STEP

7.3.1 ENTERING THE CONFIGURATION MODE

To begin configuration, hold both buttons on the left and right steering handles and turn on the scooter using the main switch. The OLED display will show screen 6 “Settings”



7.3.1.1 INFORMATION AND FUNCTIONS ON SCREEN 6

EXIT	Select to exit the configuration and go back to screen 2A or 2B (see page 33).
SET	Select to go to configuration details on screen 7.

7.3.2 SELECTING THE CONFIGURATION OPTIONS



7.3.2.1 INFORMATION AND FUNCTIONS ON SCREEN 7

NEXT	Move to the next configuration option listed on screen. Three-time selection will take the user to the screen 8 (see page 56).
SET	Selecting from among those listed on the screen. Confirming the choice.
Max power	Maximal power – entering mode for setting maximum scooter motor power.
Mode	Selecting the engine operation mode.
Dynamics	Entering the mode enabling setting gear dynamics.
Security	Entering the mode enabling setting security functions.

7.3.3 SETTING THE MAXIMUM SCOOTER POWER



7.3.3.1 INFORMATION AND FUNCTIONS ON SCREEN 7A

SET	The user can choose from 60 to 100% of maximum power of the scooter. Each button press increases the scooter power by 10%. After reaching 100% the next press will return to the level of 60%.
EXIT	Pressing the button returns to screen 7 (see page 49).

Note



Reducing the maximum power of the scooter increases its range and is recommended especially for recreational use during training or immediately after as well as by persons with little experience.

7.3.4 SELECTING THE ENGINE OPERATION MODE



7.3.4.1 INFORMATION AND FUNCTIONS ON SCREEN 7B1, 7B2

7B 1-2	EXIT	Confirming the selection to return to screen 6.
7B 1-2	SET	Selecting the appropriate engine operation characteristics.
7B1	Constant RPM	This is the standard driving mode (known from “model 2017”). The acceleration characteristics correspond to the former setting “fast”. This mode will provide a smooth starting ramp, gradually accelerating the diver to the desired speed. This mode provides RPM control, meaning that the propeller behavior is identical above and below the surface. The bigger the load (more equipment, multiple divers on one scooter), the more power will be directed to the engine, in order to maintain the selected RPM level.
7B2	Constant torque	This is a new driving mode, designed for professional users requiring the quickest possible DPV acceleration. This mode provides torque control, meaning that the engine torque will remain constant – independent of the load on the DPV. The effects of this mode can only be experienced below the surface, when the propeller moves water instead of air and the scooter pulls a load.

Caution +++ Caution +++ Caution



Please note that above the surface, the DPV will accelerate to maximum RPM, since there is no considerable load. This will happen even in lower gears.

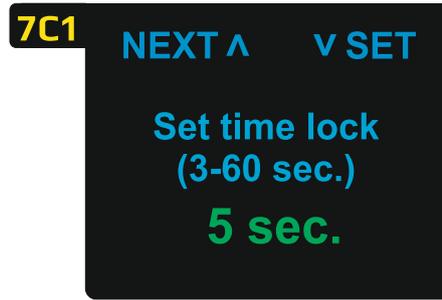
It is therefore recommended to use this mode only in the water.

Note



This is a comfort setting to adapt the scooter’s behavior to your personal preferences and also a practical feature for students.

7.3.5 SETTING THE SECURITY OPTIONS – TIME LOCK



7.3.5.1 INFORMATION AND FUNCTIONS ON SCREEN 7C1

7C1	Set time lock (3-60 sec)	Setting the time after which the release of the handle will automatically block the operation of the scooter in the form of changing to gear [0] and switching to STANDBY mode (possible range: 3-60 seconds)
7C1	NEXT	Go to screen 7D1 (see page 53).
7C1	SET	Setting the time parameter, each pressing increases the time by 1 sec., after reaching the 60 sec. limit the next press will return the user to 3 sec. limit

Caution +++ Caution +++ Caution



For safety reasons, it is recommended to set the shortest time for this function!

7.3.6 SETTING THE SECURITY OPTIONS – ONE-HANDED / TWO-HANDED STEERING



7.3.6.1 INFORMATION AND FUNCTIONS ON SCREEN 7D1, 7D2, 7D3

7D1	Two handed steering YES	Confirmation of two-hand control function (Two handed steering, see page 35)
7D1	NEXT	Confirmation of two-hand control function (Two handed steering) and move to the next settings screen
7D1	SET	Move to the screen 7D2
7D2	Two handed steering NO Not recommended!	Possibility to change the functions of two-hand control (One handed steering)
7D2	NEXT	Confirming the two-handed steering function and go to the next settings screen
7D2	SET	The first confirmation of the desire to turn on the control mode with one hand and go to the 7D3 screen
7D3	I confirm one handed steering	Second confirmation of the desire to turn on the control mode with one hand
7D3	NO	Maintain the two-handed steering function and go to the next settings screen
7D3	YES	Confirmation of the desire to turn on the control mode with one hand and go to the next settings screen

Caution +++ Caution +++ Caution



For safety reasons, it is recommended to use two-handed steering!

7.3.7 SETTING THE SECURITY OPTIONS – REVERSE UNLOCK



7.3.7.1 INFORMATION AND FUNCTIONS ON SCREEN 7E1, 7E2

7E1, 7E2	Reverse unlock	Function enabling reverse gear [R] (see page 15)
7E1, 7E2	NEXT	Go to the screen 7F1.
7E1, 7E2	SET	Turning (ON) or deactivating (OFF) reverse gear [R]

Note



Activating the reverse gear [R] is not recommended for beginners and training courses.

7.3.8 SETTING THE SECURITY OPTIONS – DIRECT START



7.3.8.1 INFORMATION AND FUNCTIONS ON SCREEN 7F1, 7F2

7F1	Direct start	The function enables quick start of the scooter without the BLOCKED function - a mode in which it is not possible to start the engine with the buttons on the control handles and it is not possible to change gears. The BLOCKED function is indicated on screen 3 with a padlock symbol.
7F1, 7F2	NEXT	Go to screen 7G1 (see page 55).
7F1, 7F2	SET	Confirmation of the DIRECT START function by selecting YES or rejecting it by selecting NO

Note



Activating the **DIRECT START** function is not recommended for beginners and training courses.

Use this function advisedly, when your planned dive includes additional equipment (e.g. stage tanks), long descents/ascents, decompression, entanglement risks and overhead environments.

7.3.9 SETTING THE SECURITY OPTIONS – FAST UNLOCK



7.3.9.1 INFORMATION AND FUNCTIONS ON SCREEN 7G1, 7G2

7G1, 7G2	Fast unlock (double tap)	The function enables to switch off the STANDBY function quickly - automatic blockage of scooter operation (zeroing of the gear)
7G1, 7G2	EXIT	Go to screen 6 Settings (see page 49).
7G1, 7G2	SET	Confirmation of the "Fast unlock" function by selecting YES or rejecting it by selecting NO

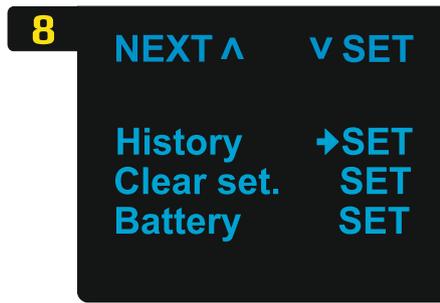
Note



Activating the **FAST UNLOCK** function is not recommended for beginners and training courses.

Use this function advisedly, when your planned dive includes additional equipment (e.g. stage tanks), long descents/ascents, decompression, entanglement risks and overhead environments.

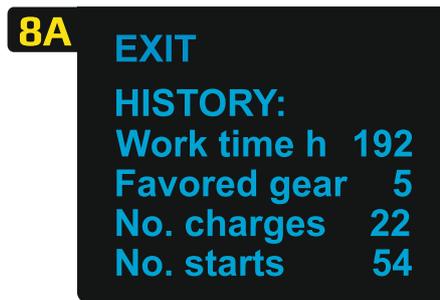
7.3.10 SETTING / READING THE REMAINING PARAMETERS



7.3.10.1 INFORMATION AND FUNCTIONS ON SCREEN 8

8	NEXT	Parameter selection from those listed on screen
8	SET	Selection confirmation

7.3.11 READING THE SCOOTER'S HISTORY DATA



7.3.11.1 INFORMATION AND FUNCTIONS ON SCREEN 8A

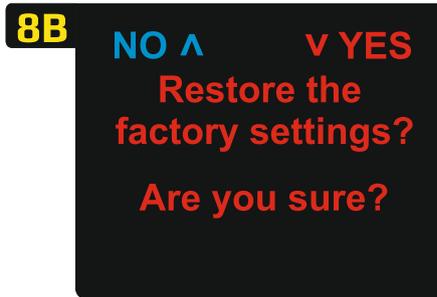
8A	EXIT	Return to screen 8.
8A	HISTORY	<p>List of data recorded by scooter:</p> <ul style="list-style-type: none"> • Work time - the number of hours of scooter operation • Favored gear - the most commonly used gear • No. charges - the number of charges of the battery • No. starts - the number of starts of the scooter (with the main switch) followed by a motor operation lasting more than one minute

Note



Please note, that the history data will not be erased, when the scooter is re-set to the factory settings.

7.3.12 RESTORING THE FACTORY SETTINGS



7.3.12.1 INFORMATION AND FUNCTIONS ON SCREEN 8B

8B	RESTORE THE FACTORY SETTINGS?	<p>The option to restore the factory settings, including:</p> <ul style="list-style-type: none"> • 60% of maximum power, • Two handed steering, • 5-second auto-block of the scooter (within Time lock function)
8B	YES	Confirmation of restoring factory settings. Return to screen 6 (see page 49).
8B	No	Scooter settings remain as is. Return to screen 6 (see page 49).

7.3.13 SETTING THE INSTALLED BATTERY

The modular construction of Seacraft DPVs allows for a variety of different batteries (Ni-Mh or Li-Ion) to be assembled into the same scooter.

Currently, available capacities are:

For Future series:

- 750Wh Li-Ion
- 1000Wh Li-Ion

For Ghost series:

- 600Wh NiMh, for special applications
- 1500Wh Li-Ion
- 2000Wh Li-Ion

In order to have battery % monitoring, and estimated remaining runtime, installed battery need to be set correctly.

Note



Should you remain unclear as to what battery is installed in the scooter, open it and look for the information printed on the battery.

7.3.13.1 INFORMATION AND FUNCTIONS ON SCREEN 8C – 8G

NEXT	Go to screen 9 (see page 55).
SET	Choosing the correct battery installed in the scooter

7.3.14 READING SOFTWARE VERSION AND SERIAL NUMBER



7.3.14.1 INFORMATION AND FUNCTIONS ON SCREEN 8C

EXIT	Go to screen 6 (see page 49).
Soft. Ver.	Software version number
Serial no	Serial number of the device

7.3.15 EXITING THE CONFIGURATION OPTIONS

To exit the configuration menu, after completing all the settings and their verification, use one of two options:

- Turn off the scooter using the main switch.
- On screen 6 „Settings" press the EXIT button.

8 SUMMARY OF FEATURES & CONFIGURATION OPTIONS

Screen 2A / 2B	
Current settings	Presents current DPV configuration
Max power	Maximum power of the scooter motor set by the user (possible range: 60-100%).
Mode	Chosen operation mode (Constant RPM / Constant Torque)
Time lock	Time set by user, after which the release of the handle will automatically block scooter operation in the form of gear changing to "zero" and a transition to STANDBY (possible range: 3-60 seconds).
One-handed / Two-handed	The control mode of the scooter set by the user, taking into account using one or two hands.
Screen 6	
EXIT	Exit / navigate to the following configuration options listed on the screen.
SET	Selecting from the options listed on the screen / accepting the selection / increasing the value of the parameter.
Settings press SET	Pressing SET navigates to configuration settings
Exit press EXIT	Pressing EXIT exits configuration settings.
Screen 7	
Max power	Maximum power – enter mode for setting maximum scooter motor power.
Mode	Enter selection of operation mode.
Security	Enter mode for setting security functions.

Screen 7A	
SET max power (60-100%)	Setting maximum power of the DPV.
Screen 7B1	
Set Mode Constant RPM	Setting standard mode, where the scooter keeps the engine RPM constant.
Screen 7B2	
Set Mode Constant Torque	Setting the operation mode, in which the scooter keeps the engine torque constant, regardless of the load on the scooter.
Screen 7C1	
Set time lock (3-60 sec)	Setting the time after which the release of the handle will automatically block scooter operation in the form of gear changing to "zero" and a transition to STANDBY (possible range: 3-60 seconds).
Screen 7D1	
Two handed steering YES Recommended!	Confirmation of Two handed steering function.
Screen 7D2	
Two handed steering NO, Not recommended!	Possibility to change the two handed steering function.
Screen 7D3	
I confirm one handed steering	Second confirmation of the desire to turn on the control mode with one hand.
Screen 7E1	
Reverse unlock NO	Function enabling turning off reverse gear [R]
Screen 7E2	
Reverse unlock YES	The function enabling the engaging of reverse gear [R]
Screen 7F1	
Direct start NO	The function allows the user to quickly turn on the scooter bypassing the

	BLOCKED function. Rejection of the "Direct start" is possible by selecting NO
Screen 7F2	
Direct start YES	Confirmation of the "Direct start" function by selecting YES.
Screen 7G1	
Fast unlock NO	Rejection of the "Fast unlock" function by selecting NO.
Screen 7G2	
Fast unlock YES	Confirmation of the "Fast unlock" function by selecting YES. The "Fast unlock" function, i.e. a quick double tap, deactivates the STANDBY function.
Screen 8	
History, Clear. Set Batt.	Screen enabling selection of the information function.
Screen 8A	
HISTORY	List of data recorded by scooter computer memory.
Work time	The number of hours of operation.
Favored gear	The most commonly used gear.
No. Charges	The number of charges of the battery.
No. starts	The number of starts of the scooter (using the main switch) followed by a motor operation lasting more than one minute.
Screen 8B	
RESTORE THE FACTORY SETTINGS?	<p>The option to restore the factory settings, including:</p> <ul style="list-style-type: none"> • 60% of maximum power • Two-handed steering • 5-second auto-block of the scooter
Screen 8C-8G	
BATT.	Setting the capacity of the installed battery.

Screen 9	
Soft. ver.	The software version number.
Serial no.	The scooter serial number.
Screen 10	
Battery charging	Battery is charging.

9 SYSTEM ERROR MESSAGES

COMMUNICATION INDICATION	ERROR DESCRIPTION	DESCRIPTION OF THE USER'S REACTION
OV Err	Voltage supply is too high	Charger failure or improper battery connected. Turn off the scooter, unplug the battery, report the problem to service point.
UV Err	Voltage supply is too low	Charger failure or improper battery connected. Turn off the scooter, unplug the battery, report the problem to service point.
OT Err	Controller temperature is too high	Reduce the swimming speed by two gears. Reduce the load on the scooter.
SU Err	Engine blocked during start	Turn off the scooter with the main switch, check if the marine propeller is working properly and if necessary remove the post swirl stator and unblock the marine propeller.
FB Err	Engine startup fault, drive feedback loop malfunction	Turn off the scooter with the main switch, check if the marine propeller is working properly and if necessary remove the post swirl stator and unblock the marine propeller.
OC Err	The permissible motor current has been exceeded	Reduce the swimming speed by two gears. Reduce the load on the scooter.
OH Err	Too high humidity of electronics	Check for any damage to the seals and unsealing of the scooter. Report the problem to the service
TM Err	Internal data transmission error	Turn off the scooter with the main switch and then turn it on after 10 seconds.

Caution +++ Caution +++ Caution



Should an error message be displayed while driving the scooter, the user should immediately return to base by selecting the shortest safe route.

Consider having the scooter serviced by an authorized service point.

After displaying an error message, depending on its cause, further driving may be not possible. After taking appropriate steps, as in description of error code, restarting the unit is required to do a next self-check of the unit, and allow for driving.

10 EXTERNAL COMPONENTS AND ACCESSORIES

The construction of the Seacraft scooter allows the installation of additional external equipment, e.g. navigation device, video camera or flashlights.

For reasons of safety and compatibility, it is recommended to use the scooter accessories offered by the manufacturer of the Seacraft brand.

Caution +++ Caution +++ Caution



Installation of additional equipment on the scooter requires re-balancing and re-trimming of the scooter (see “Balance and Trim of the Scooter” on page 30).

11 MAINTENANCE

Note



This chapter describes how the user can check, prepare and maintain the scooter before and after diving.

It is highly recommended to have the scooter serviced every 12 months by an authorized service center, in order to evaluate the battery condition, to update the scooter software etc.

11.1 SCOOTER PREPARATION FOR THE DIVING SEASON

Before commencing regular use of the scooter you should verify the state of individual structural elements of the device by using the following checklist.

11.1.1.1 ELECTRICAL COMPONENTS

Including:

- Cable and connector
- Plug
- Socket connecting the battery to the scooter electronics

Caution +++ Caution +++ Caution



In case of any damage to insulation, disconnect the connector, thoroughly secure the damage with insulating tape and have the scooter serviced by an authorized service point.

11.1.1.2 BATTERY

If the battery has been disconnected from the scooter, connect it, then recharge. It is recommended that the first use of the battery (after more than six months of inactivity) to perform a full cycle of charging - discharging - charging. This will allow the calibration of the measurement system and to determine the battery condition and charge level. The discharge of the scooter battery should be done whilst operating the scooter in water (see "Battery And Charging System" on page 24). Disconnecting the battery does not lose the saved scooter data.

11.1.1.3 GENERAL STATE OF THE SCOOTER

Check the scooter inside for any foreign bodies, especially mud and sand. If the structural elements of the scooter contain traces of contaminants, e.g. salt, wipe them with a damp, soft cloth, and then wipe dry. Wash structural elements of the scooter using clean, fresh water. Is forbidden to use detergents and solvents.

Check points on the housing of the scooter, which are in direct contact with the cap and housing cover seals (sealing surfaces). Confirm that they are not deformed, damaged or contaminated. For larger dents or damage of any item of the scooter, especially in case of doubt as to the condition of the sealing surfaces, please contact the manufacturer's service.

11.1.1.4 STATE OF SEALS

Check the seals on the cap on the side of the cap nut - 1 pc., the connection of the cap to the cylindrical section - 2 pc., the connection of the body and the pipe housing- 2 pcs., the charging socket - 1 pc. In the event of damage to the seals, including ribbing, excessive hardness or any other doubts about the correctness of their condition, replace them with new ones using the service kit.

Caution +++ Caution +++ Caution



When replacing seals places in which the seals are mounted as well as contact surfaces that overlap seals should be wiped with a damp, soft cloth. After prolonged use, in such places there may be an accumulation of residual silicone grease that make it easier for grains of sand or mud to stick to. The effect of this may be a leak and faster wear the new seals.

Before installing the new seals, surfaces should be clean and dry, and after replacement, contact surfaces and seals should be lightly greased with grease recommended by the manufacturer, which reduces resistance during assembly and disassembly and protects and preserves the seals.

It is recommended to replace the seals at least every 12 months.

The manufacturer chose the optimum size, material and hardness of the seals, so the use of non-original replacement seals may cause equipment damage and voids warranty.

11.1.1.5 THE DRIVE UNIT

In the case of significant damage to the propeller, including its leading edge, install a new one, according to the instructions.

In the case of abrasions on the nozzle or other elements remove the cause or contact the service center.

11.1.1.6 SCOOTER CONTROL AND CORRECT OPERATION OF THE OLED DISPLAY

In accordance with the principles described in this manual carry out a test for proper operation of the scooter out of the water. It is not recommended to test the operation of the scooter out of the water for more than approx. 30 seconds.

In the case of noting uneven motor operation, or loud noises, squeaks or scrapes, the user should dismantle the post swirl stator, take off the rotor with propeller by pulling them back. Motor elements mounted in the housing and on the rotor should be cleaned from sand, mud, and other possible contaminants using clean water and then dry these parts.

The axis of the rotor should be lubricated with grease recommended by the manufacturer. Insert the rotor into the body manually, and then install the post swirl stator.

Test the buttons on the handles, the speed controller, main switch and the correct operation of the OLED display.

Caution +++ Caution +++ Caution



In case of noting any defects or problems with the performance of the Seacraft scooter you should immediately report the problem to an authorized service point.

The manufacturer warns that even minor damage and neglect, e.g. due to impact during transport, storage or use of the scooter, as well as blocking due to mud, sand or careless washing after diving can result in serious malfunction or cause a malfunction during operation in the water.

It is highly recommended to have the scooter serviced every 12 months by an authorized service center, in order to evaluate the battery condition, to update the scooter software etc.

11.2 MAINTENANCE STEPS

11.2.1 MAINTAINING THE SCOOTER AFTER USE

After each use the user should:

1. Wash the scooter carefully in clean, fresh water.
2. Maintain the seals:
 - If the scooter has been disassembled into parts - carry out maintenance in accordance with chapter "11.1 - Scooter Preparation for the Diving Season" on page 66).
 - If the scooter has not been disassembled into parts - maintenance is only required in terms of the charging socket.

Every few dives (especially conducted in difficult conditions), it is recommended to check the condition of the inside of the scooter. It should then be verified if there has been no moisture due to e.g. the condensation of moisture when using the scooter in variable temperature conditions.

11.2.1.1 PERIODIC MAINTENANCE

In the case of using the scooter in particularly difficult conditions, which may lead to contamination of control elements and the propulsion system of the scooter, it is recommended periodically i.e. every few dives to review the general condition of the scooter, seals, the drive unit and control elements similarly to the procedure described in chapter "General state of the scooter" on page 67. Particularly difficult conditions include, among others, diving with a scooter:

- In reservoirs with high silting, salinisation or contamination
- Close to silty, sandy beds, in narrow caves or wrecks

11.2.1.2 MAINTENANCE AT THE END OF THE DIVING SEASON

After the end of the season or when not planning to use the scooter for an extended period of time, in order to avoid defects and premature wear as well as in order to ease the operation for the next season it is recommended to perform the following steps:

1. **Rinse the scooter** several times, very carefully in clean fresh water. Then thoroughly dry external components of the scooter with a dry cloth (body, cap, nozzle and housing cover), and gently blowing with compressed air, remove any remaining water from the control parts and the drive unit.
2. **Disassemble the scooter into parts** separating the housing cover with the cup from the body and clean up and possibly dry the interior. Clean the seals and sealing areas.
3. **Secure the battery** - using the guidelines in chapter "5.4 - Battery And Charging System" on page 24 of this manual you should charge the battery to approx. 50% capacity, then depending on the possibilities, disassemble it, or leave it in the scooter unbuckling the power connector. Information about the optimum use, including battery storage is contained in this manual.
4. **Inspect the drive unit** – after dismantling the post swirl stator take off the rotor with propeller pulling them back. Motor elements mounted in the housing, including the rotor bearing and the rotor itself should be cleaned from sand, mud, and other possible contaminants using clean water and then dried. Insert the rotor into the body manually, and then install the post swirl stator.

In case of detection of any faults mentioned in this manual or other problems, the user should repair them using the instructions contained in this manual or consult the problem with the service center.

Caution +++ Caution +++ Caution



The durability and reliability of the scooter determined not only by skilled operation, but proper, regular maintenance of the device in accordance with the principles described in this manual.

It is highly recommended to have the scooter serviced every 12 months by an authorized service center, in order to evaluate the battery condition, to update the scooter software etc.

12 ASSEMBLING / DISASSEMBLING THE DRIVE UNIT

The power unit of the Seacraft scooter can be easily disassembled. Dismantling of the above -mentioned element should be made if:

- It is necessary to replace the propeller
- Post-season maintenance of the scooter is performed
- In case of unwanted elements entangled in parts of the power unit, e.g. vegetation, rope or vegetation.

12.1.1 DISASSEMBLING THE POWER UNIT

To disassemble the scooter the user should:

1. Press the lock button located on the inner circumference of the nozzle, then turn the post swirl stator in a clockwise direction and pull back.
2. Remove the rotor and propeller with a turning and pulling back movement.
3. Clean all drive unit components of undesired elements or impurities with a stream of clean, fresh water and then dry.

In the case of damage to the propeller it must be replaced using the following procedure:

- Unscrew the propeller screw, which is attached to the rotor
- Discard the old screw
- Insert the new propeller onto the rotor
- Screw in the propeller with a new screw, and secure it with a soft (!) thread-locking agent

In order to reassemble the drive unit the user should:

- Clean the rotor axis from contamination. Lubricate this element as well as the rotor seat with slide bearings with grease recommended by the manufacturer (refer to Accessories).
- Insert the rotor with a turning movement back into the housing cover.
- Push the post-swirl stator into the places located on the inner circumference of the nozzle, push in the lock button and then turn it counterclockwise to the point of resistance.

Caution +++ Caution +++ Caution



Despite maintaining the highest standards in terms of quality of materials and processes used in production it should be kept in mind that the Seacraft scooter contains elements susceptible to shock and impact. Accordingly, it is forbidden to throw or expose the scooter to mechanical shock.

Elements particularly vulnerable to damage are the display and a drive unit. Dents or other damage to the cylindrical section may cause scooter leakage and pose risk of reducing its resistance to high pressure and its deformation at depths much lower than the rated. Violation of the rules of use of the scooter as described in this manual will result in loss of warranty.

13 TROUBLESHOOTING

No.	Symptoms	Cause of problem	Method of repair
1.	The scooter will not start	Discharged battery.	Charge the battery.
		Disconnected cable between the battery and the drive unit.	Check the cable connection between the battery and the drive unit.
2.	The battery will not charge	2.1 Not connected.	Check the battery fuse, contacts, plug and socket and charger are clean.
		2.2 Too low battery voltage.	Measure the voltage at the terminals of the battery. If it is lower than specified as minimum for the type of battery contact the service center.
		2.3 Damaged battery.	Replace the battery.
3.	The motor does not run or runs unevenly	3.1 The motor is dirty or blocked.	Turn off the scooter, remove the post swirl stator, remove the rotor, remove impurities or cause of blockage in accordance with the instructions contained in the manual.
4.	Water inside the scooter housing	4.1 Damaged seals.	Remove the old seals, clean the seal surroundings and contact areas of the sealed parts, replace with new seals, grease with lubricant recommended by the manufacturer.
		4.2 Deformation of the housing elements.	Replace the deformed housing element.
		4.3 Condensation caused by fluctuations in temperature and humidity.	Take the scooter to a dry place. Disassemble the scooter and dry individual components. Do not use the scooter at low temperatures if it was previously assembled in warm and humid conditions. If this is not possible, disassemble scooter earlier so the moisture can evaporate.
5.	Problems with control elements	5.1 Dirty or blocked control elements.	Rinse the control elements (buttons on the steering handle) thoroughly, wash and wipe with a dry cloth.
6.	The scooter sinks or rises towards the surface	6.1 Incorrect weight and / or poor placement of the ballast.	Improve the selection of the weight and the distribution of the ballast. If you have problems balancing and trimming, it is recommended to use an external ballast (see the Accessories section of this manual).

14 AFTER-SALES SERVICE

Any scooter repairs after the warranty ends are made for a fee. In the case of problems that users are able to correct themselves, the manufacturer provides additional information. Users may contact an authorized service point or the manufacturer of the scooter.

Contact the Seacraft service point at service@seacraft.eu.

15 LIST OF AVAILABLE ADDITIONAL ACCESSORIES

- Aluminum transport case
- Aluminum transport handle or POM
- Battery direct charging connector
- Charger 240W, 400W, 900W
- Electronic Navigation Console ENC2
- Electronic Navigation Console ENC2 with log
- External ballast belt
- Silicone grease with medium viscosity for the seals 14 ml, 50 ml
- Harness for depositing a scooter with a carabiner
- Holder for fixing the POM bracket to fix the navigation console
- Log of the Electronic Navigation Console ENC2
- Professional aluminum harness tensioner - 2 pcs
- Scooter harness with a carabiner and a tensioner
- Scooter internal ballast
- Scooter stand POM
- Service key
- Set of spare parts
- Trim weight 182g
- Trim weight 62g

16 APPENDICES

16.1 DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY

Product model:

SEACRAFT underwater scooter (DPV) with all unique identification numbers.

Name and address of the manufacturer or his authorised representative:

MARINE TECH Spółka Akcyjna [Joint-stock company]
60-523 Poznań, 75 Jana Henryka Dąbrowskiego street / lok.70, Poland

Subject of declaration: SEACRAFT underwater scooter (DPV) with all unique identification numbers.

The subject of the abovementioned declaration is in conformity with the relevant Community harmonisation legislation:

Machinery Directive 2006/42/EC

References to the relevant harmonised standards used, or references to the specifications in relation to which conformity is declared:

PN-EN ISO 12100
PN-EN ISO 13857
PN-EN 349+A1
PN-EN 14118
PN-EN 60204-1

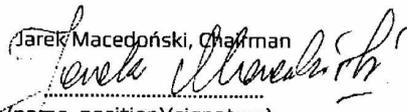
Additional information:

- Any unauthorized modification of the underwater scooter will invalidate this declaration;
- This declaration is not a guarantee of performance characteristics.

Signed for and on behalf of: MARINE TECH Spółka Akcyjna [Joint-stock company]

Poznań, 15.09.2018

.....
(place and date)

Jarek Macedoński, Chairman

.....
(name, position)(signature)

MARINE TECH Spółka Akcyjna
60-523 Poznań
ul. Jana Henryka Dąbrowskiego 75/lok.70
KRS: 0000557411
NIP: 7811910188 REGON: 361492147

16.2 WARRANTY TERMS

Warranty Conditions of the Seacraft scooter

The Warranty Terms define the obligations of the Seacraft scooter manufacturer for Warranty, the temporal and territorial scope of the Warranty, and the Warranty Owner's entitlement.

16.2.1 GLOSSARY

The wording of the Terms of Warranty have the following meaning:

16.2.1.1 WARRANTY CLAIM FORM

The form attached to this Warranty Card and also available from the retailer where the purchase was made is required by the Warranty, including details of the model and serial number of the scooter to which the application relates, and the description and date of defect identification, and a statement of familiarity and acceptance of the warranty terms; For the purpose of the warranty terms, the warranty claim form is also a vulnerability description (Faults with Fault Identification Date) along with the model and serial number of the Scooter to which the application relates, contact details of the applicant, such as: name, surname, address, telephone number, email address, and the applicant's declaration of acquaintance and acceptance of the warranty terms, made by the applicant in a written form other than the warranty claim form;

16.2.1.2 WARRANTY

Rights and obligations of the applicant and the manufacturer regarding liability for the scooter as a result of the warranty conditions;

16.2.1.3 DEFECT

A defect or damage to the Scooter that occurs during the warranty period that results from the discovery of hidden defects in material or workmanship, including due to improper assembly or improper manufacturing technology of the Scooter, resulting from normal use of the Scooter in accordance with the manufacturer's instructions, the service manual;

16.2.1.4 INSTRUCTIONS OF USE

A document specifying the technical and operational conditions of the Scooter and the recommendations for the use and maintenance of the Scooter for proper operation, included with each Scooter.

16.2.1.5 PRODUCER, GUARANTOR

MARINE TECH Spółka Akcyjna, 60-523 Poznań, 75 / 70 Jana Henryka Dąbrowskiego street, KRS: 0000557411, NIP: 7811910188, REGON: 361492147, with a capital of 100 000 PLN fully paid, producing Scooters covered by the warranty and granting the warranty;

16.2.1.6 RETAILER

The person who sold the scooter, whose name, model and serial number are specified in the warranty card;

16.2.1.7 SCOOTER

Dive scooter (DPV) called SEACRAFT, used for diving and moving underwater, manufactured by the manufacturer, covered by the warranty under the terms and conditions set forth in the warranty conditions;

16.2.1.8 WARRANTY CONDITIONS

The document defining the manufacturer's obligations, the type of defect covered by the warranty, the temporal and territorial scope of the warranty, and the warranty owner's rights;

16.2.1.9 APPLICANT, OWNER, BUYER

The person (entity) who acquired the scooter from the producer or retailer in the sale contract or who, after acquiring the scooter from the Producer or retailer, has effectively transferred the ownership of the scooter during the warranty period;

16.2.1.10 WARRANTY CLAIM

Scooter defect report made by the applicant within the framework of the warranty.

16.2.2 DECLARATIONS AND OBLIGATIONS OF THE GUARANTOR

1. The Guarantor shall guarantee the effective operation of the scooter for the period specified in paragraph 4 below. Effective operation of the scooter means that the operation is in accordance with the technical and operating conditions described in the Owner's Manual.
2. Each scooter is subjected to thorough underwater control. Positive test results of waterproofing and performance are the basis for handing over the scooter for sale.
3. The warranty is valid in the territory of the European Union.
4. The warranty is granted to the Buyer and includes:
 - battery for a period of 6 months;
 - other parts of the scooter for a period of 12 months from the date of first sale indicated on the warranty card.
5. The Guarantor shall provide, within the framework of the warranty, free repair or replacement of the scooter free from defects if, as a result of the examination of the Warranty Inquiry, the manufacturer's defect has been found and the other conditions of warranty implementation specified in these warranty conditions are fulfilled. The choice between repairing and replacing a Scooter belongs to the manufacturer.
6. One of the conditions for repairing or replacing a Scooter on a fault-free basis is that the part affected by the fault is the original part, and if it was repaired or replaced, it was in accordance with the Warranty Terms.
7. The Guarantor is not bound by any changes made without their consent in the contents of the Warranty Card, in particular in the terms of the warranty. This does not only apply to the retailer completing the relevant data for the Warranty Card Fields.

16.2.3 EXCLUSIONS OF WARRANTY

1. The manufacturer is responsible only for faults resulting from reasons caused by the manufacturer.
2. The warranty does not cover damage to the Scooter after its sale, for reasons other than those referred to in point 1 above and in particular:
 - a) damage caused by incorrect, not in accordance with the manufacturer's instructions, the Service Manual or the intended use of the Scooter, use of the Scooter;
 - b) mechanical, thermal or chemical damage caused by incorrect network voltage or other, caused by external causes;
 - c) damage caused by lack of proper operation, maintenance, use and maintenance of the Scooter, in particular due to lack of rinsing the Scooter after diving, in fresh, clean water, and drying;
 - d) damage resulting from the lack of appropriate, periodic maintenance of the Scooter, consisting of periodic maintenance specified in the Service Manual;
 - e) damage caused by repairs and / or modifications to the Scooter by third parties / persons who are not the manufacturer's service technicians or are using non-original or regenerated parts and materials;
 - f) Scratches and damage to the Scooter's casing due to its normal use;
 - g) damage caused by transport, improper storage, being dropped, fire or accident;
3. The warranty does not cover components and materials subject to wear and tear.
4. The warranty does not cover the adjustment, balancing, trimming, lubrication, cleaning of the scooter, as well as changes in the parameters of the scooter, such as the pull, speed, working time, in relation to technical specifications, resulting from normal varied operations.

16.2.4 MAKING THE WARRANTY CLAIM

1. The entity authorized to make a warranty claim is the owner of the scooter, in possession of a Warranty Card.
2. The basis for making a warranty claim is:
 - Sending the scooter with a properly completed Warranty Card and a completed Warranty Claim Form (Or written information about the defect, together with the Applicant's contact information, in accordance with the provisions of paragraph 3 below) at the expense of the Guarantor, to the address of the nearest service center to the scooter at the time of application, and if such a service center is not present locally , or is closed, to the nearest available service center to the scooter at the time of application. The current list of service points can be found on the manufacturer's website.
 - The delivery of the scooter to the service center should be by courier service, by prior arrangement with the service center. The scooter, prior to dispatch, should be reasonably secured against damage sustained in transport.

3. By sending a scooter to the address referred to in sec. 2, the applicant is obliged to fill in the warranty claim form and send information about the fault (description of defect and date of defect identification) together with the model and serial number of the Scooter to which the application relates, the contact details of the applicant, such as: name, address, telephone number, email address and a declaration by the applicant in written form other than the warranty application form.

16.2.5 INVESTIGATING THE WARRANTY CLAIM

1. The Manufacturer shall inform the Applicant of receipt of the scooter by e-mail sent to the address indicated on the Warranty Claim Form and then pre-verify that the Applicant is entitled to the warranty. If the Applicant is not entitled to the rights under the warranty i.e. in particular, the Warranty Period has expired, the Warranty has expired for other reasons as set forth in the Warranty Conditions, the Warranty Card is not enclosed or the Warranty Card is not fulfilled. The Manufacturer shall inform the Applicant by e-mail sent to the address indicated on the Warranty Claim Form. If the Applicant submits a scooter without submitting a Warranty Claim Form at the same time, or submits an unfilled or incomplete Warranty Claim Form, or fails to identify the Applicant or Reported defect, the Guarantor will disregard the case without any further action.
2. If the Applicant is entitled to the warranty, the manufacturer shall undertake diagnostic tests to verify the existence of the reported defect. The Manufacturer will inform the Applicant about the result of the verification by e-mail sent to the address indicated on the Warranty Claim Form.
3. If a defect is found, if the defect is covered by the Warranty, in particular, there is no warranty exclusion under point III of the Warranty conditions the manufacturer is responsible for repairing defects / exchanging damaged Scooters for a model free of defects within 30 days of the date of delivery of the Scooter to the address indicated in p. IV.2 of the Warranty conditions.
4. If it is determined that a defect is not covered by the warranty, the Manufacturer, via email sent to the address indicated on the Warranty Claim Form, will provide the Applicant with a description of the defect, including any possible post-warranty repair of the defect at the expense of the Applicant and the anticipated repair costs. Upon receipt of notice that the reported defect is not subject to repair under the warranty, the applicant may, within 7 days of receipt of the message, make an out-of-warranty repair at its own expense. If the Applicant fails to do so within the prescribed time limit, and if the result of the investigation indicates that there are no defects in the Scooter, or the Applicant is not entitled to the rights covered by the Warranty, the Manufacturer will return the Scooter together with the Warranty Card to the Applicant
5. Upon completion of repair or replacement of the Scooter as well as in the event of a returning the Scooter without any repairs, the Manufacturer informs the Applicant of the dispatch by e-mail sent to the address indicated on the Warranty Claim Form. The manufacturer may provide the Applicant's contact details as indicated on the Warranty Claim Form to the person/entity ordered to return the Scooter, to enable this service

16.2.6 Cost

1. The cost of sending a scooter to the address indicated in p. IV.2 and the cost of sending the scooter to the applicant (to the address indicated on the Warranty claim Form) is payable by the manufacturer.
2. In the case of unjustified warranty claim, (Applicants are not entitled to the Warranty, the defect is not covered under the Warranty or the existence of a defect is not confirmed as a result of technical research of the scooter) the manufacturer may require the applicant to reimburse costs for diagnostic research testing and transportation of the Scooter.

16.2.7 WARRANTY VALIDATION

The warranty expires in case of:

- verification by the Guarantor of alterations, interventions, modifications or structural modifications to the Scooter made by unauthorized persons / entities, i.e. not being service technicians of the Manufacturer,
- verification by the Guarantor of interference inside the Scooter by unauthorized persons / entities, i.e. not being service technicians of the Manufacturer,
- the Guarantor being prevented from performing the obligations set out in the warranty by failing to deliver the Scooter to the address indicated in Sec. IV.2 of the Warranty Conditions, in spite of sending the warranty Claim Form and/or the Warranty Card to the address
- verification by the Guarantor of damage to the Scooter excluded from the scope of the warranty, referred to in point. III.2. a), b), c), d), e), f) and g) of the Warranty conditions.

16.2.8 FINAL PROVISIONS

The warranty does not exclude, limit or prejudice the Buyer's rights under the warranty provisions for defects of the item sold.

If, in the country of purchase of the product, the consumer is protected by consumer protection laws, the rights resulting from these Terms of Use are additional to any rights and remedies available in the light of such consumer protection laws. If any provision is found to be unlawful or unenforceable, it will be excluded from this warranty without prejudice to the legality or enforceability of the remaining provisions.

16.2.9 DECLARATON ON PROTECTION OF PRIVACY BY MANUFACTURER

Pursuant to the Regulation of the European Parliament and the Council (EU) 2016/679 of 27/04/2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and the repeal of Directive 95/46/EC (general regulation on data protection) Manufacturer and Distributors make every effort to ensure the security and protection of your personal data during processing.

16.2.9.1 GENERAL INFORMATION

The administrators of your personal data are:

Manufacturer: MARINE TECH Spółka Akcyjna, 60-523 Poznań, 75 / 70 Jana Henryka Dąbrowskiego street, KRS: 0000557411, NIP: 7811910188, REGON: 361492147

Distributor:

(enter the Distributor's data)

In case of any questions regarding the processing of your data or the implementation of your rights related to it, please contact the Data Protection Officer appointed by the Manufacturer. All the inquiries should be sent to the following e-mail address:

office@seacraft.eu

16.2.9.2 SCOPE OF PROCESSED PERSONAL DATA

Administrators obtain and process personal data of individuals to the extent necessary to achieve the purpose for which they were obtained. Personal data may contain, among others, the following data: name and surname, contact details, e-mail addresses, telephone numbers, information about visits to the website, information about scooters purchased and other goods and services obtained.

16.2.9.3 THE PURPOSES OF DATA PROCESSING

- For the execution of REPAIR SERVICE ORDER (including WARRANTY AND AFTER WARRANTY SERVICES):
performance of the contract or taking action prior to its conclusion (Article 6 (1) (b) of the GDPR) to provide maintenance/repair services during or after the manufacturer's warranty or as an additional package during the manufacturer's warranty period;
- consent (Article 6 (1) (a) of the GDPR), for the purpose of marketing of the products and services of Administrators;
- legally justified interest of the Administrator (Article 6 (1) (f) of the GDPR) for analytical and profiling purposes, where it is justified interest to conduct marketing of own products and services. As part of profiling, the data will be used in the process of automated decision making. We strive to constantly improve our services, so we want to provide only those kinds of information which might be potentially interesting for you - personalized proposals.

Providing the data is voluntary, but necessary to consider the complaint and provide maintenance /repair service. Your data will be processed during processing of complaints and the provision of maintenance services (duration of the contract). The data will be stored until the time of prescription of possible claims or the expiry of the obligation to archive data resulting from legal provisions. In the event of processing personal data based on your consent, your data will be stored until the consent is withdrawn.

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This scooter was brought to you by

Dealer stamp