



Original Battery Operating Manual

The manufacturer reserves the right to change the technical specifications of the equipment described in this manual.

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

The manufacturer shall not be held responsible for accidents and damage caused by misuse of the product, nor by its use in a manner contrary to or deviating from the rules set forth in this manual.

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INTRODUCTION

Read the user manual before operating the battery.
Follow all guidelines, recommendations, dos and don'ts.
Safety guidelines apply to all types of batteries.

If you have any questions, please contact:
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This manual uses three types of markings, which have the following meanings:



WARNING

Indicates a procedure or situation that, if disregarded, could lead to equipment damage or a serious accident. It can also indicate incorrect and dangerous practices.



DANGER

Indicates a dangerous situation that, if not resolved, will inevitably lead to a serious accident, including the risk of death or disability.



CAUTION

Indicates a procedure or information that is important for the user

PURPOSE

Batteries described in this manual are intended for use exclusively in SEACRAFT underwater scooters. Section 2 describes battery models along with their parameters and purpose. Use battery models suitable for underwater scooter models, as per the table in Section 2. Charge batteries using the correct charger type as indicated in the same table.

COMPLIANCE WITH LEGAL REQUIREMENTS

The manufacturer declares that the product meets safety requirements specified in the following European Union directives:

- REGULATION (EU) 2023/1542 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 July 2023 on batteries and waste batteries
- RoHS Directive 2011/65/EU as amended by 2018/736 and 2021/647

And regulations resulting from harmonized standards and other technical standards.

MARKINGS

The following warning and information markings shall be used on the housing of a single battery segment and on the housings that constitute a uniform battery pack:



The CE marking – Conformité Européenne – signifies the manufacturer's declaration that the product is compliant with the essential requirements of the applicable directives and regulations.



The battery has been tested for compliance with the UN 38.3 transportation standard. Due to its capacity of less than 100Wh, the battery can be transported by air in carry-on baggage.



At the end of its service life, the product must not be disposed of together with other household waste.
It should be taken to a lithium-ion battery collection point.



Li-ion

Li-ion batteries must be disposed of in compliance with all applicable local and national regulations.
If not properly disposed of, they can cause danger to human health or the environment.



Air transport restrictions.



Important information!
The battery must not come into direct contact with water, moisture, or other liquids.
Read the manual before use! See the manual for information on use!



Do not overheat!

1.1 SAFETY OF USE



Lithium-ion batteries are among the most efficient types of batteries available on the market. This carries serious risks – the amount of energy stored in the batteries is sufficient to cause a fire, explosion, very high temperatures and other life and safety-threatening situations in the case of damage or misuse. It is imperative that the user follow these instructions for use and comply with the recommendations listed below.



Safety, ease of use, and the ability to transport selected models by plane were prioritized when designing the battery. However, improper use can lead to serious injury, accidents, disasters, and death, so always follow all of the following guidelines:

- do not use batteries for purposes other than those specified in this manual;
- do not use batteries in violation of the rules set forth in this manual;
- do not use and do not transport batteries that show signs of mechanical damage;
- prohibition of using and transporting batteries from scooters that have been flooded;
- do not placed in checked air baggage; 97Wh batteries may be transported conditionally only in hand luggage in manufacturer-dedicated packaging; batteries must be secured with the caps supplied with the product;
- packaging; protect batteries with caps supplied with the product.;
- only charge batteries using the original charger supplied by the manufacturer, in a carefully selected location, so that in the event of a malfunction or fire, there is no danger of the fire spreading, or danger to people;
- do not store batteries in areas exposed to direct sunlight, in closed and unventilated spaces (such as vehicles), or in the vicinity of heating equipment;
- do not allow direct contact of the battery with water, moisture, or other liquids;
- do not allow the use of batteries by children and teenagers under the age of 18 and do not leave batteries unattended;
- it is prohibited to transport damaged or potentially damaged batteries, they should be treated as hazardous waste and collected by an authorized entity;

1.2 EMERGENCY MANAGEMENT

Retain the battery safety data sheet provided with the product. Be familiar with its contents and ensure quick access to the document.

MODELS AND PARAMETERS

2.1 MODELS AND TECHNICAL PARAMETERS

Product name	Model	Total capacity (Wh)	Category in accordance with Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023	Voltage (V)			Length (mm)	Weight (kg)	Charging current (A)	Charger type	Intended purpose
				min.	max.	rated					
Battery 97	70219031	97,2	Portable	25,2	37,8	32,4	250	0,54	≤1,5	130W	Seacraft GO!
										240W, 400W	Seacraft Air-Travel
Battery 1000	702090902	987	Industrial <2000Wh	25,2	37,8	32,4	290	5,25	≤13,5	240W, 400W	Future 1000
Battery 1500	705091602	1629	Industrial <2000Wh	25,2	37,8	32,4	290	9,44	≤24	400W, 900W	Ghost 1500
Battery 2000	705091902	1965	Industrial <2000Wh	25,2	37,8	32,4	290	10,63	≤28,5	400W, 900W	Ghost 2000

NOTE:

- the length of the batteries is given including the ballast mounting elements (pins), not including the flexible cables;
- the weight of the batteries is given without added ballast (ballast mounting elements);

2.2 OTHER PARAMETERS

STORAGE TEMPERATURE

- Recommended storage temperature: +5...+30 °C (+41...+86 °F);
- Recommended ambient operating temperature: -5...+40 °C (+23...+104 °F);
- Short-term exposure (≤ 6 h): -30...+50 °C (-22...+122 °F);
- Required ambient temperature during charging: +10...+40 °C (+50...+104 °F);

CYCLIC DURABILITY

At least 300 full charge cycles without significant capacity reduction.

NOTE:

- Due to the scatter of parameters, the details of the method used and possible changes in measurement conditions (temperature, altitude, ...), the values obtained during random measurement may differ from those given by the manufacturer by a maximum of 5%.

CONSTRUCTION AND OPERATION

3.1 THE 97 MODEL 97 – A SINGLE SEGMENT

The single battery segment is intended only for assembling battery modules for the 600 and 800 models and for installation in the GO scooter!

3.2 CONSTRUCTION OF A SINGLE SEGMENT



- 1. Housing of the segment
- 2. Electrical connector
- 3. Handle for inserting or removing a segment

3.3 BATTERY PACKS 1000, 1500, 2000

These models do not consist of single segments, but are a uniform, non-removable pack that is installed in the scooter as a single component. For guidelines on installation and removal, see user manuals for relevant DPVs.



1000 Wh



1500/2000 Wh

3.4 CHARGING A SINGLE SEGMENT

Single segments can only be charged with a charger with a maximum charging current of 3.5A (130W charger). Using a charger with a higher current than recommended will trigger the overcharging protection.

3.5 SINGLE SEGMENT STATUS CHECK



It is good practice to verify the voltages of individual battery segments each time they are reassembled. Each product containing single 97Wh battery segments as a power source is supplied with a voltage meter that plugs into the segment's electrical connector. Every time before inserting battery segments into the battery pack housing, verify the voltages of all segments – each segment separately – by plugging a voltage meter into the segment's electrical connector, and make sure that the voltage of individual batteries does not differ by more than 0.2V.

If there are differences and a segment needs to be recharged, proceed as described in Section 3.8.

3.6 SECURING A SINGLE SEGMENT



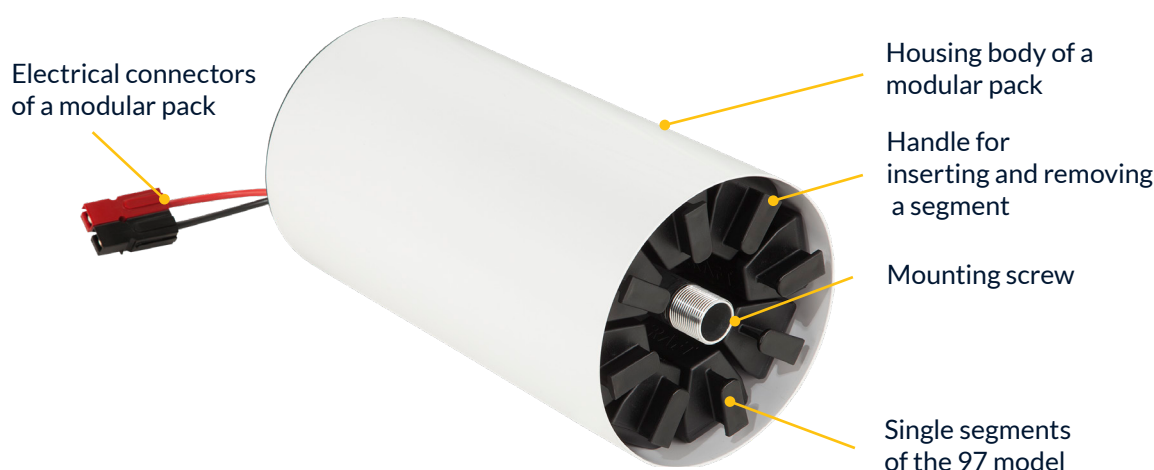
In order to protect the battery connector from potential short-circuiting, after disconnecting the battery, immediately put a protective cap on its connector.

3.7 MODULAR BATTERY PACK 600 AND 800

The 600 and 800 battery pack is formed by a housing in which single segments of the 97-model batteries are placed.

The figure shows the 800 model with eight slots in which the batteries are installed. In order to install and remove batteries, use the handles to clip them in and out. The 600 model has an identical design and six slots filled.

Electrical connectors of the modular pack are used to electrically connect batteries to the scooter. The red connector indicates the positive pole, the black connector is the negative pole.



3.8 CHARGING THE MODULAR PACK

Seacraft diver propulsion vehicles are supplied with ready-to-use, installed batteries. The batteries are charged to about 30% for transportation. Before the first use, batteries should be charged to full capacity. **Before charging, read the charger's user manual and the charging instructions of the relevant product model.**

When charging, the following rules apply:

- batteries consisting of several segments of the 97 Wh battery should be charged while installed in the product, together, using only original Seacraft chargers;

Single 97 Wh segments have a built-in protection circuit, which, when another battery is added to the modular pack, checks the voltage of the next segment it is being connected to. If the voltage difference is less than 0.2V, the electronic circuits allow the two segments to be connected – and any minimal voltage differences equalize themselves (the segment with the higher voltage charges the segment with the lower voltage).

If the voltage difference is greater than 0.2V, it may lead to blocking of the segment with the lower voltage.

Therefore, only connect battery segments with a voltage that differs by a maximum of 0.2V. Check segment status using a voltage meter, as described in Section 3.5.

3.9 INSTALLING A MODULAR PACK IN THE DPV

Carry out the installation as described in the user manual of the DPV models.

All batteries included in the above-mentioned products are matched to each other in terms of parameters and the manufacturing series of cells used. If you have several products containing 97Wh batteries, ensure their traceability – for example, by labeling or writing down serial numbers to avoid confusion.



97Wh batteries used with one scooter should not be mixed ("lent out") to another DPV. Such an exchange – while technically possible – is not recommended for a number of reasons.

If you make a mistake and connect batteries with different voltage levels, the lower-charged segments of the battery will be „blocked“ and thus inactive. Always consult the manufacturer or an authorized service center before any addition of new battery segments or any replacement of damaged segments.

3.10 BEHAVIOR OF BATTERY SEGMENTS DURING DISCHARGE

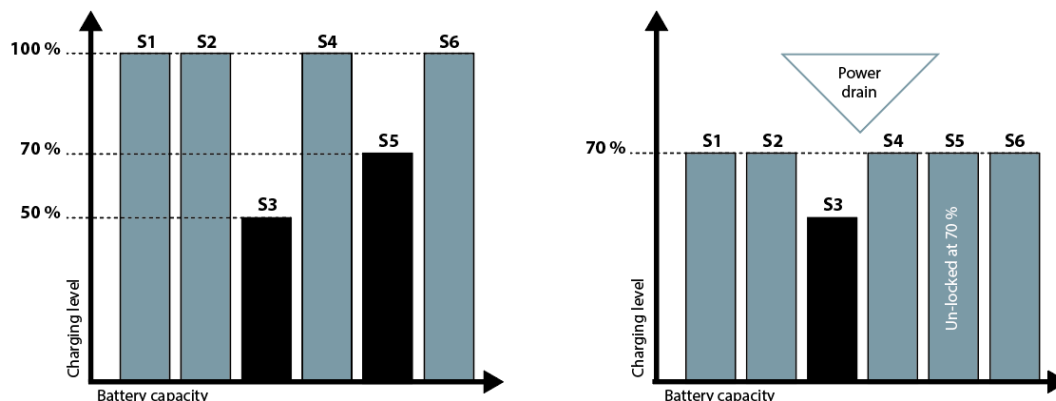
Correctly connected batteries with the same voltage level jointly release energy during operation and discharge evenly.

Connecting batteries with a voltage difference of more than 0.2V usually results in blocking the lower-charged batteries. The lower-charged batteries will remain inactive until their level is equalized while the scooter is in use.

This protects the battery from potentially dangerous phenomena as well as premature wear.

Example:

A user linked 6 segments without verifying their voltages. Segments S1, S2, S4 and S6 are 100% charged, segment S5 is 70% charged and segment S3 is 50% charged, as shown in the following image.



When the DPV is in use, its range and available maximum power will be lower than if the segments were connected using the correct procedure, however, it will still be possible to use the scooter. When discharging the scooter, as the charge level reaches 70%, the S5 segment will be unlocked (as there is no segment with a higher voltage) and will release energy along with the other segments. If the scooter is not discharged to at least 50% and the S3 segment is still blocked, connecting the charger may not charge that segment, and the scooter will only have 5 active segments out of 6.



If trying to use the scooter with only 1-2 active segments, the segments may be completely blocked due to the activation of overcurrent protection. This can manifest itself as a sudden shutdown of the scooter or a sudden change in the charge level on the display. The method of unlocking such a segment is described in Section 3.11. The blocked segment has no voltage at the electrical connector. Diving with blocked battery segments may reduce the operating time of the scooter or will prevent its use.

To unlock locked segments, follow the procedure described in Section 3.11.

3.11 PROCEDURE FOR EQUALIZING VOLTAGE AND UNLOCKING SEGMENTS

If you need to replace or unlock partially inactive battery segments, use a procedure that ensures that the product is fully charged – no matter what the voltage differences are or the number of locked battery segments.

To do this, you should:

- discharge all batteries used in the product to 0%; the best method is to discharge the scooter during use in the water until it automatically shuts down;
- discharged batteries should be fully charged as per the procedures described in the manual;
- if unsure of the discharge status of the product, it is recommended to check the voltage of each battery after a full charge;

3.12 STORAGE

Batteries should be stored inside the product, in a dry place and at the recommended temperature.

STORAGE TEMPERATURE

- Recommended storage temperature: +5...+30 °C (41...86 °F).
- Recommended State of Charge (SOC) for storage: 40–60% of nominal.
- Storage in a discharged state is prohibited.
- Maintenance-free period: up to 6 months in the range of +5...+30 °C and at SOC 40–60%, no SOC control is required.
- Storage > 6 months: Check SOC every 6 months and recharge to 40-60% if necessary. Disconnect the battery from the scooter.
- Effects of deviations: storage outside the recommended temperature range may cause irreversible loss of some capacity and an increase in internal resistance.



Batteries stored at full charge may be irreparably damaged. If a battery discharges completely, charge it to a minimum of 40-60% as soon as possible

For more information on battery storage rules, see the guide:

<https://support.seacraft.eu/knowledge-base/faq-scooters/>

3.13 MAINTENANCE

- keep the product generally clean;
- do not use running water for cleaning;
- clean with a slightly damp cloth;
- do not use detergents or solvents for cleaning;
- dry the product completely after cleaning;

3.14 ENVIRONMENTAL PROTECTION AND DISPOSAL



Used batteries are hazardous waste. Never attempt to disassemble batteries yourself. At the end of their service life, batteries must not be disposed of together with other household waste. They must be taken to a collection point for used electrical and electronic equipment to be disposed of in accordance with applicable regulations.

3.15 WARRANTY AND POST-WARRANTY SERVICE

Each unit of the product comes with a manufacturer's warranty. Detailed provisions are specified in the Warranty Terms and Conditions available at <https://support.seacraft.eu/article-categories/warranty-terms/> . They define the manufacturer's obligations under the quality warranty, the temporal and territorial scope of the warranty, and the owner's rights under the warranty.

Any repairs to the product during the post-warranty period are offered for a fee. The manufacturer provides additional information with regard to problems users are able to resolve themselves. Users can take advantage of authorized service centers or service conducted directly by the scooter manufacturer. Contact Seacraft service at: **service@seacraft.eu**.

4.1 ROAD, WATER AND AIR TRANSPORT

It is recommended to transport lithium-ion batteries with a low charge level – 20-30%. This reduces the amount of energy stored within them and reduces the potential consequences of a failure.

When transported by road or water, batteries should be installed inside the scooter.
The scooter housing is the best possible protection against impact and mechanical damage.
Follow the guidelines provided in the user manual for each model of underwater scooter.



Passenger air transport

Single segments of 97Wh batteries may be carried in carry-on baggage, as recommended by the IATA (International Air Transport Association, www.iata.org)

97Wh batteries have undergone safety tests in accordance with the UN 38.3 transport standard.

The IATA recommendations are not binding rules for airlines, and airlines have the right to determine their own carriage policies.

Check your airline's lithium-ion battery carriage policy before booking a flight.

Before traveling by air:

- make sure you do not exceed the limit on the number of batteries per person; in most cases this is a total of 20 units of less than the 100Wh value.
- remove the batteries, replace the caps provided by the manufacturer, and place the batteries in a dedicated shipping box.
- bring the 97Wh battery description card supplied with the product;
- ensure that the batteries are not subjected to falls, impacts or mechanical damage during transit to the airport;



97 Wh batteries can only be carried in carry-on baggage. They are not allowed in checked baggage.

Upon arrival at the final destination, check the battery voltages and connect as per the instructions.
For current versions of documents, certificates, and advice on air travel with 97Wh batteries, please visit for more details: <https://support.seacraft.eu/knowledge-base/flying/>

4.2 BATTERY DAMAGE

BATTERY DAMAGE RECOGNITION

SYMPTOMS:

- sudden increase in temperature;
- hissing/off-gassing, smoke/flame;
- intense chemical smell;
- deformation („swelling”);

Flooding your scooter with water can potentially damage the battery. The recommended procedure is the same as for a damaged battery.

In justified cases, it is possible to assess the condition of the battery and its possible approval for use by the manufacturer.

The battery can be returned to the manufacturer for evaluation, following the shipping procedures for damaged batteries. Such shipments must be coordinated with the manufacturer in each case.

GENERAL NOTES

Call the fire department or appropriate emergency services and follow their instructions.

Recommended fire extinguishing method: according to SDS:

Extinguishing agent: AVD (aqueous vermiculite dispersion) extinguishers, dry chemical, large amounts of water. AVD and dry chemical extinguishers are intended solely for smothering flames. Stopping the thermal reaction requires prolonged and intensive cooling with water.

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APPENDICES

■ Appendix 1 – Safety Data Sheet

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