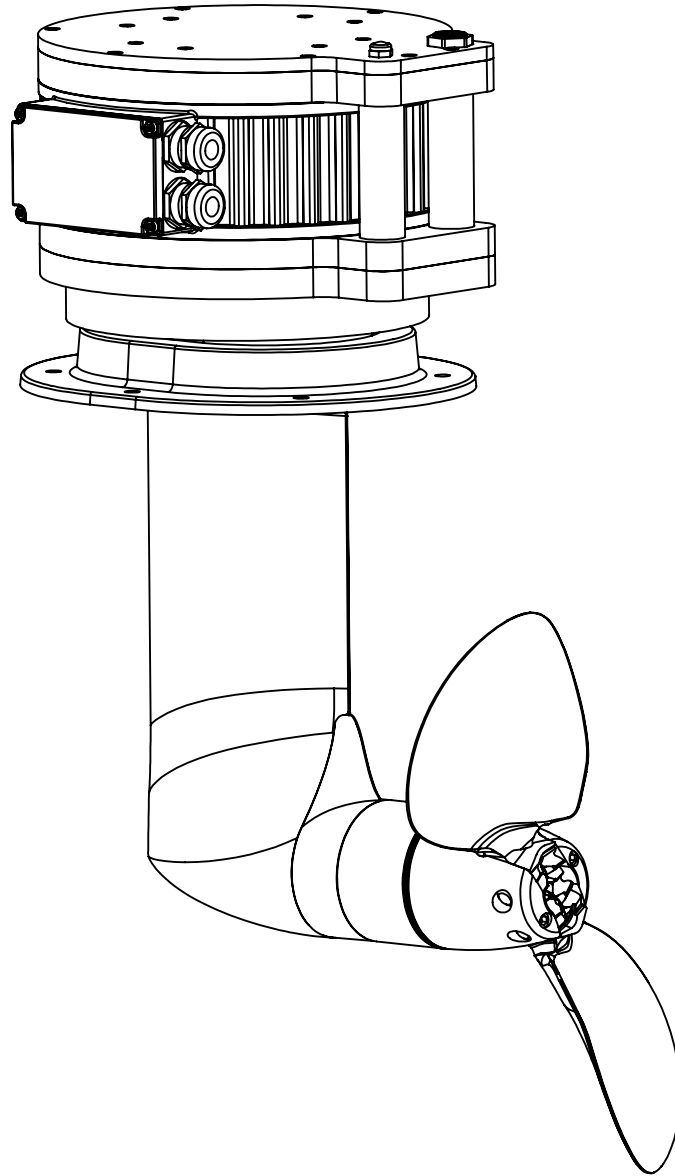


OCEANVOLT



Oceanvolt SD8.6 saildrive

Owner's manual

English (v1.4)

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Introduction

Dear customer,

Thank you for choosing Oceanvolt! Your new saildrive is designed to give you mile after mile of reliable, carefree and silent propulsion. We hope that you will enjoy the pleasant and effortless travel it provides.

We are constantly developing our products and would greatly appreciate your feedback. Please let us know if you have suggestions on how to improve our product:

[http://www.oceanvolt.com/
support@oceanvolt.com](http://www.oceanvolt.com/support@oceanvolt.com)

Bon Voyage,

Janne Kjellman, Managing Director

Richard Lax, Technical Director

Conformity declaration

We, Oceanvolt Ltd, with sole responsibility, declare that Oceanvolt propulsion systems conform with the following standard:

- ISO 10133 Small Craft, Electrical Systems, DC Installations
- EN 55012 (2007) Radiated disturbance emission test
- En 61000-6-2 (2005) Immunity test (electro magnetic field and ESD)

Helsinki, May 2012



Janne Kjellman, Managing Director

1. Important safety information

This manual will tell you how to operate your Oceanvolt saildrive pleasantly and safely. Read the whole manual carefully before you take the system into use. Ignoring these instructions can cause property damage or personal injury.

The instructions are primarily applicable to systems that use Torqeedo Power 26-104 lithium batteries. Your system may use a different set of batteries or be customized in other ways. Please refer to the boat owner's manual that came with your boat for information on how your system differs from standard installations.

The boat owner's manual also includes information on where the main switch and fuse are, and contains descriptions of the electrical system and auxiliary devices such as generators and special battery sets. The manuals that come with your batteries, generators and other auxiliary devices will also contain important information that you must be familiar with before proceeding.

This manual does not teach you how to navigate, anchor, dock, or drive, and neither does any of the other manuals that came with your boat. We urge you to take a boating safety course and learn how to navigate and handle the boat properly.

This manual is based on Oceanvolt's experience and testing. It represents the latest information available at the time of printing, but no guarantee of its accuracy is made or implied, nor responsibility taken for its use. Oceanvolt reserves the right to make changes at any time, without notice, in the equipment, specifications, materials and prices of its products, or to discontinue any product, without obligation to make similar changes to products sold prior to the date of such changes.

Pay special attention to sections marked with the following sign:



This symbol indicates a warning of risk of injury and property damage.



Using the system safely

Read this whole owner's manual and get familiar with the systems controls. Make sure that you know how to stop the motor quickly and how to turn off the main switch. Do not let anyone else operate the system unless they have read these instructions and you know that they are capable of using it safely.

Always make sure that the throttle handle is turned to the "off" position before powering up the system with the main switch.

Switch power on and make sure that the batteries have a sufficient state of charge before casting off moorings from the pier or other attachment point.

Always make sure that there are no people in the water before starting the motor. Stop the motor immediately if someone enters the water near the boat.

Always check that there are no other boats or obstacles in the front or behind of the boat before starting the motor.

Always check that there are no ropes, anchor chains, floating thrash or other items in the water that could get tangled with the propeller before starting the motor.

Check that the rudder is straight, the anchor has been raised, and all ropes have been untied from their attachment points before you start the motor to make sure that the boat does not head off in an unexpected direction.

Never take the boat to shallow waters where there is less than three feet of water under the propeller. The motor and saildrive may break if the propeller cannot rotate freely. The mounting point of the saildrive may get damaged and start leaking if the saildrive or propeller hits the bottom.

Turn the throttle handle slowly and gently to keep the boat under control. Avoid quick turns, fast acceleration and stopping on short notice as other people in the boat could fall and get thrown overboard.

Never leave the system unattended when the motor is running. An accidental nudge or ill-advised push of the throttle handle may jerk the boat and cause injury and damage.

Keep the motor and its surroundings clean and dry. Do not cover the motor. Do not start the motor if there is anything resting on top of it. Make sure that there are no heavy items in the motor compartment, which are not secured. They may damage the motor, cables or the batteries when moving.

If the motor stops while driving, turn the throttle handle to the "off" position, turn the main switch off, and wait ten seconds before turning power on again.

Always turn the main switch off after you have safely fastened the moorings. This makes sure nobody accidentally starts the motor. Switching power off also prevents the otherwise possible slow draining of the batteries, as the display and throttle handle consume some power even when in standby.

Always turn the main switch off before servicing any of the system's components or touching the batteries, cables, the fuse or the motor.

Changing the batteries, battery cables or other high current electrical wires must be done by a certified electrician. The batteries used to run the motor must be undamaged, and they must all be identical in manufacturer, model, make, chemistry, state of charge, and capacity. The cables must be at least 35 mm² in cross-sectional area and there must be a circuit-breaker and a fuse of a maximum of 250 A in the circuit.

When hauling the boat out of the water, make sure that the lines or ropes do not touch the saildrive. Never set the boat down so that the saildrive leans on the ground, the trailer or the supports. Do not turn the boat upside down.

Never run the motor while the boat is out of the water. This may overheat the motor or cause other damage. A running propeller is always dangerous and may cause injury. Keep the main switch turned off while the boat is out of the water.

Check the oil level regularly as instructed in this manual, and follow the servicing timetable.

The motor runs hot and may retain heat for some time after use. Let the motor cool down properly before touching or servicing it.

If there is a problem with the motor, stop it, check the display and write down any error codes, then turn the main switch off and follow the instructions later in this manual.

Please note that the display only provides full functionality when using Torqeedo Power 26-104 batteries. With other batteries the display may not be able to provide information on the state of charge.

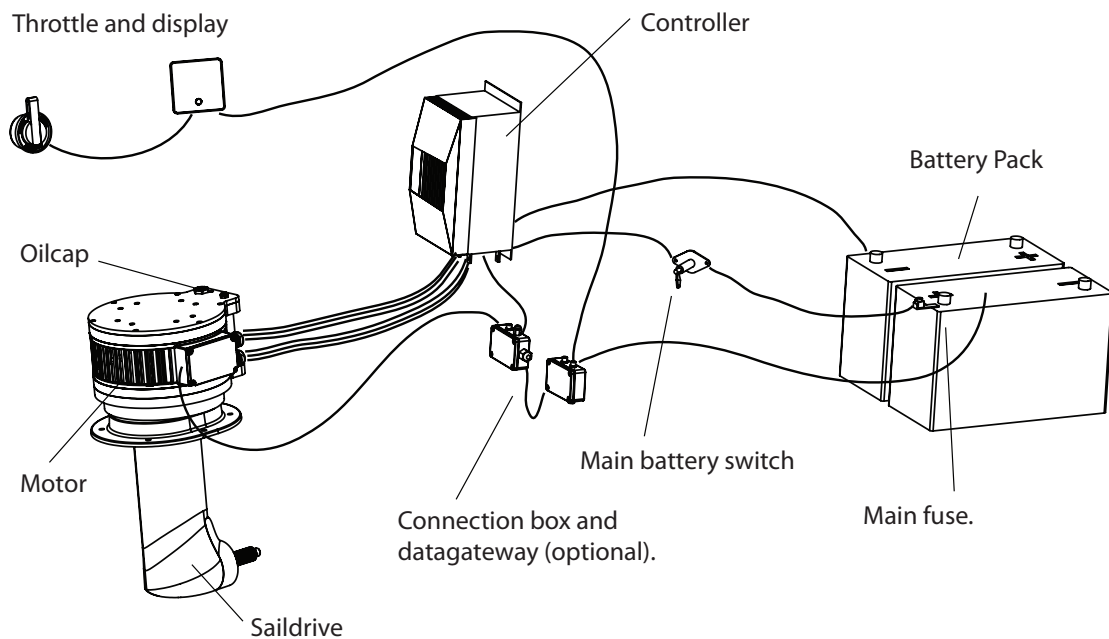
2. Discovering Oceanvolt SD

Oceanvolt is an electric propulsion system for pleasure boats. It is a saildrive designed to be the only or primary motor in sailboats and motorboats. The saildrive is installed through the hull so that the electric motor is inside and the propeller is below the boat. The system is ready to go: testing and running in are completed before delivery.

In addition to providing propulsion, Oceanvolt saildrive can also generate electricity while sailing. This feature is called regeneration and it is one way to recharge the batteries. Sailingboats should be equipped with Flex-o-fold-folding propellers as these ensure proper regeneration. Motorboats normally use fixed fixed blade propellers.

Other ways to recharge include shorepower, solar cells, wind power and diesel generators, depending on the equipment installed in your boat. Further, the Oceanvolt system can be installed as part of a hybrid system. In full electric system all the energy is stored in batteries, whereas in hybrid systems there is an additional source of electricity, for example a diesel generator or a fuel cell.

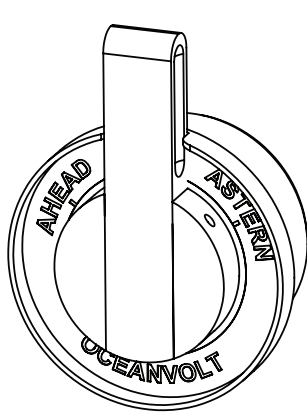
The Oceanvolt system includes the following components:



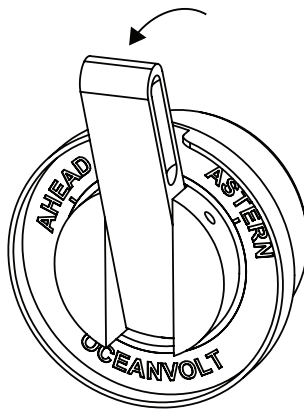
There is always a main switch and a fuse attached to the cable between the controller and the batteries. They are usually installed inside the boat or in a splash proof box in the cockpit. Please refer to the boat owner's manual to locate all the components in your system. Additional to the parts in the picture there is also battery chargers on board the boat.

Throttle handle

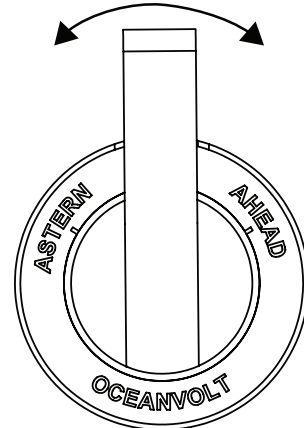
In the off position, the throttle handle points up and is pushed in the gap in the rim. To go to standby mode, pull the top of the throttle handle out of the gap so that it clicks. Turn the throttle handle gently to go to drive mode. Control the power by turning the handle to the direction marked “ahead” to go forward or “astern” to go backward. To return to standby, turn the handle back to the middle, and then push it into the gap to turn the system off.



Turned OFF



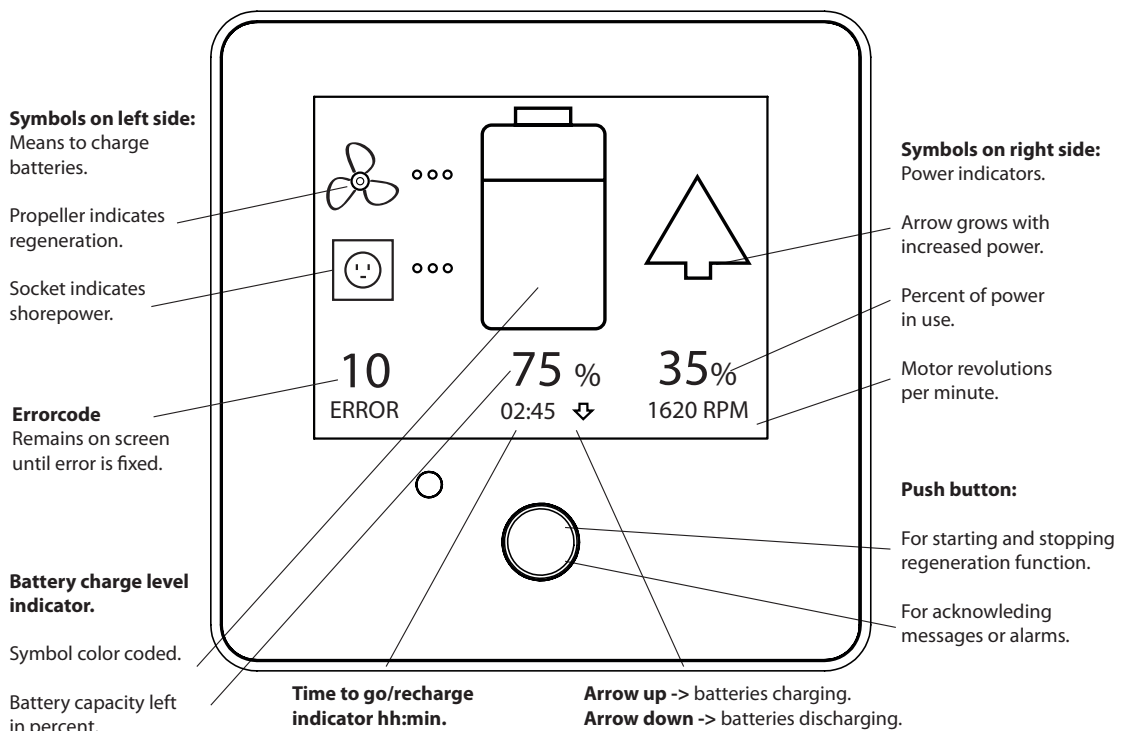
Stand by



Move handle to drive forward/backwards

Display

Turn power on with the main switch to see system status, battery charge and other information on the display.



The display automatically discovers the system mode and shows relevant information accordingly.

The most important piece of information on the display is the state of charge and the available operating time. The battery icon indicating the state of charge will change colors according to the table below.

color	state of charge
green	100 % – 16 %
red	15 % – 0 %

The regeneration feature is started using the button at the bottom of the display. Please refer to the instructions later in this manual for more information.



The display will only provide full functionality and information when used together with Torqeedo 26-104 Power batteries. With other batteries the battery icon may remain grey, which means charge level information is not available. The power and rpm indicators are available with all kinds of batteries.

Lubrication and cooling

Oceanvolt saildrive uses the gear lubrication oil as cooling liquid for the electric motor. The saildrive is immersed in water and will act as a heat exchanger to cool down the oil. A pump wheel is located between the saildrive and electric motor. This wheel does not need any servicing.



Check the oil level weekly or after every 20 hours of operation.

For the cooling system to work properly it is important to only use oil approved by Oceanvolt (Shell Spirax GSX 75W80 or similar quality oil).

Flexible attachment with the Smooth Mount

Oceanvolt saildrive attaches to the hull with special flexible rubber mounting. The Smooth Mount attachment reduces vibrations from the propulsion system. Because of the flexible attachment the saildrive may slightly tilt during driving (approximately ± 3 degrees).

Controller Area Network (CAN-databus)

Motor controller, batteries, throttle handle and the display are connected via Controller Area Network (CAN). The CAN bus reduces the number of wires and connectors, thus simplifying the installation and improving system reliability.



Do not connect any other CAN networks (for example NMEA2000) to the CAN bus used by Oceanvolt, as that could cause interference with motor control and cause a hazard.

3. Driving and recharging

This chapter contains important information about driving with Oceanvolt saildrive, recharging the batteries, and using the regeneration feature.



The capacity of the battery set has a substantial effect on the range that the boat can cover when running on electric power. The battery capacity is given in the boat owner's manual.



The display unit will give an estimate on remaining operating time, but you should always play it safe and make sure you have sufficient power to drive the boat to harbor. The time to go feature may not be in function with other batteries than Torqeedo 26-104 Power!

Before unfastening the moorings

1. Unplug the shore power cable.
2. Check the oil level of the system (weekly).
3. Turn the main power switch on.
4. Check the battery state of charge shown on the display unit.

Starting up

1. Make sure that there are no swimmers, boats or other obstacles in front of or behind the boat. Unfasten the moorings.
2. Pull the top of the throttle handle out of the gap so that it clicks to standby position. (You may hear a click and a turn of the fan as the controller turns on).
3. Gently turn the throttle handle to "ahead" (forward) or "astern" (backward).

Turning the motor off

1. To stop the motor, turn the throttle handle so that it points up. Push the handle into the gap in the rim to turn power off.
2. You may keep the main switch on while sailing to let you easily continue motoring or start regeneration of power. If you do not plan to use the motor, turn the main switch off, as this will save the batteries. The system always takes some power when the main switch is on.

Regenerating power while sailing

The Oceanvolt system can generate electricity to recharge the batteries while sailing, with folding propellers. Regenerating will typically slow the boat down by 0.1 to 1 knots depending on propeller size, wind speed and boat dynamics.

Regeneration is typically feasible at speeds of five knots or above.

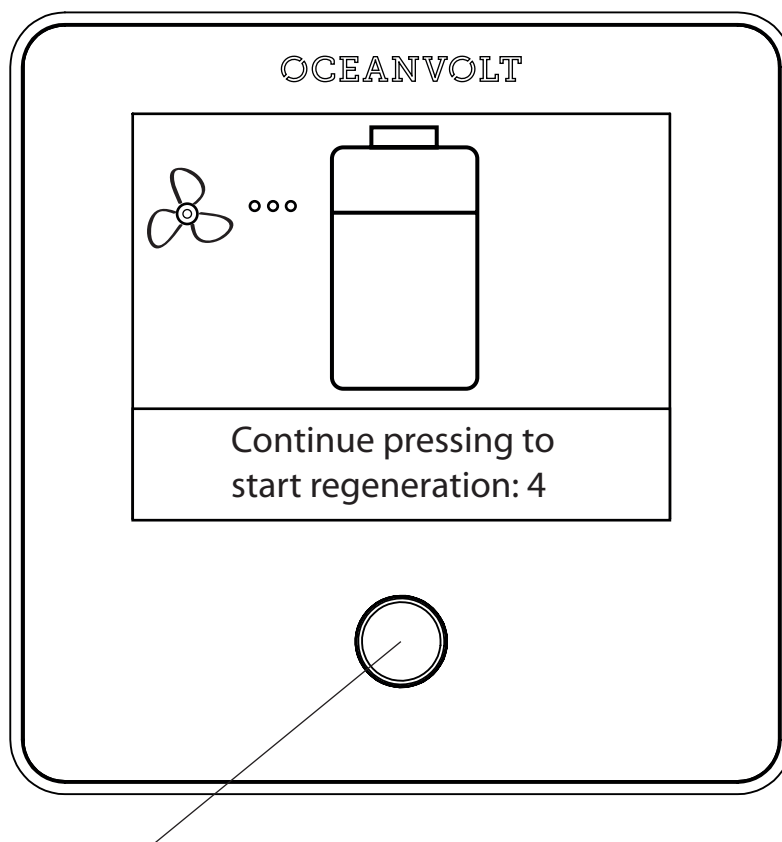
1. Check that you are sailing at a sufficient speed.

2. Make sure that the throttle handle is turned off and the main switch is turned on.
3. Press and hold the button at the bottom of the display for 4 seconds. The display shows the message "Continue pressing to start regeneration". Release the button when the regeneration function is activated. The system will then automatically wind the propeller open and start recharging the batteries. The regeneration indicator (rotating propeller) will remain on the display as long as the regeneration function is active.
4. To halt regeneration, press the button again shortly. The regeneration function will also halt by pulling out the throttle handle. The system is then ready to be used normally in driving mode.

The regeneration process will finish automatically when the batteries have been fully charged or the boat speed drops during regeneration so that the propeller no longer produces enough of power to continue recharging the batteries.



When using batteries other than Torqeedo Power 26-104 the regeneration function may not halt automatically when the batteries are full. It is important to monitor the charge level of the batteries to prevent overcharging when regenerating power!



Press and hold botton 4 seconds to start regeneration

The power produced by regeneration depends on sailing speed and the propeller size. This table lists typical regeneration power levels:

sailing speed	folding propeller
6 knots	75 W
7 knots	200 W
8 knots	350 W
10 knots	500 W

Mooring

1. To stop the motor, turn the throttle handle so that it points up. Push the handle into the gap in the rim to turn power off.
2. Make sure that the boat is securely fastened to the pier or other attachment point.
3. Turn the main switch off.



Always turn the main switch off when the boat is securely moored. This will prevent the accidental starting of the motor. It will also prevent the slow discharge of the batteries when the boat remains moored for an extended time.

Recharging with shore power

Shore power is the most convenient way to recharge the batteries while at harbor. Each Torqeedo Power 26-104 battery has a separate 300 watt charger that can fully recharge the battery in ten hours.

1. Make sure that the battery chargers are plugged into their sockets.
2. Connect the shore power cable to a terminal on the pier or shore. Make sure that the terminal socket is equipped with a residual current circuit-breaker (ground fault circuit interrupter).
3. Check that the chargers indicate the presence of main power (green light) and that the batteries are recharging (yellow light).
4. The chargers will indicate that the batteries have been fully recharged with a blinking yellow light.
5. Follow the instructions of shore power usage provided by the harbor or yacht club.

If the main power switch is turned on there will appear a socket icon on the display that indicates that the batteries are charging. There will also be an estimate on how

long time charging will take until batteries are full. This feature may only be available when using Torqeedo 26-104 Power batteries.

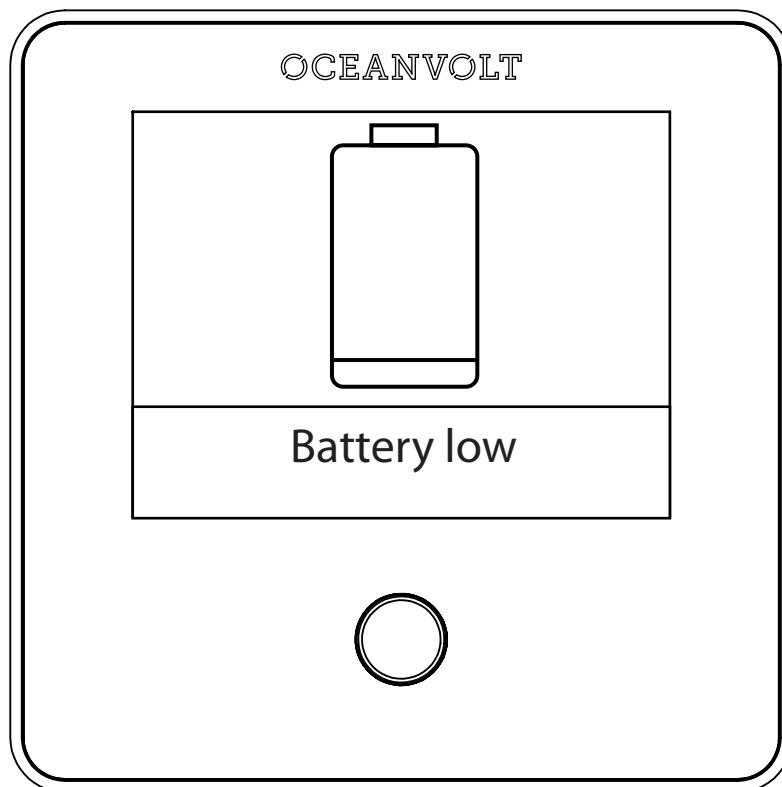
Please refer to the Torqeedo Power 26-104, other battery charger or Boat Owners manuals for more information.

Error messages

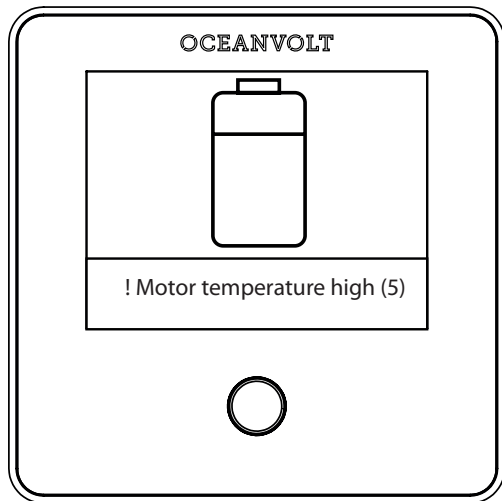
In the event of a fault or an error, the display will show a warning message. You can acknowledge the message by pressing the button. Warnings of serious faults will however remain on the display until the problem has been fixed.

The Oceanvolt SD8.6 –system has several inbuilt safety features that aim to protect the system. Should the motor or controller overheat the system will automatically reduce the maximum power output.

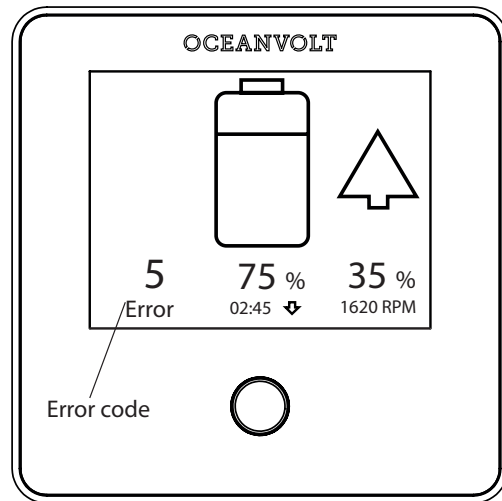
Note that some error messages are only available when using the system with Torqeedo Power 26-104-batteries.



Battery state of charge low: when battery charge level goes below 15 %, a warning message is displayed. Push button to acknowledge message and the display will turn to general view. The battery icon will stay red as long as the battery level is less than 15 %.



1) Push button to acknowledge message.



2) Error code "5" will appear until motor has cooled down enough.

Motor overheat: the motor is overheated. Avoid using the motor if you can. The system will limit the maximum power output in order to prevent damage to the system components. This may make it more difficult to maneuver the boat. The warning will stay on the display until the system has cooled off sufficiently.

General about warnings and error codes: there is fault in the system. For some errors the display will provide further information when pushing the button the first time. A second push will bring the display back to general view.

Write down the error code and look it up in the troubleshooting section (section 6) for more information.

4. Maintenance and care

We appreciate that you want to take the necessary measures to protect the value of your Oceanvolt saildrive, and have outlined a program for periodic maintenance and safety inspections. It is important that you follow these recommendations.



Always turn the main switch off before commencing any maintenance or inspections. Pay attention to warning labels and prohibitory signs. None of the enclosures of the components may be opened. If you suspect a problem in a component, have it serviced by a qualified electrician on-site, or detach the component and ship it for servicing to the manufacturer or an authorized service center. The boat's electrical system may only be serviced and modified by a qualified marine electronics technician. Before detaching a component be in touch with your local dealer or Oceanvolt Ltd.

operation / component	maintenance frequency					
	every trip	weekly	monthly	every six months	annually	every five years
battery state of charge	X					
oil level		X				
display and throttle handle cleaning			X			
saildrive inspection / cleaning				X		
anode inspection / replacement				X		
oil change					X	
saildrive painting with anti-fouling					(X)	
propeller inspection / cleaning					X	
saildrive attachment bolt inspection					X	
battery capacity inspection					X	
cable connectors inspection					X	
Inspect flexible mounting						X

Batteries

Proper treatment and storage of batteries will help give them a long life span. Please refer to the battery manufacturer's instructions on how to maintain the batteries.



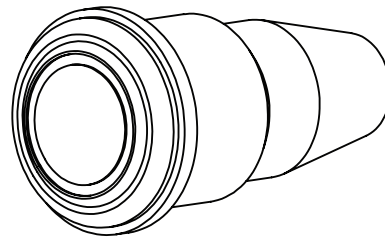
Lithium and lead-acid batteries will be seriously damaged if discharged completely. Always recharge the batteries to full capacity and turn main switch off when leaving the boat unattended for an extended period.

Check the state of charge each time before using the motor. This can be done by checking the display if your system uses Torqeedo Power 26-104 batteries exclusively. If your system uses another type of batteries, please consult the boat owner's manual for more information.

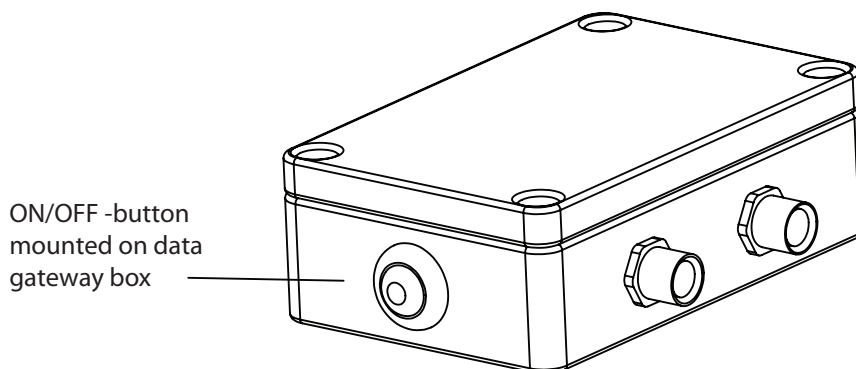
For long time storage (1 month or more) the Torqeedo 26-104 Power batteries should be switched off from the push button switch that is connected directly to the battery bank. This will also protect batteries from total discharge. The batteries should preferably have a charge level of 20-40 % when turned off for storage. This will also prevent charging of batteries. To charge the batteries, you must reactivate the battery bank.

1. To switch off the Torqeedo battery pack push the button for 7 second.
2. To reactivate the battery bank push the button for 1 seconds.

The Torqeedo on-off button is connected to the databus of the battery pack. It may be on top of the batteries or attached to a bulkhead in the boat.

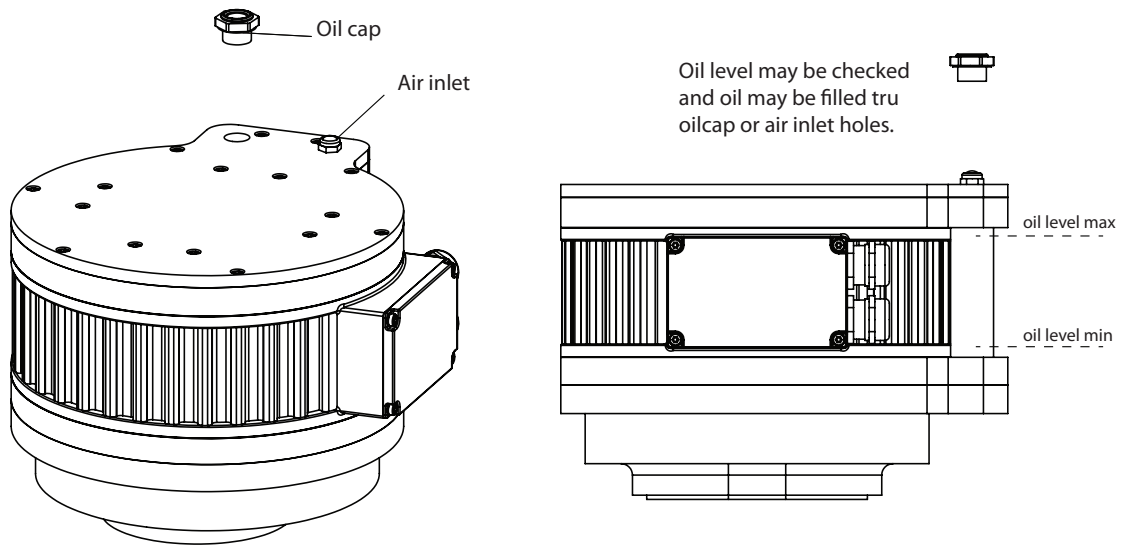


The on-off button may also be mounted directly on the data gateway box.

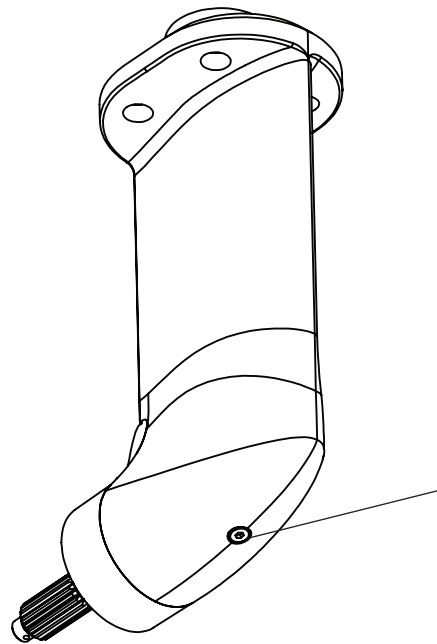


Oil

Oil level is checked by opening the oil plug on top of the motor. The oil level is right when it reaches about halfway vertically in the pipe. If the level is lower, add more oil and close the plug carefully. It is very important to only use oil approved by Oceanvolt (Shell Spirax GSX 75W80 or similar quality oil).



All of the oil must be drained and replaced with fresh oil annually. This can only be done when the boat is out of the water. Optimally, oil change should take place at the end of the boating season.



- 1) Open the oiltap with allen key (hex wrench) size 5.
- 2) Drain the oil.
- 3) Put the oilplug back in place and tighten it gently.

NOTE! Tightening the oilplug to hard may damage the thread.

To change the oil, haul the boat up and place a small bucket under the saildrive. Open the plug at the bottom of the saildrive to drain the oil. When all of it has come out, carefully close the plug and dispose of the used oil properly. Then open the plug on top of the motor and fill the oil channels with slightly less than half a gallon (approximately 1.7 liters) of fresh oil, at a very slow pace. Check the oil level an hour later and add more if the oil level does not reach about halfway vertically in the pipe.

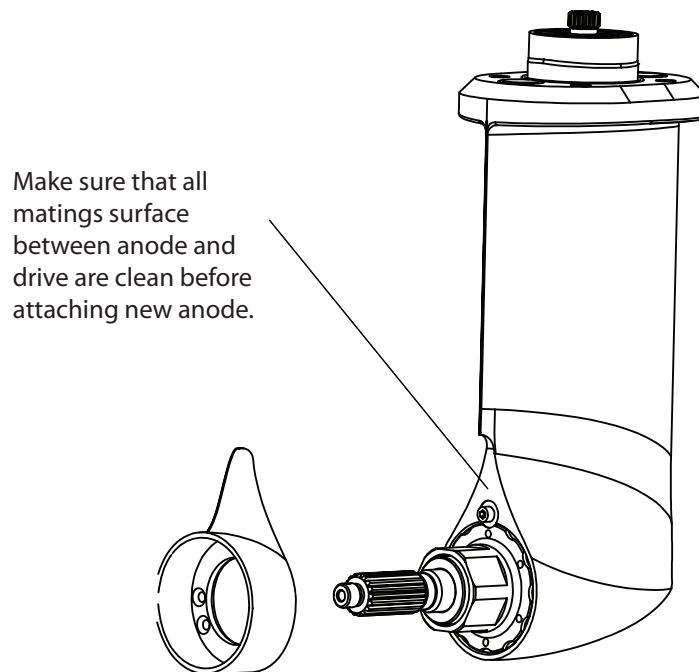


It is important to check the oil level right before the motor is first used after an oil change, and at the start of the boating season.

Anode

The anode, made of pure zinc, protects the saildrive from corrosion. It must be changed when about half of the material has been consumed. You can order a replacement anode from Oceanvolt or an authorized service center.

To replace the anode you first have to detach the propeller. Refer to the documentation that came with your propeller on how to do this.



The anode is attached with three M6 hexagon bolts. Clean the surface of the saildrive under the anode carefully to make sure that there is a good galvanic connection from the saildrive to the anode. Apply thread-locking fluid to bolts before attaching the new anode.

NOTE! The thread locking fluid must be low to medium strength (normally purple or blue) to enable opening the bolts again for the next change of anode.



Never apply any type of paint or anti-fouling to the anode.

Antifouling

Depending on the boating area the drive may have to be painted with anti-fouling to keep the drive clean during the boating season. It is important that the drive surface is clean to ensure sufficient motor cooling.

Firstly make sure that the paint surface on the drive is intact and there are no dents or scratches. If there are scratches all the way thru to the aluminum surface these need to be fixed using 2-component epoxy primer suitable for aluminum (Hempel Light Primer for instance).

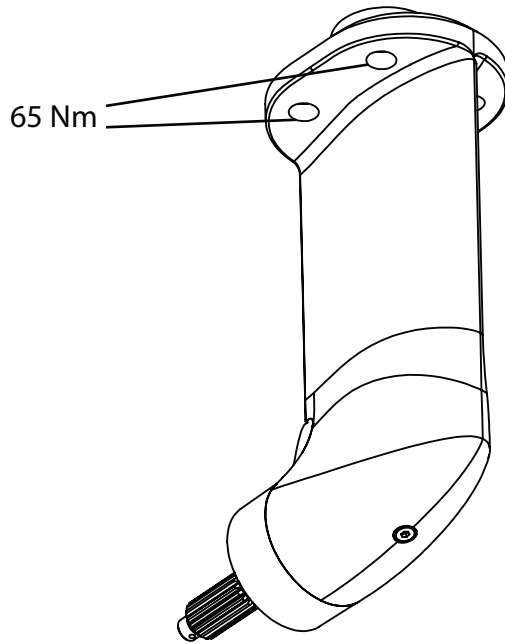
Only use anti-fouling paint that is suitable for drives made of aluminum alloy. Remove the anode during painting or protect it from getting painted. Then apply anti-fouling paint according to instructions from the paint supplier.



Never use copper based paint on the drive as this can cause severe corrosion problems! If such paint is applied to the boat bottom leave a 50 millimeters gap between the painted area and the drive.

Checking the saildrive attachment bolts

Check that the attachment bolts of the saildrive are firmly secured. The correct tightness of the bolts is 65 Nm (48 ft lb).



5. Limited warranty

Oceanvolt Ltd. guarantees the Oceanvolt motor and saildrive to be free of material and manufacturing defects during the warranty period. Oceanvolt will indemnify the final purchaser for the expenses to repair a material or manufacturing fault. This indemnification does not cover any incidental costs or financial losses (for example, costs for towing, transportation, communication, food, accommodation, loss of earnings or time).

The warranty expires two years after the date on which the product was first delivered to its first owner. All warranty claims revert to the original date of delivery. Systems that are used commercially or by public authorities, even temporarily, are not included in this warranty. The right to make a claim under the warranty runs out two months after the discovery of a fault. Normal wear and tear and routine servicing are excluded from the warranty. For example, the anode, fuse and oil are not covered.

Oceanvolt shall have the sole right to decide whether faulty parts are repaired or replaced.

Oceanvolt Ltd. is entitled to refuse a warranty claim if:

- the warranty claim was not correctly submitted (failure to present a completely filled-in warranty certificate and proof of purchase)
- the owner fails to contact Oceanvolt before sending the system for servicing
- the product was or has been handled, used or installed improperly
- the safety, operating and care instructions given in the owner's manual were not observed
- the product was in any way altered or modified or parts and accessories were added that are not expressly permitted or recommended by Oceanvolt
- previous services or repairs were not carried out by an Oceanvolt authorized service center, or non-original parts were used

The customer must be in contact with Oceanvolt Ltd. by phone or email before detaching a faulty component and sending it to repair. The component must be properly protected during transport. Hazardous components such as lithium batteries may only be shipped if relevant regulations are observed and followed.

To check a warranty claim and to process a warranty, we require a completed warranty certificate. This must be filled with contact details, product details, its serial number, purchase date, boat type, and a brief description of the problem.

6. Troubleshooting

The Oceanvolt SD –system and the Torqeedo Power 26-104 batteries have a lot of inbuilt automatic electronic protection. The batteries for instance will close down automatically before the charge level is too low to harm batteries.

The display will assist you by supplying error codes. Please note that some of the error codes presented are only available when using Torqeedo batteries.

First actions

In case of an error or fault the first action is to:

- 1) Put throttle lever in off-position.
- 2) Note and write down any error codes shown on the display.
- 3) Turn off the main switch.
- 4) Refer to the error code table later in this section and follow the instructions there.
- 5) Turn on main switch and check if the problem remains.
- 6) If the problem remains, contact Oceanvolt or an authorized service center at your earliest convenience.

If the system does not turn on from main switch:

- 1) The charge level may be too low. Charge batteries.
- 2) Check that main fuse is intact.
- 3) Check that the power cable connections are intact.
- 4) Check that the data cables are intact.



Always turn off the main switch when inspecting or repairing the system. Avoid using jewellery or clothing materials made of metals when inspecting areas close to the batteries or controller.



Never store any loose (heavy) objects in motor room or close to other components of the Oceanvolt-system as these may break some components, cables or connectors.

Torqeedo batteries only

If the system does not turn on from main switch

The Torqeedo 26-104 battery bank has electronic protection that may switch off one or several batteries in case of a battery is running empty or too much power has

been drawn from the battery. In this case the propulsion system will close down and the display remain off. To reactivate the battery pack:

- 1) Turn off the main switch.
- 2) Push the Battery on/off button that is connected to the battery-pack for 7 seconds. Now all batteries in the pack should be turned off.
- 3) Push the Battery on/off button for 1 second. Now all the batteries should be active again.
- 4) Turn on the main switch.

Charge level indicators (battery icon and charge %) on display faulty

If the charge level indicator on the display should turn grey or show misleading figures and the propulsion system is functional:

- 1) Drive boat to a place where it is safe to turn off the system.
- 2) Switch the throttle lever to stand by position and turn off the main switch.
- 3) Close down and reactivate the Torqeedo battery pack using the on/off button as described above.
- 4) Turn on the system from the main switch and check readings on the display.

To find the on-off button please refer to page 17 or the boat owners manual.

Error codes on display

This table lists the codes shown on the display in the event of an error. The error code will remain on the screen until the problem is fixed.

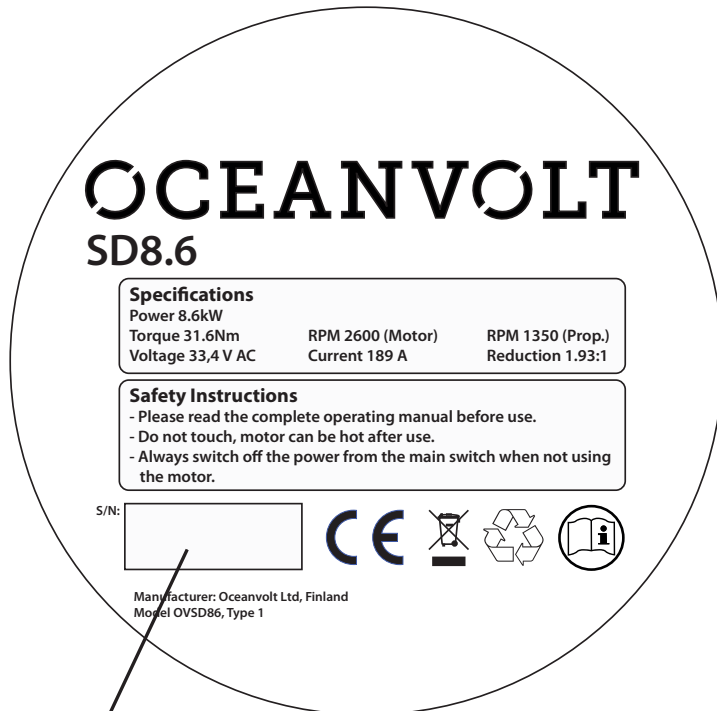
Error code	Description	Proposed actions
1	Overvoltage	1) Stop regeneration or charging batteries. 2) Turn system off from both throttle lever and main switch. 3) Check system functionality by restarting system.
2	Undervoltage	1) Check battery level of charge and recharge if batteries are empty. 2) Shut down system from both throttle lever and main switch. Look for bad connections on power cables and fix any found defects. 3) Turn system on from main switch, and try to restart.
3	Overcurrent	1) Turn system off from both throttle lever and main switch and check if propeller is blocked. 2) Turn system on from main switch, and try to restart.
4	Undercurrent	Turn system off from both throttle lever and main switch, and then try to restart.
5	Motor temperature high	1) If possible close down system and let motor cool down. 2) Check oil level, and top up if oil level is low when motor has cooled down sufficiently. 3) Check that saildrive is clean. 4) Check that the cable of the temperature sensor is intact. If problem occurs regularly the motor may be installed in space with insufficient ventilation or the system uses too large a propeller.
6	Controller temperature high	1) If possible close down system and let controller cool down. 2) Check that cooling fan on top of controller is not blocked. If problem occurs regularly the controller may be installed in space with insufficient ventilation.
7	Connection error	Check that heat sensor cable (from motor to connection box) is intact.
8-19	Controller error	Check that data cable between throttle lever and display is properly connected. For other error codes contact your closest authorized support.

Please refer to the support section at Oceanvolt's web site for a more detailed list of error codes:

<http://www.oceanvolt.com/support>

7. Technical details

	Oceanvolt SD8.6
Nominal power	8.6 kW
Motor RPM	2600 rpm
System weight without batteries	48 kg (106 lb)
Propeller size	Max 15" 2-bladed
Motor type	Brushless permanent magnet
Motor cooling	Liquid
Controller cooling	Air
Nominal voltage	48 V DC
Motor maximum voltage	31.75V AC
Oil type	Full synthetic GL4-class
Oil viscosity	75W-80
Oil recommendation	Shell Spirax GSX 75W-80



Serial number of the Oceanvolt SD8.6 (xx-yyyy-zz)

8. Oceanvolt contact details

Oceanvolt Oy
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00150 Helsinki
Finland

<http://www.oceanvolt.com/support/>

support@oceanvolt.com

phone +358 40 717 6336, 9:00am to 5:00pm (timezone: GMT+2)