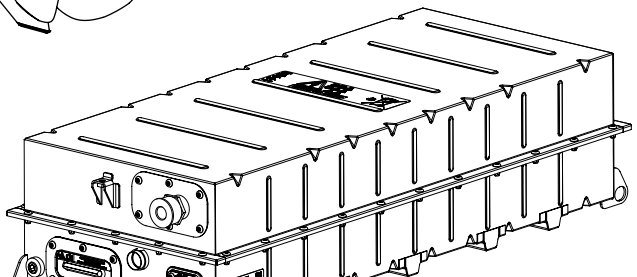


Deep Blue

Bedienungsanleitung
(Deutsch)

Operating Manual
(English)



Dear customer,

We are delighted that you have chosen our clean and powerful DEEP BLUE propulsion system.

Your Torqeedo DEEP BLUE is the first industrially developed and manufactured electrical boat drive for the higher power classes. As with all Torqeedo motors it also provides the highest efficiency levels and outstanding ride comfort. It is the benchmark for state of the art technology for electric mobility on the water.

DEEP BLUE has been designed and manufactured with the utmost care and with a special focus on comfort, user-friendliness, safety, and has been extensively tested before delivery.

Please take your time to read this operating manual carefully so that you can use the motor properly and enjoy it for years to come.

We constantly strive to improve Torqeedo products. Therefore, in case you should have any comments on design and use of our products, do not hesitate to contact us. Whenever you have a question related to Torqeedo products please contact Torqeedo customer service at service@torqeedo.com.

We hope you enjoy your DEEP BLUE.

Torqeedo staff

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1. Important safety and operating instructions

As with all Torqeedo products, the DEEP BLUE system is designed to comply with the highest safety standards in the industry. Using the system in accordance with the operating manual will ensure a safe, fun, and practical experience with the system. Please read this manual carefully before starting the motor. Non-compliance with these instructions may cause property damage and/or personal injury. Torqeedo assumes no liability for damage caused by operation contrary to the present operating manual.



DANGER

This symbol warns of risks of injury to yourself and others.

General safety instructions for boat motor operation

- Check status and function of the outboard motor (including emergency stop lanyard) prior to every trip.
- Familiarize yourself and other parties on board with all control elements of the motor; for instance, you should be able to stop the motor quickly if necessary.
- Only adults who have been fully instructed on operating procedures in accordance with the operating manual and safety procedures should operate the system.
- Respect the boat manufacturer's instructions on permissible motorization of your boat; do not exceed specified loading and capacity limits.
- Fix red emergency stop lanyard to your wrist, or on your life jacket. In case of emergency, pull the lanyard so that it disengages the stop switch.
- As the boat captain, you are responsible for the safety of people on board and for any watercrafts and persons in your vicinity. So please strictly respect the rules of safe boating and ensure you follow local law and regulations for legal boating within the area you are operating the boat and system and carefully read our operating manual.
- Pay special attention to surroundings most importantly people and objects in the water.

DEEP BLUE specific security instructions

- Before starting, check the outboard's cable protection hose for possible damage. In case of damage, under no circumstances touch the cable nor start the motor. Please immediately contact an authorized customer service agent.
- Motor, battery and connection box casings may only be opened by staff authorized by Torqeedo.
- Keep the battery away from external heat sources and respect safety instructions affixed to the battery.

- Only charge the battery at ambient temperatures between -20°C and +50°C (-4°F and +122°F).
- In case you should use a cable drum for loading the battery: Please reel off the cable completely from the cable drum. Not doing so increases risk of excessive cable heating and even cable fire.
- Only use the battery at temperatures between -25°C and +55°C (-13°F and +131°F). The on-board computer's display provides you with information on battery temperature.
- Please note that GPS based range calculation does not take into account neither current nor wind condition changes. Changes in speed, direction, wind and currents may have a significant impact on the displayed remaining range.



CAUTION – POTENTIAL DANGER & RISKS

This symbol warns against possible risks of damage to your outboard system or injuries arising as a result.

In the following, please find important operating instructions for Torqeedo DEEP BLUE motors systems. In addition to these, please also respect the entire operating manual to prevent any damage to your motor.

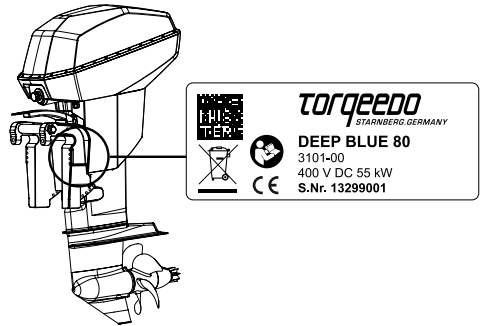
- The boat captain is responsible for regular service of the equipment. Service must be done by an authorized customer service center. Appropriate and regular service is a prerequisite for any warranty claims and extends service life of your propulsion system.
- Only run the motor when the propeller is under water.
- After use, always take the motor out of the water by way of either tilting it so the entire motor is clear of the water, or by removing the boat from the water. This is to ensure proper draining of the cooling conduit and prevent corrosion, wear and obstruction.
- After operation in salt or brackish water, rinse all components with fresh water. Please do not use a high-pressure water blaster for cleaning, as the water pressure may do harm.
- If the boat is driven by external means (towing, sailing, running with another motor), take the propeller out of the water to prevent damage to the electronics.
- Although high-voltage batteries of DEEP BLUE are protected against total discharge, a certain level of self-discharge is unavoidable. To prevent damage of the valuable battery, please respect the following advice:
 - Switch off the DEEP BLUE system after every use.
 - Recharge batteries after every trip. If the batteries are discharged down to less than 20 %, recharging must take place within 48 hours.
 - In case of extended storage, check batteries' charging level once a month. Please always check your batteries' charging level before storing it for several months to prevent any damage.

- Please use emergency stop switch solely in real emergency situations. Repeated pressing of emergency stop switch at high power burdens the system and may potentially lead to damage and thus to repair works of the battery electronics.

2. Legally prescribed information

2.1 Identification and technical data

Identification plates indicating model type and designation can be found at location indicated in the drawing.



Explanation and description of symbols



Caution: High voltage



Please carefully read operating manual



Electrical product: not to be disposed in household waste



Caution: Crushing hazard



Caution: Risk of fire



Caution: Risk of electric shock



Do not open



Do not step on.
Do not apply loads.



Caution: Hot surface

Technical data

Outboard		Battery	
Max. input power	55 kW / 75 HP	Usable energy per battery	12.8 kWh
Propulsive power	29.7 kW / 40.5 HP	Load	40 Ah
Comparable gasoline outboard motor	58 kW / 80 HP	Rated voltage	345 V
Overall efficiency	54 %	Weight	150 kg
Weight of outboard	125 kg (275 lbs)	Storage temperature	-40°C - +50°C (-40°F - +122°F)
Shaft length	20" (508 mm) / 25" (635 mm)	Operating temperature	-20°C - +55°C (-4°F - +131°F)
		Charging temperature	-20°C - +50°C (-4°F - +122°F)
Weight system*			
With 2 batteries	463 kg (1021 lbs)		
With 3 batteries	608 kg (1340 lbs)		
With 4 batteries	753 kg (1660 lbs)		

* takes into account all functionally relevant components

2.2 Conformity declaration

EC conformity declaration pursuant to EU Machine Directive 2006/42/EC, Appendix IIA

Torqueedo GmbH, Friedrichshafener Str. 4 a, 82205 Gilching, hereby declares that the DEEP BLUE propulsion system defined below, by virtue of its conception and type and in the designs placed on the market by us, complies with the basic safety and health requirements of the following EC standards and guidelines:

Machine directive 2006/42/EC
EMC directive 2004/108/EC
Recreation craft directive 94/25/EC

Applied harmonized standards:

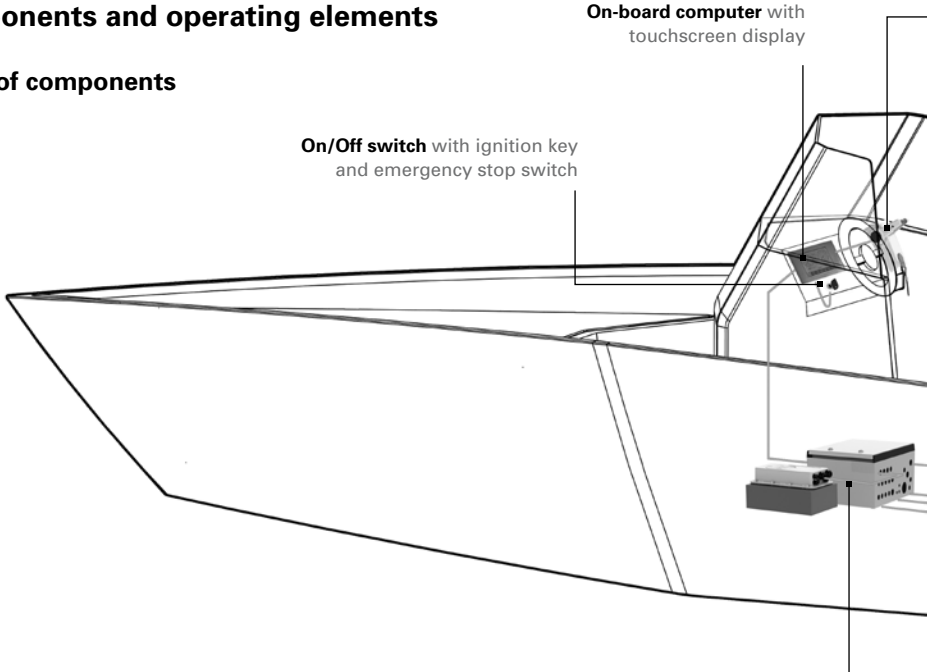
- DIN EN ISO 12100-1:2004
Safety of machinery – Basic concepts, general principles for design
Part 1: Basic terminology, methodology
- DIN EN ISO 12100-2:2004
Safety of machinery – Basic concepts, general principles for design
Part 2: Technical principles
- DIN EN 55012-1:2010-04 (VDE 0879-1)
Vehicles, boats and internal combustion engines - Radio disturbance characteristics – Limits and methods of measurement for the protection of off-board receivers (IEC/CISPR 12:2007 + 1:2009)
- DIN EN 61000-6-1:2007-10 (VDE 0839-6-1)
Electromagnetic compatibility (EMC) - Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005)

Responsible for technical documentation:
Michael Zwez, product quality

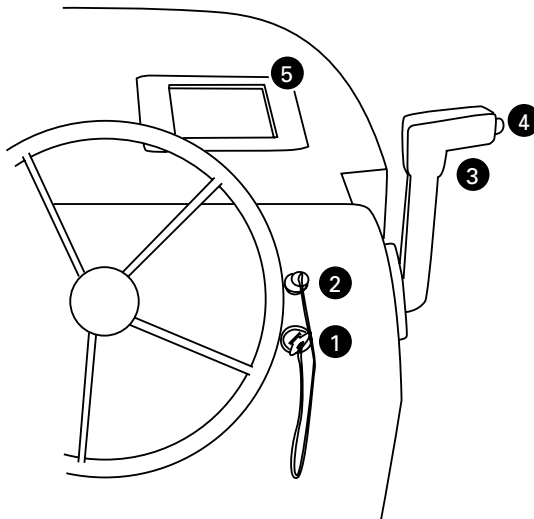
Original conformity declaration has been issued in German at
Gilching, 21st January 2013

3. Components and operating elements

3.1 List of components



3.2 List of operating elements



Connection box for wiring of DEEP BLUE components

1. On/Off switch with ignition key
2. Emergency stop switch
3. Electronic throttle with locked neutral position
4. Power trim and tilt
5. On-board computer with touchscreen display

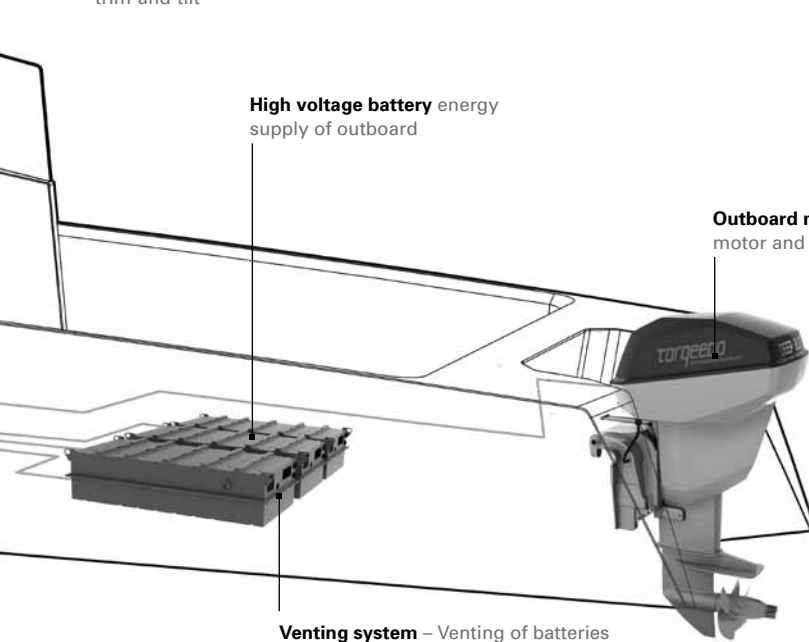
Deutsch
English

Electronic throttle with locked neutral position and power-trim-and-tilt

High voltage battery energy supply of outboard

Outboard motor with electric motor and power electronics

Venting system – Venting of batteries for the unlikely event of excess pressure discharge



4. Operation

4.1 Startup



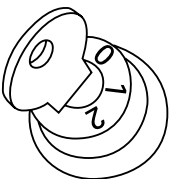
- Check cable protection hose leading to outboard for possible damage
- Check function of emergency stop switch
- Check steering system function
- In case of visible damage of system components or cables neither charge the battery nor switch on the system
- Fix red emergency stop lanyard to your wrist, or on your life jacket
- Only use the battery at temperatures between -25°C and +55°C (-13°F and +131°F).



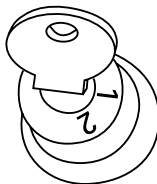
- Check condition of sacrificial anode.
- Ensure that the propeller is not damaged.
- Never operate the propeller out of the water. Take care that trim position of the motor is in the right position before starting.

To start the motor:

- Ensure that remote throttle is in neutral position
- Ensure Emergency Stop Switch is engaged
- For starting, turn ignition key to the right one click. Display will turn on and run a series of system checks. Once all boxes are ticked, turn key to right again and you will hear a clicking noise from the batteries. This is the batteries being engaged for operation. The motor is now “on” and operable. Caution, be aware that there is no noise of motor when in idle “neutral” position.
- Touchscreen display confirms readiness for operation of all components (refer to point 5.4)
- To stop the motor, turn ignition key to the left (Off Position).



Off Position



Switches on the supply voltage and activates communication of components between each other.



Enables high voltage battery and makes motor ready for operation.

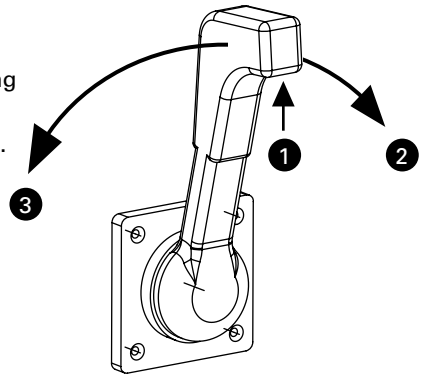


The lithium high voltage battery is switched on by the 12 V battery whenever the motor is started. In the event of extended storage, regularly check whether charging level of this battery is sufficient. During operation of the DEEP BLUE System, 12 V battery is automatically being recharged.

Behaviour of your electric motor differs from that of gasoline-driven engines. Familiarize with behaviour and thrust generation of the electric outboard.

4.2 Driving operation

To drive forwards or backwards, pull neutral locking mechanism up (1). This disengages the neutral setting and you are now free to move throttle forward to move forward (2) or backward to move in reverse (3).



In “reverse” mode there is an automatic power reduction.

4.3 Trimming and tilting



Caution: Crushing hazard



Remote throttle allows you to control trim and tilt function of the motor.

Power trim function (around 0° - 15°, slow tilt motion):

Can be operated when driving the boat. Allows fine tuning between the boat's hull and the propeller's angle in the water. Allows optimization of driving behaviour and efficiency.

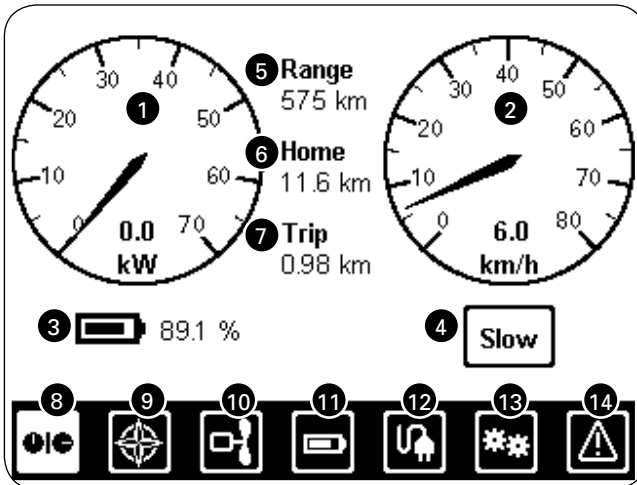
Power tilt function (around 15° - 80°, fast tilt motion):

To be used in stationary position of the boat to tilt the outboard out of the water. Protects underwater components of the motor against additional wear, aging, algae growth, etc.



- Before tilting the motor down: Make sure that the tilt lock on the transom bracket does not restrict the shaft from being tilted down.
- Tilting up of the motor drains cooling circuit of the outboard. Please always put the motor into tilted position to ensure entire drainage. This also prevents wear and helps to extend service life of the outboard system!

4.4 On-board computer and touchscreen display



Main screen

- 1 Input power
- 2 Speed over ground
- 3 Battery charge status
- 4 Power limitation, designed for slow moving within limited areas like harbours (deactivation only in neutral position)
- 5 Remaining range at current speed (if no GPS signal is available, remaining range is not displayed)

- 6 Distance to "Home" (if "Home" has been stored under "Settings")
- 7 Current distance covered (is set to zero when motor is switched off)
- 8 Selection of main screen (selected)
- 9 Selection of Navigation screen

- 10 Selection of Motor Data screen
- 11 Selection of Battery Data screen
- 12 Selection of Charger Data screen
- 13 Selection of Settings
- 14 Selection of Error Display



Please note that range indications may not be precise and may differ due to changing wind and current conditions.

The navigation screen displays the following information:

- 1 Range:** 560 km
- 2 Distance to [waypoint]:** 5.31 km
- 3 Time to [waypoint]:** 0:53 h
- 4 Distance to [Home]:** 11.69 km
- 5 Position:** 47°59'51"N, 11°21'14"W
- 6 Compass:** Shows cardinal and intercardinal directions (SE, S, SW, W, NW, N, NE, E) with a directional indicator pointing North. A '164°' bearing is shown.
- 7 STARN button:** A button with a house icon and the text 'STARN'.
- 8 Menu Settings:** A gear icon at the bottom right of the screen.

At the bottom of the screen is a toolbar with icons for: Home, Compass, Waypoints, Battery, Power, Settings, and Warning.

Navigation screen

- 1 Remaining range at current speed
- 2 Distance to selected waypoint (linear distance)
- 3 Remaining time until arrival at selected waypoint at current speed
- 4 Distance to "Home" (linear distance)
- 5 Current position
- 6 Compass with directional indication "Home" and selected waypoint

7 Choice of waypoint and display of chosen waypoints

8 Menu Settings: Select and save settings for "Home" and for waypoints here.

Motor

Rotation speed	1 856 rpm	8 Runtime	66:46 h
Torque	2 1 %		
Power	3 0.05 kW	9 Odometer	31 km
HV System	4 42.1 V		
LV System	5 0.0 V		
Motor temperature	6 25 °C		
Electronic temperature	7 25 °C		



Motor data

- 1 Rotation speed
- 2 Torque
- 3 Power
- 4 Motor voltage
- 5 Low voltage system voltage
- 6 Motor temperature
- 7 Motor electronics temperature
- 8 System total operating hours
- 9 Total distance covered since commissioning

Battery

1	Total charge	9110 Ah
2	Average temperature	26.0 °C
3	Capacity	26.0 kWh (89.1 %)
4	% warranty utilizaton	5.7 %
5	Insulation	> 1000 kOhm
6	Voltage	356.0
7	Power	4.5 kW
8	Current	12.8
9	Limit	80.0 kW
10	Temperature	26 °C



Battery data

- 1 Total battery charge over total service life
- 2 Average temperature of battery since manufacture
- 3 Capacity available depending on charging level
- 4 Pro rata use of capacity warranty (Average of all batteries in the system, can also be checked on individual battery level)

- 5 Status insulation monitoring (insulation resistance)
- 6 High voltage system voltage
- 7 Input power during operation, charging power during charging
- 8 Input current
- 9 Maximum input power
- 10 Battery temperature
- 11 Information displayed refers to entire battery bank (selected)
- 12 Information displayed refers to individual battery

Charger



1	Mode	Limit (23 %)
2	Charger setting	100.0 %
3	Nr. of chargers	1
4	Power	0.0 kW
5	Time until full	0:00 h
6	DC Current	0.0 A
9	Main Current	0.3 A
7	DC Voltage	385.7
10	Main Voltage	223.0 V
8	Temperature	25.0 °C
11	Max cell V.	3.000 V

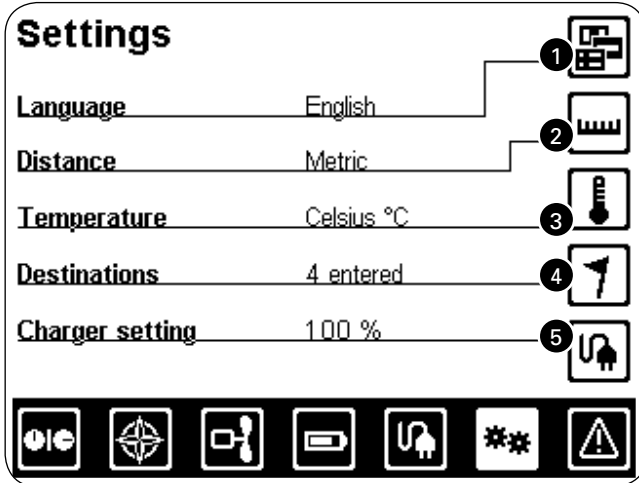


Charger data

- 1 Charger status
- 2 Selected charging power
- 3 Number of chargers in the system
- 4 Current charging power
- 5 Time until batteries are fully charged
- 6 Charging current of charger
- 7 Charging voltage of charger
- 8 Temperature of charger

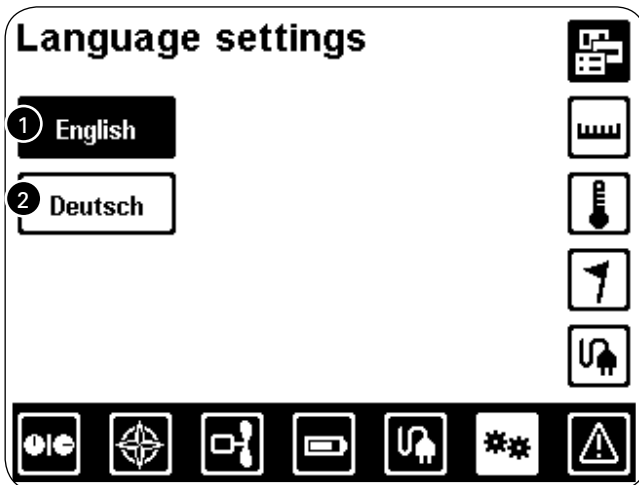
- 9 Charging current of power-outlet
- 10 Charging voltage of power-outlet
- 11 Maximum cell voltage

- 12 Charger on/off switch
- 13 Menu Settings:
Select charging power here



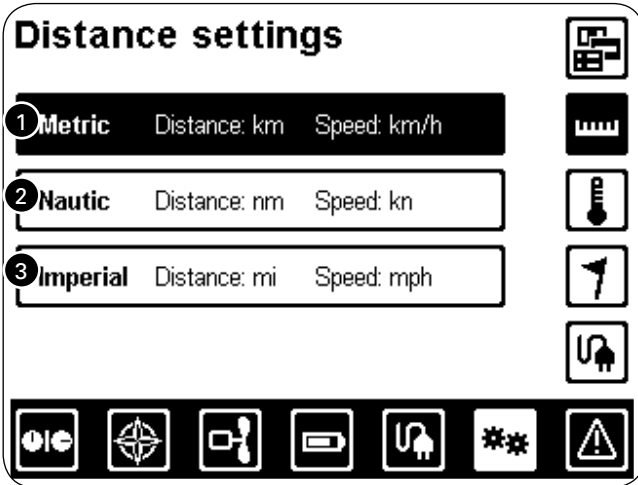
Settings

- 1 Language selection
- 2 Distance and speed settings selection
- 3 Temperature settings selection
- 4 Waypoint and Home settings selection
- 5 Charging power setting selection



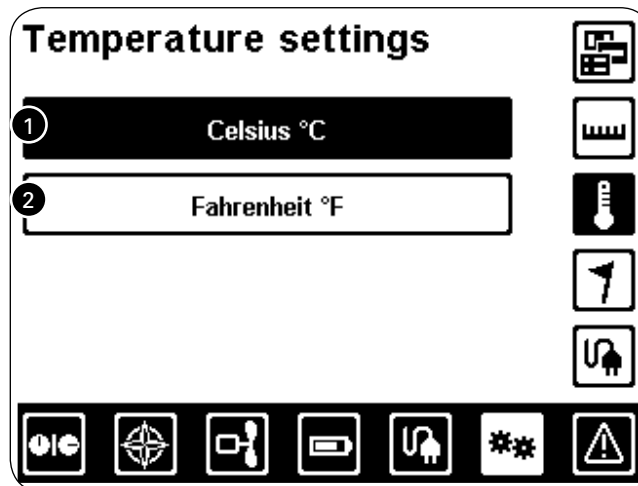
Language selection

- 1 English
- 2 German



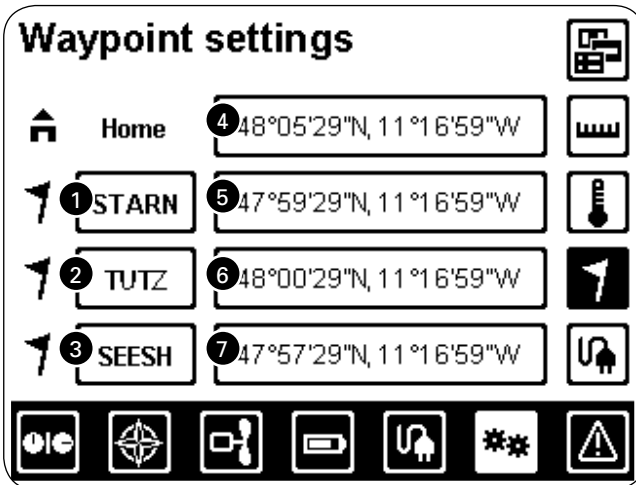
Distance and speed settings

- 1 Metric settings
- 2 Nautical settings
- 3 Imperial and US customary measurement settings



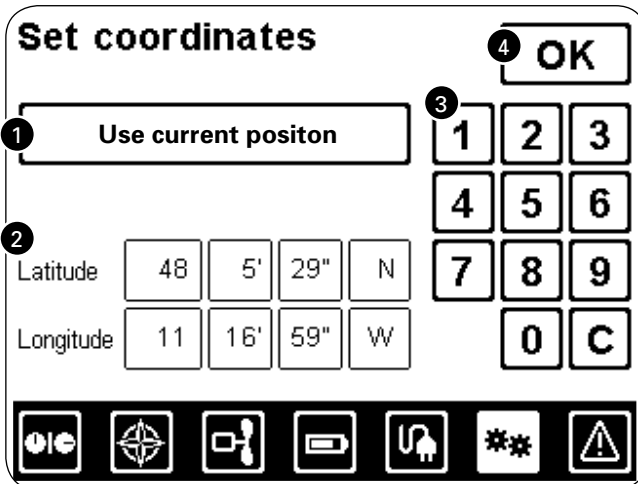
Temperature settings

- 1 Selection of Celsius
- 2 Selection of Fahrenheit



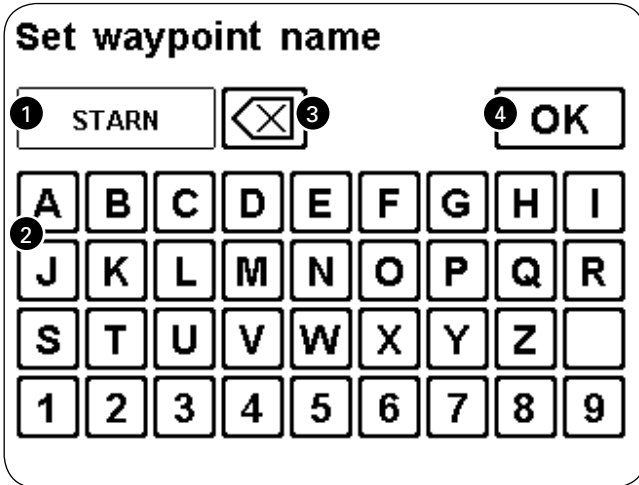
Home and waypoint settings

- 1 Input of 1st waypoint name
- 2 Input of 2nd waypoint name
- 3 Input of 3rd waypoint name
- 4 Input home position
- 5 Input of 1st waypoint position
- 6 Input of 2nd waypoint position
- 7 Input of 3rd waypoint position



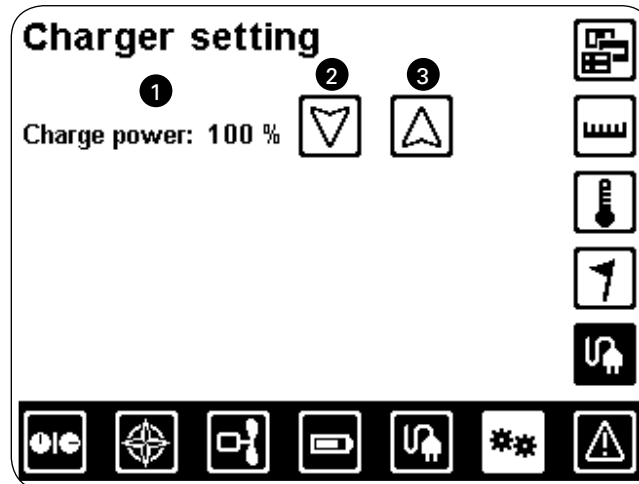
Home and waypoint position settings

- 1 Select current position as new waypoint
- 2 Display of currently stored waypoints. Fields can be selected to enter new waypoint position using coordinates
- 3 Keypad to enter new waypoint coordinates (alternative to using current position as waypoint)
- 4 Confirmation of waypoint position (exit Set Coordinates screen)



Waypoint name definition

- 1 Display of waypoint name
- 2 Keypad to enter waypoint name (maximum 5 characters)
- 3 Correction
- 4 Confirmation of waypoint name (exit Waypoint Name screen)



Charging power setting

- 1 Display of selected charging power 100 % correspond to 3 kW In case the power-outlets available for charging cannot deliver the required power, charging power may be adjusted using the two arrows.
- 2 Increase charging power
- 3 Reduce charging power

Deutsch
English

1 Warnings and errors

2 1.0

No warnings or errors

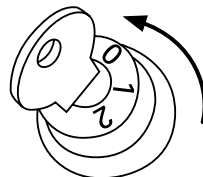


Warnings and errors

- 1 Warnings and errors display
- 2 Display of system software version (no error message)

4.5 After operation

Switch motor and batteries off after each trip by turning the ignition key to the left. Dark display indicates shut-down of the system.



When boat is not being operated and swimmers are in the vicinity of the boat, ensure motor is completely switched off to avoid accidental starting or engagement of motor.



- After use, always tilt the motor out of the water to ensure running-off and draining of the cooling conduit and prevent corrosion, wear and obstruction.
- After operation in salt or brackish water, rinse all components with fresh water. Please do not use a high-pressure water blaster for cleaning, as the water pressure may do harm.
- If you cannot tilt the motor entirely out of the water, we recommend to apply additional corrosion protection in the form of zinc savers, galvanic isolation or a grounded sacrificial anode directly on the jetty.

4.6 Charging the high voltage lithium batteries



- Use cables suitable for outdoor use.
- In case you should use a cable drum for charging the battery: Please reel off the cable completely from the cable drum. Otherwise there is a risk of excessive cable heating and even cable fire.
- Before charging please check the system for obvious damage, in particular on mains plug cable.
- Charger and heatsink heat up during operation (Surface maybe hot – caution of heat damage to skin).
- Only charge the battery at ambient temperatures between -20°C and +50°C (-4°F and +122°F).

Charge the battery as follows:

1. Switch ignition key to Off position. Emergency stop switch must not be pulled off (must be engaged).
2. Connect charging plug to the intended power-outlet in the harbour.
3. On-board computer performs self-test on each component. In the course of this, high voltage batteries are connected and display switches to Charger screen.
4. **Start charging operation by switching On/Off switch on the Charger screen to On.**
5. To finish charging operation for full charging of batteries, switch the On/Off switch in charger display to Off and then pull the plug out of the socket. After full charging of battery remove power cable from socket.



Although DEEP BLUE high-voltage batteries are protected against deep discharge, self-discharge occurs to a certain extent. To prevent damage of the battery, please respect the following advice:

- Recharge batteries after every trip. In case the batteries should be discharged down to less than 20 %, recharging must occur within 48 hours.
- In case of extended storage, check charging level of batteries once a month. To prevent possible damage of your batteries, check their charging level before storing them for several months.

In case the power-outlet available for charging cannot deliver the required power, charging power may be reduced in the **Settings – Chargers** menu until trouble-free charging is possible (refer to **5.4. On-board computer and touchscreen display**). Charging will then take more time.

In case batteries or charger should excessively heat up during charging (for instance due to high ambient temperatures) or should supply voltage drop dramatically, the charger will automatically reduce charging power. Charging will then take more time.

Time until full display indicates the time estimated remaining until batteries are 100% charged.

Retrieve current charging status at any moment on the battery display.

Reference values for charging times until charging level >90%
Voltage 230 V, setting of charger's power: 100%, ambient temperature 25 °C

	Number of batteries in the system		
	2	3	4
Depth of discharge 50%	04:15	06:25	08:30
Depth of discharge 80%	06:50	10:15	13:40

Slow charging is engaged for final stages of charge from >90 % up to 100 % with extra time.

4.7 Use of 12 V battery

The 12 V battery supplies power to the 12 V on-board electrical system. Moreover, the 12 V battery is required to start the high voltage electrical system: it conveys the switch-on signal to the high voltage batteries.

During normal operation, charging of 12 V battery by means of an external charger is not necessary. During operation and charging of the DEEP BLUE system, the 12 V battery is charged from the high voltage lithium battery with up to 10 A.

If currents exceeding 8 A are required from the 12 V battery for the on-board electrical system, we recommend installing a separate 12 V circuit for the on-board electrical system. In doing so, you avoid an unintentional discharge of the 12 V battery that is integrated into the DEEP BLUE system (and that is required to switch on the high voltage lithium batteries).

If charging the 12 V battery by means of an external charger should become necessary, disconnect the 12 V battery from the DEEP BLUE system first before connecting the 12 V battery to an external charger.

The 12 V battery connected to the DEEP BLUE system must have a charging end voltage of at least 13.8 V or more, a capacity of at least 40 Ah and a current carrying capacity of at least 100 A.



Pay attention to 12 V battery levels when you are using other on-board devices, especially while using devices when motor is not in operation. Failure to do so could result in discharge of 12 V battery, which will result in you not being able to start your motor.

5. Emergencies

To quickly stop the motor you have two choices:

1. Move throttle into neutral position.
2. Pull emergency stop lanyard.



When operating at high power, use emergency stop only in emergency situations. Repeated usage of emergency stop at high power may potentially damage the batteries' electronics and is not covered by warranty.

6. Trailing boats equipped with DEEP BLUE

During trailering and transportation of the boat with mounted outboard, the motor should be tilted down into a vertical position.

If there is not enough ground clearance to use the vertical position of the mounted outboard, the outboard should be tilted up for trailering. In this case, do use an appropriate outboard support device.

Ensure local and country-specific regulations for trailering of boats are understood and adhered to.



- Make sure before starting your journey and during your journey that there is no risk of ground contact of the motor.
- When trailering the motor in tilted position, do not use the tilt lock on the transom bracket to support the motor. Use an appropriate outboard support device.

7. Maintenance and service



- In case the high voltage battery should be mechanically damaged, please do not use the DEEP BLUE system any more. Get in touch with Torqeedo Service.
- High voltage components of DEEP BLUE systems are watertight (battery IP 67, charger IP 67, connection box IP 66 protected). However avoiding permanent exposure of high voltage components to water is necessary.
- Always keep high voltage components (batteries, connection box, charger) of DEEP BLUE system clean and free from dirt.

7.1 Maintenance of mechanical components

- After operation in salt or brackish water, rinse the motor with fresh water.
- Check propeller after every use.
- After every use make sure that no gear oil is leaking.
- Use conventional cleaning agents to clean the DEEP BLUE motor surfaces; treat plastic surfaces with cockpit spray.

7.2 Maintenance of high voltage lithium batteries

DEEP BLUE batteries are basically protected against total discharge. As batteries are self-discharging, a harmful total discharge risking to destroying the battery is nevertheless possible. So please respect the following advice:



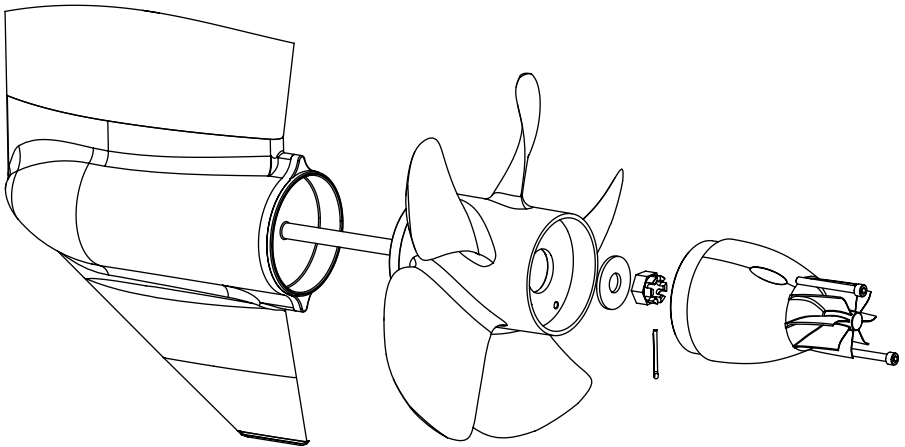
- Charge the battery after each use. Ideally, recharge the battery directly after use. In case of discharge down to less than 20 %, battery must be recharged within 48 hours.
- If you want to store the battery over a longer period: Fully charge the battery before storing it. Check battery status once a month.
- Always store the battery at ambient temperatures of between -40 °C and +50 °C (-40 °F and +122 °F).
- We do not recommend a longer storage with enabled charger. In this case, charger would start every 15 minutes. In case of an error message, undesired total discharge may be the consequence.

One of the boundary conditions of capacity warranty for DEEP BLUE high voltage batteries described in chapter 10 is not to expose them permanently to high temperatures. So store the battery at temperatures of below +25 °C (+77 °F) whenever possible.

7.3 Replacement of propeller

If you want to replace the propeller on your own, switch off the whole system by switching key switch, emergency stop and 12 V battery's main switch off.

1. Loosen the screws of HubVortex-Vane.
2. Withdraw the safety split pin of the castle nut.
3. Loosen castle nut and remove washer.
4. Replace the desired propeller
5. Tighten castle nut again (torque higher than 50 newtonmeter)
6. Secure castle nut with safety split pin against twisting.
7. Secure screws of HubVortex-Vane with screw safety varnish.



7.4 Service

As the DEEP BLUE is an electric propulsion system, a number of outboard typical maintenance issues are irrelevant: no motor oil change, no oil filter change, no idling mixture setting, no fuel filter change, no spark plug change, no valve clearance checks, etc.

However, a couple of maintenance operations are necessary to guarantee a long service life and the safe operation of the DEEP BLUE.



- Maintenance work must be realized by qualified staff. Contact Torqeedo Service.
- Prior to any technical check or service operation, service staff must necessarily switch off the DEEP BLUE system. Moreover, withdraw emergency stop lanyard and wait three minutes before touching electrical components.

DEEP BLUE service intervals

Service intervals: Service is to be carried out in the specified intervals or after specified operating hours – whichever occurs first.		Once, 1 month or 20 operating hours after commissioning	Permanently	
			Every six months or after 100 operating hours	Yearly or after 200 operating hours
Service operations				
Battery and battery cables	Check water tight fixing and isolation	■	■	
Motor cover screw joint	Check strength	■	■	
Other screws and bolts on outboard	Check strength	■	■	
Lubrication points	Lubricate	■	■*	
Gear oil	Change	■	■	
Other cable connections	Check water tight fixing and isolation	■		■
Cooling system	Check tightness and throughput		■	
Battery venting hoses	Check fastening and skin		■	
Connections in connection box	Check fastening		■	
Highvoltage isolation	Check		■	
Battery damping	Check			■
Data display	Check fastening and tightness			■
Throttle	Check stability and function			■
Clutch	Check function			■
Sacrificial anode	Check condition			■
Impeller	Change			■

* when using the outboard in saltwater, proceed to checks in shorter intervals

Lubrication valve		Intervals	
Lubrication points	Lubricant to use	When navigating in freshwater	When navigating in saltwater
Gearbox	API GL-5 SAE 80 W 90 MIL-L 2105 C (600 cc / 500 g)	Check lubrication after 10 operating hours. After that, check every 50 operating hours. If necessary, apply lubricant up to the calibration mark.	
Propeller shaft	Water repellent marine lubricants	60 days	30 days
Clamping screws	Water repellent marine lubricants	60 days	30 days



Failure to execute or document required services will lead to loss of warranty. Please ensure that all services are executed and documented in your DEEP BLUE service book.

8. Troubleshooting

Error	Check / Remedy
Display does not react after turning of key switch or connection of charging plug.	<ul style="list-style-type: none"> • Check emergency switch for correct seat and fit it if necessary. • Check boat's main switch and switch on if necessary. • Check 12 V battery charge status. In case of low charge level shut off any devices which are not part of the propulsion system; avoid tilt use, charge with the help of external charger if necessary. For reliable operation, the system continuously needs at least 11 V battery voltage • Check fuse of the 12 V battery circuit and replace defective fuse if necessary. • Only when charging: Check electrical connections on land, i.e. sockets, cables and fuses, remedy possible disorders.
Trim/tilt motor doesn't react when actuated	<ul style="list-style-type: none"> • Check emergency switch for correct seat and fit it if necessary. • Check boat's main switch and switch on if necessary. • Check tilt overload switch. The switch is located on the connection box; you will identify it by the grey rubber cap. Remove rubber cap and press the switch beneath. (Overload switch triggers when tilt/trim motor is actuated for a longer time although motor has already been trimmed until end stop.)
Trim/tilt motor audibly works, but doesn't move	<ul style="list-style-type: none"> • Check whether motor is already at end stop. • Check whether tilt lock on the transom bracket blocks tilt mechanism. Loosen if necessary. • Check trim/tilt mechanism for blockade and remove blockade if necessary.
Temperature warning or unexpected power reduction	<ul style="list-style-type: none"> • Tilt the engine from the water and shut off the system. Check whether propeller or cooling water inlet is blocked by foreign objects. Clear blockade if necessary. • Rinse cooling conduit.

Error	Check / Remedy
Very poor motor power	<ul style="list-style-type: none"> On main screen of display check whether Slow mode for navigation in harbours is activated. For enabling and disabling of Slow mode, throttle must be in neutral position.
No function of charger	<ul style="list-style-type: none"> Check on display whether charger is set on ON. Set on ON if necessary. In case of long cable connection between socket and charger, a voltage drop may occur which prevents batteries from being charged. Try to use a shorter cable for charging, if possible. Check that key switch of DEEP BLUE system has been set to OFF position and that emergency stop switch is engaged. Check whether fuses have turned off power from socket. Reset fuses and scale down charger power as outlined in chapter 4.4.
Increased noise and vibration in Deep Blue system	<ul style="list-style-type: none"> Contact an authorized Torqeedo service partner.
When starting, display displays combination from E 208, E 210 and E 138	<ul style="list-style-type: none"> Check emergency switch for correct seat and fit it if necessary .

For any errors which have not been listed or which you cannot remedy by the above mentioned measures, please contact a Torqeedo service partner.



If indicated on error messages „Insulation error“, insulation of high voltage system is damaged. The system remains operable, but must immediately be checked by Torqeedo service staff. Thanks to connected DEEP BLUE safety systems, two insulation faults must coincide at the same time to give rise to risk of injury. However, after an insulation error has been displayed, as a precautionary measure, avoid any contact to metal parts as far as possible.

9. DEEP BLUE capacity warranty for high voltage batteries

Torqeedo GmbH, Friedrichshafener Straße 4a D-82205 Gilching, warrants to the final purchaser of a Torqeedo DEEP BLUE system that the remaining capacity of DEEP BLUE high voltage batteries will still be at least 80 % of the original capacity 9 years after commissioning, provided that the following basic conditions will be met.

Like all batteries, DEEP BLUE batteries age with time due to temperature effects (calendrical aging) as well as through use of the battery, including charging and discharging (cyclical aging). Prerequisite to 9 year capacity warranty of DEEP BLUE batteries is that combinations of use intensity and battery temperature specified in the chart below are not exceeded.

Number of drawn Ah per battery over warranty period	Corresponds to number of cycles with an 80 % discharge over 9 years	Corresponds to number of cycles with an 80 % discharge per year	Admissible average temperature
98.400	3.000	333	26 °C
78.720	2.400	266	28 °C
59.040	1.800	200	30 °C

Note: Average temperature is calculated on the basis of Arrhenius average which means that weighing of higher temperatures is more important.

Moreover, Torqeedo does not warrant for defects of the battery and other components caused by:

- misuse, improper storage, improper transportation, improper loading, incorrect installation, repositioning of batteries on the boat, connection of incompatible equipment with DEEP BLUE;
- force majeure or other factors outside the control of Torqeedo;
- impact of open fire or intense heat;
- unauthorized opening of the battery;
- unauthorized changing of contacts or cabling;
- consequential damages resulting from lacking elimination of other damages;
- modification or reparation of batteries by staff that has not been authorized for repair works on DEEP BLUE components by Torqeedo, especially batteries.

Negligent or voluntary acts which are the reason for a lacking record of warranty relevant data will result in a loss of warranty.

Fulfilment of warranty claims is made through reparation or supply with spare batteries. It is admissible to take used batteries as replacement if the capacity of the spare battery corresponds at least to the warranted status of the reclaimed battery. Spare battery must be installed by Torqeedo authorized staff. Warranty period for spare batteries is calculated on the basis of remaining warranty period the reclaimed battery has still possessed at the time of the complaint.

10. Warranty conditions

10.1 Extent of warranty

Torqueedo GmbH, Friedrichshafener Straße 4a, at D-82205 Gilching, Germany, guarantees final purchaser of any Torqueedo product that the latter is free of any material and processing defects during the period of coverage stated below.

Torqueedo will indemnify final purchaser against any costs of repair of any material or manufacturing defect. This indemnification obligation does neither cover incidental costs of a warranty claim nor other financial disadvantages (e.g. costs for towing, telecommunications, food, accommodation, loss of use, loss of time, etc.).

Warranty for standard products ends two years after delivery of product to final purchaser. Products that have been used - even if only temporarily - for commercial purposes or the purposes of public authorities are excluded from this two-year warranty. These are covered by legal warranty period. Warranty lapses six months after discovery of any defect.

It's up to Torqueedo to decide whether defective pieces will be repaired or replaced. Distributors and retailers doing reparation works on Torqueedo products are not authorized to issue any legally binding statement on behalf of Torqueedo.

Warranty covers neither wear parts nor routine maintenance.

Torqueedo is entitled to refuse warranty claims if

- warranty has not duly been submitted (in particular: contacting Torqueedo before sending back defective products; lack of completely filled-in warranty certificate and proof of purchase; refer to chapter „Warranty process“),
- product has not been treated in accordance with instructions,
- safety, handling and care instructions of manual have been disregarded,
- prescribed service intervals have either not been respected or not documented,
- object of purchase has been anyhow altered or modified or equipped with parts and/or accessories which are not expressly included in equipment approved or recommended by Torqueedo,
- previous maintenance or repair works have not been carried out by companies approved by Torqueedo or other than original spare parts have been used - unless end user is able to prove that the fact leading to rejecting warranty claims has not favoured development of the defect.

In addition to the claims from this warranty, the final user also has legal warranty claims arising from his/her purchase contract with the respective retailer that are not limited by the present warranty.

10.2 Warranty process

Compliance with the warranty process described hereinafter is a prerequisite to satisfaction of any warranty claims.

In order to ensure smooth processing of warranty cases, please bear in mind the following:

- Please contact a Torqeedo Service Center in case of a reclaim. Torqeedo Service Center will assign you an RMA number.
- Service Center will need the following documents to process your reclaim: DEEP BLUE service book, your proof of purchase and a completed warranty certificate. You will find a blank form enclosed with the present manual as well as online. Data filled in the warranty certification must comprise information such as contact details, details of reclaimed product, serial number and a brief description of the problem.
- Please take care when potentially transporting products to our Service Center that unproper transport is not covered by our warranty.

In case you should have any questions regarding the warranty process, please feel free to contact us under coordinates cited on back of the present manual.

11. Decommissioning of the product / Information on disposal

Torqeedo DEEP BLUE motor has been manufactured complying with provisions of Directive 2002/96/EC. This directive rules dismissal of electric and electronic equipment to sustainably protect the environment. For proper dismissal please contact your Torqeedo Service Center or the boat manufacturer.



Torqueedo Corporate Offices

Torqueedo GmbH
Friedrichshafener Straße 4a
82205 Gilching
Germany

info@torqueedo.com
T +49 - 8153 - 92 15 - 100
F +49 - 8153 - 92 15 - 319

Torqueedo Inc.
171 Erick Street, Unit A-1
Crystal Lake, IL 60014
USA

usa@torqueedo.com
T +1 - 815 - 444 88 06
F +1 - 847 - 444 88 07

Torqueedo Service Centers

Germany / Austria / Switzerland

Torqueedo GmbH
- Service Center -
Friedrichshafener Straße 4a
82205 Gilching
Germany

service@torqueedo.com
T +49 - 8153 - 92 15 - 126
F +49 - 8153 - 92 15 - 329

North America

Torqueedo Inc.
171 Erick Street, Unit A-1
Crystal Lake, IL 60014
USA

service_usa@torqueedo.com
T +1 - 815 - 444 88 06
F +1 - 847 - 444 88 07

All other countries

Contact details of Service Centers are available
under www.torqueedo.com in the "Service" section.