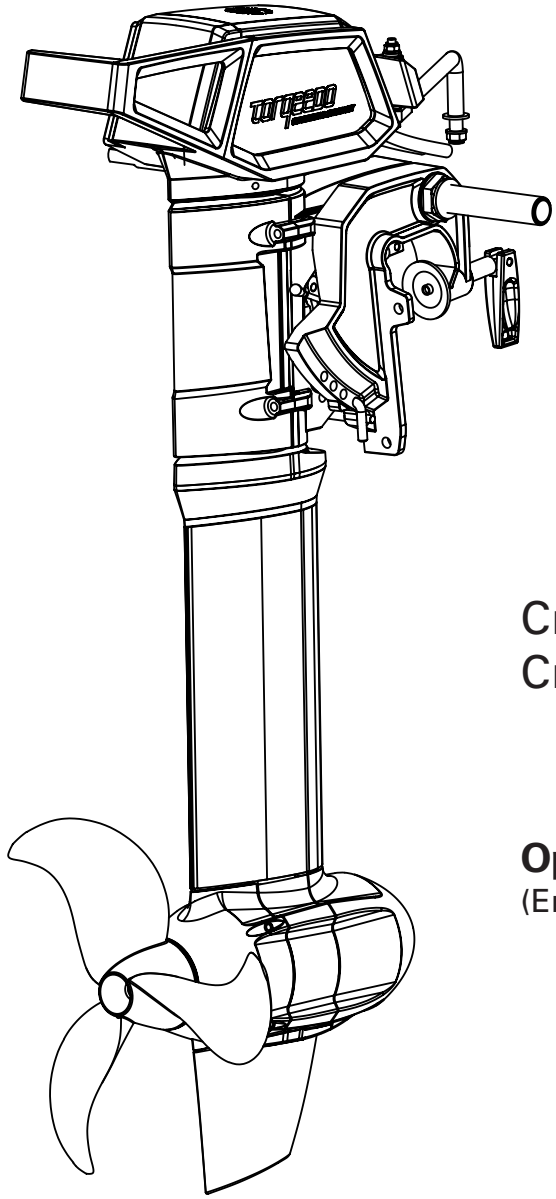
torqeedo
STARNBERG.GERMANY



Cruise 2.0 R
Cruise 4.0 R

Operating Manual
(English)

2. Important safety and operating instructions

Important safety instructions 

Torqeedo motors are designed to operate safely and reliably as long as they are used according to the operating manual. **Please read this manual carefully** before you start the motor. Ignoring these instructions can cause property damage or personal injury. Torqeedo accepts no liability for any damage caused by actions that contradict this operating manual.

To ensure safe operation of the motor:

- Familiarize yourself with all the motor controls. For instance, you should be able to stop the motor quickly if necessary.
- Please note that the information on the battery charge and remaining range on the remote throttle's display are estimated values. Depending on the quality of the batteries and their age, the actual charging level and range may deviate from the displayed values.
- Note that the on-board computer does not include changes to currents and wind conditions in the range calculation. If you are moving with the wind or current the remaining range is calculated assuming you continue going with the wind or current. If you change your direction or if winds/currents change, your remaining range may be significantly lower. Therefore note the effect that the wind and current along your route have on your range.
- To reverse or stop the Cruise R models, the kick lever on the transom mount must be in the proper position ("Lock"). You will find details on this in Sections 8.1 and 9.1 of this operating manual.
- To supply power to your Cruise 2.0 R you normally need two or more batteries (24 V nominal voltage); your Cruise 4.0 R will need four or more batteries (48 V nominal voltage). It is essential when linking up the batteries that you only combine the same kind of batteries (same capacity, same age, same manufacturer, same charge status). Different charge conditions between batteries linked together can, when the batteries are linked up, lead to extremely high compensating currents or overloads on the cables, plugs, master switch or the battery itself. In extreme cases this could even cause fire or injury. Therefore always follow the instructions in Sections 8.5 to 8.7 of this operating manual.
- Use the enclosed cable set to connect the motor to the battery supply. This has an adequate cable cross-section (25 mm^2 / American Wire Gauge 4) is equipped with a main switch in line with the relevant ISO requirement and has a main fuse.
- Keep the magnetic key supplied at least 50 cm / 20 inches away from pacemakers.

- Keep the supplied magnetic key away from magnetic information media (e.g. debit/credit cards, music cassettes, magnetic tapes etc.). The magnet integrated in the key has enough strength to make the saved data unusable.
- Check the cable regularly for damage.
- Only allow adults who have been instructed on how to operate the motor or have read the operating manual to run it.
- Follow the boat manufacturer's instructions on the permissible motorization of your boat. Do not exceed the capacity limits. Please note that the thrust performance of the Cruise 4.0 R is comparable with a 9.9 hp combustion engine.
- Stop the motor immediately if someone goes overboard.
- Never operate the motor if someone is in the water close to the boat.
- Do not use the motor as a fixing point for your boat; never use the motor as a handle to lift or tow smaller boats.

Important operating instructions 

Here are the most important instructions on operating Torqeedo Cruise motors. Apart from these instructions, please observe the complete operating instructions to prevent damage to your motor.

- Only run the motor when the propeller is under water. If it is run in the air, the shaft sealant rings that seal the motor to the drive shaft may become damaged. If the motor is run in the air for a longer period, the motor itself can overheat.
- The Cruise R and the associated remote throttle are protected against dirt and water in line with protection type IP67.
- After use, cut the connection between the motor and the battery using a master switch. This completely cuts the power supply to the motor and prevents the batteries from discharging during the stoppage time because of quiescent current.
- After use, always take the motor out of the water. You can do this using the tilt mechanism of the transom mount.
- After use in salt or brackish water, rinse the motor with fresh water.
- Occasionally use contact spray to care for all electronic contacts. If you use the motor in salt or brackish water, we recommend applying contact spray once a month.
- Do not separate the cable connections and do not turn the main battery switch to "off" when the propeller is turning.

- Only store the motor in a dry condition.
- If the motor has malfunctions an error code is shown on the display. After resolving the error the motor can be moved out of the stop position again. In rare cases it may be necessary to switch the motor off using the “on/off” button. You will find descriptions and details in Section 9.2.
- If you have a problem with your motor, please follow the instructions in this manual for handling warranty claims.

3. Introduction

Dear customer,

We are delighted that you have chosen our motor. In terms of drive technology and efficiency, your Torqeedo Cruise outboard motor is cutting-edge technology. It 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 the time to read this operating manual carefully so that you can use the motor properly and enjoy it for a long time.

We constantly strive to improve Torqeedo products. Should you have any comments on the design and use of our products, we would be pleased to hear from you. Please contact our Customer Services if you have any questions on Torqeedo products (service_usa@torqeedo.com or service_international@torqeedo.com).

We hope you have a lot of fun with this product.

Yours,

Friedrich Böbel, PhD
Managing Director

Christoph Ballin, PhD
Managing Director

Matthias Janzen
Managing Director

4. About this operating manual

This operating manual will help you use your Torqeedo Cruise R safely and efficiently. All information is given according to our latest knowledge. Subject to technical changes.

- Indicates a danger or a procedure that may cause injury and property damage.

- Indicates a danger or a procedure that may cause property damage.

5. Conformity declaration

We, Torqeedo GmbH, with sole responsibility, declare the conformity of the Cruise R product range with the following provisions:

Small water vehicles
Electrical systems
Low-voltage direct current (DC) systems
DIN EN ISO 10133:2000

Starnberg, March 2009

Managing Director's signature

The aforementioned company holds the following technical documents available for viewing:
- Required operating manual
- Plans/software source code (EU authorities only)
- Inspection records (EU authorities only)
- Other technical documentation (EU authorities only)

6. Warranty conditions

6.1 Extent of warranty

Torqeedo GmbH, Petersbrunner Straße 3a in D-82319 Starnberg, Germany, guarantees the final purchaser of a Torqeedo outboard motor that the product is free from material and manufacturing faults during the period stated below. Torqeedo will indemnify the final purchaser for any expense to repair a material or manufacturing fault. This indemnification obligation does not cover the incidental costs of a warranty claim or any other financial losses (e.g. costs for towing, telecommunications, food, accommodation, loss of earnings, loss of time etc.).

The warranty ends two years after the date on which the product was delivered to the final purchaser. Products that are used commercially or by public authorities - even if only temporarily - are excluded from this two-year warranty. In these cases, the statutory warranty applies. The right to make a claim under the warranty runs out six months after discovery of a fault. All warranty claims revert to the original date of purchase.

Torqeedo decides whether faulty parts are repaired or replaced. Distributors and dealers who repair Torqeedo motors have no authority to make legally binding statements on behalf of Torqeedo.

Normal wear and tear and routine servicing are excluded from the warranty.

Torqeedo is entitled to refuse a warranty claim if:
- the warranty was not correctly submitted (especially failure to contact Torqeedo before returning goods, failure to present a completely filled-in warranty certificate and proof of purchase, see Warranty process).
- the product has been used improperly.
- the safety, operating and care instructions in the 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 Torqeedo.
- previous services or repairs were not carried out by firms authorized by Torqeedo, or non-original parts were used unless the consumer can prove that the facts that led to the warranty being void did not affect the development of the fault.

As well as the rights arising from this warranty, the customer also has legal warranty claim rights arising from the purchase contract with the dealer that are not hampered by this warranty.

6.2 Warranty process

Adhering to the following warranty process is a prerequisite to the satisfaction of any warranty claims.

Before dispatching any apparently faulty goods, it is imperative to coordinate the delivery with Torqeedo Services. You can contact us by phone, email or mail. The ability to make contact via the www.torqeedo.com website is being extended successively. You can find the contact details on the back of this manual. **Please understand that we are unable to deal with products of which we have not been notified and will therefore refuse to accept delivery.**

To check a warranty claim and to process a warranty, we require a completed **warranty certificate** as well as **proof of purchase**.

- The warranty certificate attached to this operating manual must show contact details, product details, a serial number, and a brief description of the problem.
- Proof of purchase must indicate the purchase and the date of purchase (e.g. transaction receipt).

When returning the motor to the Service Center, we recommend keeping the original Torqeedo packaging. If this is no longer available packaging that excludes transport damage must be used as this is not included in the warranty.

We are available to answer any questions regarding the warranty process - simply use the details on the back cover.

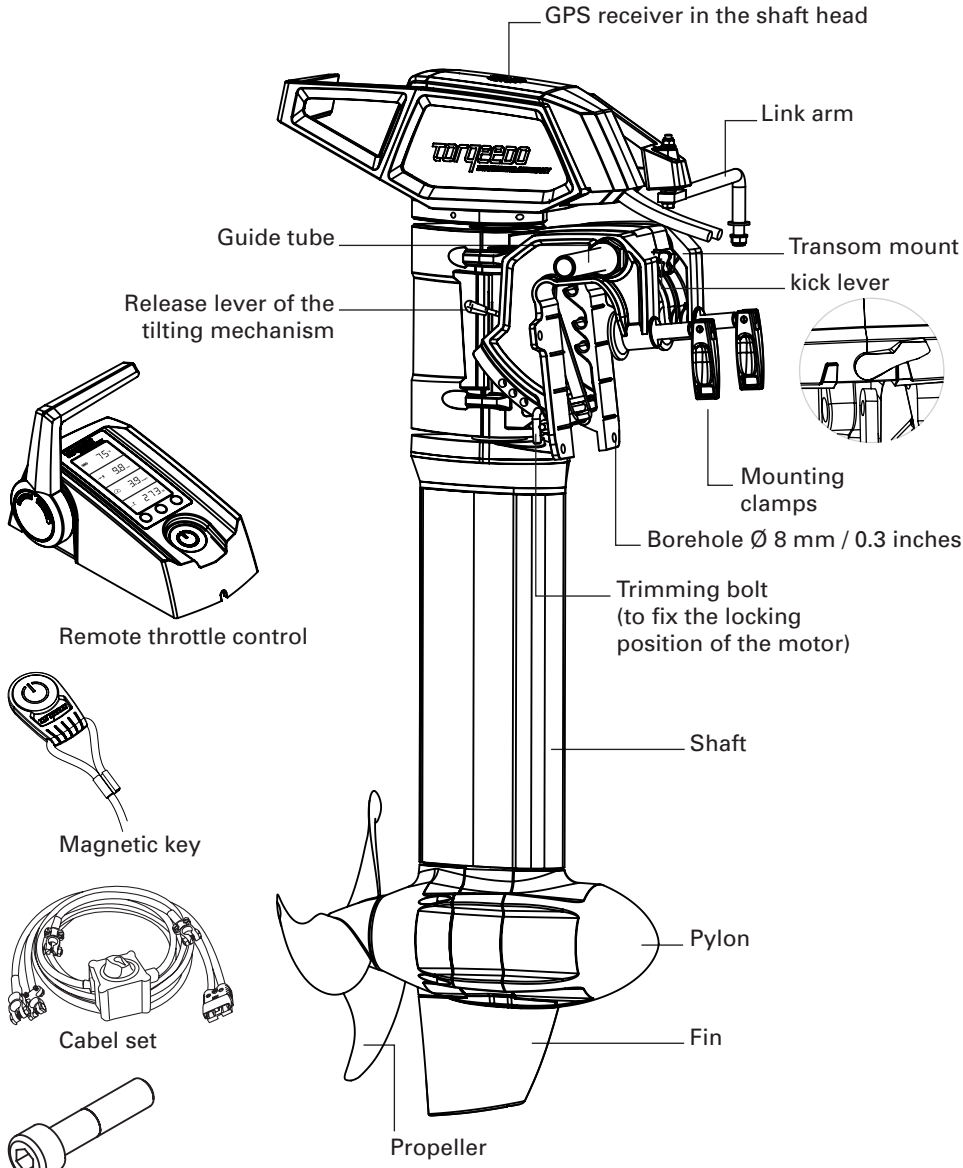
7. Equipment and operating elements

7.1 Supply scope

The full supply scope of your Torqeedo Cruise R should include the following parts:

- Motor with pylon, propeller, shaft, transom mount (with guide tube for remote steering), connection cables for cable set and remote throttle
- Link arm and small parts for connecting the remote steering
- Remote throttle control with integrated display and 4 screws M4 in different lengths to mount remote throttle
- Magnetic key
- Cable set with main switch, fuse and bridging cable (1 for Cruise 2.0 R, 3 for Cruise 4.0 R)
- M8 screw to fix the steering (if no connection is desired to the remote steering)
- Operating manual
- Warranty certificate
- Packaging

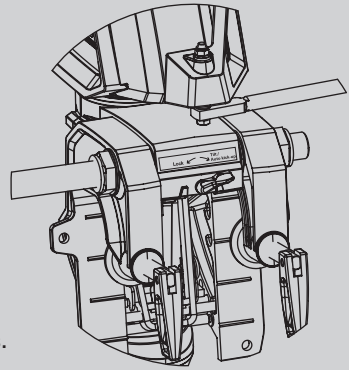
7.2 Plan of operating elements



8. Starting up

8.1 Fitting the drive onto the boat

- Please ensure that the kick lever at the transom mount is in the “Lock” position until the outboard is fitted onto the boat.



- Do not lay the cable around sharp edges.

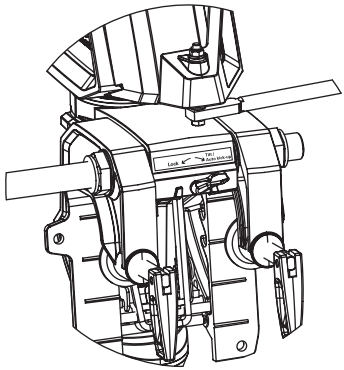
1. Remove the parts supplied with the Cruise R from the packaging.

2. Hang the drive on the transom or motor holder on your boat and tighten the two mounting clamps.

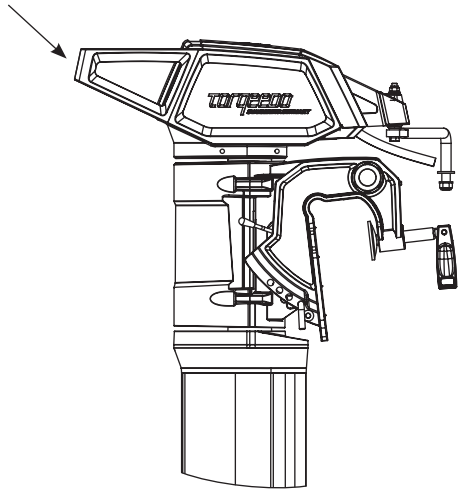
3. As an alternative the drive can be screwed with four screws (Ø 8 mm / 0.3 inches, not supplied) through the holes in the clamping mechanism onto the boat’s transom mount.

4. The following steps are required to set the engine perfectly to the water surface (trimming):

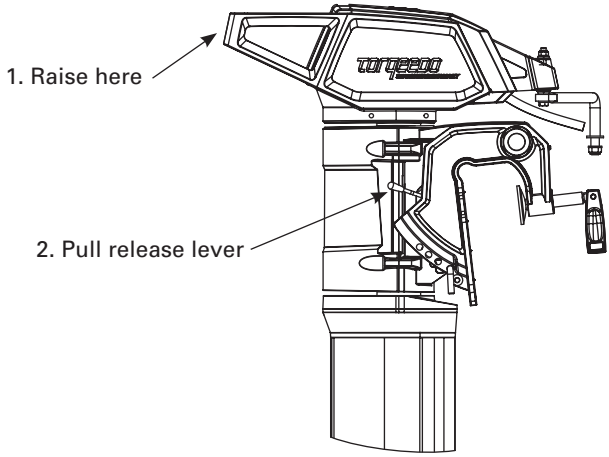
   - First tilt the motor up. To do so the kick lever must be in the “Tilt/Auto kick-up” position.



- Tilt the motor up by pulling the handle on the back end of the aluminum cage until the engine clicks into one of the upper positions.



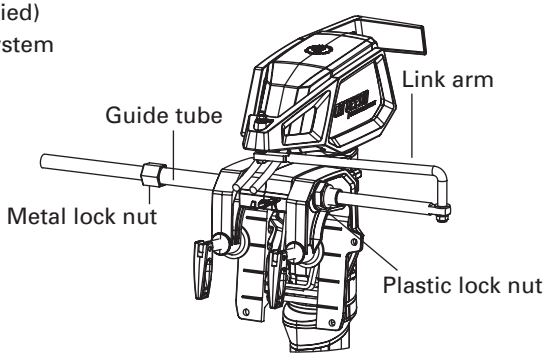
- Remove the trimming bolt's retaining ring and pull it out of the transom mount.
- Select the trimming position you want and insert the trimming bolt into the corresponding borehole. You must insert the trimming bolt through both side walls of the transom mount **Finally you must fix the trimming bolt again with the retaining ring.**
- In order to move the motor downwards again you must first lift the motor onto the handle of the aluminum cage above the release position and then press the lever again to release the tilt mechanism (refer to drawing). With the lever pressed, allow the motor to move down to the desired position slowly.



8.2 Connecting the remote steering

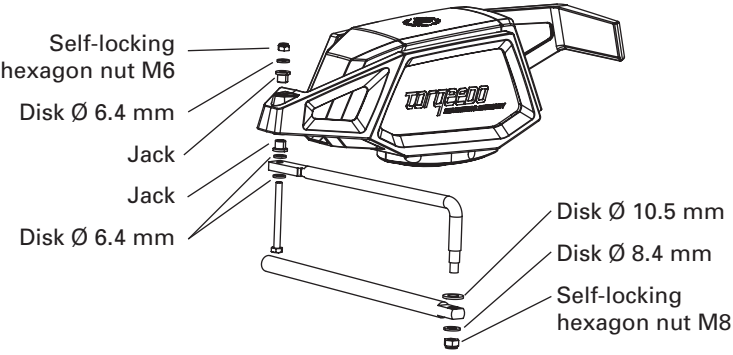
To connect your Cruise R outboard to a remote steering system you need the following parts:

- Remote steering system (not supplied) e.g. Teleflex Light Duty Steering System
- Link arm (supplied) to connect the remote steering system with the aluminum cage on the shaft head



The following steps are required for installation:

1. Connect the remote steering system with the guide tube. To do so, push the thrust rod of the remote steering system through the guide tube and fix it with the metal lock nut of the remote steering system. When tightening the lock nut ensure that you do not alter the shape of the guide tube.
2. Screw the plastic lock nut to the free end of the guide tube.
3. Insert the bent end of the link arm into the thrust rod borehole and fix the connection with the appropriate nut.
4. Fix the other end of the link arm to the borehole of the aluminum cage. To do so, please use the enclosed small parts in line with the drawing.

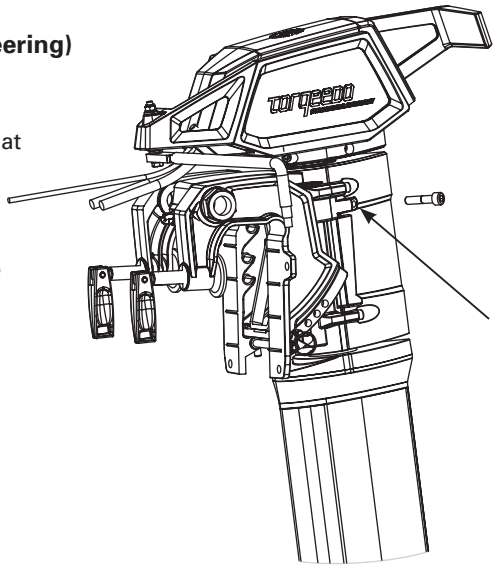


5. Fix the other parts of your remote steering system as per the manufacturer's instructions.

8.3 Fixing the steering (for operation without connecting the remote steering)

If the Cruise R is not connected to remote steering - e.g. for operation on sail boats that steer with the rudder – the motor can be fixed in a steering position.

To do so, turn the M8 screw supplied in the appropriate opening on the back of the transom mount and tighten it.



8.4 Connecting the remote throttle control with the integrated display and magnetic key

1. Lay the black connection cable that extends from the shaft head to the location you wish to assemble the remote throttle. Ensure that the cable is not subject to clamping during any steering movement.
2. Mount the remote throttle in the desired position. The boring image required for this is found on the last page of this operating manual. To screw it firmly, use a screw with a M4 thread included in the supply scope.
3. Before finally tightening the remote throttle, screw the plug of the connection cable to the appropriate jack on the underside of the remote throttle.

8.5 Basic information on battery supply

In general the Cruise models can be operated with lead-gel, AGM or lithium-based batteries.

We do not recommend using starter batteries as they can be damaged after a few cycles if the discharge is lower. If lead-based batteries are to be used we recommend so-called "traction batteries" or "deep cycle batteries" that have been designed for an average depth of discharge per cycle of 80 % as they are used for example in fork lift trucks. So-called "marine" batteries can also be used. Here we recommend higher nominal capacities so as not to exceed a 50 % depth of discharge.

To calculate the travel times and range of the batteries, you need to know the battery capacity. In the following, this is stated in watt-hours [Wh]. The number of watt-hours can easily be matched with the input power of the motor in watts [W]: The Cruise 2.0 R has an input power of 2,000 W and consumes 2,000 Wh in one hour at full speed. The Cruise 4.0 R has an input power of 4,000 W and consumes 4,000 Wh in one hour at full speed. The nominal capacity of a battery [Wh] is calculated by multiplying the charge [Ah] with the nominal voltage [V]. So a battery with 12 V and 100 Ah has a nominal capacity of 1,200 Wh.

In general, lead-acid, lead-gel and AGM batteries do not fully provide the battery's calculated nominal capacity. This is in particular due to the high current capabilities of lead batteries. In order to counteract this effect we recommend using larger batteries. This effect is almost negligible for lithium-manganese batteries.

In addition to the actual available battery capacity of the boat type, the selected output level (lower life and range at higher speed) and the external temperature also play an important role for the range and life expected.

We recommend that you achieve the required battery capacity in Wh using as few parallel connections as possible with as few big batteries as possible. So, to give yourself a battery capacity of e.g. 4,800 Wh (at 24 V) it is better to use two 12 V / 200 Ah batteries rather than several parallel and serial linked batteries (e.g. four 12 V / 100 Ah batteries). Firstly, this avoids safety risks from battery configurations. And secondly, capacity differences between the batteries that already exist at the time of the configuration or that develop later have a negative effect on the overall battery system (capacity loss, also called drifting). Thirdly, this way you reduce losses at the contact points that can amount to 2-3 % of the battery capacity.

To avoid safety risks, capacity losses, and contact point losses with serial and parallel battery configurations, always only combine the same type of batteries (same capacity, same age, same manufacturer, same charge condition).

- Serial and parallel configured batteries must always have the same charge condition. That is why you must use only the same type of batteries in configurations (same capacity, same age, same manufacturer, same charge condition) and fully charge each battery separately in your charger before you connect it up. Differences in the charge condition can lead to extremely high compensatory currents or overloads on the cables and plugs or the battery itself. In extreme cases this could even cause fire or injury.
- When working with or near batteries avoid wearing metal jewelry and laying tools on the batteries as this could result in a short circuit.

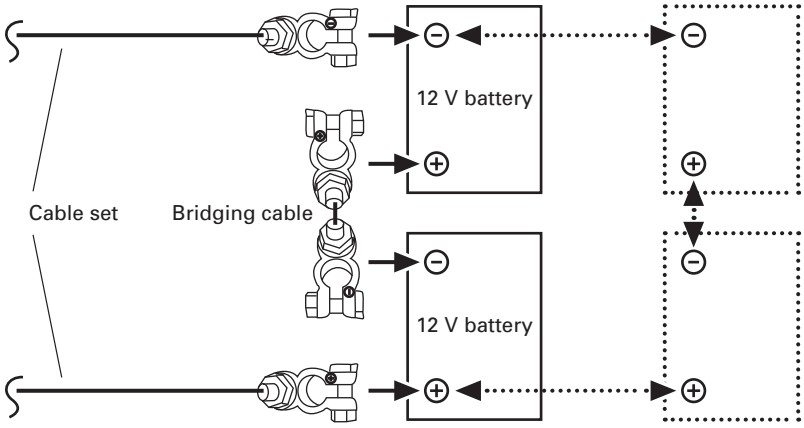
8.6 Connecting the Cruise R to lead batteries (gel, AGM) with the aid of the Torqeedo cable set (supplied)

The Cruise 2.0 R operates with a power supply of between 20 V and 30 V (relating to the nominal voltage). That means it can be operated with two serial configured 12 V batteries.

The Cruise 4.0 R operates with a power supply of between 42 V and 58 V (relating to the nominal voltage). That means it can be operated with four serial configured 12 V batteries.

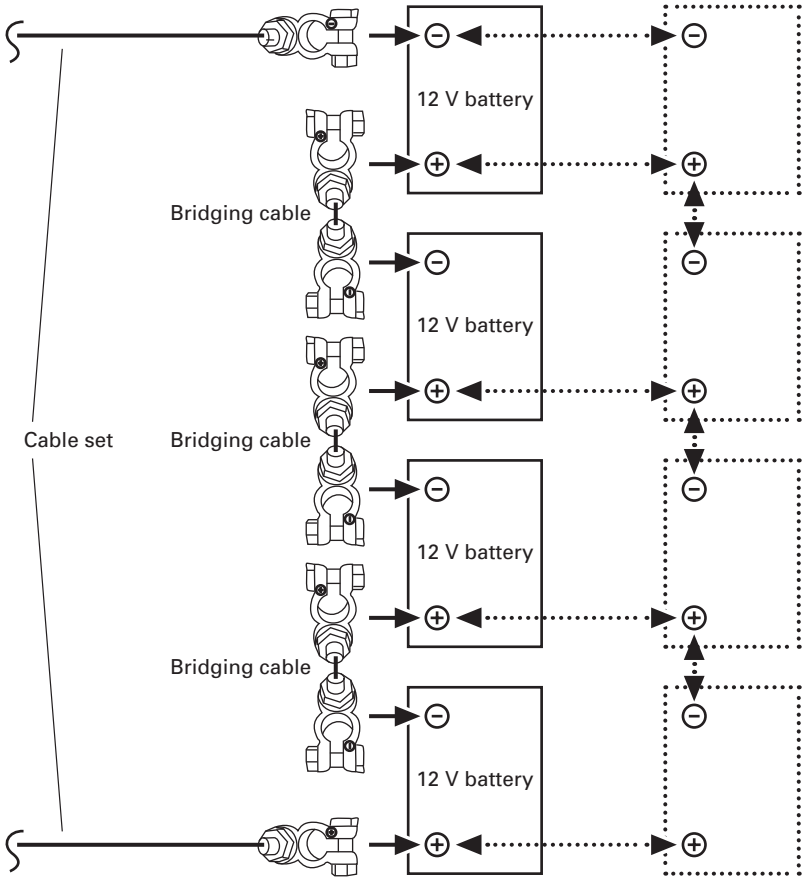
To increase the capacity it is possible to switch several pairs of serial connected 12 V batteries in parallel to each other.

1. Make sure the main switch of the cable set is in the off or zero position. If necessary, switch it to the off or zero position.
2. Connect your cable set in line with the following drawings for your Cruise 2.0 R or 4.0 R an.



Connecting Cruise 2.0 R to two 12 V batteries

Optional extension of the battery capacity via parallel connection with other pairs of 12 V batteries



Connecting Cruise 4.0 R to four 12 V batteries

Optional extension of the battery capacity via parallel connection with other pairs of 12 V batteries

3. Now connect the high current plug of the cable set to the high current plug of the motor.
4. Switch the main switch to the on position.

The batteries are now in serial connected to each other: The battery capacity [Wh] and the voltage [V] of the battery block increase with the number of in serial connected batteries. The battery charge [Ah] is not changed by serial configuration (e.g. two in serial configured 12 V / 100 Ah batteries, each with 1,200 Wh, have 24 V, 100 Ah and 2,400 Wh after the serial configuration).

The cable set comes complete with a CF8 135 A fuse. In case of a short circuit, the fuse cuts the circuit and prevents any further damage.

After installing the batteries, please use the remote throttle control to transfer information about the battery bank to the motor's on-board computer (Section 9.2, Setup mode). Only in this way is it possible to determine the loading status and ranges.

- Serial and parallel configured batteries must always have the same charge condition. That is why you must use only the same type of batteries in configurations (same capacity, same age, same manufacturer, same charge condition) and fully charge each battery separately in your charger before you connect it up. Differences in the charge condition can lead to extremely high compensatory currents or overloads on the cables and plugs or the battery itself. In extreme cases this could even cause fire or injury.
- The cable cross-section for battery configurations must be 25 mm^2 / American Wire Gauge 4. Make sure the battery poles are clean and corrosion-free
- To fix them to the battery poles, tighten the screws on the terminals securely.

8.7 Connecting the Cruise R to Torqeedo Power 26-77 lithium-manganese batteries

The Cruise 2.0 R operates with a power supply of between 20 V and 30 V (relating to the nominal voltage). This means it can also be operated with a Torqeedo Power 26-77 lithium-manganese (LIMA) based battery.

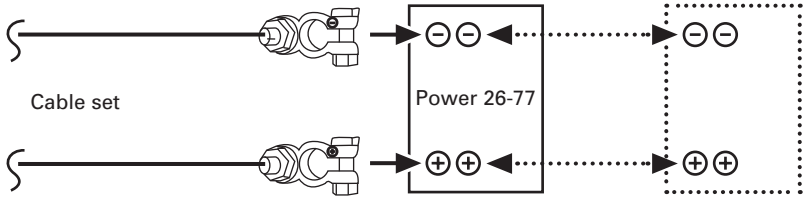
The Cruise 4.0 R operates with a power supply of between 42 V and 58 V (relating to the nominal voltage). This means it can also be operated with two Torqeedo Power 26-77 lithium-manganese (LIMA) based batteries.

To increase the capacity, you can configure up to four Torqeedo Power batteries parallel to each other.

To connect the Cruise 2.0 R / 4.0 R to one or two Torqeedo Power 26-77 batteries you also need an adapter cable set / Power battery (available as an accessory).

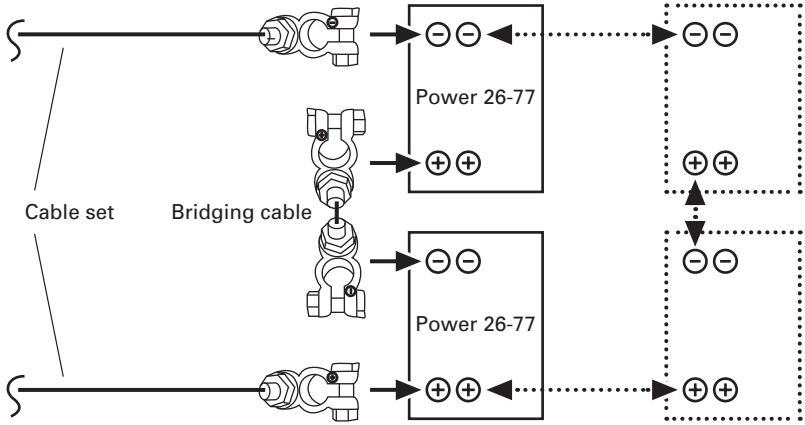
- Incorrect configuration of lithium batteries leads to much higher short circuit currents than configurations with lead batteries. That is why you must follow the installation instructions very carefully and only use the Torqeedo cable set to connect up your motor.

1. Convert the cable set with the adapter cable set / Power battery on the M16 ring terminal that is available as an accessory. Please refer to the supplementary sheet on the adapter cable set / Power battery for more information.
2. Then turn the main switch of the cable set into the off or zero position.
3. Connect your cable set in line with the following drawings for your Cruise 2.0 R or 4.0 R.



Connecting the Cruise 2.0 R to one Torqeedo Power 26-77

Optional extension of the battery capacity via parallel connection with Torqeedo Power batteries



Connecting the Cruise 4.0 R to two Torqeedo Power 26-77

Optional extension of the battery capacity via parallel connection with Torqeedo Power batteries

4. Now connect the high current plug of the cable set to the high current plug of the motor.
5. Switch the master switch of the cable set to the on position.

The adapter cable set / Power battery is equipped with an ANL 125 A fuse. In case of a short circuit, the fuse cuts the circuit and prevents any further damage.

After installing the batteries please use the remote throttle control to transfer information about the battery bank to the motor's on-board computer (Section 9.2, Setup mode). Only in this way is it possible to determine the loading status and ranges.

9. Operation

9.1 Transom bracket

The **tilt mechanism** allows both tilting and trimming the motor.

You can tilt the motor to remove it from the water (e.g. when it is not in use or when you land the boat in shallow water).

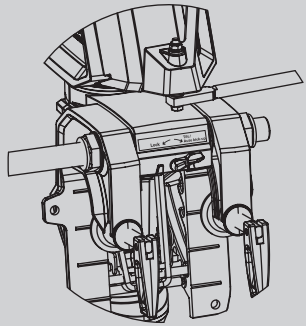
Trimming allows you to set the motor perfectly to the water surface. For this there are 4 possible trimming positions.

See Section 8.1 (Fitting the drive onto the boat) to find out how to tilt and trim the motor.

The kick lever in the "Tilt/Auto kick-up" position enables the motor to be kicked up if it touches the bottom. In this position it is not possible to reverse at full speed.

Automatic kick-up is switched off in the "Lock" position. This enables reversing at full speed.

- Please ensure that the kick lever for revers drive is in the “Lock” position.

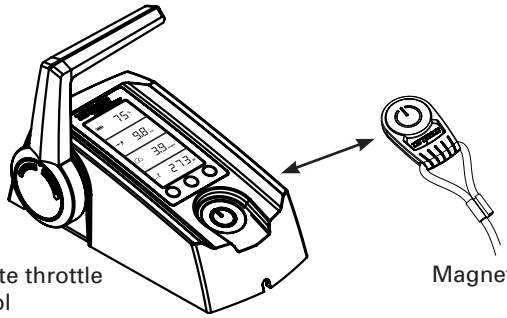


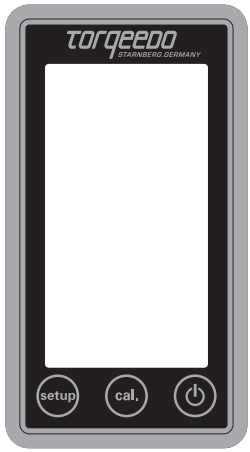
9.2 Remote throttle with integrated display and magnetic key

9.2.1 General

Control the drive power - propeller speed and direction - by adjusting the remote throttle. Forward movement of the remote throttle means the boat moves forward, backward movement of the remote throttle means the boat moves in reverse. Please note that the output is restricted when reversing. The central position is the stop position.

The remote throttle control is equipped with a **magnetic key** with an on/off function. The motor only works if you place the magnetic key supplied on the proper recess on the remote throttle control (see drawing). If the magnetic key is removed the motor stops. You can only start the motor again if you first replace the magnetic key and then move the remote throttle to the central position (stop position).





The remote throttle control is equipped with an **integrated display** and three buttons.

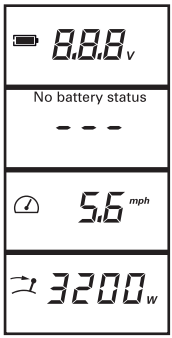
If you press the "on/off" button for 1 second while the magnetic pin is placed on the throttle you switch on the motor. Pressing the button again for 3 seconds switches the motor off again. You can switch the motor off in any operating mode. If there is no activity for 1 hour the motor switches off automatically. Press it again to switch it back on.

9.2.2 Setting up the battery charge indicator

1. To enter the setup menu press the "setup" button for 3 seconds.
2. Select the units in which the remaining range is displayed. Push the button in the center of the display to select between kilometers, miles, nautical miles, and hours. You confirm your selection by pressing "setup" again.
3. Now, enter the speed indicator setting. You can choose between kilometers per hour, miles per hour, and knots. Again you select the units with central button. Confirm your selection by pressing "setup" again.
4. Then, choose whether the battery status shall be displayed in percent or in volts.
5. The next step is to supply the on-board computer with information about the batteries. Start with entering whether the motor is connected with lithium batteries from the Torqeedo power series or with lead-gel or AGM batteries. Select "Li" for lithium or "Pb" for lead-gel or AGM batteries. Confirm your selection by pressing "setup" again.
6. Enter the size of the battery bank with which the motor is connected. For this enter ampere-hours (Ah) for the battery bank. Please use the throttle lever to select the correct number of ampere-hours. Pushing the "setup" button will confirm your selection and exit the setup-menu. Please be aware that for example a battery bank consisting of two 12 Volt batteries with a capacity of 200 Ah each connected in series will give you a 24 Volt battery bank with a capacity of 200 Ah, not 400 Ah. For a more detailed explanation please read Section 8 in this operating manual (basic information on battery supply).

The capacity in percent and the remaining range can only be displayed after completing the setup and after the first calibration (entering the charge level, see capter 9.2.3).

Display example in normal operation when setup has not been completed:



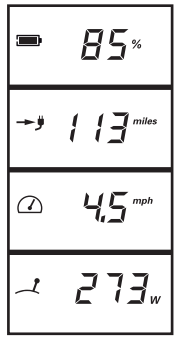
Battery voltage (flashing below 11.2 V per lead battery)

Can not be shown

Speed

Input power consumption

Display example in normal operation:



Battery charge (flashing below 50 % of capacitiy)

Remaining range at current speed

Speed

Input power consumption

Other indicators:

Drive slowly: Is displayed if the battery capacity is < 50 % or if the voltage falls below a value that could damage the battery.

No battery status: Is displayed if setup was not completed.

: The GPS module integrated into the shaft head searches for satellite signals to determine the position and speed. If no GPS signal is received within 5 minutes, the remaining duration in the second field from the top changes from distance to time information. In addition, a clock icon is displayed. If the remaining duration is more than 10 hours it is indicated in whole hours. If it is less it is shown in hours and minutes.

Stop

: This icon is displayed if the remote throttle must be placed in the central position (stop position). This is necessary for safety reasons before starting off.

: Is displayed if the motor has overheated. The motor controls the power independently.

Error: If an error occurs, the error icon and a two-digit code are displayed in the bottom field. The code shows the component causing the error and the error itself. You will find details about the error codes in the following table.

The following table contains a list of possible error codes:

Fault codes		
Display	Cause	What to do
E02	Stator over-temperature (engine overheating)	Motor can be used again after a short waiting period of 10 minutes. Contact Torqeedo Service.
E05	Motor/propeller blocked	Loosen blockage and turn propeller one revolution by hand.
E06	Voltage in the motor too low	Low battery charging status. Motor can be used again slowly from the stop position.
E07	Motor overcurrent	Continue at low output. Contact Torqeedo Service.
E08	Circuit board overheating	Motor can be used again after a short waiting period of 10 minutes. Contact Torqeedo Service.
E21	Remote throttle calibration defective	• Re-calibrate: • Press “cal” button for 10 seconds. • The display shows “cal up”: Press remote throttle control forward to full gas then press the “cal” button. • The display shows “cal stp”: Return remote throttle control to central position then press the “cal” button. • The display shows “cal dn”: Press remote throttle control revers to full gas then press the “cal” button.
E22	Magnetic sensor defective	Re-calibrate (refer to E21).
E23	Value range false	Re-calibrate (refer to E21).
E30	Motor communication error	Check the motor cable’s plug-in connection. Check the motor cable for damage.
E32	Remote throttle communication error	Check the remote throttle cable’s plug-in connection. Check the cable.
E33	General communication error	Check the plug-in connections and cables.

Fault codes		
Display	Cause	What to do
E36	Input voltage too high	The input voltage is higher than the 35 V (Cruise 2.0 R) or 65 V (Cruise 4.0 R). Check the battery connection as per Section 8.
E45	Battery overcurrent	The electronics measure unusually high power consumption. Motor can continue to be used slowly. Contact Torqeedo Service.
E46	Overtemperature on the electronics	Can occur with extremely high external temperatures, high output and low battery charging status. The motor can continue to be used after the temperature has stabilized.
Other error codes	Defects	Contact Torqeedo Service and notify them of the error code.

9.2.3 Calibrating the battery charge indicator

Having entered the battery information in the setup-menu, the on-board computer now knows the capacity of the battery bank. When the motor is in use, the on-board computer measures the consumed power and determines the remaining battery charge in percent and the remaining range based on the current speed.

The calculation of the remaining range takes into account the fact that lead-based batteries do not provide their full capacity at higher electrical currents. Depending on the battery used this effect may result in the battery charge indicator showing a relatively high charge level in percent but the remaining range at full throttle is very low. By moving slower you can still use the available battery charge.

To use the indicator of the battery charge status and remaining range in your Cruise, your assistance is required in two ways:

1. **Whenever you start a journey with fully charged batteries the computer has to be calibrated.** To do so **press the "cal" button in the center of the display before the journey begins.** The display shows the value 100% for the charge level. To **confirm the value and exit the calibration menu press the "cal" button again.**
   As deep discharges of lead-based batteries adversely affect the lifespan of the batteries, we recommend starting a journey whenever possible with fully charged batteries.
   When you switch the motor on without having charged the batteries since the last use (e.g. when pausing the journey or after a very short journey) the on-board computer uses the most recently saved charge level and calculates the subsequent charge levels and range from that point.
   If you have partially charged the batteries the on-board computer falsely assumes the most recent charging level and under-estimates your charge and range.

2. **At the beginning of each season the on-board computer has to be calibrated in order to take into account the aging of the battery bank.** To do so use the **fully charged battery bank** on your boat and deplete it to the point where the remaining **range** shown on the display is **less than 5 km (approx. 3 miles). In order to obtain a proper calibration, the motor should not draw more than 400 watts out of the battery bank for at least the last hour.** If the conditions stated above are met (1 hour's operation at 400 watts or less and remaining range less than 5 km / approx. 3 miles) the motor switches off automatically. Therefore, you can conveniently execute the calibration procedure for example while the boat is tied up in port; please note that the main switch is not switched off automatically when the motor stops. This needs to be done manually after the motor stopped.

   If you conduct the calibration on the open water (and not tied up in port) please note that the motor stops automatically when the aforementioned conditions are fulfilled, thus signaling the completion of the calibration. The motor can be switched on afterwards to head towards port. Note that the remaining range is low.

   The calibration helps the on-board computer to learn how much capacity the battery bank that is supplying the motor has lost through aging. These values are included in the calculation of future charge level indications in percent and ranges. The on-board computer overwrites the values stored in the set up menu for ampere-hours for your battery bank. If you want to assess the status of the battery bank and check the capacity loss, go into the setup menu, look up the value for ampere-hours and compare it with the original values. Please do not change the value set during the calibration journey as otherwise the on-board computer will make false assumptions.

- When using the motor with lead-based batteries (gel or AGM) please note that the values displayed for the range are based on the average performance curves of various batteries. Lead-based batteries are available in qualities that vary strongly. Therefore the indicated outstanding range can not be exact for lead-based batteries. A list of batteries that achieve good results with the Torqeedo range calculation is found at www.torqeedo.com.
- False information on the charge level (eg. due to pressing the “cal” button twice when the batteries are not full) results in the on-board computer over-estimating the battery‘s charge level and your range.
- At the beginning of each season the on-board computer has to be calibrated in order to take into account the aging of the battery bank.
- Other devices that are connected to the motor’s battery supply can not be considered when calculating the remaining charge level and range. In this case your batteries’ charge level and outstanding range are lower than indicated on the display
- Charging the battery bank during the journey (e.g. using solar systems, wind turbines or generators) cannot be taken into account by the on-board computer. In this case your batteries´ charge level and outstanding range are higher than indicated on the display.
- We recommend fixing the magnetic key‘s lanyard to a personal flotation device (PFD).
- Keep the magnetic key supplied more than 50 cm / 20 inches away from pacemakers as strong magnets could affect the operation of the pacemaker.
- Keep the supplied magnetic key away from magnetic information media (e.g. debit/credit cards, music cassettes, magnetic tapes etc.). The magnet integrated in the key has enough strength to make the saved data unusable.

9.3 Pylon

The **motor** and the **electronic control system** are located in the pylon. They generate the propulsion. In addition, several protective functions are integrated:

1. **Temperature protection:** If the motor overheats, the motor control system reduces the output of the drive until a temperature equilibrium is established between generated and disposed heat. Above a critical temperature the motor stops and the display shows error code E02 or E08.
2. **Under-voltage protection:** If the voltage falls below 16 V (Cruise 2.0 R) / 36 V (Cruise 4.0 R), the electronic controller switches the drive off to prevent over-discharging the batteries. The display shows error code E06.
3. **Blocking protection:** If the propeller is blocked or stuck, the motor would normally take in too much power. In this case, the motor is switched off within a few hundredths of a second to protect the electronics, motor winding and propeller. After removing the blockage you can switch the motor on again. If there is a blockage the display shows error code E05.
4. **Cable break protection:** If the connection cable is damaged, i.e. if the connection to the remote throttle is broken the motor will not start, respectively it will stop. An error code is shown on the display.
5. **Throttle control:** The speed at which the propeller adjusts to a changed tiller position is limited in order to protect mechanical drive parts and to avoid short-term peak current.

- If the motor has a defect an error code is shown on the display. After resolving the error the motor can be restarted out of the stop position again. You will find descriptions and details in Section 9.2.

The **fin** supports steering movements and protects the propeller if it comes into contact with the bottom.

- Only run the motor when the propeller is under water. If it is run in the air, the shaft sealant rings that seal the motor to the drive shaft may become damaged. If the motor is run in the air for a longer period, the motor itself can overheat.
- After use, always take the motor out of the water. You can do this using the tilt mechanism of the transom bracket.

10. Dismantling

1. Remove the magnetic key from the remote throttle and press the “on/off” button on the display. Set the battery main switch to the off or neutral position.
2. Unplug the connection between the motor, the cable set, and the remote throttle.
3. Unhinge the motor and place it on a flat surface.

- The pylon may be hot.

- Make sure the motor is dry before you store it.
- Ensure you do not bend the cable around sharp edges.

11. Storage and care instructions

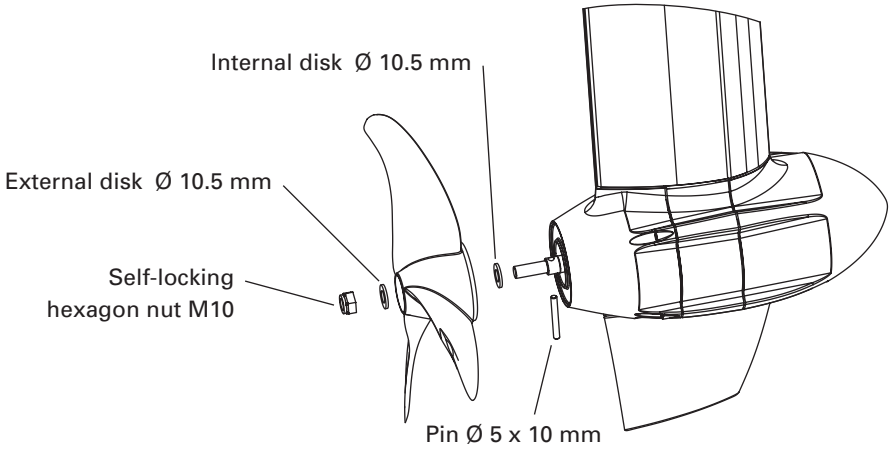
11.1 Corrosion protection

Materials were chosen with a high level of corrosion-resistance. Most of the materials used in the Cruise R are, as with most leisure maritime products, classed as “seawater resistant”, not “seawater-proof”.

- After use, you should always take the motor out of the water. You can do this using the tilt mechanism of the transom bracket.
- After use in salt or brackish water rinse the motor with fresh water.
- Only store the motor in a dry condition.
- **Treat all electronic parts with contact spray once a month.**

11.2 Changing the propeller

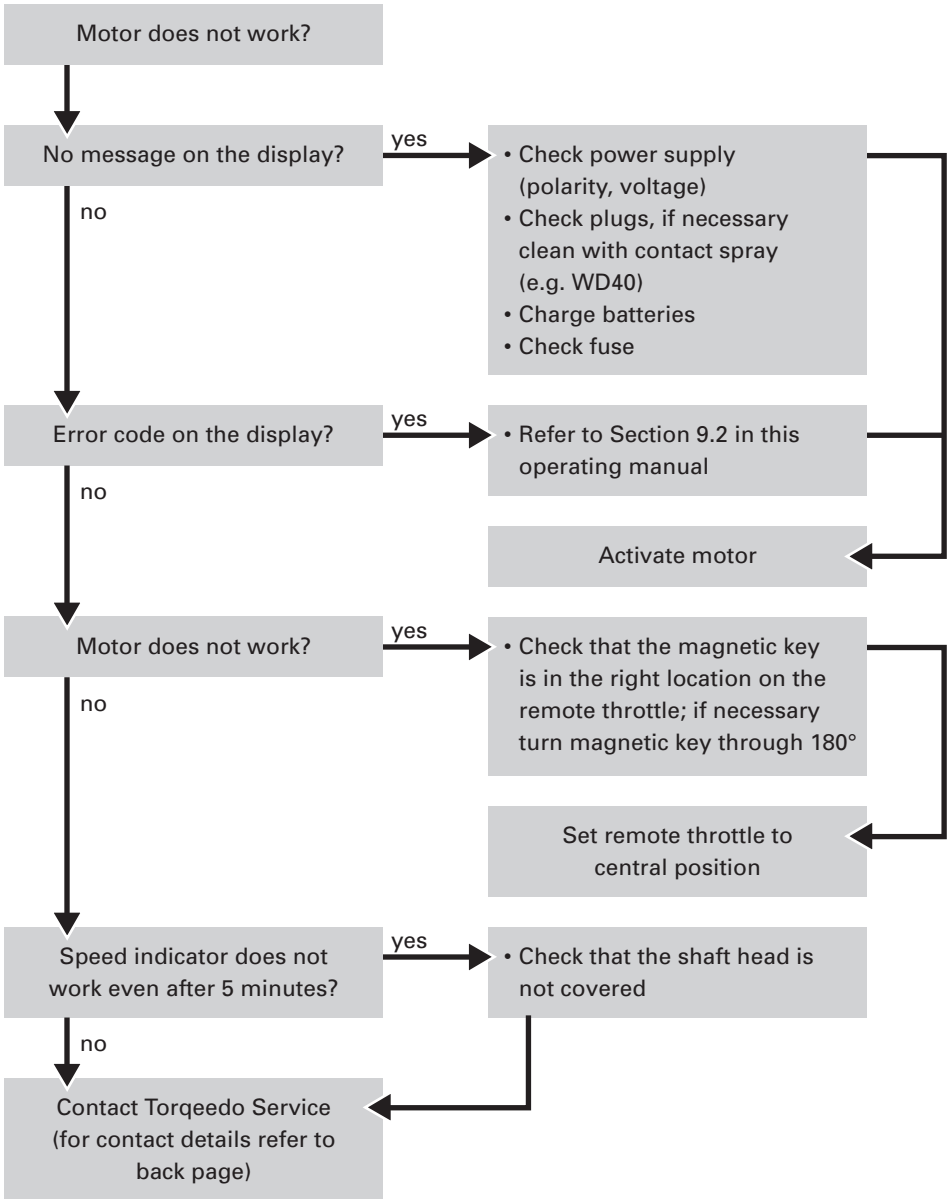
1. Set the main battery switch to the “off” position.
2. Loosen and unscrew the self-locking hexagon nut on the propeller.
3. Pull the propeller with the external disk from the motor shaft.
4. Pull the cylinder pin from the motor shaft and remove the internal disk from the motor shaft.
5. Set the main battery switch to the “on” position. Allow the motor to run slowly and check whether the shaft is turning unevenly at the shaft sealant ring.
   Contact Torqeedo Service if the shaft is damaged or uneven.
6. Set the main battery switch to the “off” position. Insert the new cylinder pin centrally to the motor shaft and insert the internal disk onto the motor shaft.
7. Place the propeller onto the motor shaft and turn the propeller until the cylinder pin fits into the groove of the propeller.
8. Place the external disk over the motor shaft and screw the self-locking hexagon nut onto the shaft.



11.3 Other care instructions

To clean the motor you can use any cleaning agents suitable for plastic - follow the manufacturer’s instructions. Cockpit sprays available for cars achieve good results on the plastic surfaces of the Torqeedo Cruise.

12. Trouble shooting



- Repairs may only be carried out by authorized Torqeedo Service Centers. Should you attempt to carry out repairs or conversions yourself, this immediately cancels the warranty.
- Please note that opening the pylon or the inner shaft head cover causes the warranty to lapse.
- In case of a warranty claim, please follow the warranty instructions at the beginning of the operating manual.

13. Technical Data

	Cruise 2.0 R	Cruise 4.0 R
Input power in watts	2,000	4,000
Rated voltage in volts	24.0 -25.9	48.0 – 51.8
Propulsive power in watts	1,020	2,040
Comparable gas outboards (propulsive power, displacement mode)	5 HP	8 HP
Comparable gas outboards (thrust)	6 HP	9.9 HP
Maximum overall efficiency	51 %	51 %
Static thrust	121 lbs	214 lbs
Total weight	16.0 kg / 35 lbs	17.0 kg / 37 lbs
Shaft length	62.5 cm / 24.6 in (S) 74.5 cm / 29.3 in (L)	62.5 cm / 24.6 in (S) 74.5 cm / 29.3 in (L)
Propeller dimensions in inches	12 x 10	12 x 10
Max. propeller speed in rpm	1,250	1,250
Control	Remote throttle control	Remote throttle control
Steering	Connection prepared for steering device	Connection prepared for steering device
Tilting system	manually	manually
Trimming system	manual 4-step	manual 4-step
Stepless drive forwards/reverse	yes (reverse 50 % power)	yes (reverse 50 % power)

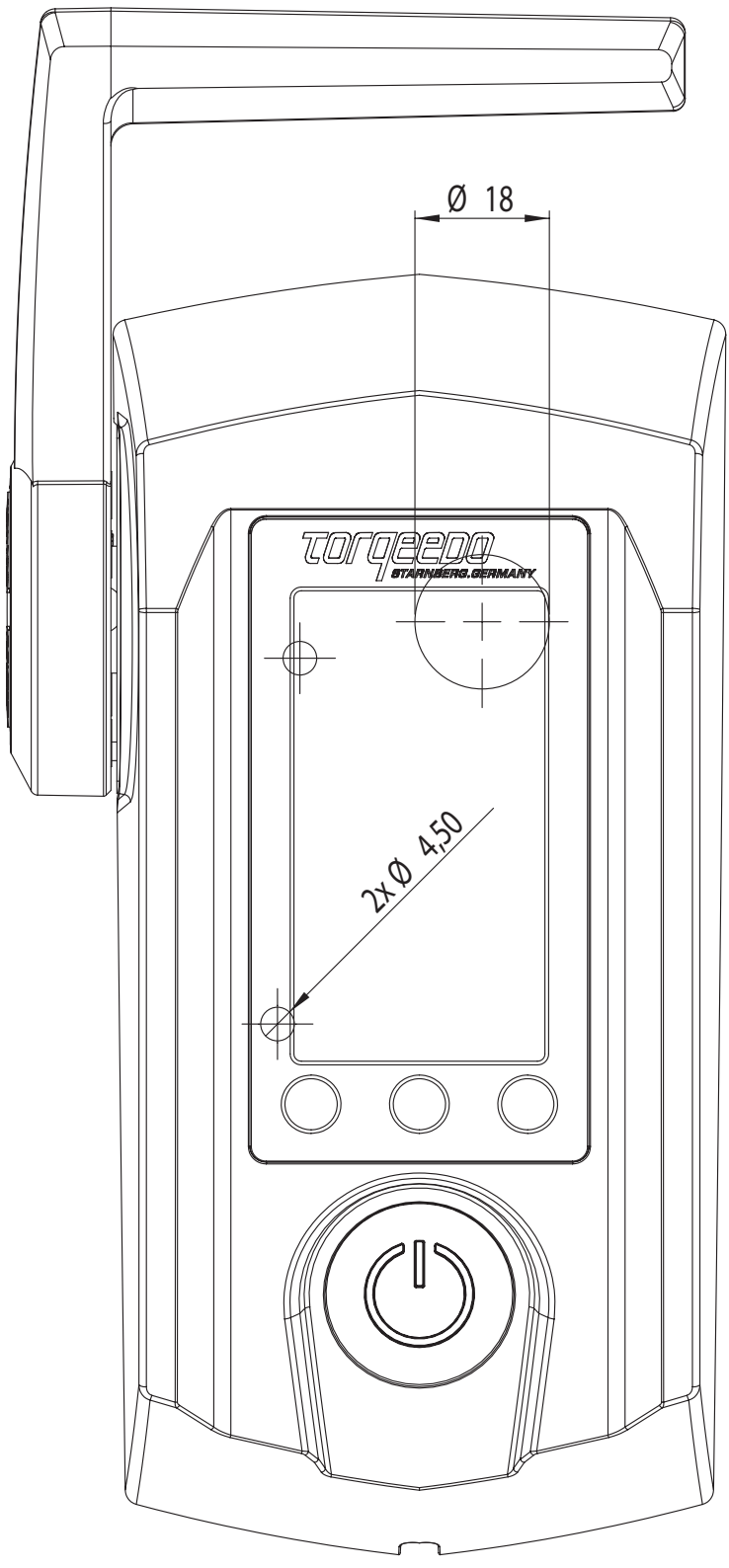
14. Disposal instructions

Torqeedo Cruise motors are manufactured in accordance with EU Directive 2002/96. This directive regulates the disposal of electrical and electronic devices to protect the environment.

You can, in line with local regulations, hand in the motor at a collecting point. From there it will be professionally disposed.

15. Accessories

Item no.	Product	Description
1204-00	**Cable set extension Cruise**	Extension for Cruise cable set, 2 m / 6 ft long, complete with two high current plugs
1915-00	**Spare propeller Cruise R models**	12“ x 10“ variable-pitch-variable-camber (VPCP) propeller, developed especially for the torque characteristic and performance range of Torqeedo motors; made of high-impact resistant, glass-fiber reinforced PBT (Polybutylene terephthalate), complete with nuts, disc springs, and cylinder pin
2101-00	**Torqeedo Power 26-77**	LIMA high performance battery, capacity 1,994 Wh, rated voltage 25.9 V, charge 77 Ah, weight 19 kg / 42 lbs, connection to other batteries only in agreement with Torqeedo
2302-00	**Adapter cable set for Torqeedo Power 26-77**	Adapter to connect the cable set to Torqeedo Power 26-77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