Operating instructions

Ørsted

Contents

1.0 Introduction

Congratulations on your purchase of the new A2B Ørsted*, the e-bike that will significantly change your mobility. A2B has set itself the goal of redefining your daily mobility together with you and getting you from A to B in style. Driving an A2B is more fun than driving a car, avoids the frustrating process of looking for parking spaces, saves on fuel costs and, at the same time, protects the environment. You can redefine your paths with the A2B. Whether you ride your A2B to work, for shopping or just for fun, you will rediscover your world. In order to take the idea of travelling familiar paths differently, doing everyday activities in differently from before and changing our behaviour into account, we named our A2B models after various individuals. These individuals have strongly influenced and changed our everyday life thanks to their ideas, inventions and developments. In the case of the A2B Ørsted, the name chosen for the bike is an hommage to Hanna Christian Ørsted, a Danish physicist and chemist whose research and discoveries in the field of electrical engineering first made the use of electricity possible.

1.1. Intended use of your A2B

Your A2B, equipped with the neodrives drive system, is a Pedelec (Pedal Electric Cycle) for usual transport of one person on public roads. Any adjustments and repairs to the A2B and its components shall only be regarded as intended use insofar as they are stated in and permitted by these operating instructions, the component manufacturer's instructions or further documents provided upon purchase of the Pedelec. The manufacturer does not assume any liability for damage caused negligently due to misuse, improper use or improper or omitted maintenance or repairs. The driver is responsible for examining the Pedelec as required, having any necessary works carried out and using it appropriately.

These operating instructions describe the use of your A2B and its components and correspond to the latest version of this technology at the time of printing. The manufacturer reserves the right to make changes resulting from the further development of mechanics, the software or from the statutory requirements.

Hero Eco Ltd
Berlin office
Reichenberger Str. 124
Berlin - 10999

www.wearea2b.com

* The A2B Ørsted electric bicycle is hereinafter referred to in short as "A2B".

2.0 Important information

This user manual contains important information on safety, performance and maintenance.
Please read it carefully before your first journey.
In case of delivery by your A2B specialist dealer, your A2B should be fully assembled and charged. If not, please contact us immediately as your guarantee will become void otherwise.

Please ensure that all users of your A2B read and understand the following important information.

- According to the Straßenverkehrszulassungsordnung (StVZO) [Road traffic approval regulations], a bicycle must be equipped with two operative brakes which are independent of each other, a clearly audible bell, headlamp, rear lamp, pedal reflectors, side reflectors for wheels or integrated reflective strips on the tyre and front and rear reflectors.
- Your A2B is suitable for riding on paved streets and paths. Therefore, do not ride away from paths or off-road. Do not use the A2B for crossing water, for off-road jumps or for sports events.
- We recommend that you always wear an approved bicycle helmet when using the A2B and, additionally, that you wear light or reflective clothes at night.
- Make sure that you know and observe the rules of behaviour for safe and responsible cycling. When riding the A2B, there is always a risk of severe / fatal injuries or material damage resulting from an accident. By deciding to ride the A2B you assume full responsibility for this risk.
- Your current insurance policies might not include accident insurance coverage for using the A2B. Please consult with your insurer or insurance agent concerning this matter.
- This user manual provides no guarantee as to the safe use of the A2B under all conditions.

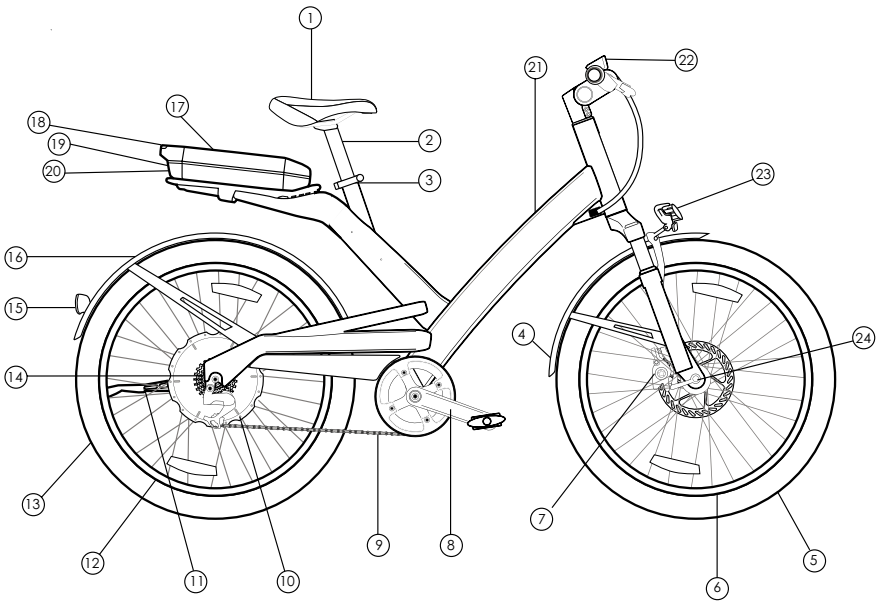
Important symbols

ⓘ	Indicates a potentially dangerous situation which may lead to a severe injury, material or equipment damage or unwanted system failure if this situation is not prevented.
i	Indicates useful or other important, relevant information.

If you have any questions or do not understand any instructions in this user manual, please ask your A2B specialist dealer or contact our customer service at A2B.DE@heroeco.com

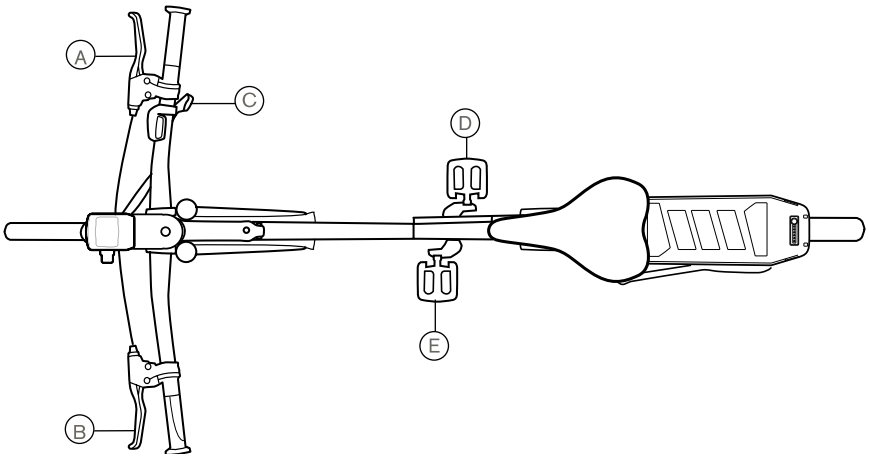
3.0 Your A2B

3.1 Components



1. Saddle (seat)
2. Saddle post
3. Quick release
4. Front splash guard
5. Front tyre
6. Front wheel rim
7. Front disk brake and rotor
8. Pedals, pedal crank and chainring
9. Chain
10. Motor
11. Stand
12. Rear wheel rim
13. Rear tyre
14. Derailleur and freewheel
15. Reflector
16. Rear splash guard
17. Battery
18. LED rear light
19. Z reflector on battery
20. Battery plug
21. Frame
22. sMMI
23. Headlamp
24. Quick release front wheel

3.1 Components



A. Right-hand brake lever (for rear wheel brake)
B. Left-hand brake lever (for front wheel brake)
C. Shift lever
D. Right pedal
E. Left pedal

3.2 Replacement of components, fitting of accessories

Before mounting any components or accessories (including different tyres), you should ask your certified A2B specialist dealer if they are appropriate for your A2B.
Please read and observe the instructions for the respective components or accessories you have bought for your A2B. Please observe the manufacturer's instructions for the components or accessories if they are different from these instructions.

⚠ Like all mechanical components, your A2B is subject to wear and tear. The user must particularly watch out for wear and tear under higher workloads. If a component's life cycle is exceeded, this component may suddenly become inoperative leading to severe or even fatal injuries. Please therefore watch out for signs of wear and tear such as cracks, scratches and changes of colour in areas which are subject to high strain, e.g. on the frame, fork, wheels and handlebars, indicating that the life cycle has been completed or even exceeded. Have worn components replaced immediately by your specialist dealer.

⚠ If you do not check components or accessories for fitness and install, use and maintain them properly, this can lead to severe or even fatal injuries.

⚠ The use of non-original components or spare parts may endanger your A2B's safety and void the warranty.

ⓘ The replacement of components or fitting of accessories will be made at your own risk, since the fitness, reliability or safety of these parts for use with your A2B may not have been checked by Hero Eco.

3.3 Adjusting the brake levers

Are you able to easily operate the brake levers? If not, take your A2B to an A2B specialist dealer to have the angle of the brake levers adjusted.
Alternatively, you can adjust the brake levers' angle yourself as indicated below:

1. Loosen the screw below the brake lever using an appropriate Allen key.
2. Adjust the angle as required.
3. Tighten the screw and make sure the brake lever is held securely in place.

ⓘ For adjustment of the brakes, you should take your A2B to an A2B specialist dealer.

3.4 Adjusting the seat height

The seat height may need to be adjusted. Please ask your A2B specialist dealer to adjust the seat height before your first journey. You can also adjust the seat height yourself as indicated below:

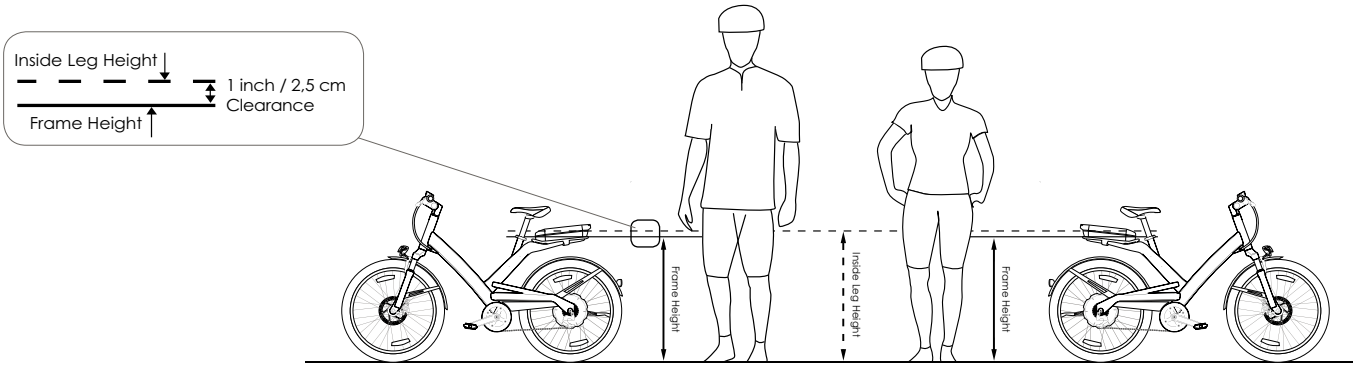
Determining the correct seat height for the rider

There are several ways of determining the correct seat height; the method which can be carried out without any other equipment is performed as follows: Sit on the saddle and stretch one leg. Put the heel of your foot on the pedal which is at the lowest point of the crank turn. Your knee should now be almost straight.

If you are sitting right on the saddle while in this position then the saddle height is correct.

Of course, you do not then ride with your legs stretched. When you put your foot on the pedal while in the correct riding position (ball of the foot and base of the toe joint above the pedal axle), the knee will still remain slightly bent at the lowest point of the crank turn if the saddle height has been adjusted correctly.

A short test ride will tell you if the saddle is too high. If your pelvis tilts to the right and left in time with the pedalling rhythm then the saddle is too high. If the saddle is too low, you will usually only find out after many kilometres with pain in your knees.



Height adjustment

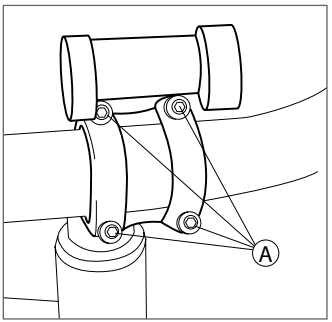
1. The seat height can be adjusted by loosening the quick release for the saddle post.
2. Position the saddle at the desired height. Do NOT position the saddle higher than the minimum insertion mark located on the saddle post UNDER ANY CIRCUMSTANCES.
3. Push the quick release lever towards the frame, until it is closed again. In order to avoid the risk of injury, the lever must not stick out. The lever is safely fastened if it takes effort to push it into the closed position. The amount of effort is appropriate if the lever leaves a mark on the palm of your hand when pressing. A properly closed quick-release cannot be moved any more unless it is reopened as specified above. If you can move the mechanism slightly, open the quick release lever, turn the adjusting nut by another 180° and try again.
4. After height adjustment, check that the saddle cannot be moved in any direction.

⚠ An improperly attached saddle may lead to severe or even fatal injuries. Ensure that the saddle clamp screw (saddle post - saddle) has been tightened using 27 Nm.

- This user manual provides no guarantee as to the safe use of the A2B under all conditions.

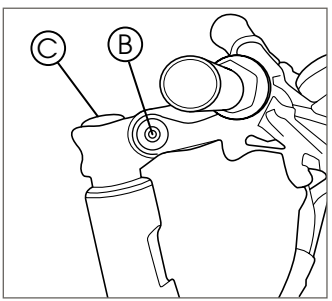
3.5 Adjusting the handlebars

1. Loosen the A screws using an appropriate Allen key.
2. Align the handlebars centrally in relation to the stem.
3. Turn the handlebars to achieve the desired angular position.
4. Tighten the A screws evenly using 5 Nm.



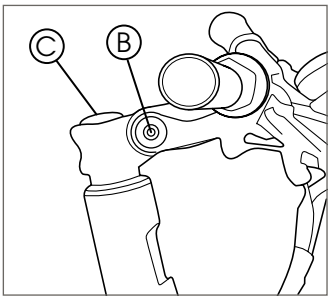
3.6 Adjusting the variable stem Alignment of the handlebar stem

1. Loosen the B screws using an appropriate Allen key.
2. Align the stem in relation to the front wheel.
3. Tighten the screws evenly using 15 Nm.



Adjusting the angle of the stem

1. Loosen the C screws using an appropriate Allen key.
2. Position the stem at the desired angle.
3. Tighten the C screws to 17-18.5 Nm and ensure that the stem is alignedin relation to the front wheel.



⚠ Caution: This is an A-headset stem, the upper screw D is a pretensioning screw and is not intended for adjusting the stem! Trying to tighten screw D may result in damage to the headset.

⚠ Improperly attached handlebars and stem may lead to severe or even fatal injuries.
Make sure the steering is free of play and can be operated easily. Please contact your A2B specialist dealer if you need more help in adjusting the handlebars, headset and stem.

4.0 Familiarising yourself with the functions of your A2B before your first journey

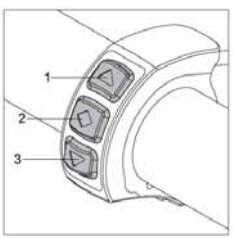
If you still have any questions after having read this section, please ask your A2B specialist dealer to explain any unclear functions or features to you before your first journey.

4.1 A2B at a glance

As soon as you start to pedal when the drive system is enabled, you will notice that the motor will start and assist you based on the level of assistance selected - making riding a bike an effortless pleasure.

4.2 Starting and stopping

1. Put your helmet on and look for a calm place without any obstacles, cars or other hazards, if possible.
2. Ensure that the battery has been charged and connected correctly
3. Activate the drive system by pressing the controller's middle button next to the left handlebar grip.
4. Fold the stand up into the riding position. Do NOT sit on the A2B if it is still supported by the stand. By doing so, you damage the stand and possibly the frame.
5. Sit on the A2B and find a comfortable sitting position.
6. Start to pedal and start the motor assistance in this way.

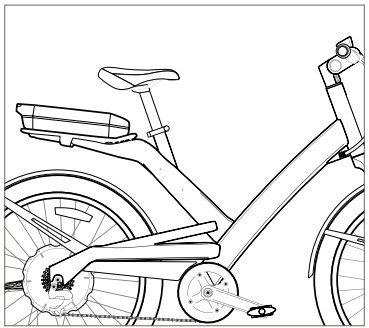


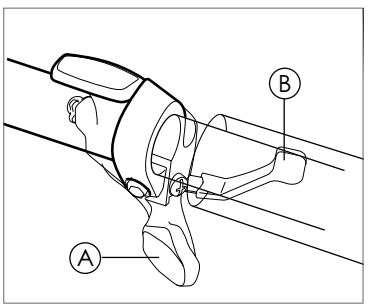
7. Test the brakes at low speed. The left brake lever activates the front wheel brake, the right brake lever activates the rear wheel brake. If you pull the brake levers too hard, a wheel may become locked which could cause you to lose control of the bicycle and fall. Remember that both brake levers include a motor switch-off device; as soon as you operate one of the two brake levers, the motor's power supply will be switched off, so do not brake if the engine should remain running.

ⓘ Remember that both brake levers include a motor switch-off device. As soon as you operate one of the two brake levers, the motor's power supply will be switched off, so do not keep a brake lever pulled if the motor should remain running.

8. Test the handling and reactions of your A2B. Familiarise yourself with how the suspension responds to the brakes being operated by the rider and the shifting of the rider's weight.

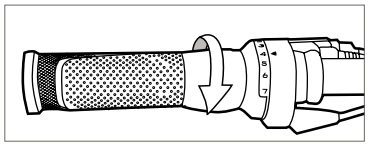
4.3 Gear box

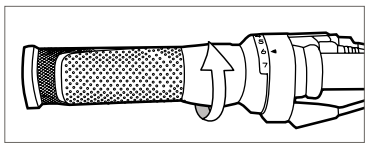




Your A2B is equipped with a derailleur activated by the two pressure levers at the right-hand side of the handlebar. To facilitate pedalling (e.g. at gradients), you operate the large lever located in front of the handlebar and marked with A in the illustration. In this way, you shift down and have to pedal faster to maintain your speed. If you want to go faster (on the flat or downhill), you shift up one gear using the smaller lever which is marked as B in the opposite figure and located behind the handlebar from the driver's point of view. You can pedal slower, but you have to use more effort.

⚠ Do not ever move the pedals backwards when shifting into another gear. The chain could come off and you may lose control of the bicycle which could lead to accidents resulting in severe or even fatal injuries and/or material damage. Always pedal evenly and in a forward direction when shifting into another gear.





The derailleur operates independently from the motor. Using the derailleur, select a gear which allows you to pedal comfortably and, at the same time, helps the motor.

4.4 Lights

Turn the on/off switch located on the headlamp to the applicable position to switch the lights on or off.

4.5 Luggage rack

Your bicycle model is not equipped with a luggage rack as standard, however your A2B's battery has a slot for a Rack-Time luggage rack adaptor. This adaptor can be ordered through your A2B specialist dealer using the order no. 625450098300 and installed on the bicycle. This adaptor enables you to install various luggage transport options from Rack-Time. You can from choose either luggage baskets or a range of saddle bag solutions. Alternatively, you can just use the base plate and a standard Racktime luggage rack. Please ask your A2B specialist dealer for information about the various options and the best solution for your needs. No matter which solution you choose, please be aware of the following when transporting your luggage:

1. Your A2B's battery is equipped with an integrated LED rear light. When riding at dusk or in the dark, please ensure that your luggage is fixed in such a way that the rear light is not covered, either completely or in part, since this results in a high risk of not being noticed by other road users.
2. Make sure the luggage is safely attached to the luggage rack and cannot fall off while riding. Ensure that loose tightening straps or other objects cannot get into the spokes while riding.
3. Observe the maximum permitted load of 25 kg in addition to the bicycle's standard fittings on the rear of the bike. Do not overload the luggage rack.
4. This vehicle is not designed or approved for transporting a second passenger, transporting a child in a fitted child seat or for pulling a trailer.
5. The total permitted weight for your A2B must not be exceeded. The maximum total permitted weight is indicated in the specifications.
6. Distribute the weight of your luggage or the objects to be transported evenly on both sides of the luggage rack.
7. Please remember that luggage or other loads present on the luggage rack alter the handling of your A2B. This applies in particular to steering and braking responses.

⚠ Failure to observe these directions may lead to severe or even fatal injuries and/or material damage.

At the end of your first journey
If you have any questions or feel that your A2B has not yet been adjusted and adapted to you as well as possible then we recommend that you contact your A2B specialist dealer before using your A2B again.

Your range
Factors affecting the range:
- Support level
- Battery charge level
- Use of the correct gears for your speed
- Tyre pressure
- Front wheel bearing and both brakes (tight bearings or rubbing brake blocks will reduce the range)
- Driver's weight (more energy is required to accelerate a heavy person)
- Your speed and the wind conditions (quick pedalling into a strong headwind reduces the range)
- Terrain (riding on soft areas or uphill requires more efforts)
- Frequent starting and stopping (full power from a standstill uses the most battery power)

Maximising your range
- Completely charge the battery before every journey.
- Check the tyre pressure regularly and inflate the tyres to a pressure of 3.5 bar (front and rear tyres).
- Have your A2B serviced regularly to ensure that the wheel bearings are rotating freely and the brake blocks do not rub on the brake disks.
- Keep the total weight as low as possible.
- Ride at low speeds.
- Use the energy saving mode as often as possible and assist the motor by pedalling on your own.
- Lubricate the chain and derailleur using a special chain spray for bicycles.

5.0 Operating instructions for the smart Man Machine Interface (sMMI) motor and control interface

5.1.1 Important instructions – please take note!

Please pay attention to all documents enclosed with your A2B and all notes, both those included in this user manual and those on stickers attached to the bicycle.

5.1.2 Intended use of the neodrives components

Your A2B, equipped with the neodrives drive system, is a Pedelec (Pedal Electric Cycle) for usual transportation of one person on public roads. Any adjustments and repairs to the A2B and its components shall only be regarded as intended use insofar as they are stated in and permitted by these operating instructions, the component manufacturers' instructions or further documents provided upon purchase of the Pedelec. The manufacturer does not assume any liability for damage caused negligently due to misuse, improper use or improper or omitted maintenance or repairs. The driver is responsible for examining the Pedelec as required, having any necessary works carried out and using it appropriately.

The following sections of these operating instructions only describe the use of the neodrives components installed on your A2B and correspond to the latest version of this technology at the time of printing. The manufacturer of the neodrives components reserves the right to make changes resulting from further development of the mechanics or software or from statutory requirements.

According to the manufacturer of the neodrives components, misuse of the neodrives components installed on your A2B includes, but is not limited to, the following:

- Use of the drive system contrary to the instructions and recommendations in these operating instructions
- Exceeding the technical performance limits defined in the present operating instructions
- Technical modifications to the neodrives components
- Modification of the neodrives components' software
- Unauthorised installation or use of the neodrives components on bicycles other than the A2B Pedelec supplied to you.

5.1.3 Acceptable operating conditions / places of use

neodrives components may be operated at temperatures between -10°C and 45°C.

Observe the safety instructions and hazard warnings included in the individual sections of the present operating instructions. The restrictions on the acceptable operating conditions (e.g. maximum climbing power, permissible maximum obstacle height, maximum user weight, etc.) contained herein must be observed when using the Pedelec! Observe the safety instructions and hazard warnings included in the individual sections of these operating instructions.

5.1.4 Standard scope of supply (neodrives components)

- Drive motor
- Smart Man Machine Interface (sMMI) = Control unit incl. dock

5.1.5 Technical details

Drive	
Range*	Up to 120 km
Speed	25 km/h
Rated output (peak)	250 watts (650 watts)
Operating voltage	36 volts
Rated torque	12 Nm
Peak torque	40 Nm
Efficiency	80% (incl. electronics)
Power electronics controls	Integrated into the wheel hub
Cartridge receiver	Commercially available plug-in cartridge cartridge receiver with 9-fold transmission
Brake disk	Diameter from 160 mm
Intake torque	Variable torque support can be adjusted to dropout
Weight	4.36 Kg (just the drive, incl. plugs and cable, without brake disk, freewheel unit, cartridge)

Smart MMI	
Display control *	Monochrome
Diagonal display measurement, resolution	2.4 inches, 240 X 320 pixels
sMMI dimensions without dock	53 mm x 85 mm x 14 mm (W X L X H)
Connectivity	Micro-B 1.1 USB, 5-volt power supply, 500 mA PC connection with diagnostic and parameterisation software
Mechanical/electrical contacts	Twist-to-lock, corrosion-proof contacts, spring loaded
Lighting	LED Backlight, 70 – 350 cd/m²
Display surface	Scratchproof, quenched and tempered acrylic glass plate
sMMI weight (detached)	55 g

Smart MMI Dock	
Controller	23 mm inside diameter, 3 buttons (up, down, menu), hard-wired
Mounting plate	Stem and handlebar mounting, angle can be adjusted in 10° steps, height can be adjusted using spacers
Weight (incl. cable and remote control)	60 g

Whole system	
Operating temperature	-10°C to 45°C (recuperation and braking assistant will be automatically deactivated below 0°C)
Protection class	IP65

(*) The range varies depending on the battery used, the terrain and the prevailing travelling conditions.

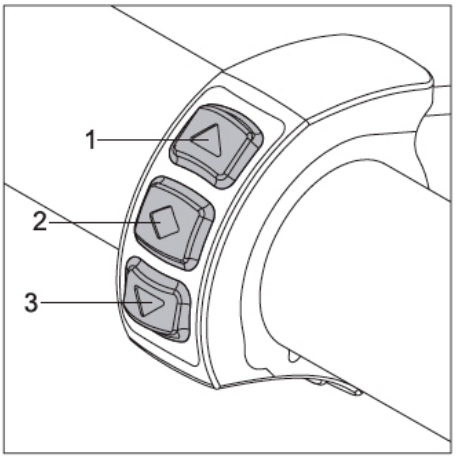
The specified range can be achieved under optimum travelling conditions (e.g. even terrain, recently charged batteries, ambient temperature of 20°C, smooth journey, etc.), with a driving power of 100 watts and a pedalling power of 100 watts.

Subject to technical and design modifications based on continuous further development.

These operating instructions can also be downloaded from our website www.weareA2B.com.

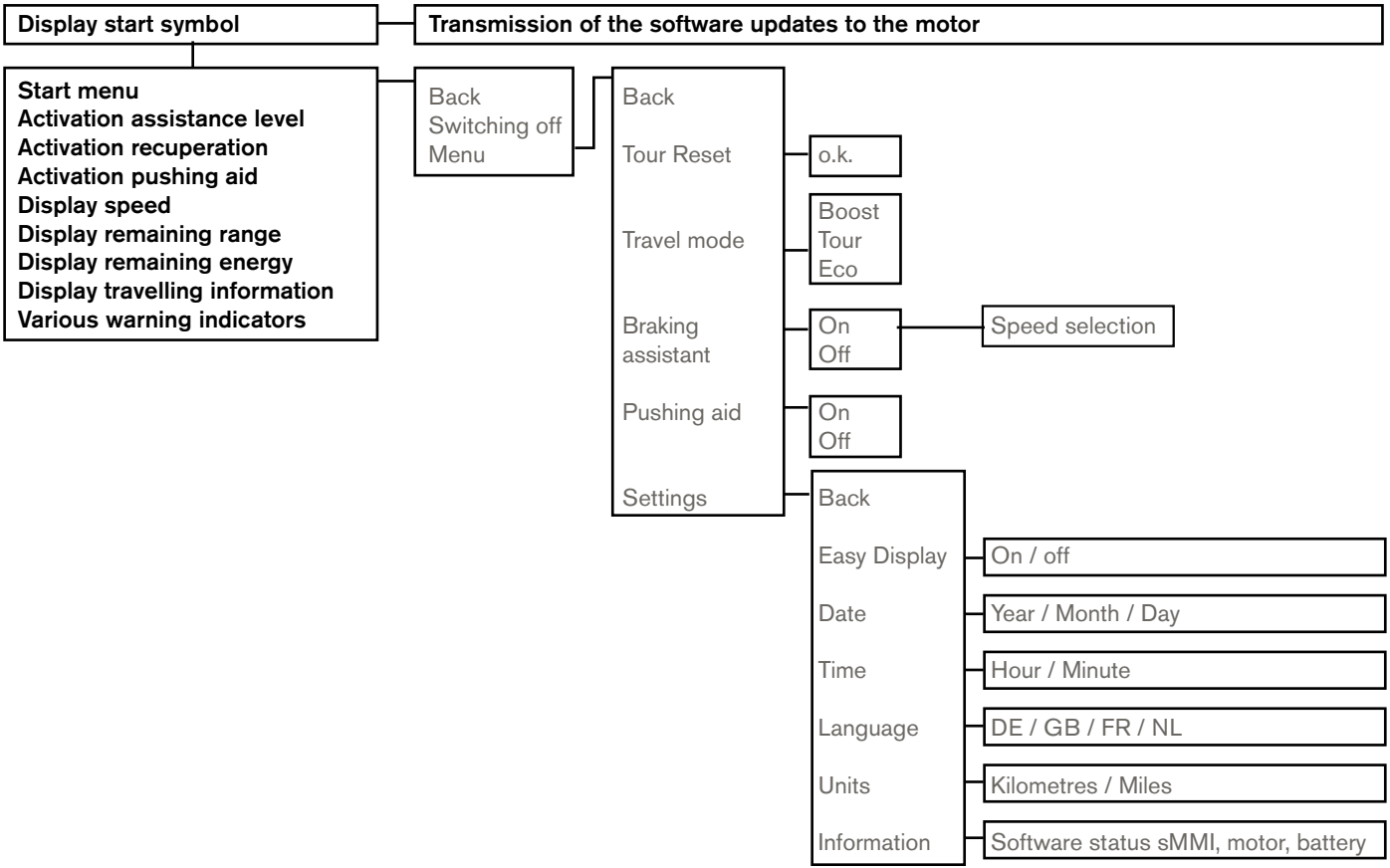
5.2. Controller

The controller fitted to the handlebar of your A2B is used to access menus
and activate functions in the sMMI. The following functions are stored:
Button 1 = UP (one step upwards)
Button 2 = confirm menu button or selection
Button 3 = DOWN (one step downwards)



5.3. smart Man-Machine Interface (sMMI)

The sMMI is attached to your Pedelec's handlebar or stem. You can access various functions and activate or deactivate parameters using the controller's buttons (see section 2). For some functions you can also permanently store various parameters in the sMMI's software (see section 3.2.15). Please contact your specialist dealer regarding this matter, they will be happy to inform and advise you. For further information, an overview of the sMMI's menu structure follows.


Display start symbol
Transmission of the software updates to the motor
Start menu
Activation assistance level
Activation recuperation
Activation pushing aid
Display speed
Display remaining range
Display remaining energy
Display travelling information
Various warning indicators
Back
Switching off
Menu
Back
Tour Reset
o.k.
Travel mode
Boost
Tour
Eco
Braking assistant
On
Off
Speed selection
Pushing aid
On
Off
Settings
Back
Easy Display
On / off
Date
Year / Month / Day
Time
Hour / Minute
Language
DE / GB / FR / NL
Units
Kilometres / Miles
Information
Software status sMMI, motor, battery

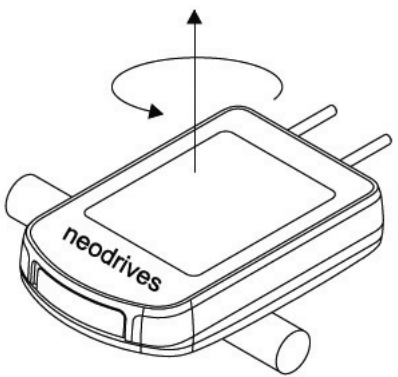
5.3.1 Fitting and removing the sMMI

Fitting
Place the sMMI [4] in the correct position (the "neodrives" logo faces the rider) and turned to the left at an angle of about 30 degrees in relation to the dock [5] (see illustration).

Turn the sMMI [4] clockwise on the dock [5] by 30 degrees applying slight pressure so that both components are aligned to each other. While doing so, the electrical connections to the controller, motor and battery pack are automatically established.

Removing
Turn the sMMI [4] anticlockwise on its dock [5] by about 30 degrees. While doing so, the electrical connections are disengaged and the sMMI [4] can be removed. The sMMI must be switched off before it is removed (see section 3.2).

ⓘ To protect your Pedelec from unwanted use by third parties or against theft, the sMMI should always be removed from the handlebar when not in use. Removing the sMMI, however, does not constitute a replacement for securing your Pedelec against theft by means of appropriate measures (use of a bicycle lock, anti-theft chain or similar).



5.3.2 Functions of the sMMI

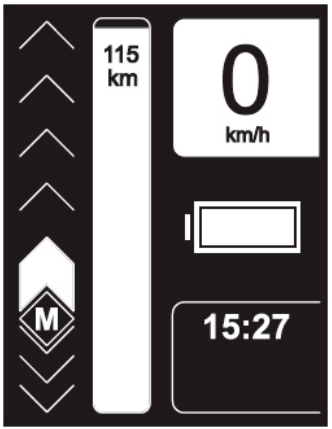
5.3.2.1 Switching on and off

Switching on
To switch the sMMI on, press the menu button [2] on the controller. After a couple of seconds, a welcome screen will appear followed by the start menu shown opposite. If functions are already activated or the battery is not fully charged, the display of your sMMI may differ in parts from the illustration.

Switching off
To switch off your Pedelec, you need to press button [2] on the controller for about 2 seconds while the start menu is displayed. By doing so, you access the submenu shown opposite. In this display, you can jump up or down using buttons [1] and [3] on the controller. Any selected field is displayed within a U-shaped border. Select the "Switch off" field and briefly press button [2]. Your Pedelec will now be switched off.

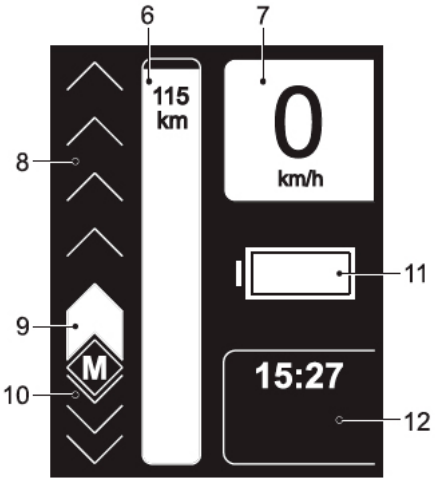
Automatic switch-off
If your Pedelec is not used for 10 minutes, the system will automatically be switched off. Pressing the menu button again will switch the system back on.

⚠ Do not switch off your Pedelec by removing the sMMI, this may damage the electronics.



5.3.2.2 Start menu

As described in section 3.2.1, the start menu shown in the opposite illustration will appear upon startup.



Explanation:
6. Approximate value of the distance in km which can be travelled at the preselected level of assistance (remaining range)
7. Display of the current speed
8. Selection of the assistance level (see section 3.2.4)
9. Set assistance level (see section 3.2.4)
10. Selection of recuperation (see section 3.2.5)
11. Various alternating information and warning indications, see section 3.2.11 (shown here: remaining battery capacity)
12. Display of various travelling information (see section 3.2.10)

The letter "M" for setting the menu functions is only shown in the left lower third of the display while at a standstill. For safety reasons, various functions cannot be selected while riding.

⚠ All parameters that you change will be permanently saved and will be available each time the sMMI is switched on. For this reason, the display of your Pedelec may differ from the illustration.

5.3.2.3 Dynamo function and "light" switch-on routine (optional)

The neodrives motor features a dynamo function and supplies the headlamp on your Pedelec with power even if the battery is flat, not attached or defective. Thanks to this function, a standard bicycle dynamo on the front wheel is not required. In the normal Pedelec mode, the bicycle headlamp is supplied with 36 volts from the battery pack. When switching on the bicycle lights, a certain sequence must be followed for electronic query routines:

1. Switch on the Pedelec, before switching on the lights. Switch on the lights only when the Pedelec shows readiness to travel on the display for about 3 seconds.
2. After the end of the journey, the lights always need to be switched off so that the correct switch-on routine can be run when they are switched on again.

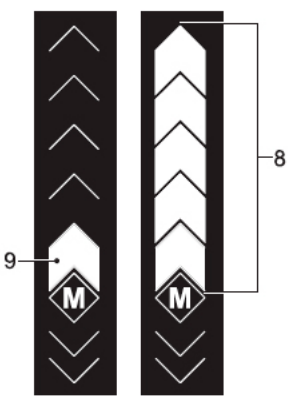
If, contrary to the above routine, the Pedelec is switched on when the lights are switched on then a warning symbol will be shown on the display. In this case, switch off the Pedelec and the lights and proceed as described above.

5.3.2.4 Selecting the assistance level

Your desired assistance level (5 possible levels) can be permanently stored in the sMMI by your specialist dealer as part of a travel profile. This level will be available instantly after switch-on of the sMMI and will be shown on the sMMI's display as bar element [9]. You can also change the assistance level manually at any time using the buttons [1] UP and [3] DOWN on the controller, thereby increasing or reducing the number of the individual white bar elements in the field [8] according to the assistance level you require. When switching off the Pedelec, any changes made using the controller buttons are not stored.

When restarting the Pedelec, therefore, only the assistance level stored in the travel profile will be available.

According to the selected assistance level, field [6] indicates the distance that can be travelled using motorised assistance. The higher the selected assistance level, the more energy is consumed by the motor. The range which can be achieved is reduced accordingly.



When the Pedelec is stopped, please be aware of the following:

- If the pushing aid (see section 3.2.7) is activated, you need to turn the Pedelec's pedals 2 to 3 times the Pedelec has been stopped before the motorised assistance will be available again - you can increase or reduce the assistance level using the buttons on the controller.
- If the pushing aid is deactivated, the motorised assistance is instantly available when moving the pedals. Similarly, the assistance level can also be increased or reduced when the Pedelec is standing still.

ⓘ The field [12] of the start menu has multiple functions. By briefly pressing the controller button [2], various travel information can be displayed (see section 3.2.10).

5.3.2.5 Activating recuperation

By activating recuperation, you can recover energy when travelling and feed it into the battery. This is possible and advisable from a speed of 15 km/h. The recuperation is activated and adjusted using the controller buttons [1] and [3].

- One white bar element [10] means: 50% energy recovery in the battery (factory setting, configurable)
- Two white bar elements mean: 100% energy recovery in the battery (factory setting, configurable)

Depending on the battery used and the speed, a maximum of 6A to 8A is recovered in case of 100% energy recovery. If you want to deactivate recuperation, this is also done using the controller button [1]. During energy recovery, "0 A" is shown in field [12] and the charging process [a] symbol is shown in field [11]. If the energy cannot be recovered because the battery is already charged to above 90% then the [b] symbol is displayed instead. In this case, the sMMI's software waits for the battery to be partially drained then automatically switches on recuperation and changes to the [a] symbol.

Automatic recuperation (optional)
Depending on how the Pedelec has been configured by the manufacturer, recuperation can also be activated automatically by operating the rear wheel brake. By doing so, energy is automatically fed into the battery whenever you brake. To ensure controlled and safe braking, recuperation during braking is made with 40% energy recovery.

ⓘ Recuperation may only be activated at temperatures above 0° C. If temperature drops below 0°C, recuperation is automatically deactivated.

ⓘ At speeds of less than 15 km/h the motor is not yet at its optimum operating point, which is why recuperation cannot be activated.

ⓘ Activating recuperation is not possible when the battery is fully charged, as the battery could be damaged as a result of overcharging. Recuperation can only be activated at a battery charge level of ≤ 90%.


[a]


[b]

5.3.2.6 Braking assistant

The braking assistant can be activated before the journey if required. It assists you with braking and ensures the recovered energy is fed into the battery (provided that the battery is not charged above the limit of 90% and the temperature is not below 0°C).
To activate the braking assistant, press the controller button [2] while in the start menu (see section 3.2.2) to access the next submenu. Select "Menu" in the submenu and, in the selection window which then appears, select the "Braking assistant" item. When selecting the "On" item, a new menu item is opened in which you can preselect the speed from which the motor-assisted braking process is to be carried out using the controller buttons [1] and [3]. A speed between 10 and 28 km/h can be set. If you have adjusted the required speed, you can return to the start menu by pressing the controller button [1] several times.

If you wish to deactivate the braking assistant, repeat the procedure and select the "Off" item instead of "On". Please note that neither automatic deceleration nor energy recovery and feeding into the battery are carried out if the braking assistant is deactivated - unless you select manual recuperation (see section 3.2.5)

Important notes

If the battery is fully charged, the braking assistant can be activated but not actively used. This is only possible if the battery charge level is <90%. For this reason, the fully charged battery (a) symbol is shown in field [11] of the display instead of the activated braking assistant (b) symbol. The sMMI's software now waits for the battery to be partially drained, then automatically switches on the braking assistant and switches to symbol [b].

[a]

[b]

Important information about the operation of the braking assistant

If, for example, you have preset a speed of 20 km/h then the system will maintain this maximum speed irrespective of the slope angle, provided that the slope is steep enough to achieve the preset maximum speed. This is carried out by the drive until maximum motor torque is reached. If this is exceeded, the braking effect gradually decreases and you will have to brake additionally on your own so as not to accelerate. While the motor is regulating the travelling speed as described above, power is fed back into the battery which is thus charged.

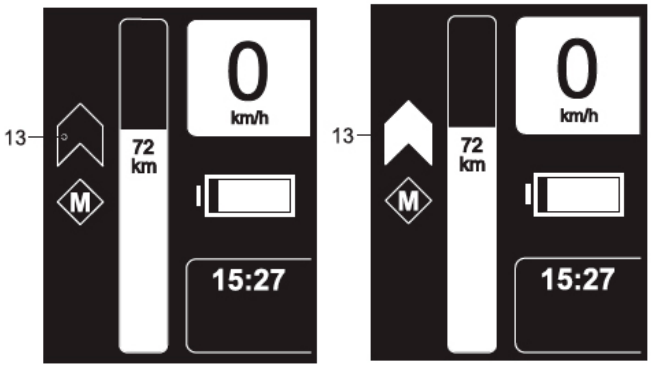
As soon as you start to pedal, the braking assistant is automatically deactivated. It will be reactivated as soon as you stop pedalling and there is no force acting on the chain or the force sensor in the wheel hub via the pedals. The assistant will, however, only become effective if the speed is not more than 28 km/h after you have stopped pedalling. The assistant can be brought back into the speed range where it is automatically activated by means of manual braking.

5.3.2.7 Pushing aid

If you require motorised assistance when pushing, e.g. on steep mountain slopes, you can activate the pushing aid. For this purpose, press the controller button [2] while in the start menu (see section 3.2.2) to access the next submenu. Select "Menu" in the submenu and, in the selection window which then appears, select the "Pushing aid" item. You can activate or deactivate the pushing aid in the next window which is opened. Once you have selected the required function, you can return to the start menu by pressing the controller button [1] for several times. The activation of the pushing aid is shown there with the symbol [13].

Use of the pushing aid

- The pushing aid is used by pressing the controller button [1]. As a result, the motor is switched on and moves your Pedelec at a maximum speed of 6 km/h as long as you press and hold button [1]. This is shown in field [13] as a white bar element.
- If the buttons [1] or [3] are released, the motor is switched off. It can only be switched on when the Pedelec/Handbike is stopped.
- If the pedals are moved during pushing, the sMMI automatically changes to the preset assistance level mode (see section 3.2.4) so that the selection activated there is available for you.
- If the pedals are no longer moved, the sMMI switches back to the pushing aid.
- If the sMMI is switched off, the activation of the pushing aid will remain in the programme and will be immediately operational the next time the sMMI is switched on. However, you first have to pedal 2 to 3 times before the motor moves the Pedelec when the button [1] or [3] is pressed.
- The pushing aid's maximum speed can be adjusted by your specialist dealer according to your requirements.



5.3.2.8 Date and time

The date and time can also be set individually. The set time is shown in field [12] of the start menu, while the date is only used for internal calculations in the sMMI. As for the functions already described in the previous sections, you can access the various submenus from the start menu as indicated above to set the date and time (see overview provided in section 3). You can modify the required parameters here.

5.3.2.9 Travel modes

Three travel modes - BOOST, TOUR and ECO - are stored in the sMMI.

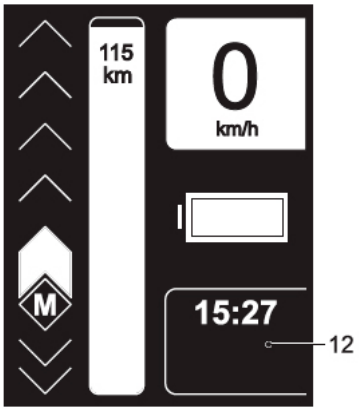
In Eco mode, the torque, and thus the maximum available motor power, is automatically reduced by about 40%, thereby reducing power consumption. At the same time, the agility is also modified so that the drive responds better. The ECO travel mode is especially suitable for journeys in which the battery charge needs to yield the longest distance possible.

In the Tour mode, 75% of the maximum motor torque is available. Performance and range are both at a high level. Moreover, the heat generation in the motor (see section 4, Thermal Management) is moderate in this mode so that long, steep inclines can be managed very well in the Tour mode.

In the Boost mode you obtain the full drive performance. It is suitable for quick rides in the city, incl. powerful starting at traffic lights. The full "Boost performance" may not be sustainably available. Under rough conditions, such as steep uphill rides, the drive performance may be reduced due to heat generation (see section 4, Thermal management). In Boost mode, the range will also be smaller than in the other modes.

To activate the required mode, press the controller button [2] while in the start menu (see section 3.2.2) to access the next submenu. Select "Menu" in the submenu and, in the selection window which then appears, select the "Travel mode" item. Another window will then be opened in which you can activate the required mode. After having completed the activation, you return to the start menu by pressing the button [2] for several times. The ECO and SPORT travel modes can only be selected when the bike has stopped, not while travelling.

ⓘ The parameters stored in the BOOST, TOUR and ECO modes can be adapted for your requirements. Please contact your specialist dealer concerning this matter.



5.3.2.10 Display of travelling information (bike computer functions)

Before, during and after a journey, various values and information are shown in field [12]
and saved regularly. They can be adjusted as normal by briefly pressing the menu button [2] on the controller to show the subsequent function.
Explanation:

Current time (requires presetting, see section 3.2.8).

Display of the distance travelled (requires "Journey Reset"). For this purpose, navigate to the "Journey Reset" function (Start Menu - Menu - Journey Reset; see chart in section 3) using the controller buttons (see section 2). After each activation of "Journey Reset", the display is reset to "Zero".

The distance you have travelled since the first startup of your Pedelec.

Your average speed per journey. The average speed is calculated from each "Journey Reset" on and is displayed after a travelling time of 10 minutes.

The time in which you have ridden one or more journey; any time for which the Pedelec is stopped is not included. The travelling time is calculated from each "Journey Reset" on.

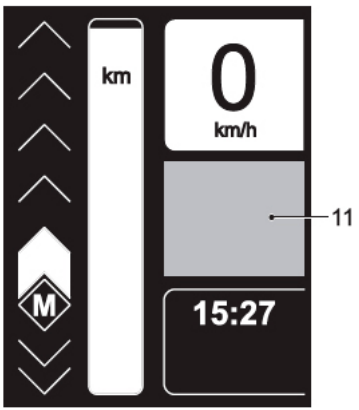
The current power consumption in Ampères.

Your rider performance in watts.

The travel mode that you have activated (BOOST, TOUR or ECO).

5.3.2.11 Display of information and warnings

The battery's remaining capacity is shown in field [11] as standard. Depending on the travelling situation, information and warnings can also be indicated in the field as shown below.



Display of the battery's capacity (standard representation)

The battery's remaining capacity is shown step by step with a decreasing white bar.

The battery's charging process

1. The battery charger is plugged in and the battery is being charged (only for battery models which are charged via a second charging socket which is why the power connection from the battery to the sMMI does not have to be disconnected).
2. The battery is charged using energy from the motor (recuperation, see also section 3.2.5).

Warning

The battery is flat. No power can be taken from the battery, motorised assistance of the Pedelec is no longer available. Please charge the battery as soon as possible using the charger supplied.

Braking assistant active

While travelling downhill, your Pedelec is automatically braked within the preset limits (see section 3.2.6)

Service reminder

The service interval of your Pedelec has expired. Please arrange a service appointment with your specialist dealer. The display can be reset by your dealer using diagnostic software.

Warning - Temperature problem

In case of extremely long and steep inclines (especially in BOOST mode), the drive generates heat leading to an automatic reduction in performance inside the motor from a temperature of +80°C. This is shown on the display by the temperature warning signal. Thanks to the intelligent multipoint thermal management monitoring (see also section 4), the motor will never overheat. The performance is reduced to such an extent that there is no chance of any damage. Very rarely (e.g.

heating by external heat sources) the system may be switched off entirely until temperatures return to within the range of acceptable operating values.

Warning - General fault

A fault has occurred in the system, motorised assistance is no longer available. Please contact your specialist dealer.

Warning - System fault

Various letters (e.g. the letter "B" in the opposite illustration) are shown inside the warning symbol instead of the exclamation mark. They have the following meaning:

B = battery fault
C = communication fault in the system
M = motor fault
R = controller fault

If a fault occurs, motorised assistance will no longer be available. Please contact your specialist dealer.

5.3.2.12 Easy Display mode

By activating Easy Display, the following graphical symbols introduced in section 3.2.2 are enlarged and shown on the display:

- display of the current speed
- display of the number of kilometres travelled daily (requires prior RESET, see section 3.2.10)
- display of the battery's remaining capacity, incl. display of the expected remaining range

The respective displays can be selected by briefly pressing button [2] of the controller. If buttons [1] or [3] are pressed briefly, the indication of the assistance level which can be increased or decreased using the two buttons will appear for about 3 seconds.

Activation of Easy Display

You can access the display "on/off" from the start menu via Menu - Settings -Easy Display. If Easy Display is activated, you automatically access this mode every time the sMMI is switched on.

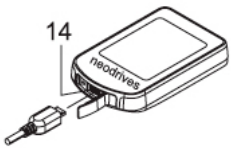
Deactivation of Easy Display

To deactivate this mode, you have to press the controller button [2] for about 2 seconds. You then access the display "on/off" via Menu - Settings -Easy Display.

5.3.2.13 Other settings

Your sMMI has a German user interface as standard. If required, an English interface can also be activated. The sMMI, motor and battery pack software status can also be requested via the "Information" menu item. The language activation or status requests are carried out similarly to the procedures already presented in the previous sections via various menus and submenus.

5.3.2.14 USB port



The sMMI has a USB port [14] which is primarily used by your specialist dealer for maintenance and diagnosis. Make sure the rubber cover fixed above is always fully inserted and seals the port. If the sMMI is not fully sealed, moisture can get inside and steam up the display from inside.

5.3.2.15 Programming options through the specialist dealer

Your neodrives drive system has been optimally adjusted for your A2B at the factory, so there is usually no need for any changes. If individual changes are required owing to your preferences, the following parameters can be programmed:

Speed of the forward pushing aid:
Set to 6 km/h in the factory settings (maximum legally permissible value). This value may only be reduced.

Standard assistance level:
The assistance level which is always available after switching-on the Pedelec. Adjustable from 0 - 5, value 3 is preprogrammed in the factory settings.

sMMI standard settings:
Language settings, time format (12/24 h)

sMMI lock:
The sMMI can optionally be permanently connected to the motor. As a result, the sMMI is only operable with this motor/system and cannot be used with another motor.

Service interval:
Depending on the appropriate maintenance interval specified, this interval can be set or reset by date or kilometres travelled (depending on which is first).

Wheel circumference:
To correctly display the speed and comply with statutory provisions regarding speed restriction, the bicycle dealer may change the wheel circumference. This is only necessary if the drive wheel is subsequently fitted with a tyre increasing or reducing the original wheel circumference or if the motor has been readjusted to a larger or smaller rim.

This parameter may only be changed if the statutory requirements are complied with (max. 25 km/h for Pedelecs); in case of misuse the warranty and product liability will become void. Furthermore, illegal tampering may lead to criminal consequences if detected during police checks

ⓘ All changes to the travel parameters are logged in the sMMI's data storage.

5.3.2.16 Firmware updates and their transmission to the motor and battery

As part of product maintenance and to extend the range of functions, firmware updates are occasionally available for download by specialist dealers. Your specialist dealer will be happy to inform and advise you in this matter. If an update was loaded to your sMMI by your specialist dealer, the new firmware will be installed the next time you start your Pedelec.

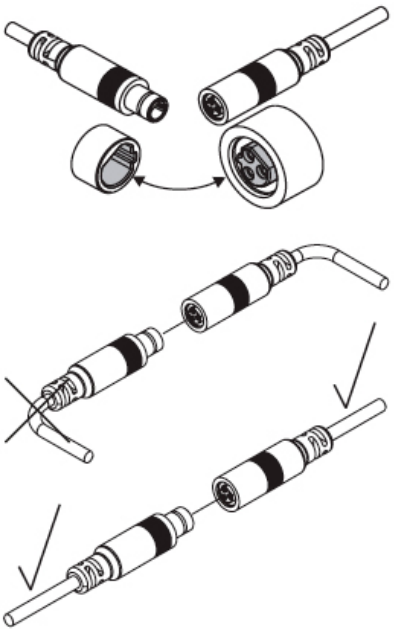
Proceed as follows:

- Put the sMMI on its dock [5] as described in section 3.1.
- The connection to the motor and the battery is automatically established and a warning "Firmware update is running" appears instead of the start menu. A live bar graph also shows the progress of data transmission.
- Once the data is fully transmitted, the screen display automatically changes to the start menu (see section 3.2.2).
- Check the settings, if any, which you have stored in the sMMI. They may have been changed by the update.

⚠ Do not interrupt the update process, for example by removing the sMMI from its dock. This
may cause damage.

5.3.2.17 Information on the sMMI plugs

If you need to remove the sMMI plugs leading to the battery, please observe the following information when reconnecting them. The sMMI plug and the socket on the cable leading to the battery must be correctly aligned with each other when connected. Both parts are quite hard to connect. This, however, prevents moisture ingress during operation. Do not bend the attached cables by any means when connecting the plug and the socket! There is a risk of breaking the cable.



5.4. Thermal management

A combination of three temperature sensors, an intelligent software control and patented air circulation ensure optimal cooling of the motor. This means better and longer performance on gradients or with heavy (trailer) loads.

Advantage:
protection against premature overheating in case of long gradients or heavy loads - longer assistance on hills, higher efficiency and thus lower battery consumption since the motor is optimally cooled.

About the theory
Like all drives, gearless wheel hub motors are also optimised with regards to an operating point consisting of speed, load and power. Our wheel hub motors are designed for operation in the speed range between 15 km/h and 25 km/h and with a nominal drive power of 250 watts. They achieve their highest efficiency and range in this speed and power range which means that the energy supplied is optimally converted into drive energy.

Whenever a motor is operated beyond its optimum operating point, its efficiency decreases. This results in the energy no longer being optimally converted, but rather a proportion of the energy supplied being converted into heat. Because of this, the range decreases and the heat must be discharged. In neodrives motors this heat is discharged through a large contact surface inside the motor (stator carrier) to the dropout or chainstays of the bicycle frame. Cooling ribs inside and outside the drive casing additionally ensure the greatest possible heat exchange with the surroundings. Heat which cannot be discharged results in the drive motor being heated up.

The neodrives wheel hub motors monitor both the energy supplied and the temperatures in the motor. Any damage through overheating owing to overload can thus be avoided. This, however, results in the motor performance available to the rider being reduced to avoid overheating.

If a temperature of 80°C is exceeded in the motor electronics, the motor control reduces the supplied power and thus the assistance. This is indicated in the sMMI by the thermometer symbol shown opposite (see section 3.2.11). As the temperature increases, the power is continually reduced.

This means: the greater the temperature increase in the motor, the less drive power can be obtained and the less assistance is available. When the motor cools down, the energy supplied is increased again and the drive power increases.

This control of drive power according to the motor temperature is infinitely variable so that there is always asistance available, but the motor cannot be damaged by overheating.

In practice

The above aspects, in practice, lead to dependence on the outside temperature, the total weight, incline, terrain, cadence, air pressure and speed. These factors may lead to a temperature which causes the power or assistance to be reduced. This, however, does not mean that a fault or failure has occurred in the drive, you can proceed with less assistance. In extreme cases, a short-term complete shutoff may occur.

Extreme example:
an incline of 10-12% at an altitude of 500 metres, a total weight of 120 kg, loose terrain, a maximum assistance level, a travelling speed of < 10 km/h and a cadence of 60 rpm mean operation in an unfavourable range at low efficiency and travelling range and, at the same time, high heat generation. This will lead to a reduction of the drive power.

Tip:
By selecting a lower gear with higher cadence, the "Tour" or "Eco" travel mode and/or a reduced level of assistance and/or taking a short break (during which the drive can cool down again), you can continue to cycle at optimal performance.

⚠ The motor must never be externally "forcibly cooled" using water! This may cause damage and does not provide very much cooling since the inside of the motor in particular becomes hot.

5.5 Motor

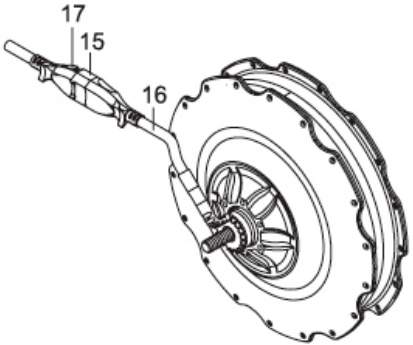
The drive wheel of your Pedelec can be removed from the bicycle frame at any time, such as for cleaning or in case of a puncture. Proceed extremely carefully when removing the drive wheel and when remounting it afterwards and, in particular, observe the manufacturer's information and instructions for the various components fitted to the wheel, especially the brake disk. (Note: For better clarity, the following charts only show the drive motor integrated in the wheel, but not the complete drive wheel).

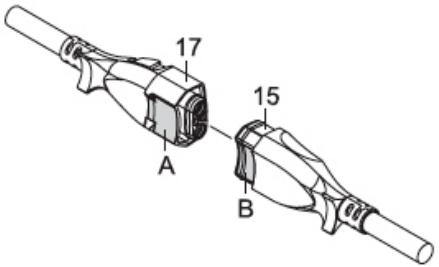
5.5.1 Removing the drive wheel

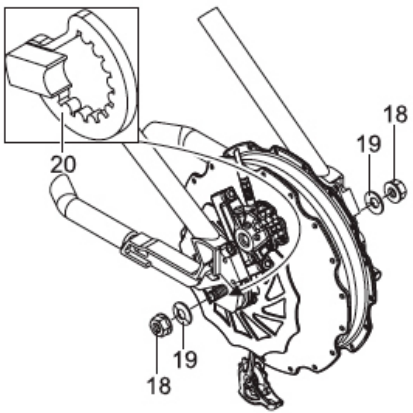
Record or make a mental note of the cable installation and the fixing points for the cable fixers before removing the drive wheel. First loosen and remove all cable fixers attaching the cable [16] coming from the motor and cables and supply lines for other components to the bicycle frame. Then disconnect the plug [15] on the motor cable [16] from the socket [17] on the battery cable. Loosen the two nuts [18] or the quick release used for fixing the wheel to the frame so that the entire wheel can be removed from your Pedelec's frame.

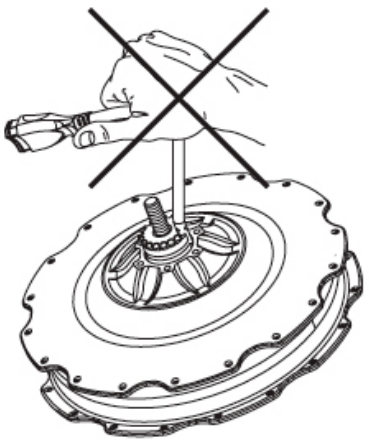
⚠ Mark or make a mental note of the position of the torque support [20]. It must be reattached in exactly the same position removal when fitting the wheel later.

⚠ Never hold or transport the removed wheel by the cable [16] coming from the motor! There is a risk of breaking the cable.


17
15
16


17
15
A
B


18
19
20
19
18



5.5.2 Attaching the drive wheel

Make sure that all components fixed to the wheel have been mounted according to their respective manufacturer's instructions and specifications. This applies in particular to the brakes and the gear box. Do not forget to remount the torque support [20] in the same position as before removal.

Then, push the wheel into the slot on the frame and tighten it using the hub axle nut [18] in the following sequence:

- first tighten on the gear box side (figure A)
- then tighten on the brake side (figure B)

The tightening torque of the two nuts is between 30 and 40 Nm in each case. Make sure that the tooth lock washer [19] is under the hub axle nut, otherwise there is the risk that the hub axle nut [18] can come loose.

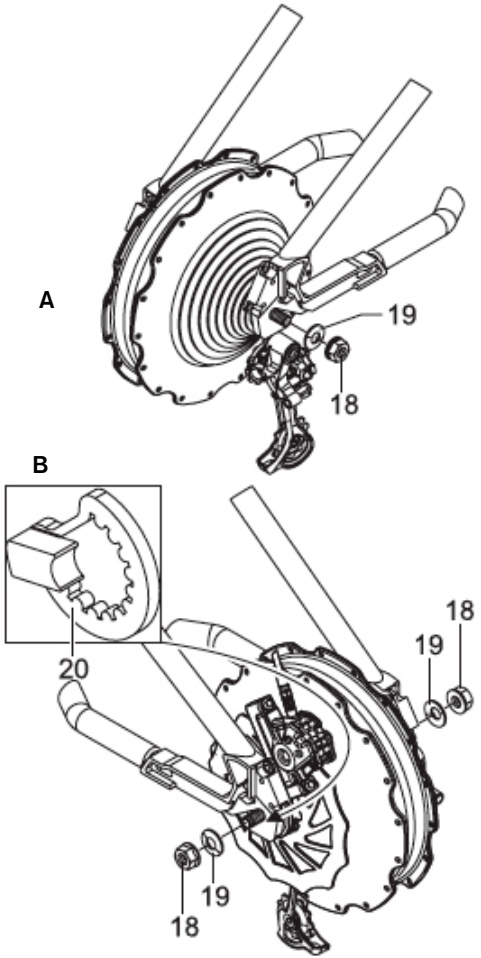
If your wheels are equipped with quick releases, please observe the manufacturer's specifications on mounting and the tightening torque.

If the wheel is correctly fixed to the frame, the motor can be connected to the cable end leading to the battery. While doing so, ensure that the plug [15] is correctly aligned with the socket [17]. The rounded surfaces ([A] and [B]) must be aligned with each other!

Fasten all cables and supply lines to the bicycle frame using cable fixers and carry out a final functional test.

Make sure the cable is installed correctly since the cable could get caught in the brake disk, drive or spokes if the cable is incorrectly installed, leading to wheel locking and, subsequently, the rider falling off.

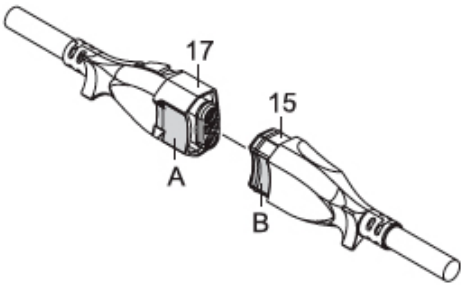
⚠ Observe the manufacturers' instructions and specifications for the various components fitted to the wheel at all times during mounting work. This applies in particular to the brake, the gear box and the quick release.



⚠ Never install the motor without the torque support [20]. This would lead to a write-off (twisting off the cable). In this case, all warranty or guarantee claims shall become void.

⚠ Carry 5 cable fixers with you alongside your repair tool in order to be able to refasten any loose cablessecurely during a journey.

⚠ Mounting or removing the drive wheel is best carried out with the Pedelec turned upside down (resting on the handlebars and saddle). Remove the sMMI fixed to the handlebars first to avoid damage.



5.6. Cleaning the motor and sMMI

Never use cleaning benzine, thinners, acetone or similar agents when cleaning the motor and sMMI. Never use abrasive or aggressive cleaning agents. Instead, only use commercially available household cleaning agents and disinfectants (isopropyl alcohol).

5.6.1 Motor

- Your Pedelec's motor should be cleaned regularly to remove dirt, ideally using a dry brush or a damp (not wet) cloth. Do not use running water, such as a water hose or even a high-pressure cleaner for cleaning. Riding in the rain and on wet ground, however, are possible without any problems.
- Water infiltration may destroy the motor. Therefore, always make sure when cleaning that neither liquids nor moisture get into the motor.
- Do not clean the motor when warm, e.g. immediately after a journey. Wait for the motor to cool down. Otherwise this may lead to damage.
- If the motor has been removed, e.g. for cleaning, it must never be held or transported by the cables, otherwise there is a risk of breaking the cables.
- If the motor has been removed from the Pedelec's frame (see section 4.1), the plug from the motor and the socket of the cable leading to the battery back must be checked for contamination and cleaned before reconnection.

5.6.2 sMMI

- The contacts of the sMMI dock are spring loaded and should be cleaned from time to time using a contact spray to ensure they operate flawlessly and for a long time.
- The sMMI casing must only be cleaned using a damp (not wet) cloth.

5.7. Transport

The following information must be observed when transporting the Pedelec by car:

- Protect all components of your Pedelec from moisture and dirt by taking appropriate measures.
- Remove the battery and sMMI from the bicycle before attaching the Pedelec to your car's bicycle rack. The weight that you have to lift, particularly for a roof bicycle rack, is thus reduced.
- Always transport the battery and the sMMI inside your car.
- When transporting the Pedelec inside your car (e.g. in an estate car), the sMMI and battery should also be removed to avoid damage during loading and the journey.
- In case of carrier systems featuring down tube clamping, make sure that the battery mounting rail is not crushed/damaged when tightening the clamping device.
- Ensure that the cable ends cannot cause damage to the Pedelec or your car during transport.
- Check all the Pedelec's contacts for possible foreign matter or moisture after transportation. To ensure safe operation, all plug connections in particular must be free from dirt and foreign matter as well as completely dry.
- Never put your Pedelec on its gear box side during transport, for instance in a car boot. It could be damaged in this way.

5.8. Warnings

- When not in use, do not expose your Pedelec to strong sunlight for long periods. This can cause the motor to heat up and, in extreme cases, not be able to operate at full power. Plastic parts also age faster under intense sunlight.
- If high temperatures (caused for example by uninterrupted operation or while stopped owing to sustained exposure to sunlight) cause the system to stop, let the motor cool down for about 10 minutes before continuing your ride.
- The maximum speed (non-motorised operation) of the system is 75 km/h. When exceeding this speed, you endanger the electronic components which could be damaged in the worst case. The maximum speed is logged by the system.

5.9. Error indications and possible solutions

The system cannot be switched on
(no indication on the sMMI display)

- Has the battery been correctly inserted into its holder?
- Have all plugs been correctly connected?
- Are there any deposits (such as metal filings) on the magnetic battery plug? Please check this very carefully!
- Is the battery "awake"? After 48 hours without being used, the battery goes into a "deep sleep" and must be reactivated by pressing the battery button once.

- Has the sMMI lock been activated by the specialist dealer? If so, the sMMI only operates with the designated motor (see section 3.2.14 - Anti-theft measures).
- Do the sMMI contacts on the dock spring back properly? Press the 8 pins into the dock one after the other using your finger. Check if the pins spring back. If the pins are stuck, use contact spray.

The battery cannot be charged

- Are there any deposits (such as metal filings) on the magnetic charger plug? Carefully check the charger plug and the battery socket for deposits.
- Is the ambient temperature <0°C? The battery cannot be charged below 0°C. Always charge the battery at room temperature. Observe the information on the charging process provided in the charger's operating instructions, in particular the error codes.

No motor assistance (sMMI operative, motor assistance not available)

- First check that the motor cable and motor plug are correctly aligned with each other (see section 4.1).
- Is an error message appearing on the display? If so, follow the appropriate recommendations (see section 3.2.11). Was the switch-on routine for the lights observed? (see section 3.2.3).
- Is the system permanently in recuperation mode? If so, check the brake lever switch located on the rear wheel brake lever (only for sMMIs with brake cable) for proper fit.
- Has the sMMI been correctly attached to the dock (see section 3.1)?

Recuperation/the downhill assistant does not work

- Is the battery charge level >90%? Recuperation only works with a battery charge level of ≤ 90%.
- Is the current travelling speed less than 15 km/h? Recuperation is not possible below 15 km/h.
- Is the current travelling speed more than 28 km/h? Recuperation is not possible above 28 km/h.

The assistance levels cannot be changed while stopped

- You have activated the pushing aid in the menu. As soon as you start to pedal, you can select the assistance levels. Alternatively, you can deactivate the pushing again aid via the menu (see section 3.2.7).

The motor is not operating at full power output

- The motor might be in a high temperature range.. From an electronics temperature of 80°C, power is gradually reduced. Let the Pedelec cool down for about 10 minutes (in the shade) and then continue your ride.

The symbol for the service reminder (section 3.2.11) is showing on the display.

- You can continue to ride your Pedelec without any restrictions, but please arrange a service appointment with your specialist dealer. They can then reset the display.

6.0 A2B neodrives battery operating instructions

6.1.1 Important instructions – please take note!

Aside from this user manual, further documents are supplied with your Pedelec.
Please observe the specifications and instructions contained in these documents.

6.1.2 Intended use of the A2B neodrives battery

The A2B neodrives battery is only intended to supply power to the neodrives drive system. No other components may be connected to it. Any further use is subject to the written consent of the manufacturer.

These operating instructions only describe the use of the neodrives battery and corresponds to the latest version of this technology at the time of printing. The manufacturer reserves the right to make changes resulting from the further development of the mechanics or software or from the statutory requirements.

According to the manufacturer, misuse of the battery includes the following:

- Use of the battery contrary to the instructions and recommendations in these operating instructions.
- Exceeding the technical performance limits defined in the present operating instructions.
- Technical modifications to the battery.
- Modifications to the battery's software.
- Unauthorised attachments or use of the battery.
- The manufacturer does not accept any liability for damage caused by misuse of the battery.

The manufacturer does not accept any liability for damage caused by misuse of the battery.

ⓘ Before starting your journey, read all safety instructions and hazard warnings contained in the individual sections of these operating instructions and all other enclosed documents.

6.1.3 Acceptable operating conditions / places of use

The battery may be used at ambient temperatures between -10°C and +45°C

Also observe the information on acceptable operating conditions contained in the Pedelec manufacturer's operating instructions. This manufacturer's restrictions on the acceptable operating conditions must also be followed!

Observe the safety instructions and hazard warnings included in the individual sections of the present operating instructions.

6.1.4 Standard scope of supply (neodrives components)

- Battery, incl. 1 pair of keys
- Battery rail for attaching the battery (already mounted on the Pedelec)
- the present operating instructions

6.1.5 Technical details

Name:	BM18650Z3	US18650NC1
Battery type:	Lithium ion	Lithium ion
Rated capacity:	11.25 Ah	14.5 Ah
Rated voltage:	37 V	36V
End-of-charge voltage	42.5 V	42.5 V
Total energy:	416 Wh	522 Wh
Maximum discharge current:	30 A	30 A
Ambient charging temperature:	0°C to 40°C	0°C to 40°C
Ambient operating temperature:	-10°C to 45°C	-10°C to 45°C
Number of cells:	50	50
Protection class	IP54	IP54
Weight:	about 3.25 kg	about 3.25 kg

Subject to technical and design modifications based on continuous further development.

Please keep these operating instructions for future reference.

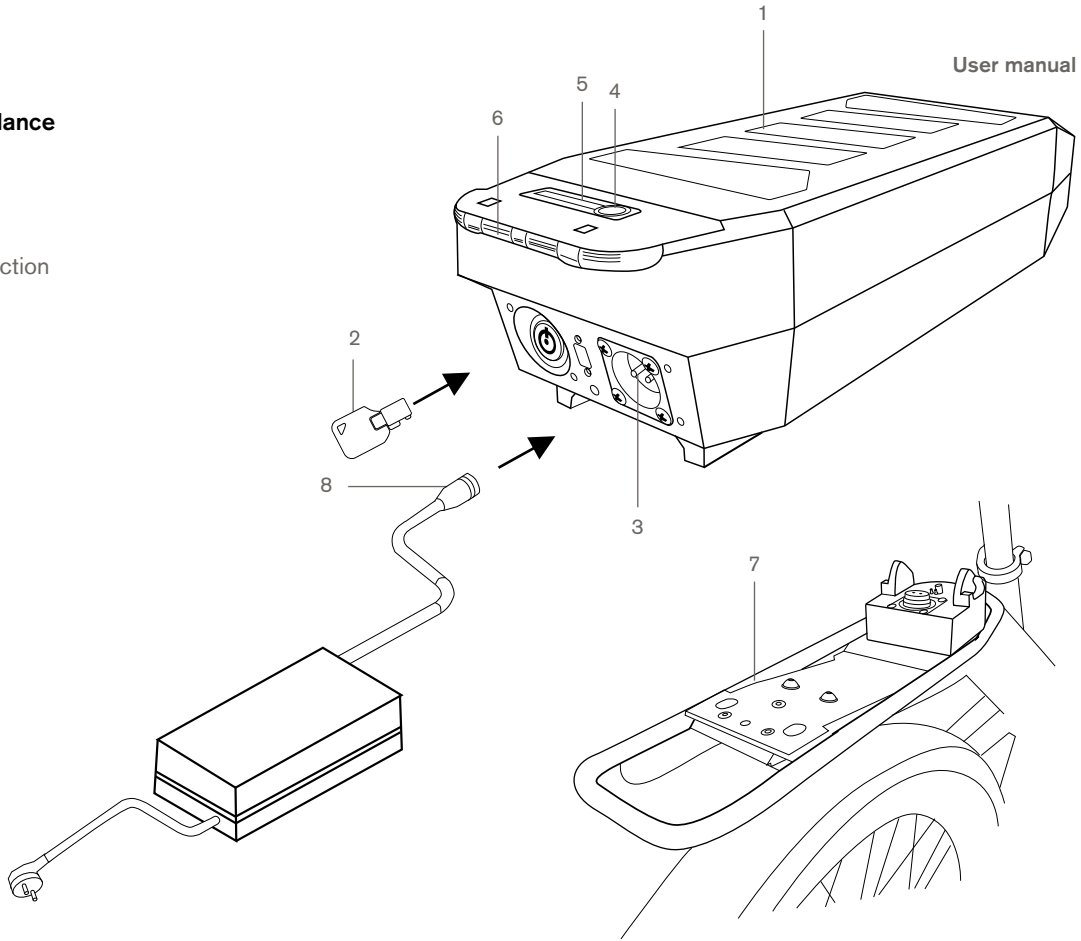
These operating instructions can also be downloaded from our website at www.weareA2B.com.

6.1.6 The main elements at a glance

Battery
1. Battery (casing)
2. Keys
3. Charger socket / motor connection
4. On/off button
5. LED energy display
6. LED rear light

On the Pedelec
7. Battery rail

Battery charger
8. Charging cable plug



6.2. Safety instructions and warnings

⚠ Read and take not of the following safety instructions and warnings before installing the battery and starting the charging process. Non-compliance with the safety information and instructions may result in damage to the product or electric shocks, fire and/or severe injuries. The lithium-ion battery contains chemical substances which may cause dangerous reactions if the present safety instructions are not complied with. The manufacturer does not accept any liability for damage resulting from the non-compliance with these instructions.

6.2.1 Safety instructions and warnings for use of the battery

- The battery should be fully charged before using it for the first time.
- The battery may only be used at temperatures between -10°C and +45°C
- The battery must not be exposed to heat (e.g. radiators) or fire. External heat may cause the battery to explode.
- In the (unlikely) event of the battery overheating or catching fire, the battery must under no circumstance come into contact with water or other liquids. The cell manufacturers recommend sand as only appropriate extinguishing agent.
- Your Pedelec consumes energy each time it is used. We therefore recommend charging the battery after each use if possible.
- The battery may only be used for supplying power to the neodrives components. Any further use is subject to the written consent of the manufacturer.
- The battery must not be opened or disassembled. Improper opening or wilful destruction of the battery involves the danger of severe injuries. Moreover, opening the battery will result in the warranty claim being voided.
- Never connect the battery contacts in the socket to metallic objects and ensure that the contacts never come into contact with metallic objects (for example with metal filings).
- If the socket is dirty, clean it using a clean and dry cloth.
- Never immerse the battery in water.
- The battery's life cycle depends, among other things, on where it is stored. Therefore, do not leave the battery (irrespective of whether the battery is inserted or has been removed from the Pedelec) in hot places for long periods of time. In particular, the boots of cars parked in the sun should only be used for transportation, not as a general storage location.
- The battery must not be exposed to mechanical impacts. If, for instance, the Pedelec tilts and the battery directly hits the ground, the battery must be checked by the manufacturer. Please contact your specialist dealer concerning this matter. A damaged battery must not be used again.
- If the battery is damaged or defective, it must be taken out of use and checked. Please contact your specialist dealer and discuss further action with respect to return and repair. The defective/damaged battery must by no means be used again or opened.
- Always make sure to keep the battery clean and dry.

6.2.2 Safety instructions and warnings for storage of the battery

- Protect the battery immedialy after disconnecting it from the charger or motor. Moisture or foreign matter (such as metal fragments, small nails, filings or other conductive metals) must not get into the battery.

- Do not expose the battery to any kind of moisture (water, rainwater, snow, etc.) during storage!
- Charge the battery before storage and check the state of charge every 3 months.
- Store the battery in a cool and dry place where it is safe from damage and unauthorised access.
- To obtain an optimum battery life cycle, the battery should be stored at a temperature from 18°C to 23°C and a humidity of 0 to 80 percent. The state of charge should be 70 percent.
- Check the battery's state of charge every 3 months during storage and charge it to 70 percent if required.

6.2.3 Safety instructions and warnings for the charging process

- Only charge the battery in a ventilated, dry and dust-free environment.
- Never charge the battery in the presence of or close to flammable liquids or gases.
- Do not expose the battery to any kind of moisture (water, rainwater, snow, etc.) during charging.
- Do not charge it in areas in which the battery could come into contact with moisture.
- The battery should only be charged at temperatures between 0°C and 40°C. If you try to carry out a charging process beyond this temperature range,
- the battery's automatic system will automatically switch off the charging process.
- The battery achieves its maximum life cycle if charged at temperatures between 10°C and 30°C.
- Only use the intended chargers to charge the battery. Your specialist dealer will give you the relevant information.
- Using an inappropriate charger may lead to malfunctions and result in a shorter life cycle of the battery. There is also a danger of fire and explosion.
- After the end of the charging process, the charger must first be disconnected from the mains socket and then from the battery.
- Ensure adequate air circulation as soon as the battery is charged.
- Only charge the battery under supervision.
- Damaged batteries must not be recharged or used again.
- Damaged battery chargers (damage to the plug, casing, cable) must not be used.

6.2.4 Safety instructions and warnings for transportation and shipping of the battery

Lithium-ion cells are used in the A2B neodrives battery. Therefore, relevant statutory provisions are applicable to the transportation and shipping of the battery which must be strictly complied with. For instance, a defective battery pack must never be transported in aircraft.

If your battery is defective, please take it to your specialist dealer in person since the shipping of lithium-ion batteries by post or through other carriers is stricly regulated. In this case, we also recommend that you contact your specialist dealer.

Since the transport regulations may change annually, we strongly recommend that you contact your travel operator, airline or shipping company before going on a trip to obtain information on the current applicable regulations. A defective battery must not be brought onto an aircraft or put into luggage. If your battery is attached to the Pedelec when transporting it, less strict transport regulations apply in accordance with UN3171.

ⓘ Keep the paperboard packaging of the battery pack without fail in case you need it for transport.

ⓘ Discuss transportation with your specialist dealer before dispatching the battery.

6.2.5 Safety instructions and warnings for the charger

⚠ Read and observe all instructions and warnings enclosed with the charger and the following safety instructions and warnings before starting the charging process.

- Only use the intended chargers to charge the battery. Your specialist dealer will give you the relevant information.
- Using an inappropriate charger may lead to malfunctions and result in a shorter life cycle of the battery. There is also a danger of fire and explosion.
- The charging process is automatically ended as soon as the battery pack is charged. Overcharging is therefore not possible.
- After the end of the charging process, we recommend disconnecting the charger from the mains socket first and then from the battery pack.
- Never use a charger other than the one recommended by your specialist dealer.
- Do not expose the charger to any kind of moisture (water, rainwater, snow) during charging.
- Do not carry out the charging process in areas in which the charger could come into contact with moisture.
- Be careful if condensation occurs. If the charger is brought from a cold area into a warm one, condensation may form. In this case, wait until the condensation has evaporated before using the charger. This may take several hours.
- Never carry the charger by the power cable or the charger cable.
- Never pull the power cable to disconnect the charger from the mains socket.

- Do not subject the cable and plug to pressure. Excessive stretching or bending of the cables, pinching of a cable between a wall and a window frame or placing of heavy objects on a cable or plug may lead to an electric shock or fire.
- Lay the power cable and the attached charging cable in such a way that nobody can step on it or stumble over it and that both cables are not subject to any other damaging effects or influences.
- Do not operate the charger if the power cable, the charging cable or the plugs fixed to the cables are damaged. All damaged parts must be replaced immediately by the authorised specialist dealer. Do not use or disassemble the charger if it has received a hard blow, was dropped or was damaged in any other way. Take the damaged charger to an authorised specialist dealer to have it repaired.
- The charger must not be used by children.
- Do not disassemble or modify the charger.
- Do not cover the charger during the charging process and do not place any objects on it.
- Never short-circuit the poles of the charging plug using metallic objects.
- Ensure that the power plug has been firmly inserted into the socket.
- Do not touch the plugs with wet hands.
- Do not use the charger plug and/or the mains plug if they are wet or dirty. Clean the plugs using a dry cloth before inserting them.

6.3. Startup

6.3.1 Information on the operating modes

The battery essentially has two operating modes. It is

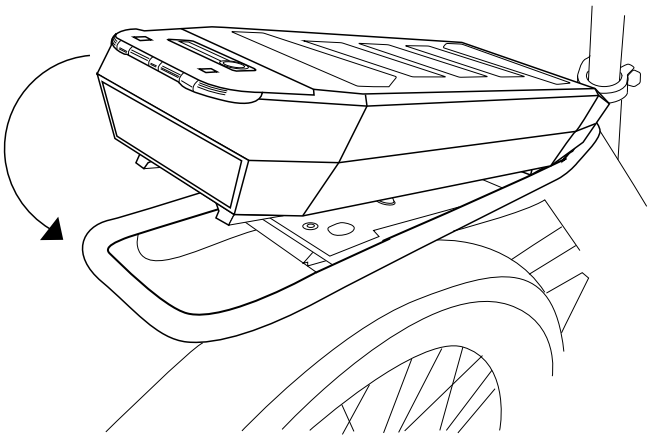
either in "Active mode" or in "Deep Sleep mode".

When being in "Active mode", the battery consumes at least 5 mA per hour (own consumption of electronics).

To keep the own consumption as low as possible, the battery automatically switches into the so-called "Deep Sleep mode" after 48 hours.

6.3.2 Insertion of the battery

- Put the battery's front end into the two rails located on the connector box.
- Place the battery on the luggage rack and slightly push it downwards until the lock snaps into place with a click. While doing so, the electrical connection to the wheel is automatically established.
- Press the lock until it snaps into place in its casing. The battery can now no longer be removed from the luggage rack.



6.3.3 Switching the battery on

If the battery has been used within 48 hours, it does not need to be switched on. The Pedelec is operable and can be switched on via the sMMI and started.

If the battery is being started for the first time or if it has not been used for more than 48 hours ("Deep Sleep mode"), it must be switched on.

- Briefly press the button.
- All LEDs [5] flash three times to indicate that the battery has been switched on.
- Your Pedelec is now operable and can be switched on via the sMMI and started.

ⓘ If the motor cable has not yet been connected to the battery, the battery will still be put into "Active mode" when switched on.

ⓘ If the battery cannot be switched on, the cell voltage might be too low. In this case, connect the charger and then press the on/off button. The battery will then be charged for a minute.

6.3.4 Display of the state of charge

You can check the battery's state of charge at any time using the LED display.

If the battery has not been used for more than 48 hours:

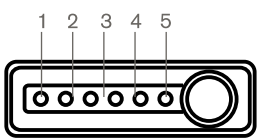
- Briefly press the button.
- The battery is switched on, all LEDs (a to e) flash three times.
- Briefly press the button again.
- The LEDs will now indicate the battery' s capacity as shown in the following table.
- If the battery has been used within the past 48 hours:
- Briefly press the button.
- The LEDs will now indicate the battery' s capacity as shown in the following table.

While in operation or in case of storage

- 100-81% ROC: LED1-LED5 continuously illuminated
- 80-61% ROC: LED1-LED4 continuously illuminated
- 60-41% ROC: LED1-LED3 continuously illuminated
- 40-21% ROC: LED1-LED2 continuously illuminated
- 20-11% ROC: LED1 continuously illuminated
- 10-0% ROC: LED1 flashing

During charging

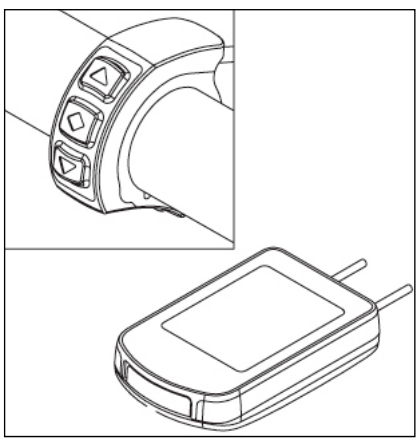
- 100% ROC: LED1-LED5 continuously illuminated
- 99-81% ROC: LED1-LED4 continuously illuminated
- 80-61% ROC: LED1-LED3 continuously illuminated
- 60-41% ROC: LED1-LED3 continuously illuminated
- 40-21% ROC: LED1-LED2 continuously illuminated
- 20-11% ROC: LED1 continuously illuminated
- 10-0% ROC: LED1 flashing



6.4. Removal of the battery

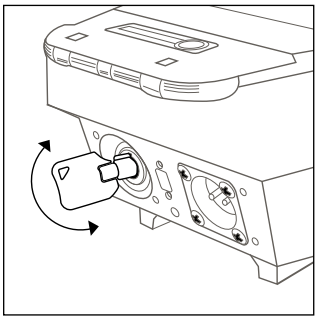
6.4.1 Switching off the battery

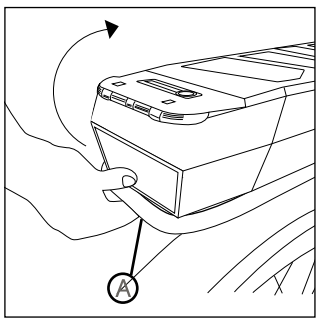
The battery is switched off using the sMMI controller (see neodrives sMMI and motor operating instructions). While doing so, the battery is first put into "Active mode" for 48 hours. This means that the sMMI can be reactivated at any time during this period without having to switch on the battery first. The power required in this context is minimal.



6.4.2 Removing the battery

- Open the cover flap on the luggage rack battery. Put the key into the lock on the luggage rack battery
- Push the key slightly into the lock and, while doing so, turn it into any direction.
- If the lock was turned by about 45 degrees, it comes out about 8 mm and automatically releases the lock.
- Keep on turning the key into any direction and, while doing so, pull it slightly outward. When the starting position is reached, the key can be pulled out of the lock.
- Pull the lock [A] on borrom of the battery and lift it upwards using the carrying handle.
- Store the battery in a clean place.





6.5. Charging the battery

Completely charge the battery before using it for the first time. The battery's state of charge is usually 30% upon delivery. The battery may be charged from any state of charge without affecting the life cycle. The battery achieves its maximum life cycle if charged at an ambient temperature between 10°C and 30°C

6.5.1 Connecting the charger

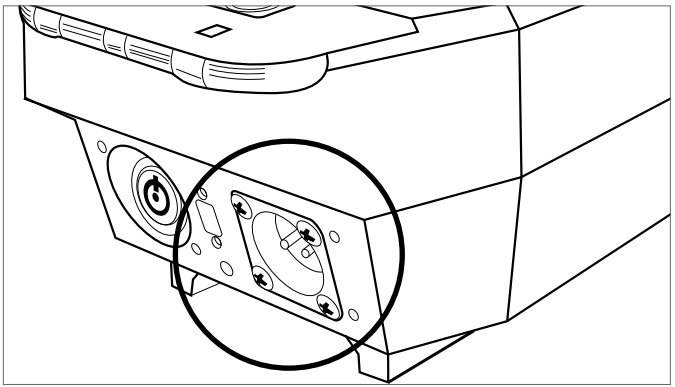
The battery [1] does not have to be removed from the Pedelec to charge it, but may remain there. Only the motor cable plug [9] needs to be detached (see section 4.2). Proceed as follows.

- Insert the charger plug into the socket on the battery.
- The two parts are automatically correctly aligned and locked by a magnetic lock.
- Charge the battery in accordance with the specifications in the charger's operating instructions. Also observe the instructions for the charging process contained in section 2.3.

⚠ Before inserting the plug into the socket, make sure that both parts are clean and do not contain any metallic particles. If they contain metallic particles, these particles must be removed using a clean dry cloth.

6.5.2 Charging process

When charging the battery, follow the charger's operating instructions.



Also observe the safety instructions and warnings included in sections 2.3 and 2.5

6.5.3 LED indications during charging process

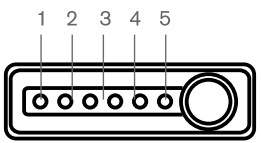
The following table shows the battery's LED indications during the charging process.

While in operation or in case of storage

- 100-81% ROC: LED1-LED5 continuously illuminated
- 80-61% ROC: LED1-LED4 continuously illuminated
- 60-41% ROC: LED1-LED3 continuously illuminated
- 40-21% ROC: LED1-LED2 continuously illuminated
- 20-11% ROC: LED1 continuously illuminated
- 10-0% ROC: LED1 flashing

During charging

- 100% ROC: LED1-LED5 continuously illuminated
- 99-81% ROC: LED1-LED4 continuously illuminated
- 80-61% ROC: LED1-LED3 continuously illuminated
- 60-41% ROC: LED1-LED3 continuously illuminated
- 40-21% ROC: LED1-LED2 continuously illuminated
- 20-11% ROC: LED1 continuously illuminated
- 10-0% ROC: LED1 flashing



ⓘ If a fault occurs during the charging process, all LEDs will illuminate. Check if all criteria (such as ambient temperature, properly fixed charging plug, etc.) relating to the charging process have been fulfilled in accordance with the present operating instructions and those enclosed with the charger.

ⓘ Do not leave the charger connected to the mains after the charging process
is finished. After the end of the charging process, the charger must first be disconnected from the mains socket and then from the battery pack.

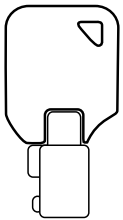
ⓘ Always check the battery pack's state of charge before starting a journey. It should be fully charged before starting the journey so that motorised assistance is available at any time.

ⓘ The batteries may only be charged in a dry room at a temperature between 0°C and a maximum of 40°C.

ⓘ Observe the information in the operating instructions enclosed
with the charger.

ⓘ Follow the safety instructions and warnings relating to the battery provided in sections 2.1 to 2.5 of these operating instructions

6.6. Keys



The battery's scope of supply includes two keys for locking the battery in the battery rail. Your specialist dealer should record the identification engraved in the keys
in the documents delivered with the Pedelec so that the keys can be reordered if required.
Please check, therefore, that the key identification has been recorded in the documents.
If not, please record it yourself.
Any keys may only be reordered via the Burg specialist dealer (as of October 2013).

6.7. Cleaning the battery

Never use cleaning benzine, thinners, acetone or similar agents for any cleaning work. Only use commercially available household cleaning agents
and disinfectants (isopropyl alcohol).

- The charging cable plug on the charger and the motor cable plug may only be cleaned using a dry cloth.
- Never spray off the battery using a steam-jet air ejector or similar devices.

6.8. Disposal

Electrical and electronic appliances must be disposed of separately from household waste at governement disposal centres provided for this purpose. The proper disposal and separate collection of old appliances is intended to prevent potential damage to the environment and health. It constitutes a prerequisite for reusing and recycling used electrical and electronic appliances. Detailed information on the disposal of your old appliances is available from your community, your waste disposal service, the specialist dealer who you bought this product from or your sales representative. This only applies to devices which are installed and sold in European Union member states and subject to the European directive 2002/96/EC. In countries outside the European Union, different regulations on the disposal of electrical and electronic appliances may apply.

6.9. Liability

The manufacturer shall not accept any liability if

- the battery was / is operated improperly.
- the battery was / is started contrary to the present operating instructions.
- the battery was / is operated with inadequate battery charge.
- repairs or other works were / are performed by unauthorised persons.
- the battery was / is used contrary to the intended use.

7.0 Important safety precautions before your first journey

Make sure that you and your A2B are prepared for a safe and pleasant ride.

ALWAYS wear an approved bicycle helmet. If you lend your A2B to some else, you should always lend them an approved helmet as well.

NEVER transport another person on your A2B. Overloading your A2B by transporting another person may cause severe or even fatal injuries.

FOLLOW all traffic rules. Always ride on the correct side of the road, in the direction of the traffic and not in the opposite direction.

Beware of vehicle doors. Remember that the doors of vehicles in front of you might be opened.

Be very careful in wet weather. When the road is wet, the braking distance of your A2B might be twice or three times as long. Ride slower, prepare for stopping in plenty of time and brake earlier. Wet roads are slippery – be careful in curves and when turning.

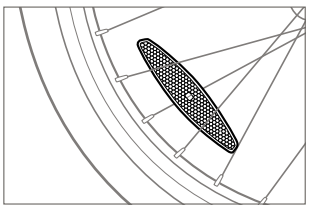
Make sure that you are seen by others. In dim lighting and in the dark, you should wear light clothes, ideally with reflective stripes.

Remain attentive when cycling. Watch out for moving and stopped vehicles.

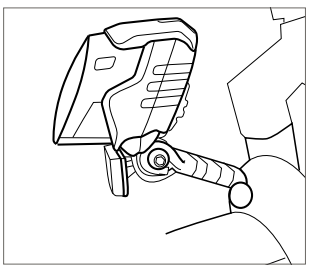
Special note for parents or guardians
As parents or guardians, you are responsible for the child's activities and safety when using the A2B. You must ensure that:

- your A2B is correctly adjusted for the child.
- your A2B is in good and safe operating condition.
- you and your child have learnt and understood how to safely use the A2B.
- you and your child have learnt, understand and comply with the local applicable regulations relating to motor vehicles, bicycles and traffic.
- you and your child observe the generally accepted rules of behaviour for safe and responsible cycling.
- you and your child have read this manual and you have discussed the warnings, functions of the A2B and operating procedures with your child before letting the child use the A2B.

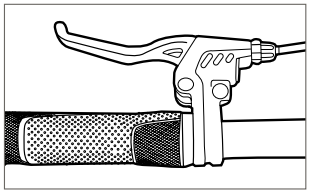
Check your A2B before every journey
Walk around your A2B before every ride and check the brakes, tyres and fit of all major fastening elements. Have your A2B serviced in accordance with the servicing schedule and checked at least ONCE a year by a certified A2B dealer. Your safety depends on your A2B's roadworthiness.



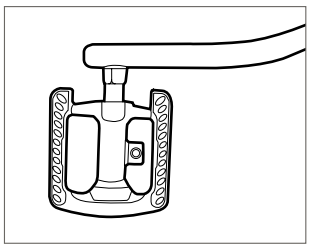
Reflectors. Your A2B is equipped with rear and side reflectors to make sure you are noticed at night. Make sure before every ride that the rear and side reflectors are fixed, properly positioned and clean.



Lights. Your A2B has a headlamp and rear lamp to make sure you are noticed at night. Ensure that the lights are operative and clean before every journey.



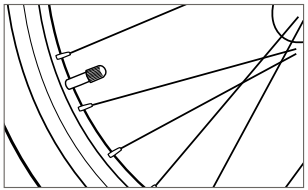
Brakes. Check the brakes before every journey. The left brake lever activates the front wheel brake, the right brake lever activates the rear wheel brake.

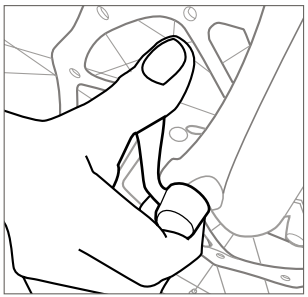


Brake pads. When checking the brakes, the entire brake system must be checked without fail. Brake pads are subject to normal wear and tear and will wear out over time. Never wait until the brake pads are completely worn out. Ask your A2B specialist dealer to check the brake pads and replace them if necessary.

Pedals. Ensure that the pedals are properly fixed and have a firm fit before every journey.

Saddle. Ensure that the saddle is correctly adjusted and has a firm fit (see 3.4) before every journey.





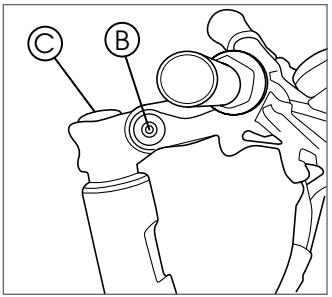
Tyre pressure. Your A2B is fitted with very durable bicycle inner tubes to prevent punctures. Bicycle tyres, however, usually lose pressure over time. Poorly inflated tyres might fail prematurely and mean that you have to use more power (pedalling power and motor power) to move your A2B forward. Low tyre pressure reduces the possible range for each battery charge. The recommended tyre pressure for the front and rear wheel tyres is 3.5 bar.

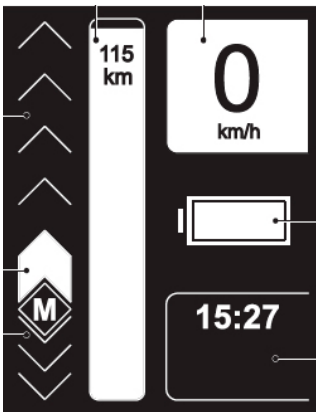
⚠ **Quick release.** Ensure that the quick release on the front wheel is correctly adjusted and has a firm fit. In case of inadequate adjustment and securing of the quick release, the front wheel may come loose during the ride leading to severe or even fatal injuries and/or material damage.

⚠ **Stem and handlebars.** Make absolutely sure that the screws of the handlebar clamp (see 3.5) and the stem (see 3.6) are tightened using the specified torque.

Battery. Check the display before the ride to ensure that the battery has been sufficiently charged for the planned distance.

ⓘ If any aspects regarding the use and servicing of your A2B are unclear, please contact your A2B specialist dealer.

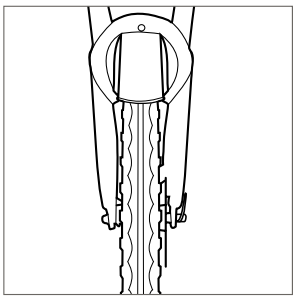




8.0 Maintenance

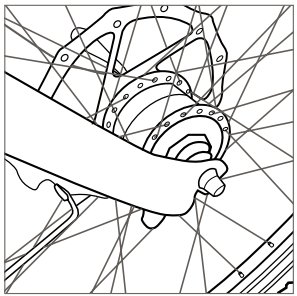
Have your A2B checked and serviced regularly by an A2B specialist dealer in accordance with the servicing schedule (see section 13 of these operating instructions) and at least once a year.

8.1 Wheels



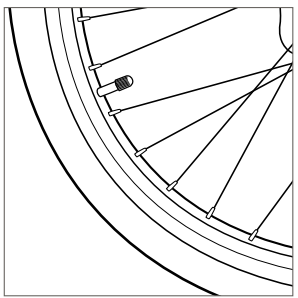
The front and rear wheels should be aligned centrally in the fork and the frame. Regularly check the wheels for correct spoke tension and rim alignment. Do NOT use your A2B if the spokes are damaged or missing. The wheels should run smoothly and without any horizontal or vertical wobble.

8.2 Hub bearings

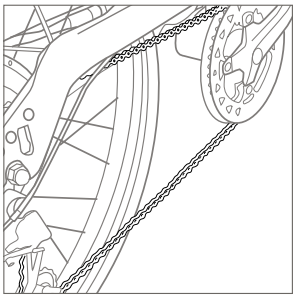


Regularly check the fit of the hub bearings by lifting the wheel from the ground and turning it while trying to move the rim sideways between the fork or the frame. There should not be any movement to the side. If you notice that a wheel is moving to the side, the hub bearings must be adjusted or replaced.

8.3 Rims



The rims must be smooth and should not have any cracks, bulges or flat areas. Take your A2B to your A2B specialist dealer, as required, to have the wheels repaired and/or adjusted.



8.4 Drive chain

Your A2B is equipped with a high-quality chain. This chain must be cleaned regularly and lubricated using a synthetic lubricant recommended for bicycles.

8.5 Brakes

Check the hydraulic brake lines for signs of wear and fraying.

Pull the brake lever tight and check whether the brakes are operating properly.
Make sure that the rotors are free from any residues and oil.

Never wait until the brake pads are completely worn out. Replace the brake pads as required.
If the brake pads look worn out or the brakes do not respond as usual, you should ask your A2B specialist dealer to check and replace the brake pads. The brakes are less effective if the road is wet.

If you have to travel in wet weather, always remember that your A2B has a longer braking distance. Ride slower, keep a larger distance between yourself and other road users and start braking earlier than usual. Any non-compliance with these safety measures may lead to accidents resulting in severe or even fatal injuries and/or material damage. If you have any questions on the use of the brakes, please contact your A2B specialist dealer.

⚠ Brake disks and pads must be free from oil and grease.

8.6 Tyres

Check the tyres for damage, cracks and unusual or heavy wear and tear. The tyre should sit properly in the rim. Regularly check the fit of the bead in the rim. Check that the tyre tread is free from any foreign bodies and the valve stands out straight from the rim.

Damaged or worn out tyres should be replaced immediately.
Take your A2B to an A2B specialist dealer or a qualified bicycle mechanic to have the tyres repaired and/or replaced as necessary.

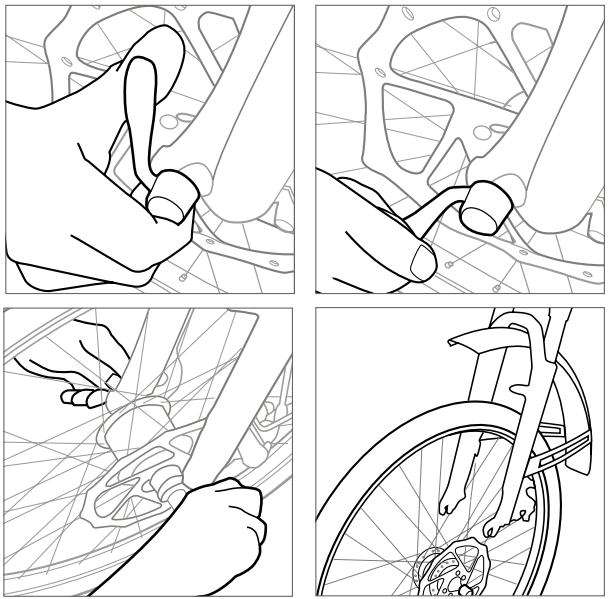
In the unlikely event that you get a puncture, you should be familiar with the proper method for removing and remounting the front and rear wheels.

8.7 Removing and remounting the wheels

Removing the front wheel

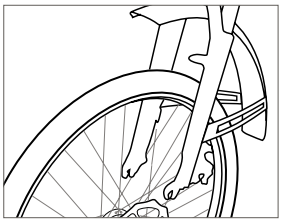
1. Loosen the quick release on the front wheel hub by turning the lever away from the hub until it is fully opened.
2. Turn the adjusting nut on the hub opposite from the quick release ANTI CLOCKWISE until the nut and the quick release unit stick out from the safety edges on the fork end.
3. The front wheel can now be easily removed from the hub.

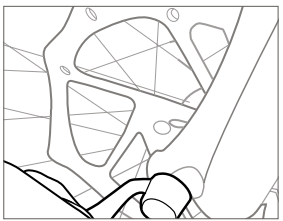
⚠ Your A2B is equipped with a front wheel with quick release for easy removal and mounting of the front wheel. Please observe the instructions on the quick release system to ensure proper handling. If you do not observe the correct procedure for fastening the front quick release then the front wheel may come loose during the ride. This can lead to severe or even fatal injuries and/or material damage. If you have any questions on assembling and adjusting your A2B, please contact your A2B specialist dealer.

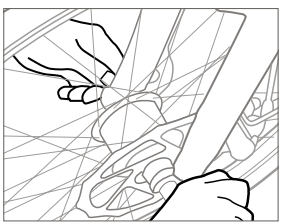


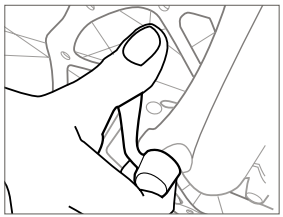
Remounting the front wheel

1. Position the front wheel in the fork in such a way that the quick release lever is on the left-hand side of the fork.
2. Adjust the lever to the open position (OPEN, i.e. the lever is bent away from the hub) and push the front wheel axle into the dropouts of the fork.
3. Turn the adjusting nut on the right-hand side of the hub in clockwise direction so that you can feel resistance when closing the lever (when the lever is parallel to the midline of the hub).
4. Hold the fork tightly in your left hand and push the lever towards









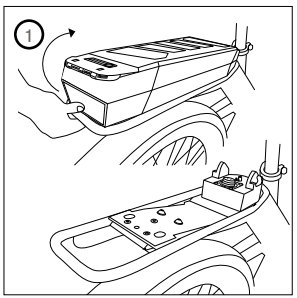
the fork until it is closed again. In order to avoid the risk of injury, the lever must not stick out. The lever is safely fastened if it takes effort to push it into the closed position. The amount of effort is appropriate if the lever leaves a mark on the palm of your hand when pressing. When the lever is closed, the OPEN label is no longer visible. A properly closed quick-release cannot be moved any more unless it is reopened as specified above. If you can move the mechanism slightly, open the quick release lever, turn the adjusting nut by another 180° and try again.

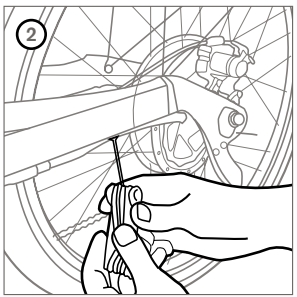
5. Make sure that the brake disk is sitting correctly between the brake calipers and is correctly adjusted.

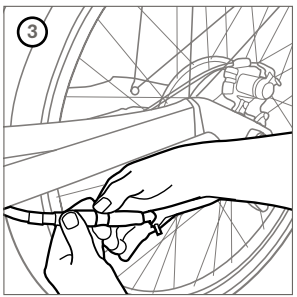
⚠ If such installation and adjustment of the brakes is not completely clear, ask your A2B specialist dealer to adjust the your A2B's brakes for you. Incorrectly adjusted brakes have reduced efficiency which can lead to accidents resulting in severe or even fatal injuries and/or material damage. Do NOT use your A2B if you are not sure whether the brakes are working properly.

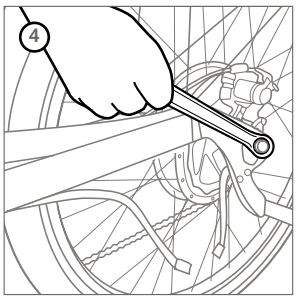
Removing the rear wheel

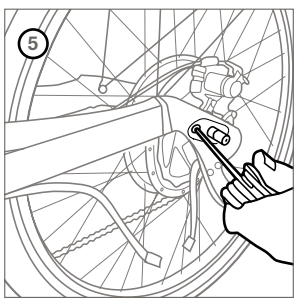
1. Ensure that the battery is no longer connected to the system. To that end, remove the battery from the vehicle.
2. Remove the cable holders (on the back of the dropout and on the bottom side of the left chain stay) using an appropriate Allen key.
3. Disconnect the plug connectors for the power and control cables leading to the motor.
4. Loosen and remove the hub axle nuts using a 19-mm wrench.
5. Loosen and remove the torque support retaining screw on the left-hand side of the dropout.
6. Remove the torque support from the A2B by pushing it from the axle.
7. Now pull the rear wheel from the frame while at the same time removing the chain from the freewheel.

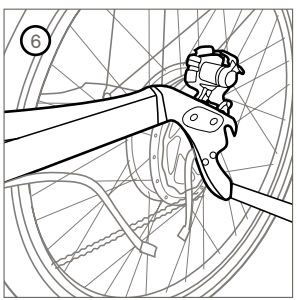


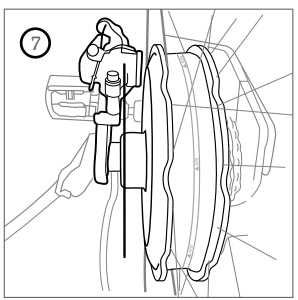










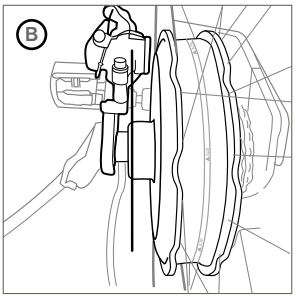


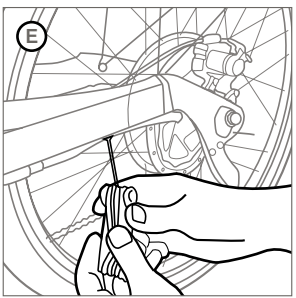
Remounting the rear wheel
Carry out the steps for removal (7-1) in reverse order.

A. Remount the torque support. Otherwise, the frame may be damaged.
B. Ensure that the rear wheel is centred in the frame before safely tightening the hub axle nuts using 60 Nm.
C. Make sure that the brake disk is sitting correctly between the brake calipers and the wheel is turning freely without the brake blocks rubbing on it.

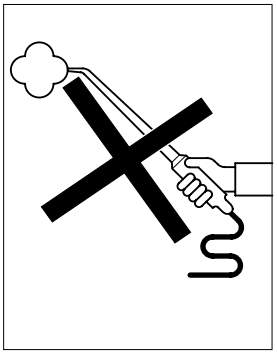
⚠ If such installation and adjustment of the brakes is not completely clear, ask your A2B specialist dealer to adjust the your A2B's brakes for you. Incorrectly adjusted brakes may have reduced efficiency which can lead to accidents resulting in severe or even fatal injuries and/or material damage. Do NOT use your A2B if you are not sure whether the brakes are working properly.

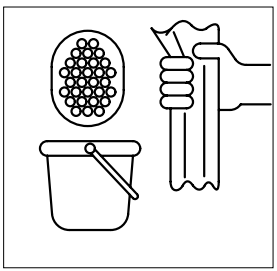
D. Check the correct fit of the chain on the front and rear chainrings.
E. Reattach the cable holders to the dropout and the frame.





9.0 Vehicle cleaning

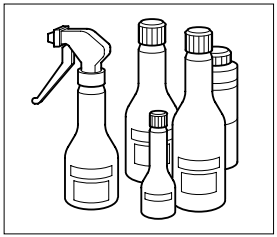




ⓘ Rubber- and plastic parts must not be damaged with aggressive or penetrating cleaning agents- and solvents.

⚠ Always carry out a brake test after cleaning and before starting a journey!

⚠ Do not use any steam cleaners- or high pressure blast cleaners! The high water pressure may damage seals, the battery and the entire electrical system.
- Only use a soft sponge and clear water for cleaning.
- Only repolish it using a soft cloth or leather!
- Do not wipe away dust and dirt using a dry cloth (scratches to the paint and on the coverings).



ⓘ Do not use paint polishing agents for plastic parts.
- Thoroughly clean the A2B after long journeys and preserve it using a commercially available anticorrosive agent.

ⓘ For the purposes of environmental protection, we ask you use care products economically and only use products which are marked as environmentally friendly.

Road salt can cause major damage if the vehicle is used during the winter.

ⓘ Do not use warm water - increased salt-induced corrosion. Immediately clean the vehicle after the journey using cold water; thoroughly dry the vehicle; treat parts subject to corrosion using wax-based anticorrosive agents.

10.0 Tecnical details

General technical details

- 17” Overall dimensions – 1,720 mm x 650 mm x 1,000 mm
- 20” Overall dimensions – 1,745 mm x 650 mm x 1,070 mm
- Unladen weight without battery: 22.4 kg
- Unladen weight with battery: 25.9 kg
- Permissible maximum load: 160 kg
- Permissible maximum luggage rack load: 25 kg
- Maximum speed with motorised assistance, even terrain: 25km/h (15.5 mph), NOTE: limited
- Maximum range, even terrain, without tailwind or headwind, without stopping/starting, lowest assistance level: Up to 120 km (74.5 miles)

11.0 Warranty and safety information

Hero Eco Warranty

1. Definitions

1.1 The following definitions stipulated in this clause shall apply to the warranty:

Goods means: In connection with the A2B: the frame, the motor system (motor and motor control), the lithium-ion battery and all other components of the A2B, excluding the tyres, inner tubes and brake bads.

A2B means: Light electric vehicle, manufactured and distributed by Hero Eco.

2. Guarantee

Periods means: 5 years from the date of delivery of your A2B for the frame, two years from the date of delivery of your A2B for the motor system (motor and motor control); one year from the date of delivery of your A2B for the lithium-ion battery, two years from the date of delivery of youe A2B for all other A2B components, excluding the tyres, inner tubes, brake pads and handles.

Hero Eco means: Hero Eco Ltd.

You and your mean: The original purchaser of the A2B buying it from an authorised A2B specialist dealer.

2.1 Hero Eco guarantees that, upon delivery of the A2B to you and for the specified period, the goods:

- 2.1.1 correspond to the relevant description with respect to all major aspects and based on any conditions or information contained in brochures, promotion or other documents;
- 2.1.2 are of a satisfactory quality;
- 2.1.3 are appropriate for the purposes specified by Hero Eco or all reasonable purposes that you use the goods for;
- 2.1.4 do not have any major defects relating to construction, material and workmanship;
- 2.1.5 comply with all applicable statutory and regulatory requirements with regard to the sale of the goods in Europe.

2.2 Hero Eco provides this warranty in addition to your statutory claims relating to goods which are defective or do not fulfill the warranty conditions in any other way. Your local consumer advice centre or consumer protection authority will inform you of your statutory claims.

2.3 This warranty shall not apply in case of failure of the goods:

- 2.3.1 owing to normal use and wear;
- 2.3.2 owing to wilful destruction, accident or negligence by you or any third party;
- 2.3.3 if your A2B has been assembled by any person other than Hero Eco or an authorised A2B specialist dealer

2.3.4 if you use the goods in a way not recommended by Hero Eco, such as using the A2B for commercial purposes or in competitions or for the purposes of training for such activities or events;

2.3.5 because of your non-compliance with our instructions, such as the user manual;

2.3.6 in case of any modifications, changes or repairs carried out by you without Hero Eco's prior written consent.

2.4 The warranty shall also apply to any goods repaired by Hero Eco or provided as replacement by Hero Eco in the unlikely event that the original goods are defective or do not fulfil this warranty in any other way.

3. Defective goods and returns

3.1 Either contact an authorised A2B specialist dealer or contact Hero Eco directly via A2B.DE@heroeco.com

3.2 Hero Eco will ask you to take the A2B to an authorised A2B specialist dealer together with proof of purchase. After Hero Eco has checked that the goods are defective, Hero Eco will, at its own discretion:

3.2.1 refund the costs of the defective goods in whole or in part or

3.2.2 replace the defective goods or

3.2.3 repair the defective goods.

4. Limitation of liability

4.1 If you or Hero Eco does not comply with this waranty, subject to clause 4.2, neither party shall be liable for any losses which may result for the other party, except for losses which are a foreseeable consequence of the non-compliance with this warranty.

4.2 Neither you nor Hero Eco shall be liable for losses due to non-compliance with this warranty by Hero Eco, especially including, but not limited to:

4.2.1 loss of income or earnings;

4.2.2 loss of business;

4.2.3 loss of expected savings;

4.2.4 data loss or

4.2.5 any lost time.

4.3 Clause 4.2, however, shall not prevent claims with regard to foreseeable loss of or damage to objects in your possession.

4.4 This clause shall not, in any form, cover or limit the liability of Hero Eco for:

4.4.1 death or personal injuries due to the Hero Eco's negligence or

4.4.2 fraud or fraudulent misrepresentation or

4.4.3 any other matter in which it would be illegal or unlawful for Hero Eco to exclude or attempt to exclude its liability.

12.0 Disposal

Hero Eco supports the professional disposal and recycling of our products. In case of need, please take your vehicle or vehicle components to a local disposal facility. Our specialist dealer or customer service may assist you with disposal. Please call your specialist dealer or our customer service for this purpose. If requested, Hero Eco will carry out the disposal for you.

13.0 Servicing schedule

To ensure the proper functioning and related safety of your A2B, you should have a service check carried out once a year, or at least in the periods indicated in the table. Please contact an A2B specialist dealer for this purpose and have the vehicle routinely checked. This still applies, even if you do not notice any problems or signs of wear and tear when using your A2B.

Inspection by your specialist workshop is documented in the following servicing schedule. Please keep it in a safe place.

Checklist

The following pages contain the maintenance tables which are checked by your A2B specialist dealer at the following times:

1. Maintenance upon assembly
2. First inspection after 200, no later than after 300 km
3. Further maintenance: every 2,000 km

No.	Step	inspection
1	Component assembly: Frame-handlebars-stem-saddle post-saddle ▪ Check components for cracks and replace, if necessary ▪ Check screws on handlebars/stem/saddle ▪ Clean & lubricate saddle post pipe	 X
2	Front fork ▪ Completely clean suspension fork, espec. sliding surfaces of the standpipes ▪ Check standpipes for damage, replace, if necessary	
3	Rear wheel slot ▪ Clean TMM4 sensor using air, without demounting it ▪ Check firm fit & state of the sensor plate ▪ Check axle screws for firm fit	 X X
4	Component assembly: Crank - inside bearing-pedal ▪ Clean crank & pedal / lubricate pedal axle ▪ Check sprocket for wear, replace, if necessary ▪ Check crank and pedal fastening for firm fit ▪ Check play of bottom bracket bearing, replace, if necessary ▪ Demount bottom bracket bearing, clean & lubricate casing & thread	 X
5	Component assembly: Chain-cassette-sprocket ▪ Clean all parts. ▪ Check all screws for firm fit ▪ Check components for wear, replace, if necessary ▪ Clean & lubricate chain	 X
6	Component assembly: Wheels-rims-tyres ▪ Clean parts ▪ Check tyres for damage and tread ▪ Adjust tyre air pressure ▪ Check front and rear wheel rim for lateral and radial run-out, adjust, if necessary ▪ Check spoke tension, adjust, if necessary ▪ Check functioning & bearing play of front wheel hub. ▪ Demount, clean and lubricate hub	 X

No.	Step	inspection
7	Steering head	
	▪ Check bearing play of steering head and adjust or replace, if necessary	X
8	Component assembly: Derailleur system	
	▪ Clean and lubricate derailleur mechanism and derailleur.	
	▪ Check derailleur system cord and outer shells for state and function, replace, if necessary	
	▪ Check derailleur mechanism adjustment, adjust, if necessary	X
	▪ Check all screws on the derailleur mechanism/derailleur for firm fit	X
9	Component assembly: Brake system	
	▪ Clean brake bosses.	
	▪ Check brake pads, replace, if necessary	
	▪ Check brake pressure, refill brake oil, if necessary	X
	▪ Check brake system for tightness.	X
	▪ Check brake system screws for firm fit	X
	▪ Check brake function and efficiency	X
10	Guard plates-luggage rack-side stand-lighting system	
	▪ Tighten all screws	X
	▪ Check lighting system for functioning & setting, adjust, if necessary	X
11	Component assembly: electrical drive system & lock	
	▪ Check lines for proper fastening, breakings, chafing, bends, replace, if necessary	X
	▪ Check plug contacts for corrosion and scaling, clean or replace, if necessary	
	▪ Check cable joints for correct connection	
	▪ Check display for functioning & error codes	
	▪ Run current software update	X
	▪ Check battery state and charge	
	▪ Check alignment & state of the battery slide rails, adjust/replace, if necessary	X
	▪ Check locking cylinder on battery slot for functioning, clean and lubricate	
	▪ Check brake switch/motor stop switch for functioning	

Date
Signature / stamp of the A2B specialist workshop

No.	Step	inspection
1	Component assembly: Frame-handlebars-stem-saddle post-saddle	
	▪ Check components for cracks and replace, if necessary	X
	▪ Check screws on handlebars/stem/saddle	X
	▪ Clean & lubricate saddle post pipe	
2	Front fork	
	▪ Completely clean suspension fork, espec. sliding surfaces of the standpipes	X
	▪ Check standpipes for damage, replace, if necessary	
3	Rear wheel slot	
	▪ Clean TMM4 sensor using air, without demounting it	X
	▪ Check firm fit & state of the sensor plate	
	▪ Check axle screws for firm fit	X
4	Component assembly: Crank - inside bearing-pedal	
	▪ Clean crank & pedal / lubricate pedal axle	X
	▪ Check sprocket for wear, replace, if necessary	X
	▪ Check crank and pedal fastening for firm fit	X
	▪ Check play of bottom bracket bearing, replace, if necessary	
	▪ Demount bottom bracket bearing, clean & lubricate casing & thread	
5	Component assembly: Chain-cassette-sprocket	X
	▪ Clean all parts.	X
	▪ Check all screws for firm fit	X
	▪ Check components for wear, replace, if necessary	X
	▪ Clean & lubricate chain	
6	Component assembly: Wheels-rims-tyres	
	▪ Clean parts	X
	▪ Check tyres for damage and tread	X
	▪ Adjust tyre air pressure	X
	▪ Check front and rear wheel rim for lateral and radial run-out, adjust, if necessary	X
	▪ Check spoke tension, adjust, if necessary	X
	▪ Check functioning & bearing play of front wheel hub.	
	▪ Demount, clean and lubricate hub	

First inspection after 200 km (125 miles), no later than 300 km (185 miles)

No.	Step	inspection
7	Steering head	
	▪ Check bearing play of steering head and adjust or replace, if necessary	X
8	Component assembly: Derailleur system	
	▪ Clean and lubricate derailleur mechanism and derailleur.	X
	▪ Check derailleur system cord and outer shells for state and function, replace, if necessary	
	▪ Check derailleur mechanism adjustment, adjust, if necessary	X
	▪ Check all screws on the derailleur mechanism/derailleur for firm fit	X
9	Component assembly: Brake system	
	▪ Clean brake bosses.	
	▪ Check brake pads, replace, if necessary	X
	▪ Check brake pressure, refill brake oil, if necessary	X
	▪ Check brake system for tightness.	X
	▪ Check brake system screws for firm fit	X
	▪ Check brake function and efficiency	X
10	Guard plates-luggage rack-side stand-lighting system	
	▪ Tighten all screws	X
	▪ Check lighting system for functioning & setting, adjust, if necessary	X
11	Component assembly: electrical drive system & lock	
	▪ Check lines for proper fastening, breakings, chafing, bends, replace, if necessary	X
	▪ Check plug contacts for corrosion and scaling, clean or replace, if necessary	
	▪ Check cable joints for correct connection	X
	▪ Check display for functioning & error codes	X
	▪ Run current software update	X
	▪ Check battery state and charge	
	▪ Check alignment & state of the battery slide rails, adjust/replace, if necessary	X
	▪ Check locking cylinder on battery slot for functioning, clean and lubricate	X
	▪ Check brake switch/motor stop switch for functioning	X

Date
Signature / stamp of the A2B specialist workshop

No.	Step	inspection
1	Component assembly: Frame-handlebars-stem-saddle post-saddle	
	▪ Check components for cracks and replace, if necessary	X
	▪ Check screws on handlebars/stem/saddle	X
	▪ Clean & lubricate saddle post pipe	X
2	Front fork	
	▪ Completely clean suspension fork, espec. sliding surfaces of the standpipes	X
	▪ Check standpipes for damage, replace, if necessary	X
3	Rear wheel slot	
	▪ Clean TMM4 sensor using air, without demounting it	X
	▪ Check firm fit & state of the sensor plate	X
	▪ Check axle screws for firm fit	X
4	Component assembly: Crank - inside bearing-pedal	
	▪ Clean crank & pedal / lubricate pedal axle	X
	▪ Check sprocket for wear, replace, if necessary	X
	▪ Check crank and pedal fastening for firm fit	X
	▪ Check play of bottom bracket bearing, replace, if necessary	X
	▪ Demount bottom bracket bearing, clean & lubricate casing & thread	X
5	Component assembly: Chain-cassette-sprocket	
	▪ Clean all parts.	X
	▪ Check all screws for firm fit	X
	▪ Check components for wear, replace, if necessary	X
	▪ Clean & lubricate chain	X
6	Component assembly: Wheels-rims-tyres	
	▪ Clean parts	X
	▪ Check tyres for damage and tread	X
	▪ Adjust tyre air pressure	X
	▪ Check front and rear wheel rim for lateral and radial run-out, adjust, if necessary	X
	▪ Check spoke tension, adjust, if necessary	X
	▪ Check functioning & bearing play of front wheel hub.	X
	▪ Demount, clean and lubricate hub	X

No.	Step	inspection
7	Steering head	
	▪ Check bearing play of steering head and adjust or replace, if necessary	X
8	Component assembly: Derailleur system	
	▪ Clean and lubricate derailleur mechanism and derailleur.	X
	▪ Check derailleur system cord and outer shells for state and function, replace, if necessary	X
	▪ Check derailleur mechanism adjustment, adjust, if necessary	X
	▪ Check all screws on the derailleur mechanism/derailleur for firm fit	X
9	Component assembly: Brake system	
	▪ Clean brake bosses.	X
	▪ Check brake pads, replace, if necessary	X
	▪ Check brake pressure, refill brake oil, if necessary	X
	▪ Check brake system for tightness.	X
	▪ Check brake system screws for firm fit	X
	▪ Check brake function and efficiency	X
10	Guard plates-luggage rack-side stand-lighting system	
	▪ Tighten all screws	X
	▪ Check lighting system for functioning & setting, adjust, if necessary	X
11	Component assembly: electrical drive system & lock	
	▪ Check lines for proper fastening, breakings, chafing, bends, replace, if necessary	X
	▪ Check plug contacts for corrosion and scaling, clean or replace, if necessary	X
	▪ Check cable joints for correct connection	
	▪ Check display for functioning & error codes	X
	▪ Run current software update	X
	▪ Check battery state and charge	X
	▪ Check alignment & state of the battery slide rails, adjust/replace, if necessary	X
	▪ Check locking cylinder on battery slot for functioning, clean and lubricate	X
	▪ Check brake switch/motor stop switch for functioning	X

Date
Signature / stamp of the A2B specialist workshop

No.	Step	inspection
Date	Signature / stamp of the A2B specialist workshop	after 4,000 km (2,500 miles)
Date	Signature / stamp of the A2B specialist workshop	after 6,000 km (3,750 miles)
Date	Signature / stamp of the A2B specialist workshop	after 8,000 km (5,000 miles)
Date	Signature / stamp of the A2B specialist workshop	after 10,000 km (6,200 miles)
Date	Signature / stamp of the A2B specialist workshop	after 12,000 km (7,500 miles)
Date	Signature / stamp of the A2B specialist workshop	after 14,000 km (8,750 miles)
Date	Signature / stamp of the A2B specialist workshop	after 16,000 km (10,000 miles)
Date	Signature / stamp of the A2B specialist workshop	after 18,000 km (11,250 miles)
Date	Signature / stamp of the A2B specialist workshop	after 20,000 km (12,500 miles)

Further maintenance: every 2,000 km (1250 miles)

14.0 Owner registration

You should complete your owner registration card immediately and return it or register online at www.wearea2b.com so that we can send you important information in the future. Thank you very much.

Your A2B and certain major components have unique serial numbers. You should note these numbers in case you wish to register any warranty claims at a later date or if your bicycle gets lost or is stolen.

The vehicle serial number can be found on the bottom side of the frame near the pedal crank:

Vehicle serial number:

The motor serial number is engraved on the left-hand side of the motor hub:

Motor serial number:

Please make a note of this further important information:

Date of purchase: _____

Selling specialist dealer: _____

Address: _____

Town/postcode: _____

Phone: _____

Seller: _____

Please keep this information in a safe place.

⚠ In order to appropriately protect your A2B from theft, you should buy a high-quality cable lock or a similar device. Each time you leave your A2B unattended, attach it to a firmly fixed object and lock it. Also lock the front and rear wheels and the motor to the frame.

A2B Global Head Office
Hero Eco Ltd
80 Coleman Street
London
EC2R 5BJ

Germany
Hero Eco Ltd
Reichenberger Strasse 124
10999 Berlin

USA
Hero Eco Inc.
207 9th St.
San Francisco, CA 94103
A2B.US@heroeco.com

www.wearea2b.com

DE Edition 1.0
July 2014

CE EN15194

weareA2B.com

660001441500