

Sortimo ProCargo CT1

Operating Instructions



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Content and symbols used in this manual

This manual contains important information which will increase safety, ensure a long service life of the pedelec and enhance your riding experience with the ProCargo CT1.

Failure to observe the contents of this manual may result in personal injury and damage to the vehicle.

The following symbols are used in the manual:



Attention!

This symbol indicates a possible hazard. Observe the safety-relevant information!



Information

This indicates useful information regarding handling of the product.

Important information!



The manual for your Sortimo ProCargo CT1 is revised regularly to ensure its validity. This manual reflects the knowledge base at the time of going to press. We therefore recommend that you visit our website at **www.mysortimo.com/procargo** to familiarise yourself with any changes. The latest manual can also be downloaded here in PDF format.

1. Your vehicle

The Sortimo ProCargo CT1 is a pedelec¹¹, which is a bicycle that assists the rider with an electric motor. This assistance is adapted via a control which evaluates the data from three sensors²² and regulates the motor based on the selected level of assistance. The electric motor switches off when a speed of 25 km/h is reached. However, you can ride faster than 25 km/h on your own without electric motor assistance.

In Europe, the pedelec is legally classed as a bicycle³³. It does not have to be approved and does not require an insurance plate. The rider does not require a licence. **For your own safety, we recommend that you wear a suitable helmet and protective glasses at all times.**

The maximum climbing performance of the vehicle is dependent upon various parameters, including cargo load, fitness of the rider and charging status of the battery.

With a fully charged battery and rider in good condition, climbing performance is anticipated as follows: 18 % (80 kg rider without load) to 7% (100 kg rider + 140 kg cargo load).

This climbing performance is reduced with charging status of the battery < 30%.

1.1. Intended use

Your Sortimo ProCargo CT1 is designed to carry one person and load on asphalt roads and fortified paths through woods and fields. The cargo loads are approved as follows:

Rider weight: 100 kg

Cargo loading area: 140 kg

1 Pedal Electric Cycle

2 Sensors: Speed, cadence, torque

3 Regulation 168/2013, article 2, (2) h)

The ProCargo CT1 is **not** designed for the following:

- Transportation of a person on the loading area (transportation of a child in suitable seating possible, refer to 1.5 „Fitting of accessories“)
- Race/competition use
- Cleaning with a water jet
- Charging of the battery outdoors in wet conditions
- Use of a trailer

Intended use is further limited by:

- the safety information in this manual
- the „Technical specifications“ chapter in this manual
- the road traffic regulations valid for the respective country of use
- the road traffic licensing regulations valid for the respective country of use

Use of the cargo bike is **not** recommended for the following user groups:

- People with limited physical, sensory or intellectual capacities
- People who cannot operate the vehicle safely due to their physique



If you increase the maximum assistance speed from 25 km/h by tuning, the vehicle is no longer classed as a pedelec, but rather a small moped. Tuning may result in negative consequences in a variety of legal areas. For example, accidents with a tuned pedelec will not be covered by personal liability insurance.
-> Please refrain from tuning.



Rotating parts such as wheels, sprockets, cranks or pedals can draw items of clothing, items being carried or even body parts into the mechanism. If you slip off the pedals, your foot could get tangled in the spokes. This can cause serious accidents!
-> Wear close-fitting clothing.
-> Wear shoes with a flat sole which provides good grip.



The ProCargo CT1 is considerably longer and wider than a conventional bicycle.
-> Initially, manoeuvring your ProCargo CT1 should be practised in a location relatively free of traffic, as described in the following section,
-> Switching the light on during travel will allow other road users to gauge the size of the ProCargo CT1.

Please check your country specific requirements concerning lighting devices and decide which passive reflectors are necessary to be mounted.

1.2. Tilting

The tilting system installed on the ProCargo CT1 will ensure impressive agility at greater travel speeds. Tilting system can be blocked via foot lever for parking (and loading) and to facilitate the starting procedure.

Blocking the tilting system:

Push the lever all the way down with the foot.

Blocking engages when the vehicle is fully erected.



Unblocking the tilting system:

Actuate the hand lever with one finger.



The vehicle should not be manoeuvred faster than walking pace with the tilting system blocked.
-> Disengage blocking of the tilting system when starting off !

Familiarise yourself with the tilting system of the ProCargo CT1 in an area with minimal traffic. Practice without load to begin with, and then continue with load added:

- Block the tilting system with the foot lever.
- Commence movement, and at the same time disengage blocking of the tilting system with the hand lever.



We recommend starting off with a higher assistance level in order that a stable speed is more quickly attained.



Please be aware that the possible tilting is technically limited, even with disengaged tilting system. Once this limit has been reached, a curve can not be traversed any more acutely.
-> Familiarise yourself with this limit range on an open area with no other traffic



In an unloaded condition, the axle load is minimal on the front wheels. The front wheels are blocked extremely quickly with heavy front braking. Front wheels blocked in curves will lead to understeer, the vehicle slides forwards in a direct line.
-> The rear brake should be predominantly applied in an unladen condition and the front brakes applied only tentatively.

1.3. Safe loading

The following principles should be observed when loading:

- **Ensure a stable position of the vehicle during loading.** Lock the tilting system and one or both holding brakes as required.
- **Maintain a low centre of gravity for the load.** If several items are being placed on the loading area, always place the heavier items at the bottom.
- **Secure the cargo.** Use the appropriate ProSafe Rail with the matching one and approved accessories. Only allowed Sortimo lashing straps with clamp buckle.



Loads which are permitted to move freely around the loading area can lead to accidents. -> Secure the load with lashing strap(s).



Do not secure the lashing straps onto parts of the steering/tilting system, as this could impair functioning of the steering/tilting system.



The loading area or other parts of the vehicle must not become misshapen as a direct result of lashing straps.

1.4. Scope of delivery

- Battery charger
- 2 keys for frame lock/battery lock
- Transport locks for the Tektro brake discs
- Bosch hazardous goods box for shipping the battery
- Two yellow spoke reflectors for the rear wheel
- Manuals of select component manufacturers

1.5. Installing accessories

Mount only approved and tested for the ProCargo CT1 equipment.

The required accessories can be obtained from your Sortimo partner or in the online shop of Sortimo under mysortimo.com/ProCargo.

2. Initial set-up

This chapter explains how to get your ProCargo CT1 ready for the road.

- Firstly, you should inflate the tyres. The recommended air pressure can be obtained in section 3.1.
- We recommend adjusting the saddle height first (2.1), and then the handlebar height accordingly (2.2).
- If necessary, the brake locking must be released prior to commencing initial travel, refer to section 4.4.

2.1. Adjusting the saddle height

The saddle height is a decisive influential factor on efficiency of the power you exert on the pedelec.

Saddle height is correct when your leg is almost straight with the ball of your foot on the pedal. The crank arms are thereby aligned vertically. Block the tilting system when checking the saddle height to prevent toppling.



To change the saddle height, proceed as follows:

- Continue to loosen the seatpost clamping screw with an Allen key until it is possible to adjust the saddle height.
- Then tighten the screw with a torque of 5-7 Nm using the Allen key.



The seatpost clamping screw is tightened sufficiently when the seatpost can not be turned or when it no longer slides down into the seat tube under your weight.



If you pull the seatpost out too far, the upper part of the seat tube may sustain damage which could lead to breakage. There is a risk of accident or injury!
-> Pull out the seatpost until the marking for minimum insertion depth is only just visible.



2.2. Adjusting handlebar height

The ProCargo CT1 is equipped with a stem adjustable in height. In the delivery condition, the stem is screwed into its lowermost position (-20°). The height of the stem can be increased by up to 11.5 cm by adjusting the angle of the stem (max. angle 60°). To adjust the height of the stem, proceed as follows:

- Continue to loosen both screws marked in red until it is possible to turn the stem.
- Set the desired angle and note the difference in angle.
- Tighten the screws marked in red once again with 14-15 Nm.



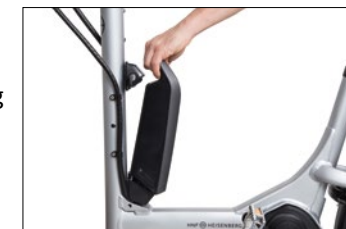
In the second step, the handlebar must also be turned around this difference in angle in the opposite direction, indicated by the right-hand semicircular arrow:

- Loosen all 4 screws on the clamping plate of the stem until it is possible to turn the handlebar.
- Turn the handlebar around the difference in angle opposite to that noted.
- Retighten all 4 handlebar clamping screws of the stem with 6 Nm.

2.3. Removing/installing the battery

Removing the battery:

- Ensure that the system is switched off.
- Turn the key around a quarter of a turn in the lock while at the same time tipping the battery out of the upper holder.
- Lift the battery out of the holder.



Installing the battery:

- Place the battery with the contacts on the lower holder and tilt it into the upper holder so that it clicks into place.

2.4. Switching the drive on/off

Press the On / Off button on the Purion to switch on the system.



Alternatively, you can also turn on the drive by pressing the button on the battery. This method also works if the button cell in the Purion is empty.



2.5. Adjusting the assistance level

To increase the assistance level, press the „+“ button on the Purion until the desired assistance level appears in the display.

To reduce the assistance, press the „-“ button



2.6. Switching the light on/off

Hold the „+“ button of the Purion pressed (1 to 2.5 seconds) until the light is switched on.

Hold the „+“ button of the Purion pressed longer (more than 2.5 seconds) to switch off the light.



2.7. Push-assistance

The push-assistance helps you to push the pedelec a maximum 6 km/h (the highest ratio of the NuVinci gear hub, otherwise accordingly slower). This is activated by successively pressing the „Walk button“ ① and the „+“ button ②.



2.8. Bedding in the disc brakes

When delivered, your brake system initially exhibits only a weak braking action as the surfaces of brake disc and brake pads have not yet been bedded in. For your new pedelec, as well as following replacement of brake disc and brake pads, the disc brakes should be bedded in as follows:

- Accelerate the vehicle to approx. 25 km/h
- Decelerate to a standstill using both brakes (avoid locking of the brakes)
- Repeat this procedure until a satisfactory improvement in braking action is effected. Repeat this procedure according to brake manufacturer Tektro 30-40 times.



In an unloaded condition, the axle load is minimal on the front wheels. The front wheels are blocked extremely quickly with heavy front braking. Front wheels blocked in curves will lead to understeer, the bike slides forwards in a direct line.
-> The rear brake should be predominantly applied in an unloaded condition and the front brakes applied only tentatively.

3. Before every ride

3.1. Checking the tyres

Air pressure:

Schwalbe prescribes 2-4 bar as the permissible pressure range for both tyres.

With a maximum cargo load of 240 kg, all 3 tyres should be inflated to 4 bar. The pressure may be reduced for lighter loads.



We recommend that you check the pressure weekly as continuous pressure loss is inevitable for bicycle inner tubes.



If the tyre pressure is too low, the risk of snakebite punctures increases. The result of a snakebite puncture is a flat tyre.



A tyre damaged by cracks or entrenched foreign objects may lead to a loss of pressure. There is a risk of accident!
-> Check for cracks or foreign objects in the tyre.

3.2. Checking steering and tilting kinematics

Perform three tests prior to commencing travel:

- 1) Blocking of tilting system and unlocking must be fully functional
- 2) Steering and tilt must exhibit freedom-of-movement without restriction
 - Block the tilting system and turn the handlebar to both sides.
 - Disengage the tilting system, hold the handlebar securely in the travel position and tip the pedelec to both sides.
 - Ensure that both movements can be performed without restriction. Should this not be possible, inspect the front section of the vehicle for any objects which may be impairing tilting/steering of the vehicle and remove them accordingly.
- 3) Steering must function without play
 - Block the tilting system with the foot lever.
 - Push the bike against a wall with both front wheels and lock the brakes of the front wheels.
 - Now turn the handlebar. If play is clearly evident in the steering transmission, please consult the Sortimo Service Team.

3.3. Checking the brake system

- Perform a brake test at a standstill prior to every ride. In this regard, pull the brake lever towards the handlebar with two fingers and normal braking force. The brake lever should not come into contact with the handlebar grip, and the brake must be capable of blocking the wheel.
- Move the ProCargo CT1 back and forth with the brake applied.
- No significant play should be evident. Identify the cause of any play determined.
- For hydraulic disc brakes, the pressure point on the brake lever must be stable. If the pressure point is not reached after two-thirds of the lever stroke, pull the lever several times in succession („pumping“). Check whether the pressure point stiffens. If so, and if the location of the pressure point moves during travel, the brake system must be bled by Sortimo Service Team or by a qualified specialist workshop.
- The brake discs must be free of oil. Any oil evident on the brake discs can be removed with alcohol.



The pressure point is defined as the position of the lever stroke at which the brake responds. If the brake is working perfectly, i.e. there are no air bubbles in the hydraulic line, the pressure point will be at the same lever position for each braking procedure.



Do not touch the brake discs with your hands. The thin film of oil on your skin transfers to the brake discs and temporarily impairs the braking force.

3.4. Checking the drive belt

The Gates Carbon Drive is a maintenance-free, durable system. Nevertheless, the following points must be considered

- Are there any foreign objects between socket and belt?
- If yes: Remove immediately.
- Is the belt heavily contaminated?
- If yes: Rinse clean with water.

3.5. Battery: Ensuring secure fixing and charging status

Ensure that the battery is securely fixed in the lock and assess whether the charging status is sufficient for your planned journey.

3.6. Checking the screw fittings

Ensure that the threaded axle is securely tightened on the rear wheel and that the following parts can not be turned:

- Saddle
- Seatpost
- Handlebar
- Stem

3.7. Checking the lights

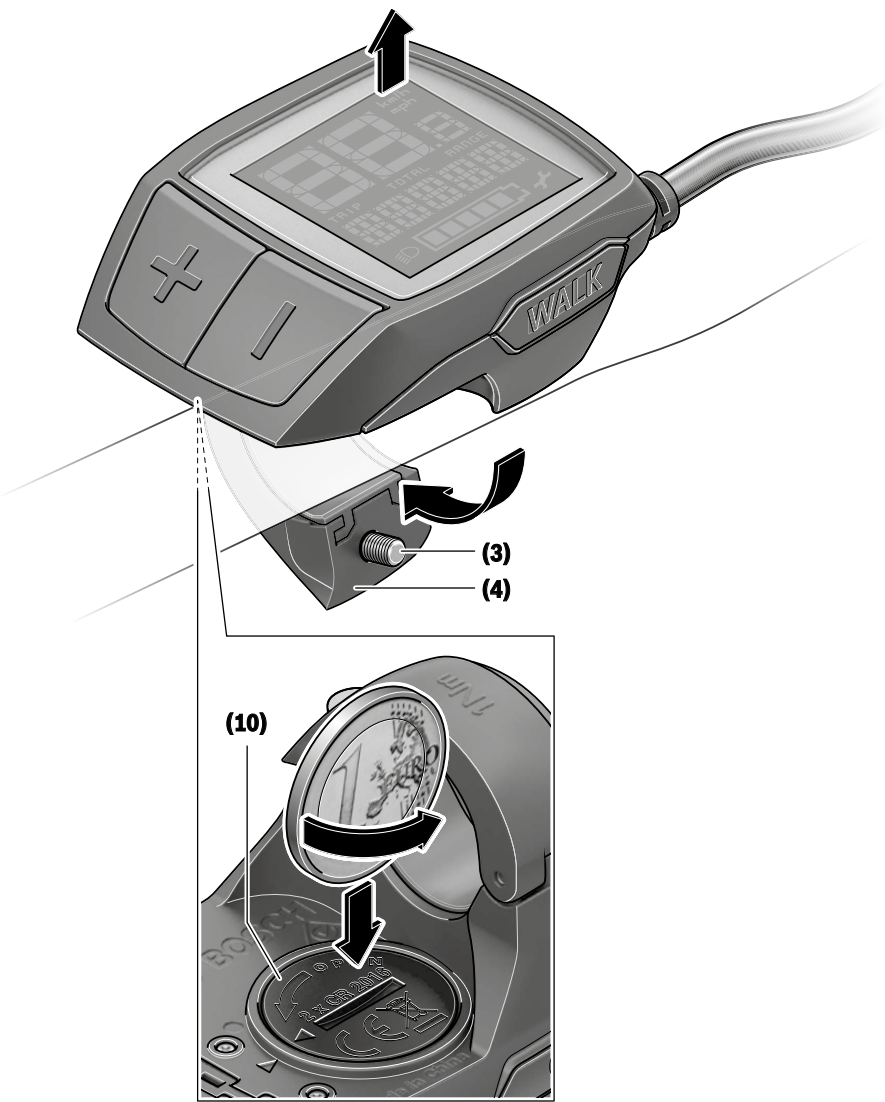
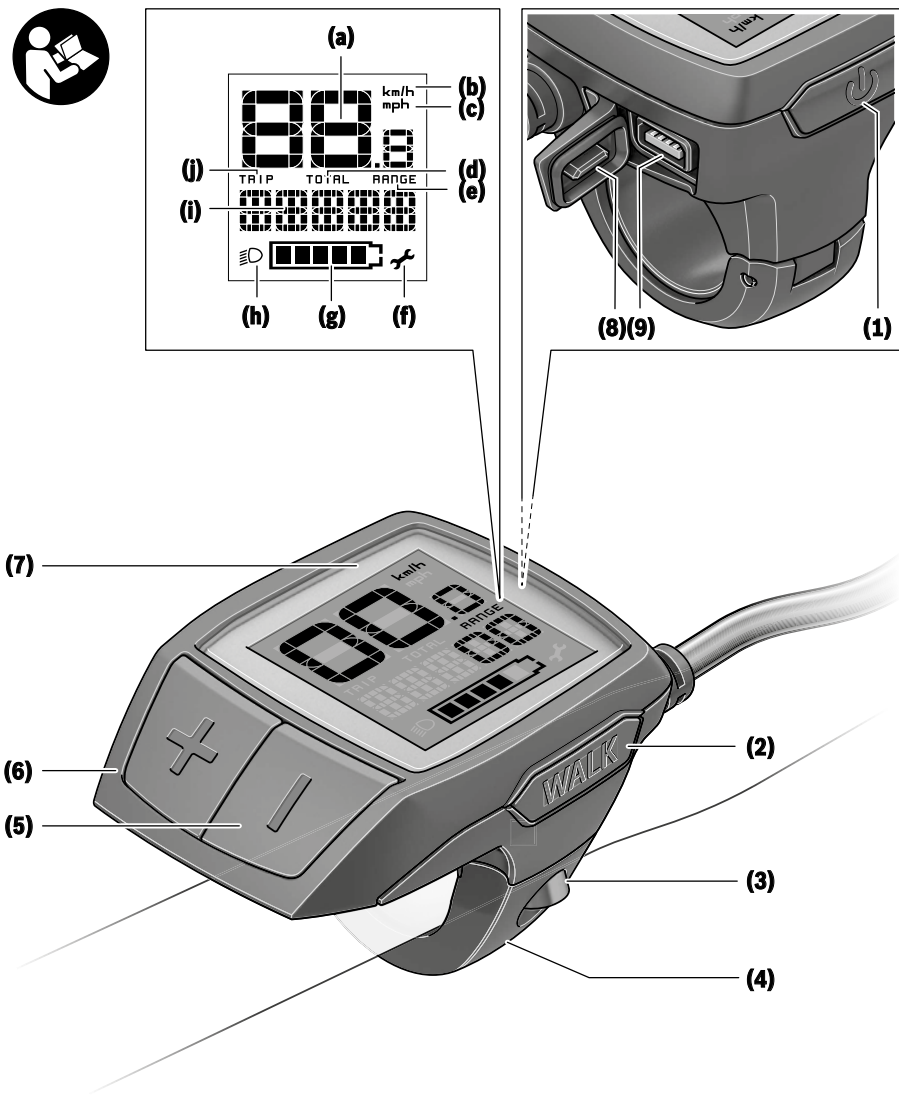
Headlight so that other road users do not become blinded by the glare.

4. Operation

In this chapter, operation of the individual ProCargo CT1 components is described in more detail.

4.1. Bosch eBike system

4.1.1. Purion on-board computer



Safety instructions



Read all the safety information and instructions. Failure to observe the safety information and follow instructions may result in electric shock, fire and/or serious injury.

Save all safety warnings and instructions for future reference.

The term **battery** is used in these instructions to mean all original Bosch eBike rechargeable battery packs.

► **Do not allow yourself to be distracted by the on-board computer's display.** If you do not focus exclusively on the traffic, you risk being involved in an accident. If you want to make entries in your on-board computer other than switching the assistance level, stop and enter the appropriate data.

► **Read and observe the safety warnings and directions contained in all the eBike system operating instructions and in the operating instructions of your eBike.**

Product description and specifications

Intended use

The Purion on-board computer is designed to control Bosch eBike systems and display riding data.

In addition to the functions shown here, changes to software relating to troubleshooting and functional enhancements may be introduced at any time.

Product features

The numbering of the components shown refers to the illustrations on the graphics pages at the beginning of the manual.

Individual illustrations in these operating instructions may differ slightly from the actual conditions depending on the equipment of your eBike.

- (1) On/off button for on-board computer
- (2) Push assistance button **WALK**
- (3) Fastening screw for on-board computer
- (4) Holder for on-board computer
- (5) Decrease assistance level button –
- (6) Increase assistance level button +
- (7) Display
- (8) Protective cap for USB port
- (9) USB diagnostic port (for servicing purposes only)
- (10) Battery compartment cover

Display elements of on-board computer

- (a) Speedometer
- (b) km/h unit indicator
- (c) mph unit indicator
- (d) Total distance indicator **TOTAL**

- (e) Range indicator **RANGE**
- (f) Service indicator
- (g) Battery charge indicator
- (h) Illumination indicator
- (i) Assistance level indicator/value indicator
- (j) Trip distance indicator **TRIP**

Technical data

On-board computer		Purion
Product code		BUI210 BUI215
Batteries ^{A)}		2 × 3 V CR2016
Operating temperature	°C	–5...+40
Storage temperature	°C	–10...+50
Protection rating ^{B)}		IP 54 (dust and splash proof)
Weight, approx.	kg	0.1

A) We recommend using the batteries offered by Bosch. You can purchase them from your bicycle dealer (article number: 1 270 016 819).

B) When the USB cover is closed
The Bosch eBike system uses FreeRTOS
(see <http://www.freertos.org>).

Operation

Symbols and their Meaning

Symbol	Explanation
	Short button press (less than 1 second)
	Medium button press (between 1 second and 2.5 seconds)
	Long button press (longer than 2.5 seconds)

Start-up

Prerequisites

The eBike system can only be activated when the following requirements are met:

- A sufficiently charged battery is inserted (see battery operating instructions).
- The speed sensor is connected properly (see drive unit operating instructions).

Switching the eBike system on/off

The following options are available for switching on the eBike system:

- Press the on/off button (1) of the on-board computer with the eBike battery inserted.
- Press the on/off button of the eBike battery (see battery operating instructions).

The drive is activated as soon as you start pedalling (except if you are using the push-assistance function or if the assistance level is set to **OFF**). The motor output depends on the settings of the assistance level on the on-board computer.

As soon as you stop pedalling when in normal operation, or as soon as you have reached a speed of **25/45 km/h**, the eBike drive switches off the assistance. The drive is automatically reactivated as soon you start pedalling again and the speed is below **25/45 km/h**.

The following options are available for **switching off** the eBike system:

- Press the on/off button (1) of the on-board computer.
- Switch off the eBike battery using its on/off button (bicycle manufacturer-specific solutions are possible when there is no access to the battery on/off button; see the bicycle manufacturer operating instructions).

The system shuts down after being switched off; this takes approximately three seconds. It cannot be switched back on until shutdown has been completed.

If the eBike is not moved for approx. 10 min and no button is pressed on the on-board computer, the eBike system switches off automatically in order to save energy.

Note: Always switch off the eBike system when you park the eBike.

Note: If the batteries of the on-board computer are empty, you can still switch on your eBike using the bike's battery. It is, however, recommended that you replace the internal batteries as soon as possible in order to avoid damage.

Energy supply of the on-board computer

The on-board computer is supplied with voltage by two CR2016 button cells.

Changing the batteries (see figure A)

If the on-board computer shows **LOW BAT** on the display, remove the on-board computer from the handlebars by unscrewing the fastening screw (3) of the on-board computer. Open the battery compartment cover (10) using a suitable coin, remove the used batteries and insert new CR 2016 batteries. You can obtain the batteries recommended by Bosch from your bicycle dealer.

When inserting the batteries, ensure that the polarity is correct.

Close the battery compartment again and fasten the on-board computer to your eBike's handlebars using the fastening screw (3).

Switching the push assistance on/off

The push assistance aids you when pushing your eBike. The speed in this function depends on the selected gear and can reach a maximum of 6 km/h. The lower the selected gear, the lower the speed of the push assistance function (at full power).

► **The push assistance function must only be used when pushing the eBike.** There is a risk of injury if the wheels of the eBike are not in contact with the ground while using the push assistance.

To activate push assistance, briefly press the **WALK** button on your on-board computer. After activation, press the + button within 3 s and keep it pressed. The eBike drive is switched on.

The push assistance is **switched off** as soon as one of the following occurs:

- You release the + button;
- The wheels of the eBike are locked (e.g. by applying the brakes or hitting an obstacle);
- The speed exceeds 6 km/h.

Note: The push assistance cannot be activated at assistance level **OFF**.

Note: On some systems, the push assistance can be started directly by pressing the **WALK** button.

Setting the assistance level

You can set the level at which the eBike drive assists you while pedalling on the on-board computer. The assistance level can be changed at any time, even while cycling.

Note: In some models, the assistance level may be preset and cannot be changed. There may also be fewer assistance levels available than stated here.

If the manufacturer has configured the eBike with **eMTB Mode**, the assistance level **SPORT** is replaced by **eMTB**. In **eMTB Mode**, the assistance factor and torque are dynamically adjusted according to the force you exert on the pedals. **eMTB Mode** is only available for Performance Line CX drives.


The following assistance levels are available as a maximum:

- **OFF:** Motor assistance is switched off. The eBike can just be moved by pedalling, as with a normal bicycle. The push assistance cannot be activated at this assistance level.
- **ECO:** Effective assistance with maximum efficiency, for maximum range
- **TOUR:** Steady assistance, long range for touring
- **SPORT/eMTB:**
SPORT: Powerful assistance, for mountain biking and for cycling in urban traffic
eMTB: Optimum assistance whatever the terrain, rapid acceleration when starting from a standstill, improved dynamics and top performance
- **TURBO:** Maximum assistance even at high pedalling speeds, for biking sports

To **increase** the assistance level, briefly press the button + (6) on the on-board computer repeatedly until the required assistance level appears on the indicator (i). To **decrease** the assistance level briefly press the button – (5). If the display is set to **TRIP**, **TOTAL** or **RANGE**, the selected assistance level will only be superimposed briefly (for approx. one second) on the display when switching over.

Switching bicycle lights on/off

For the model which has the bike lights powered by the eBike system, a medium-length press of the button + will


switch on the front and rear lights simultaneously. To switch off the bike lights, press and hold  the button **+**. The lighting symbol **(h)** is displayed when the light is on. The on-board computer saves the light status and activates this saved status accordingly after a restart. Switching the bike light on and off has no effect on the back lighting of the display.

Displays and configurations of the on-board computer


Battery charge indicator

The battery charge indicator **(g)** displays the state of charge of the eBike battery. The state of charge of the eBike battery can also be checked on the LEDs of the battery itself.

Each bar of the battery symbol on the indicator **(g)** represents approximately 20 % of the capacity:




 The eBike battery is fully charged.


 The eBike battery should be recharged.



 The LEDs of the battery charge indicator on the battery go out. The capacity for assisting the drive has been used up, and assistance is gently switched off. The remaining capacity is made available for the lighting. The indicator flashes.

The capacity of the eBike battery is enough for about two hours of lighting.

Speed and distance indicators

The speedometer **(a)** always displays the current speed. Indicator **(i)** always displays the last setting as standard. Repeated medium-length presses  of the button **-** will display the trip distance **TRIP**, the total distance **TOTAL** and the range of the battery **RANGE** one after the other. (Briefly pressing  the button **-** will decrease the assistance level.) To **reset** the trip distance **TRIP**, select the trip distance **TRIP** and simultaneously press and hold  the buttons **+** and **-**. The display will initially show **RESET**. If you continue to press both buttons, the trip distance **TRIP** will be set to **0**.



















To **reset** the range of the battery **RANGE**, select the battery range **RANGE** and simultaneously press and hold  the buttons **+** and **-**. The display will initially show **RESET**. If you continue to press both buttons, the trip distance **TRIP** will be set to **0**.

You can switch the displayed values from kilometres to miles by holding down  the button **-** and briefly pressing  the on/off button **(1)**.

The versions of the subsystems and their model part numbers can be displayed for the purposes of servicing, provided the subsystems divulge this information (dependent on the subsystem). With the system **switched off**, simultaneously press the buttons **-** and **+** and then press the on/off button **(1)**.

The USB port is reserved for connecting diagnostic systems. The USB port does not have any other function.

► **The USB connection must always be completely sealed with the protective cap (8).**

Action	Buttons	Duration
Switch on on-board computer		Any
Switch off on-board computer		Any
Increase assistance	+ 	
Decrease assistance	- 	
Display TRIP , TOTAL , RANGE , assistance modes	- 	
Switch on bike lights	+ 	
Switch off bike lights	+ 	
Reset trip distance	- + 	
Activate push assistance	WALK	1. 
Implement push assistance	+	2. Any
Switch from kilometres to miles	- 	1. Keep pressed
		2. 
Display the versions ^{A)B)}	- + 	1. Keep pressed
		2. 
Adjust display brightness ^{C)}	- + 	1. Keep pressed
		2. 
	- or +	

A) The eBike system must be switched off.

B) The information is shown as scrolling text.

C) The display must be switched off.

Error code display

The eBike system's components are continuously and automatically monitored. If an error is detected, the corresponding error code is displayed on the on-board computer.

The drive may be automatically shut down, depending on the type of error. However, if you wish to continue cycling, you will always be able to do so without assistance from the drive. Before undertaking any other journeys, the eBike should be checked.

► **Have all repairs performed only by an authorised bike dealer.**

Code	Cause	Corrective measures
410	One or more buttons of the on-board computer are disabled.	Check whether any buttons are stuck, e.g. as a result of dirt finding its way in. Clean the buttons if need be.
414	Operating unit connection problem	Have the connections checked

Code	Cause	Corrective measures
418	One or more buttons on the operating unit are disabled.	Check whether any buttons are stuck, e.g. as a result of dirt finding its way in. Clean the buttons if need be.
419	Configuration error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
422	Drive unit connection problem	Have the connections checked
423	eBike battery connection problem	Have the connections checked
424	Communication problem between components	Have the connections checked
426	Internal time-out error	Restart the system. If the problem persists, contact your Bosch eBike dealer. With this error, it is not possible to bring up the wheel circumference in the basic settings menu or to adjust it.
430	Internal battery of the on-board computer is flat	Charge the on-board computer (in the holder or via the USB port)
431	Software version error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
440	Internal drive unit fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
450	Internal software error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
460	Error at USB port	Remove the cable from the USB port of the on-board computer. If the problem persists, contact your Bosch eBike dealer.
490	Internal fault of the on-board computer	Have the on-board computer checked
500	Internal drive unit fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
502	Bike light fault	Check the light and the associated wiring. Restart the system. If the problem persists, contact your Bosch eBike dealer.
503	Speed sensor fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
510	Internal sensor fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
511	Internal drive unit fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
530	Battery fault	Switch off the eBike, remove the eBike battery and reinsert the eBike battery. Restart the system. If the problem persists, contact your Bosch eBike dealer.
531	Configuration error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
540	Temperature error	The eBike is outside of the permissible temperature range. Switch off the eBike system and allow the drive unit to either cool down or heat up to the permissible temperature range. Restart the system. If the problem persists, contact your Bosch eBike dealer.
550	An impermissible load has been detected.	Remove the load. Restart the system. If the problem persists, contact your Bosch eBike dealer.
580	Software version error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
591	Authentication error	Switch off the eBike system. Remove then reinsert the battery. Restart the system. If the problem persists, contact your Bosch eBike dealer.
592	Incompatible component	Use a compatible display. If the problem persists, contact your Bosch eBike dealer.

Code	Cause	Corrective measures
593	Configuration error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
595, 596	Communication error	Check the wiring to the transmission and restart the system. If the problem persists, contact your Bosch eBike dealer.
602	Internal battery fault while charging	Unplug the charger from the battery. Restart the eBike system. Plug the charger into the battery. If the problem persists, contact your Bosch eBike dealer.
602	Internal battery fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
603	Internal battery fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
605	Battery temperature error	The eBike is outside of the permissible temperature range. Switch off the eBike system and allow the drive unit to either cool down or heat up to the permissible temperature range. Restart the system. If the problem persists, contact your Bosch eBike dealer.
605	Battery temperature error while charging	Unplug the charger from the battery. Allow the battery to cool. If the problem persists, contact your Bosch eBike dealer.
606	External battery fault	Check the wiring. Restart the system. If the problem persists, contact your Bosch eBike dealer.
610	Battery voltage error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
620	Charger fault	Replace the charger. Contact your Bosch eBike dealer.
640	Internal battery fault	Restart the system. If the problem persists, contact your Bosch eBike dealer.
655	Multiple battery faults	Switch off the eBike system. Remove then reinsert the battery. Restart the system. If the problem persists, contact your Bosch eBike dealer.
656	Software version error	Contact your Bosch eBike dealer so that they can perform a software update.
7xx	Transmission fault	Please observe the operating instructions provided by the transmission manufacturer.
800	Internal ABS fault	Contact your Bosch eBike dealer.
810	Implausible signals from the wheel speed sensor. Contact your Bosch eBike dealer.	Contact your Bosch eBike dealer.
820	Fault in the wire to the front wheel speed sensor.	Contact your Bosch eBike dealer.
821 to 826	Implausible signals from the front wheel speed sensor. The sensor disc may be missing, defective or fitted incorrectly; there is a significant difference in diameter between the front wheel and the rear wheel; extreme riding situation, e.g. riding solely on the rear wheel.	Restart the system and carry out a test ride lasting at least two minutes. The ABS indicator light must go out. If the problem persists, contact your Bosch eBike dealer.
830	Fault in the wire to the rear wheel speed sensor.	Contact your Bosch eBike dealer.
831 to 835	Implausible signals from the rear wheel speed sensor. The sensor disc may be missing, defective or fitted incorrectly; there is a significant difference in diameter between the front	Restart the system and carry out a test ride lasting at least two minutes. The ABS indicator light must go out. If the problem persists, contact your Bosch eBike dealer.

Code	Cause	Corrective measures
	wheel and the rear wheel; extreme riding situation, e.g. riding solely on the rear wheel.	
840	Internal ABS fault	Contact your Bosch eBike dealer.
850	Internal ABS fault	Contact your Bosch eBike dealer.
860, 861	Fault in the power supply	Restart the system. If the problem persists, contact your Bosch eBike dealer.
870, 871 880 883 to 885	Communication error	Restart the system. If the problem persists, contact your Bosch eBike dealer.
889	Internal ABS fault	Contact your Bosch eBike dealer.
890	ABS indicator light is defective or missing; ABS may not be working.	Contact your Bosch eBike dealer.
No display	Internal fault of the on-board computer	Restart your eBike system by switching it off and back on.

Maintenance and servicing


Subject to change without notice.

Maintenance and cleaning

Do not immerse any components, including the drive unit, in water or clean them with pressurised water.

Clean your on-board computer using a soft cloth dampened only with water. Do not use any detergents.

Have your eBike system checked by an expert at least once a year (including mechanical parts, up-to-dateness of system software).

The bicycle manufacturer or dealer can also store a distance travelled for the service date in the system. In this case, the on-board computer will show you that the service date is due by displaying **(f)** .

Please have your eBike serviced and repaired by an authorised bicycle dealer.

After-sales service and advice on using products

If you have any questions about the eBike system and its components, contact an authorised bicycle dealer.

For contact details of authorised bike dealerships, please visit www.bosch-ebike.com.

Disposal



The drive unit, on-board computer incl. operating unit, battery, speed sensor, accessories and packaging should be disposed of in an environmentally correct manner.

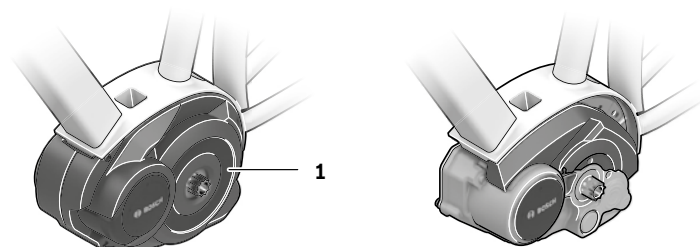
Do not dispose of eBikes and their components with household waste.



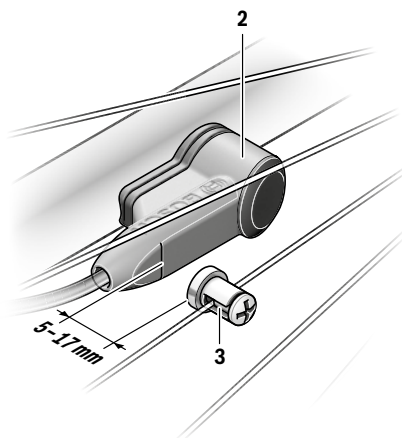
In accordance with Directive 2012/19/EU and Directive 2006/66/EC respectively, electronic devices that are no longer usable and defective/drain batteries must be collected separately and recycled in an environmentally friendly manner.

Please return Bosch eBike components that are no longer usable to an authorised bicycle dealer.

4.1.2. Drive Unit CX



A



Safety instructions



Read all the safety information and instructions. Failure to observe the safety information and follow instructions may result in electric shock, fire and/or serious injury.

Save all safety warnings and instructions for future reference.

The term **battery** is used in these instructions to mean all original Bosch eBike rechargeable battery packs.

- ▶ **Do not open the drive unit yourself. The drive unit must only be repaired by qualified personnel using only original spare parts.** This will ensure that the safety of the drive unit is maintained. Unauthorised opening of the drive unit will render warranty claims null and void.
- ▶ **All components fitted to the drive unit and all other components of the eBike drive (e.g. chainring, chainring receptacle, pedals) must only be replaced with identical components or components that have been specifically approved by the manufacturer for your eBike.** This will protect the drive unit from overloading and becoming damaged.
- ▶ **Remove the battery from the eBike before beginning work (e.g. inspection, repair, assembly, maintenance, work on the chain, etc.) on the eBike, transporting it with a car or aeroplane, or storing it.** Unintentional activation of the eBike system poses a risk of injury.
- ▶ **The eBike system may switch on when the eBike is pushed backwards.**
- ▶ **The push assistance function must only be used when pushing the eBike.** There is a risk of injury if the wheels of the eBike are not in contact with the ground while using the push assistance.
- ▶ **When the push assistance is activated, the pedals may turn at the same time.** When the push assistance function is activated, make sure that there is enough space between your legs and the turning pedals to avoid the risk of injury.
- ▶ **Use only original Bosch batteries that the manufacturer has approved for your eBike.** Using other batteries can lead to injuries and pose a fire hazard. Bosch accepts no liability or warranty claims if other batteries are used.
- ▶ **Do not make any modifications to your eBike system or fit any other products that might increase the performance of your eBike system.** Doing so will generally reduce the service life of the system and risks damaging the drive unit and the bike. You also run the risk of losing the guarantee and warranty claims on the bicycle you have purchased. By handling the system improperly you are also endangering your safety and that of other road users, thus running the risk of high personal liability costs and possibly even criminal prosecution in the event of accidents that can be attributed to manipulation of the bicycle.

- ▶ **Observe all national regulations which set out the approved use of eBikes.**
- ▶ **Read and observe the safety warnings and directions contained in all the eBike system operating instructions and in the operating instructions of your eBike.**

Privacy notice

When you connect the eBike to the Bosch diagnostic tool, data about the eBike drive unit (e.g. energy consumption, temperature, etc.) is transferred to Bosch eBike Systems (Robert Bosch GmbH) for the purposes of product improvement. You can find more information about this on the Bosch eBike website at www.bosch-ebike.com

Product description and specifications

Intended use

The drive unit is intended exclusively for driving your eBike and must not be used for any other purpose.

In addition to the functions shown here, changes to software relating to troubleshooting and functional enhancements may be introduced at any time.

Product features

Individual illustrations in these operating instructions may differ slightly from the actual conditions depending on the equipment of your eBike.

The numbering of the components shown refers to the illustrations on the graphics pages at the beginning of the manual.

- (1) Drive unit
- (2) Speed sensor
- (3) Speed sensor spoke magnet

Technical data

Drive unit		Active Line	Performance Line		Performance Line CX
			Cruise	Speed	
Product code		BDU250C BDU255C	BDU250P	BDU290P	BDU250P CX
Continuous rated power	W	250	250	250	250
Torque at drive, max.	Nm	50	63	63	75
Rated voltage	V =	36	36	36	36
Operating temperature	°C	-5 to +40	-5 to +40	-5 to +40	-5 to +40
Storage temperature	°C	-10 to +50	-10 to +50	-10 to +50	-10 to +50
Protection rating		IP 54 (dust- and splash-proof)	IP 54 (dust- and splash-proof)	IP 54 (dust- and splash-proof)	IP 54 (dust- and splash-proof)
Weight, approx.	kg	4	4	4	4
Bicycle lights ^{A)}					
Voltage approx. ^{B/C)}			V =		6/12
Maximum power					
– Front light			W		8.4/17.4
– Taillight			W		0.6/0.6

A) Depends on legal regulations, not possible in all country-specific models via the eBike battery

B) The voltage level is preset and can only be changed by the bicycle dealer.

C) When changing the bulbs, ensure that they are compatible with the Bosch eBike system (ask your bicycle dealer) and are suitable for the specified voltage. Bulbs must only be replaced with bulbs of the same voltage.

Inserting a bulb incorrectly can cause it to blow.

Assembly

Inserting and removing the battery

For inserting and removing the eBike battery in/from the eBike, please read and observe the battery operating instructions.

Checking the speed sensor (see figure A)

The speed sensor **(2)** and its spoke magnet **(3)** must be fitted such that the spoke magnet moves past the speed sensor at a distance of at least 5 mm and at most 17 mm with each rotation of the wheel.

Note: If the distance between the speed sensor **(2)** and the spoke magnet **(3)** is too small or too large, or if the speed sensor **(2)** is not properly connected, the speedometer display will fail and the eBike drive unit will operate in emergency mode. Should this occur, loosen the screw of the spoke magnet **(3)** and fasten the spoke magnet to the spoke such that it runs past the marking on the speed sensor at the correct clearance. If the speed is still not being indicated on the speedometer display after doing this, please contact an authorised bicycle dealer.

Operation

Start-up

Requirements

The eBike system can only be activated when the following requirements are met:

- A sufficiently charged battery is inserted (see battery operating instructions).
- The on-board computer is properly inserted in the holder (see on-board computer operating instructions).
- The speed sensor is correctly connected (see "Checking the speed sensor (see figure A)", page English – 2).

Switching the eBike system on/off

The following options are available for **switching on** the eBike system:

- If the on-board computer is already switched on when you insert it into the holder, the eBike system will be switched on automatically.
- When the on-board computer and the eBike battery are inserted, briefly press the On/Off button of the on-board computer.
- With the on-board computer inserted, push the On/Off button on the eBike battery (bicycle manufacturer-spe-

cific solutions are possible whereby there is no access to the battery On/Off button; see the battery operating instructions).

Note: The eBike system **always** starts in **OFF** mode for drive units with a maximum speed of more than **25 km/h**.

The drive is activated as soon as you start pedalling (except for in the push assistance function, (see "Switching the push assistance on/off", page English – 4)). The motor output depends on which assistance level is set on the on-board computer.

As soon as you stop pedalling when in normal operation, or as soon as you have reached a speed of **25/45 km/h**, the eBike drive unit switches off the assistance. The drive is automatically re-activated as soon you start pedalling again and the speed is below **25/45 km/h**.

The following options are available for **switching off** the eBike system:

- Press the On/Off button of the on-board computer.
- Switch off the eBike battery using its On/Off button (bicycle manufacturer-specific solutions are possible whereby there is no access to the battery On/Off button; see the bicycle manufacturer operating instructions).
- Remove the on-board computer from its holder.

If the eBike is not moved for approx. 10 min **and** no button is pressed on the on-board computer, the eBike system switches off automatically in order to save energy.

eShift (optional)

eShift is the integration of electronic gear-shifting systems into the eBike system. The eShift components are electrically connected to the drive unit by the manufacturer. The separate operating instructions describe how to operate the electronic gear-shifting systems.

Assistance level	Assistance factor ^{A)}			
	Active Line	Performance Line		Performance Line CX
		Cruise	Speed	
ECO	40%	50%	55%	50%
TOUR	100%	120%	120%	120%
SPORT/eMTB	150%	190%	190%	210% to 300% ^{B)}
TURBO	250%	275%	275%	300%

A) The assistance factor may vary in some models.

B) Maximum value

Setting the assistance level

You can set the level at which the eBike drive assists you while pedalling on the on-board computer. The assistance level can be changed at any time, even while cycling.

Note: In some models, the assistance level may be preset and cannot be changed. There may also be fewer assistance levels available than stated here.

If the manufacturer has configured the eBike with **eMTB Mode**, the assistance level **SPORT** is replaced by **eMTB**. In **eMTB Mode**, the assistance factor and torque are dynamically adjusted according to the force you exert on the pedals. **eMTB Mode** is only available for Performance Line CX drives.

The following assistance levels are available as a maximum:

- **OFF:** Motor assistance is switched off. The eBike can just be moved by pedalling, as with a normal bicycle. The push assistance cannot be activated at this assistance level.
- **ECO:** Effective assistance with maximum efficiency, for maximum range
- **TOUR:** Steady assistance, long range for touring
- **SPORT/eMTB:** **SPORT:** Powerful assistance, for mountain biking and for cycling in urban traffic
eMTB: Optimum assistance whatever the terrain, rapid acceleration when starting from a standstill, improved dynamics and top performance
- **TURBO:** Maximum assistance even at high pedalling speeds, for biking sports

The requested motor output appears on the display of the on-board computer. The maximum motor output depends on which assistance level is selected.

Switching the push assistance on/off

The push assistance aids you when pushing your eBike. The speed in this function depends on the selected gear and can reach a maximum of 6 km/h. The lower the selected gear, the lower the speed of the push assistance function (at full power).

- **The push assistance function must only be used when pushing the eBike.** There is a risk of injury if the wheels of the eBike are not in contact with the ground while using the push assistance.

To **activate** the push assistance, briefly press the **WALK** button on your on-board computer. After activation, press the **+** button within 3 s and keep it pressed. The eBike drive is switched on.

Note: The push assistance cannot be activated at assistance level **OFF**.

The push assistance is **switched off** as soon as one of the following occurs:

- You release the **+** button;
- The wheels of the eBike are locked (e.g. by applying the brakes or hitting an obstacle);
- The speed exceeds 6 km/h.

Note: On some systems, the push assistance can be started directly by pressing the **WALK** button.

Note: A speed of 18 km/h (start assistance) can be reached on some systems.

Depending on the statutory specifications in some countries, the push assistance function may vary from region to region.

Back-pedalling function (optional)

On bikes with a back-pedalling function, the pedals rotate when the push assistance is switched on. If the rotating pedals are locked, the push assistance switches off.

Switching bicycle lights on/off

On the model where the bike lights are powered by the eBike system, the front light and taillight can be switched on and off at the same time via the on-board computer.

Notes on cycling with the eBike system

When does the eBike drive work?

The eBike drive assists your cycling only when you are pedalling. If you do not pedal, the assistance will not work. The motor output always depends on the pedalling force you apply.

If you apply less force, you will receive less assistance than if you apply a lot of force. This applies irrespective of the assistance level.

The eBike drive automatically switches off at speeds over **25/45 km/h**. When the speed falls below **25/45 km/h**, the drive automatically becomes available again.

An exception applies to the push assistance function, in which the eBike can be pushed at low speed without pedalling. The pedals may rotate when the push assistance is in use.

You can also use the eBike as a normal bicycle without assistance at any time, either by switching off the eBike system or by setting the assistance level to **OFF**. The same applies when the battery is drained.

Interaction between the eBike system and gear-shifting

The gear-shifting should be used with an eBike drive in the same way as with a normal bicycle (observe the operating instructions of your eBike on this point).

Irrespective of the type of gear-shifting, it is advisable to briefly stop pedalling when changing gear. This will facilitate the gear change and reduce wear on the powertrain.

By selecting the correct gear, you can increase your speed and range while applying the same amount of force.

Gaining initial experience

We recommend that you gain initial experience with the eBike away from busy roads.

Test the various assistance levels, beginning with the lowest level. As soon as you feel confident, you can ride your eBike in traffic like any other bicycle.

Test the range of your eBike in different conditions before planning longer and more demanding trips.

Influences on range

The range is affected by a number of factors, such as:

- Assistance level
- Speed
- Gear shifting behaviour
- Tyre type and tyre pressure
- Age and condition of the battery
- Route profile (gradients) and conditions (road surface)
- Headwind and ambient temperature
- Weight of eBike, rider and luggage

For this reason, it is not possible to predict the range accurately before and during a trip. However, as a general rule:

- With the **same** assistance level on the eBike drive: The less energy you need to exert in order to reach a certain speed (e.g. by changing gears optimally), the less energy the eBike drive will consume and the higher the range per battery charge will be.
- The **higher** the selected assistance level under otherwise constant conditions, the smaller the range will be.

Taking care of your eBike

Please observe the operating and storage temperatures of the eBike components. Protect the drive unit, on-board computer and battery against extreme temperatures (e.g. from intense sunlight without adequate ventilation). Extreme temperatures can cause the components (especially the battery) to become damaged.

Have your eBike system checked by an expert at least once a year (including mechanical parts, up-to-dateness of system software).

Please have your eBike serviced and repaired by an authorised bicycle dealer.

Maintenance and servicing

Maintenance and cleaning

When changing the bulbs, ensure that they are compatible with the Bosch eBike system (ask your bicycle dealer) and are suitable for the specified voltage. Bulbs must only be replaced with bulbs of the same voltage.

Do not immerse any components, including the drive unit, in water or clean them with pressurised water.

Have your eBike system checked by an expert at least once a year (including mechanical parts, up-to-dateness of system software).

Please have your eBike serviced and repaired by an authorised bicycle dealer.

After-sales service and advice on using products

If you have any questions about the eBike system and its components, contact an authorised bicycle dealer.

For contact details of authorised bike dealerships, please visit www.bosch-ebike.com

Disposal



The drive unit, on-board computer incl. operating unit, battery, speed sensor, accessories and packaging should be disposed of in an environmentally correct manner.

Do not dispose of eBikes and their components with household waste.

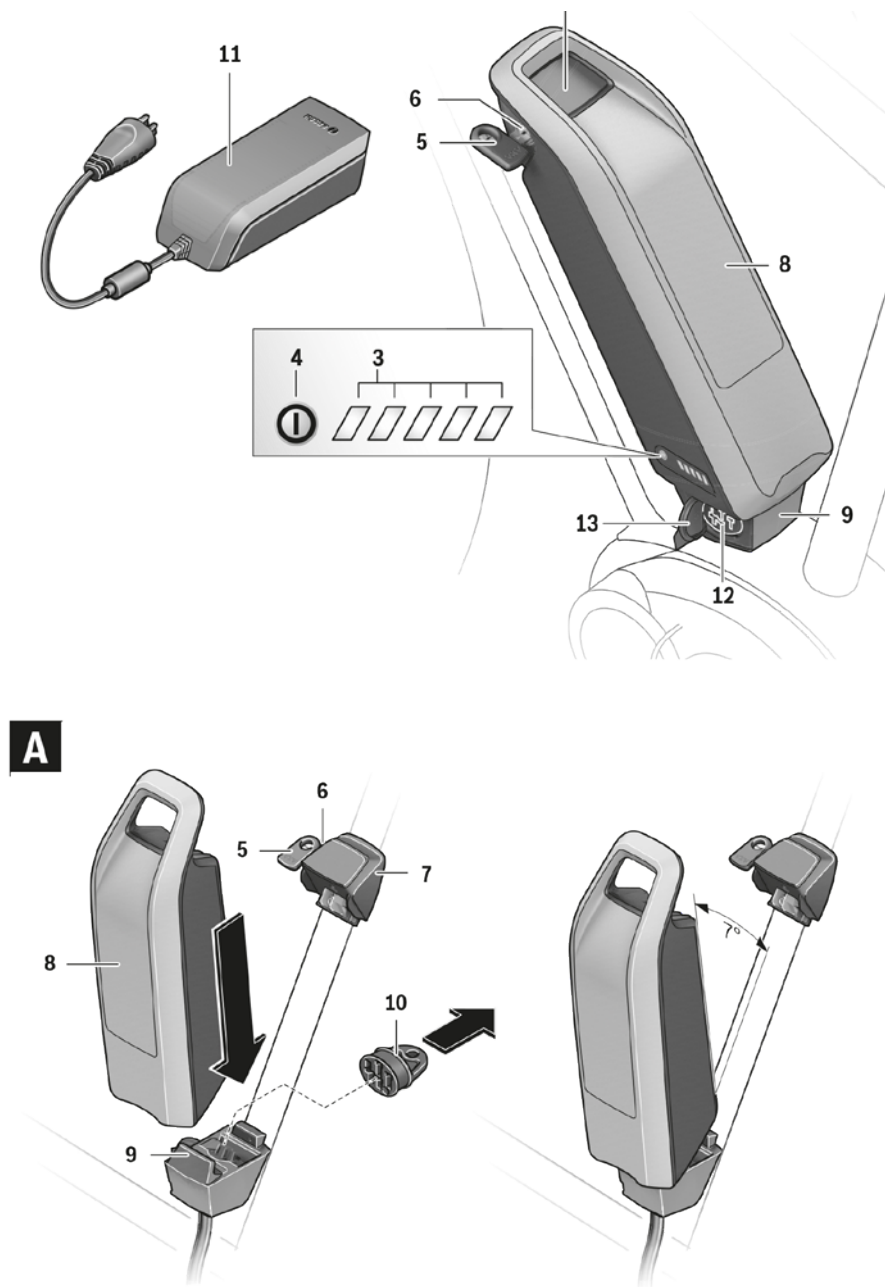


In accordance with Directive 2012/19/EU and Directive 2006/66/EC respectively, electronic devices that are no longer usable and defective/drain batteries must be collected separately and recycled in an environmentally friendly manner.

Please return Bosch eBike components that are no longer usable to an authorised bicycle dealer.

Subject to change without notice.

4.1.3. Battery



Safety instructions



Read all the safety and general instructions. Failure to observe the safety and general instructions may result in electric shock,

fire and/or serious injury.

The contents of lithium-ion battery cells are flammable under certain conditions. You must therefore ensure that you have read and understood the rules of conduct set out in these operating instructions.

Save all safety warnings and instructions for future reference.

The term **battery** is used in these instructions to mean all original Bosch eBike rechargeable battery packs.

- ▶ **Remove the battery from the eBike before beginning work (e.g. inspection, repair, assembly, maintenance, work on the chain, etc.) on the eBike, transporting it with a car or aeroplane, or storing it.** Unintentional activation of the eBike system poses a risk of injury.
- ▶ **Do not open the battery.** There is a risk of short-circuiting. Opening the battery voids any and all warranty claims.
- ▶ **Protect the battery against heat (e.g. prolonged sun exposure), fire and from being submerged in water. Do not store or operate the battery near hot or flammable objects.** There is a risk of explosion.
- ▶ **When the battery is not in use, keep it away from paper clips, coins, keys, nails, screws or other small metal objects that could make a connection from one terminal to another.** A short circuit between the battery terminals may cause burns or a fire. Short circuit damage which occurs in this instance voids any and all warranty claims against Bosch.
- ▶ **Avoid mechanical loads and exposure to high temperatures.** These can damage the battery cells and cause the flammable contents to leak out.
- ▶ **Do not place the charger or the battery near flammable materials. Ensure the battery is completely dry and placed on a fireproof surface before charging.** There is a risk of fire due to the heat generated during charging.
- ▶ **The eBike battery must not be left unattended while charging.**
- ▶ **If used incorrectly, liquid may leak from the battery. Contact with this liquid should be avoided. If contact accidentally occurs, rinse off with water. If the liquid comes into contact with your eyes, seek additional medical attention.** Liquid leaking from the battery may cause irritation or scalding.
- ▶ **Batteries must not be subjected to mechanical shock.** There is a risk of the battery being damaged.
- ▶ **The battery may give off fumes if it becomes damaged or is used incorrectly. Ensure the area is well ventilated and seek medical attention should you experi-**

ence any adverse effects. The fumes may irritate the respiratory system.

- ▶ **Only charge the battery using original Bosch chargers.** When using chargers that are not made by Bosch, the risk of fire cannot be excluded.
- ▶ **Use the battery only in conjunction with eBikes that have original Bosch eBike drive systems.** This is the only way in which you can protect the battery against dangerous overload.
- ▶ **Use only original Bosch batteries that the manufacturer has approved for your eBike.** Using other batteries can lead to injuries and pose a fire hazard. Bosch accepts no liability or warranty claims if other batteries are used.
- ▶ **Do not use the rack-mounted battery as a handle.** Lifting the eBike up by the battery can damage the battery.
- ▶ **Keep the battery away from children.**
- ▶ **Read and observe the safety warnings and directions contained in all the eBike system operating instructions and in the operating instructions of your eBike.**

The safety of both our products and our customers is important to us. Our eBike batteries are lithium-ion batteries which have been developed and manufactured in accordance with the latest technology. We comply with or exceed the requirements of all relevant safety standards. When charged, these lithium-ion batteries contain a high level of energy. If a fault occurs (which may not be detectable from the outside), in very rare cases and under unfavourable conditions, lithium-ion batteries can catch fire.

Privacy notice

When you connect the eBike to the Bosch diagnostic tool, data about the eBike batteries (e.g. temperature, cell voltage, etc.) is transferred to Bosch eBike Systems (Robert Bosch GmbH) for the purposes of product improvement. You can find more information about this on the Bosch eBike website at www.bosch-ebike.com

Product description and specifications

Product features

The numbering of the components shown refers to the illustrations on the graphics pages at the beginning of the manual.

All representations of bicycle parts, apart from the batteries and their holders, are schematic and may differ from those on your own eBike.

In addition to the functions shown here, changes to software relating to troubleshooting and functional enhancements may be introduced at any time.

- (1) Rack-mounted battery holder
- (2) Rack-mounted battery
- (3) Operation/state of charge indicator

- (4) On/off button
- (5) Key for the battery lock
- (6) Battery lock
- (7) Upper standard battery holder
- (8) Standard battery
- (9) Lower standard battery holder
- (10) Cover (supplied only on eBikes with two battery packs)

- (11) Charger
- (12) Socket for charging connector
- (13) Charging socket cover
- (14) PowerTube battery safety restraint
- (15) PowerTube battery
- (16) PowerTube battery safety hook

Technical data

Li-ion battery		PowerPack 300	PowerPack 400	PowerPack 500	PowerTube
Product code		BBS240 ^{A) B)} BBS245 ^{A) B)} BBR240 ^{C) B)} BBR245 ^{B) C)}	BBS260 ^{A)} BBS265 ^{A)} BBR260 ^{C)} BBR265 ^{C)}	BBS270 ^{A)} BBS275 ^{A)} BBR270 ^{C)} BBR275 ^{C)}	BBP280 horizontal BBP281 vertical
Rated voltage	V =	36	36	36	36
Nominal capacity	Ah	8.2	11	13.4	13.4
Energy	Wh	300	400	500	500
Operating temperature	°C	-5...+40	-5...+40	-5...+40	-5...+40
Storage temperature	°C	-10...+60	-10...+60	-10...+60	-10...+60
Permitted charging temperature range	°C	0...+40	0...+40	0...+40	0...+40
Weight, approx.	kg	2.5/2.6	2.5/2.6	2.6/2.7	2.8
Protection rating		IP 54 (dust- and splash-proof)	IP 54 (dust- and splash-proof)	IP 54 (dust- and splash-proof)	IP 54 (dust- and splash-proof)

A) Standard battery

B) Cannot be used in combination with other batteries in systems with two batteries

C) Rack-mounted battery

Fitting

► Ensure the battery is placed on clean surfaces only.

Avoid getting dirt, e.g. sand or soil, in the charging socket and contacts in particular.

Testing the battery before using it for the first time

Test the battery before charging it for the first time or using it in your eBike.

To do this, press the on/off button (4) to switch the battery on. If none of the LEDs on the battery charge indicator (3) light up, the battery may be damaged.

If at least one (but not all) of the LEDs on the battery charge indicator (3) lights up, the battery will need to be fully charged before using it for the first time.

► Do not charge or use batteries if they are damaged.

Contact an authorised bicycle dealer.

Charging the battery

► Use only the charger included with your eBike or an identical original Bosch charger.

Only this charger is compatible with your eBike's lithium-ion battery.

Note: The battery is supplied partially charged. To ensure full battery capacity, fully charge the battery in the charger before using it for the first time.

To charge the battery, read and follow the instructions in the operating manual for the charger.

The battery can be charged at any state of charge. Interrupting the charging process does not damage the battery.

The battery has a temperature monitoring function which only allows it to be charged within a temperature range of 0 °C to 40 °C.



If the temperature of the battery is outside this charging range, three of the LEDs on the battery charge indicator (3) will flash. Disconnect the battery from the charger and let it acclimatise.

Do not reconnect the battery to the charger until it has reached the correct charging temperature.

Battery charge indicator

The five green LEDs on the battery charge indicator (3) indicate the battery's state of charge of when the battery is switched on.

Each LED represents approximately 20% of the charging capacity. When the battery is fully charged, all five LEDs will be lit.

The battery's state of charge when switched on is also shown on the display of the on-board computer. Read and follow the instructions in the operating manuals for the drive unit and on-board computer.

If the battery capacity is less than 5%, all the LEDs on the battery charge indicator (3) on the battery will go out. The display function of the on-board computer, however, will carry on working.

Once charging is complete, disconnect the battery from the charger and the charger from the mains.

Using two batteries for one eBike (optional)

The manufacturer can also equip an eBike with two batteries. In this case, one of the charging sockets will not be accessible or it will have been sealed with a sealing cap by the bicycle manufacturer. Only charge the batteries via the charging socket that is accessible.

► Never open charging sockets that have been sealed by the manufacturer.

Charging batteries via a charging socket that used to be sealed may cause irreparable damage.

If you want to use an eBike that is designed for two batteries with only one battery, cover the contacts of the unused socket using the cover (10) provided. Otherwise there is a risk that the exposed contacts will cause a short circuit (see figures A and B).

Charging process for two batteries

If two batteries are fitted to an eBike, both batteries can be charged using the uncovered connection. To begin with, both batteries are charged one after the other until they reach approx. 80–90% capacity, then they are both charged at the same time until full (the LED flashes on both batteries).

When the bike is in operation, power is drawn from both batteries on an alternating basis.

If you take the batteries out of the holders, you can charge each one individually.

Charging with one battery fitted

If only one battery is fitted, you can only charge the battery that has the accessible charging socket on the bike. You can only charge the battery with the sealed charging socket if you take the battery out of the holder.

Inserting and removing the battery

► Always switch off the battery and the eBike system when inserting the battery into the holder or removing it from the holder.

Inserting and removing the standard battery (see figure A)

In order for the battery to be inserted, the key (5) must be inserted into the lock (6) and the lock must be open.

To **insert the standard battery (8)**, place it onto the contacts on the lower holder (9) on the eBike (the battery can be tilted towards the frame by up to 7°). Tilt it into the upper holder (7) as far as possible until you hear it click into place. Check that the battery is secure in all directions. Always secure the battery by closing the lock (6) – otherwise the lock may open and the battery may fall out of the holder.

Always remove the key (5) from the lock (6) after closing it. This prevents both the key from falling out and the battery from being removed by unauthorised third parties when the eBike is not in use.

To **remove the standard battery (8)**, switch it off and open the lock using the key (5). Tilt the battery out of the upper holder (7) and pull it out of the lower holder (9).

Inserting and removing the rack-mounted battery (see figure B)

In order for the battery to be inserted, the key (5) must be inserted into the lock (6) and the lock must be open.

To **insert the rack-mounted battery (2)**, slide it contacts-first into the holder (1) on the rack until you hear it click into place.

Check that the battery is secure in all directions. Always secure the battery by closing the lock (6) – otherwise the lock may open and the battery may fall out of the holder.

Always remove the key (5) from the lock (6) after closing it. This prevents both the key from falling out and the battery from being removed by unauthorised third parties when the eBike is not in use.

To **remove the rack-mounted battery (2)**, switch it off and open the lock using the key (5). Pull the battery out of the holder (1).

Removing the PowerTube battery (see figure C)

① To remove the PowerTube battery, (15) open the lock (6) using the key (5). The battery will be unlocked and fall into the safety restraint (14).

② Press on the safety restraint from above. The battery will be unlocked completely and fall into your hand. Pull the battery out of the frame.

Note: As a result of varying designs, the battery may need to be inserted and removed using a different method. In this case, consult the bicycle documentation provided by your bicycle manufacturer.

Inserting the PowerTube battery (see figure D)

In order for the battery to be inserted, the key (5) must be inserted into the lock (6) and the lock must be open.

① To insert the PowerTube battery (15), place it so that its contacts are in the lower holder of the frame.

② Push the battery upwards until it is held by the safety restraint (14).

- ③ Press the battery upwards until you hear it click into place. Check that the battery is secure in all directions.
- ④ Always secure the battery by closing the lock (6) – otherwise the lock may open and the battery may fall out of the holder.

Always remove the key (5) from the lock (6) after locking it. This prevents both the key from falling out and the battery from being removed by unauthorised third parties when the eBike is not in use.

Operation

Start-up

- **Use only original Bosch batteries that the manufacturer has approved for your eBike.** Using other batteries can lead to injuries and pose a fire hazard. Bosch accepts no liability or warranty claims if other batteries are used.

Switching on/off

Switching on the battery is one way to switch on the eBike system. Read and follow the instructions in the operating manuals for the drive unit and on-board computer.

Before switching on the battery, i.e. the eBike system, make sure that the lock (6) is closed.

To **switch on** the battery, press the on/off button (4). The LEDs on the indicator (3) will light up, indicating the battery's state of charge at the same time.

Note: If the battery capacity is less than 5%, none of the LEDs on the battery charge indicator (3) will light up. Whether the eBike system is switched on is only visible on the on-board computer.

To **switch off** the battery, press the on/off button (4) again. The LEDs on the indicator (3) go out. This will also switch the eBike system off.

If no power is drawn from the eBike drive for about 10 minutes (e.g. because the eBike is not moving) and no button is pressed on the on-board computer or the operating unit of the eBike, the eBike system, and therefore also the battery, will switch off automatically to save energy.

The battery is protected against deep discharge, overloading, overheating and short-circuiting by the Electronic Cell Protection (ECP). In the event of danger, a protective circuit switches the battery off automatically.



If a fault is detected in the battery, two of the LEDs on the battery charge indicator (3) will flash. Contact an authorised bicycle dealer if this happens.

Recommendations for optimal handling of the battery

The service life of the battery can be extended if it is looked after well and especially if it is stored at the correct temperature.

As it ages, however, the capacity of the battery will diminish, even with good care.

A significantly reduced operating time after charging indicates that the battery has deteriorated. You can replace the battery.

Recharging the battery before and during storage

When you are not going to use the battery for an extended period (longer than three months), store it at a state of charge of around 30 % to 60 % (when two to three of the LEDs on the battery charge indicator (3) are lit).

Check the state of charge after six months. If only one of the LEDs on the battery charge indicator (3) is lit, charge the battery back up to around 30 % to 60 %.

Note: If the battery is stored with no charge for an extended period of time, it may become damaged despite the low self-discharge and the battery capacity could be significantly reduced.

Leaving the battery permanently connected to the charger is not recommended.

Storage conditions

If possible, store the battery in a dry, well-ventilated place. Protect it against moisture and water. When the weather conditions are bad, it is advisable to remove the battery from the eBike and store it in a closed room until you use it next, for example.

Store the eBike batteries in the following locations:

- In a room with a smoke alarm
- Away from combustible or easily flammable objects
- Away from heat sources

Store the batteries at temperatures between **0 °C** and **20 °C**. Never store them at temperatures below **-10 °C** or above **60 °C**. To ensure that the service life is as long as possible, storage at approx. **20 °C** (room temperature) is recommended.

Make sure that the maximum storage temperature is not exceeded. Do not leave the battery in your car in the summer, for example, and store it away from direct sunlight.

Leaving the battery on the bicycle for storage is not recommended.

Maintenance and servicing

Maintenance and cleaning

- **The battery must not be submerged in water or cleaned using a jet of water.**

Keep the battery clean. Clean it carefully with a soft, damp cloth.

Clean and lightly grease the connector pins occasionally.

Please contact an authorised bicycle dealer if the battery is no longer working.

After-sales service and advice on using products

If you have any questions about the batteries, contact an authorised bicycle dealer.

- **Note down the key manufacturer and number on the key (5).** Contact an authorised bicycle dealer if you lose the key. Give them the name of the key manufacturer and the number on the key.

For contact details of authorised bicycle dealers, please visit www.bosch-ebike.com

Transport

- **If you transport your eBike attached to the outside of your car, e.g. on a bike rack, remove the on-board computer and the eBike battery to avoid damaging them.**

The batteries are subject to legislation on the transport of dangerous goods. Private users can transport undamaged batteries by road without having to comply with additional requirements.

When batteries are transported by commercial users or third parties (e.g. air transport or forwarding agency), special requirements on packaging and labelling (e.g. ADR regulations) must be met. When preparing items for shipping, a dangerous goods expert can be consulted as required.

Do not ship batteries if the housing is damaged. Apply tape over exposed contacts and pack the battery such that it cannot move around inside the packaging. Inform your parcel service that the package contains dangerous goods. Please also observe any additional national regulations should these exist.

If you have any questions about transporting the batteries, contact an authorised bicycle dealer. You can also order suitable transport packaging from the dealer.

Disposal



Batteries, accessories and packaging should be recycled in an environmentally friendly manner.

Do not dispose of batteries along with household waste.

Apply tape over the contact surfaces of the battery terminals before disposing of batteries.

Do not touch severely damaged eBike batteries with your bare hands – electrolyte may escape and cause skin irritation. Store the defective battery in a safe location outdoors. Cover the terminals if necessary and inform your dealer. They will help you to dispose of it properly.



In accordance with Directive 2012/19/EU and Directive 2006/66/EC respectively, electronic devices that are no longer usable and defective/discharged batteries must be collected separately and recycled in an environmentally friendly manner.

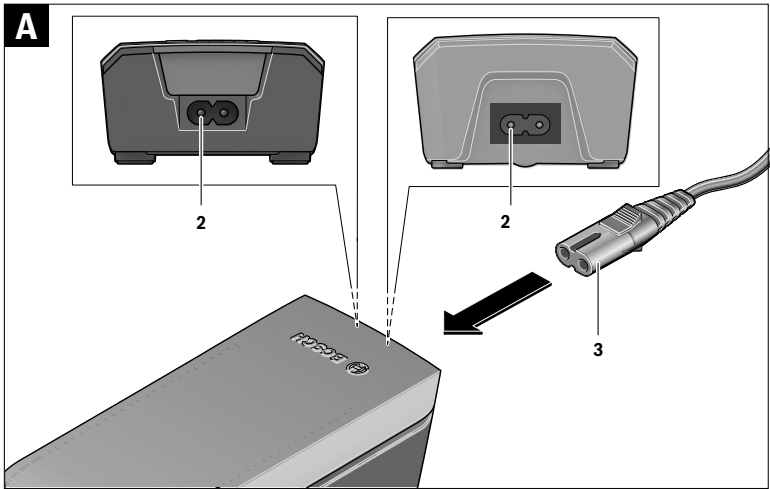
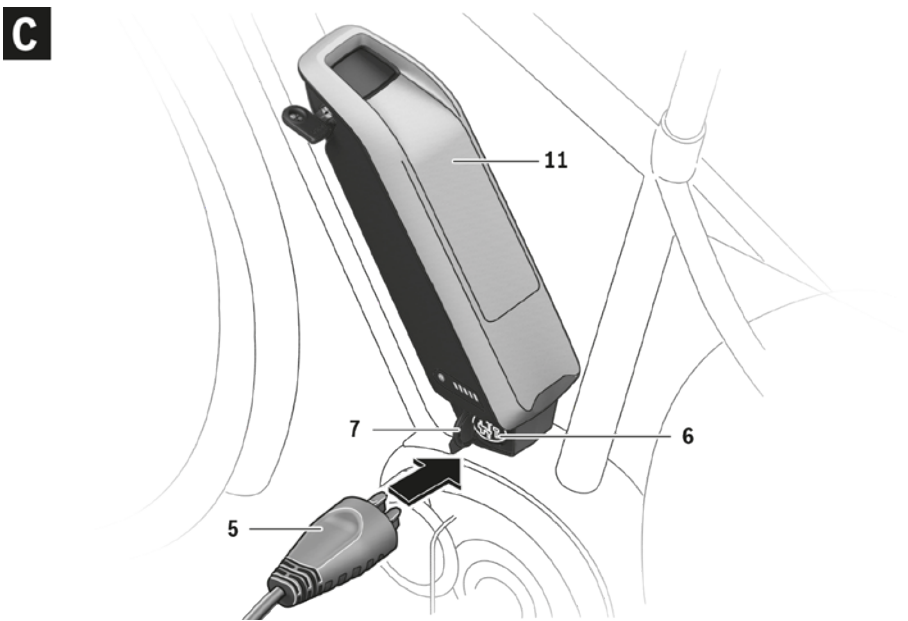
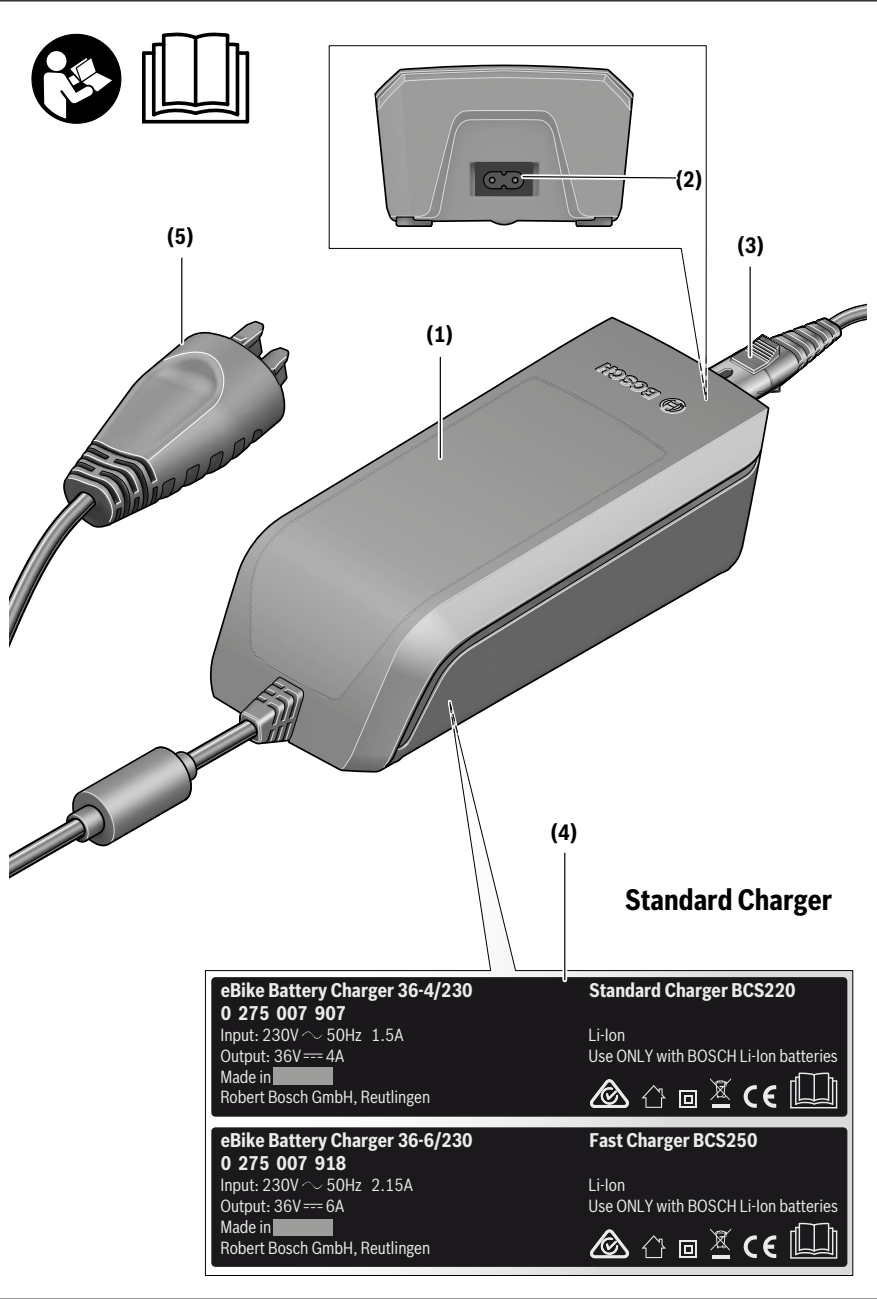
Please return batteries that are no longer usable to an authorised bicycle dealer.



Li-ion:
Please observe the information in the section on (see "Transport", page English – 5)

Subject to change without notice.

4.1.4. Battery charger



Safety instructions



Read all the safety and general instructions. Failure to observe the safety and general instructions may result in electric shock,

fire and/or serious injury.

Save all safety warnings and instructions for future reference.

The term **battery** is used in these instructions to mean all original Bosch eBike rechargeable battery packs.



Do not expose the charger to rain or wet conditions. If water enters a charger, there is a risk of electric shock.

- **Charge only Bosch lithium-ion batteries that are approved for use in eBikes. The battery voltage must match the battery charging voltage of the charger.** Otherwise there is a danger of fire and explosion.
- **Keep the charger clean.** Dirt poses a risk of electric shock.
- **Always check the charger, cable and plug before use. Stop using the charger if you discover any damage. Do not open the charger.** Damaged chargers, cables and plugs increase the risk of electric shock.
- **Do not operate the charger on an easily ignited surface (e.g. paper, textiles, etc.) or in a flammable environment.** There is a risk of fire due to the charger heating up during operation.
- **Take care if you touch the charger while it is charging. Wear protective gloves.** The charger can get very hot, especially when the ambient temperature is high.
- **The battery may give off fumes if it becomes damaged or is used incorrectly. Ensure the area is well ventilated and seek medical attention should you experience any adverse effects.** The fumes may irritate the respiratory system.
- **Do not place the charger or the battery near flammable materials. Ensure the battery is completely dry and placed on a fireproof surface before charging.** There is a risk of fire due to the heat generated during charging.
- **The eBike battery must not be left unattended while charging.**
- **Supervise children during use, cleaning and maintenance.** This will ensure that children do not play with the charger.
- **Children or persons who, owing to their physical, sensory or mental limitations or to their lack of experience or knowledge, are not capable of safely operating the charger may only use this charger under supervision or after having been instructed by a responsible person.** Otherwise, there is a danger of operating errors and injuries.

- **Read and observe the safety warnings and directions contained in all the eBike system operating instructions and in the operating instructions of your eBike.**
- A sticker in English is adhered to the bottom of the charger (marked **(4)** in the diagram on the graphics page). This says: Use ONLY with BOSCH lithium-ion batteries.

Product description and specifications

In addition to the functions shown here, changes to software relating to troubleshooting and functional enhancements may be introduced at any time.

Product features

The numbering of the components shown refers to the illustrations on the graphics pages at the beginning of the manual.

Individual illustrations in these operating instructions may differ slightly from the actual conditions depending on the equipment of your eBike.

- (1) Charger
- (2) Device socket
- (3) Device connector
- (4) Charger safety instructions
- (5) Charging connector
- (6) Socket for charging connector
- (7) Charging socket cover
- (8) Rack-mounted battery
- (9) Operation/state of charge indicator
- (10) Battery on/off button
- (11) Standard battery

Technical data

Charger		Standard Charger (36–4/230)	Compact Charger (36–2/100-230)	Fast Charger (36–6/230)
Product code		BCS220	BCS230	BCS250
Rated voltage	V ~	207...264	90...264	207...264
Frequency	Hz	47...63	47...63	47...63
Battery charging voltage	V =	36	36	36
Charging current (max.)	A	4	2	6 ^{A)}
Charging time				
– PowerPack 300, approx.	hrs	2,5	5	2
– PowerPack 400, approx.	hrs	3,5	6,5	2,5
– PowerPack 500, approx.	hrs	4,5	7,5	3
Operating temperature	°C	0 ... +40	0 ... +40	0 ... +40
Storage temperature	°C	–10 ... +50	–10 ... +50	–10 ... +50
Weight, approx.	kg	0,8	0,6	1,0
Protection rating		IP 40	IP 40	IP 40

A) The charging current is limited to 4A for the PowerPack 300 and for Classic + Line batteries.

The specifications apply to a rated voltage [U] of 230 V. These specifications may vary at different voltages and in country-specific models.

Operation

Start-up

Connecting the charger to the mains (see figure A)

- **Pay attention to the mains voltage.** The voltage of the power source must match the voltage specified on the rating plate of the charger. Chargers marked 230 V can also be operated at 220 V.

Plug the device connector (3) of the power cable into the device socket (2) on the charger.

Connect the power cable (country-specific) to the mains.

Charging the removed battery (see figure B)

Switch the battery off and remove it from its holder on the eBike. When doing so, read and observe the operating instructions of the battery.

- **Ensure the battery is placed on clean surfaces only.** Avoid getting dirt, e.g. sand or soil, in the charging socket and contacts in particular.

Plug the charging connector (5) of the charger into the socket (6) on the battery.

Charging the battery on the bike (see figures C and D)

Switch the battery off. Clean the cover of the charging socket (7). Avoid getting dirt, e.g. sand or soil, in the charging socket and contacts in particular. Lift the cover of the charging socket (7) and plug the charging connector (5) into the charging socket (6).

- **Charge the battery only in accordance with all safety instructions.** If this is not possible, remove the battery from the holder and charge it in a more suitable location.

When doing so, read and observe the operating instructions of the battery.

Charging process for two batteries

If two batteries are fitted to an eBike, both batteries can be charged using the uncovered connection. To begin with, both batteries are charged one after the other until they reach approx. 80–90 % capacity, then they are both charged at the same time until full (the LED flashes on both batteries).

When the bike is in operation, power is drawn from both batteries on an alternating basis.

If you take the batteries out of the holders, you can charge each one individually.

Charging process

The charging process begins as soon as the charger is connected to the battery or charging socket on the bike and to the mains.

Note: The charging process is only possible when the temperature of the eBike battery is within the permitted charging temperature range.

Note: The drive unit is deactivated during the charging process.

The battery can be charged with or without the on-board computer. When charging without the on-board computer, the charging progress can be observed via the battery charge indicator.

When the on-board computer is connected, a charging notification appears on the display.

The state of charge is displayed by the battery charge indicator (9) on the battery and by the bars on the on-board computer.

The LEDs on the battery charge indicator (9) will flash during the charging process. Each solid illuminated LED represents approximately 20 % of the charging capacity. The flashing LED indicates the next 20 % currently charging.

Once the eBike battery is fully charged, the LEDs extinguish immediately and the on-board computer is switched off. The charging process is terminated. The state of charge can be displayed for three seconds by pressing the on/off button (10) on the eBike battery.




Disconnect the charger from the mains and the battery from the charger.

When the battery is disconnected from the charger, the battery is automatically switched off.

Note: If you have charged the battery on the bike, carefully close the charging socket (6) with the cover (7) after charging, so that no dirt or water can get in.

If the charger is not disconnected from the battery after charging, the charger will switch itself back on after a few hours, check the state of charge of the battery and begin the charging process again if necessary.

Errors – causes and corrective measures

Cause	Corrective measures
 Battery defective	Two LEDs flash on the battery. Contact an authorised bike dealership.
 Battery too warm or too cold	Three LEDs flash on the battery. Disconnect the battery from the charger until the charging temperature range has been reached. Do not reconnect the battery to the charger until it has reached the correct charging temperature.
 The charger is not charging.	No LEDs flashing (one or more LEDs will remain permanently lit depending on the state of charge of the eBike battery). Contact an authorised bike dealership.

Charging not possible (no indicator on battery)	
Connector not attached properly	Check all connections.
Battery contacts dirty	Carefully clean the battery contacts.

Cause	Corrective measures
Socket outlet, cable or charger defective	Check the mains voltage, have the charger checked over by a bike dealership.
Battery defective	Contact an authorised bike dealership.

Maintenance and servicing

Maintenance and cleaning

If the charger fails, please contact an authorised bike dealership.

After-sales service and advice on using products

If you have any questions about the charger, contact an authorised bike dealership.


For contact details of authorised bike dealerships, please visit www.bosch-ebike.com

Disposal

Chargers, accessories and packaging should be recycled in an environmentally friendly manner.

Do not dispose of chargers along with household waste.

Only for EU countries:



According to the European Directive 2012/19/ EU on Waste Electrical and Electronic Equipment and its implementation into national law, chargers that are no longer usable must be collected separately and disposed of in an environmentally friendly manner.

Subject to change without notice.

4.2. NuVinci Harmony gear hub

The twist grip on the Nuvinci Harmony actuates a servo motor electronically on the rear wheel hub which changes transmission ratio of the hub. Two operating modes are featured on the NuVinci H8 twist grip and can be alternated between using the Mode key:




Automatic mode: blue display The cadence which is to remain constant is determined with the twist grip. Cadence is symbolised in blue on the display. The transmission ratio is adapted automatically during travel.




Manual mode: orange display In this mode, the twist grip determines the transmission ratio. This is symbolised on the display in orange.





If the Bosch system ceases assistance due to a fl at battery, a minimal energy reserve remains available to the NuVinci Harmony for shifting processes. This can be depleted within approx. 30 min., depending on the number of shifting processes.
-> Shifting is thereafter no longer possible!



When at a standsti II, only 50 to 70% of the transmission range is available on NuVinci hubs. The remaining range is only available while riding.

4.3. Gates Carbon Drive Belt

When delivered, the belt exhibits optimum tension and does not have to be retensioned, even after prolonged use of the drive. Correctly mounted, the belt is extremely resilient in the pulling direction. The carbon fibres embedded in the belt are extremely flexible, however, are also sensitive to mistreatment as follows:



4.4. Brake system

Your ProCargo CT1 is equipped with hydraulic disc brakes. The left brake lever acts simultaneously on both front wheel brakes, the right brake lever acts on the rear brake.



In an unloaded condition, the axle load is minimal on the front wheels. The wheels are blocked extremely quickly with heavy front braking. Front wheels blocked in curves will lead to understeer, the bike slides forwards in a direct line.
-> The rear brake should be predominantly applied in an unloaded condition and the front brakes applied only tentatively.



Brake discs and brake callipers can become extremely hot under braking, in particular following long descents.
-> Do not touch the brake system with your hands after heavy braking. You could suffer burns.

Both brake levers feature a turning lever which can be used to block the respective brake.

For locking:

- Pull the brake lever towards the handlebar.
- At the same time, push the rotary switch towards the end of the handlebar until the brake blocks.



To release the brake locking:

- Pull the brake lever towards the handlebar
- At the same time, push the rotary switch towards the stem until the brake lever retracts



The brake system compensates wear of the brake pads automatically and ensures a constant pressure point for the brake.

4.5. Frame lock on rear wheel

The ProCargo CT1 can be secured quickly and easily with the integrated frame lock. The keys for frame lock and battery lock are the same.

The lock:

- Insert the key and turn in a clockwise direction. Hold in this position.
- Push the halfing into the spokes with the other hand using the lever on the lock.
- Release the key and remove.



To unlock the frame lock:

- Insert the key and turn in a clockwise direction. The half-ring snaps back automatically.
- Release the key and remove.

4.6. Pannier holders

The Wingee mudguards feature integrated side struts for the mounting of panniers. Each side can carry a maximum load of 8 kg.

5. Ergonomic setting

5.1. Horizontal saddle position and tilt

The optimum horizontal saddle position can be determined using the „knee plumb line“. The knee plumb line can be determined using a weight suspended on a piece of string. The knee plumb line should pass through the pedal axle or just in front of it.



Sit on the pedelec in the position shown above with horizontal crank arms and have a second person determine the knee plumb line.

Ideally, the saddle is horizontally aligned with the upper side or with the saddle tip tilted slightly forwards.

To adjust the saddle position and tilt, loosen the two Allen screws of the saddle clamp situated behind the seatpost under the saddle. You can now shift the saddle in the guide of the clamp and adjust the tilt. Then tighten both screws with 9-10 Nm.



5.2. Adjusting grip distance of the brake lever

The grip distance can be adjusted using an Allen key at the position marked in red.

The grip distance of the brake lever should be adjusted so that it is possible to wrap the foremost phalanges of 2-3 fingers behind the brake lever.



6. Maintenance

Regular maintenance of the cargo bike will ensure that it remains safe and functional. Please observe the following information before every maintenance measure.



Sortimo offers a service concept. Get in touch with your direct Sortimo contact person or the Sortimo Service Team.



Maintenance requires technical skills. You are responsible for the maintenance work being carried out correctly.
-> If you do not feel confident doing the work, have the bike serviced by a dealer or contact the Sortimo Service.



Risk of clamping and crushing if the maintenance work is carried out with the drive unit switched on! Your hands could get stuck in the moving drive between belt and socket.
-> Always remove the battery before commencing any maintenance work.



Risk of clamping and crushing when carrying out maintenance work. Your fingers could get stuck between moving parts.
-> Pay attention to your hands and work carefully.

6.1. List of wear parts

The following parts are subject to function-related wear which is not covered by the warranty:

- Battery
- Tyres and tubes
- Brake pads, brake discs
- Belts and sockets
- Rubber seals and rings (e.g. in the NuVinci hub)
- All moving parts (e.g. bearings)
- Bowden cables, including mantel
- Hydraulic oil and lubricants
- Handlebar grips
- Paint and all surfaces (Examples: Cable outer mantels cause wear on the paintwork / Actuation of the foot pedal for tilt blocking abrades the paintwork in this area.)

If no further explanation is given, the wear of these parts is due to friction.

6.2. Recommended maintenance intervals

The need for maintenance of your pedelec depends on its use and leaves do not specify themselves precisely. You should use the pedelec at least once a year. Check with a specialist dealer or wait for the Sortimo Service Team to let.

As a guide, we suggest the following maintenance intervals:

Once after 100-300 km:

- Check the tightening torques of the grips, brake levers, saddle, seatpost, stem, handlebar
- Check the spoke tension, if necessary true the wheel

Monthly (or every 500 km):

- Check wear condition of the brake pads
- Check wear condition of the tyres (tread and side wall)
- Check bearing clearance of headsets, hubs and pedals
- Ensure secure fixing of crank arms
- Ensure secure seating of dust protection on the track rod ends and retighten as required

Yearly (or every 3000 km):

- Check complete brake system (including wear condition of brake discs)
- Grease the pivot points of both brake levers
- Check the tightening torques of the grips, brake levers, saddle, seatpost, stem, handlebar
- Check wear condition of the belt
- Check clearance of the track rod ends
- Inspect V-arms for cracks
- Check tightening torque of „V-arms on frame“ screws. Nominal: 70 Nm
- Check tightening torque of „tubes beneath loading area“ clamping screws. Nominal: 14 Nm

6.3. After an accident



If parts of the drive unit (cable, motor, battery) are visibly damaged due to an accident, there is a risk of electric shock. In this case, remove the battery immediately. Stop that Drive system from the Sortimo Service Team or from a specialist dealer check.



Parts of your ProCargo CT1 may be damaged due to an accident, which can cause a risk of breakage.
-> After an accident, contact the Sortimo Service Team or contact a dealer for damaged parts such as the frame, suspension, handlebar, handlebar, stem, seat post, crank and check pedals and replace if necessary.

6.4. Battery

The battery is a wear part as it ages over time (even if it is not used), and in particular with usage. Its service life is dependent upon the following factors:

During use, service life of the battery is primarily determined by the performance requirements. Frequent use of high assistance levels reduces service life of the battery.

During storage/non-use, the following factors are relevant for service life:

- Storage temperature. Optimum: 0-20 °C. Temperatures above 30°C or parking the bike with the battery in direct sunlight reduces service life of the battery.
- Charging status. Optimum charging status: 40-60% (=2-3 LEDs) Storing the battery fully charged or completely fl at reduces the service life.

6.5. Tyers

Transporting cargo with the ProCargo CT1 will result in increased wear of the tyres compared with a bicycle. Wear can be avoided on the side walls of the tyres by ensuring sufficient tyre pressure (refer to section 3.1). Reduce wear to the tyre treads by avoiding blocking of the tyres when braking.

You will need to replace your tyres if the rubber tread is so worn down that the braid underneath is exposed, or if the tyres have become porous due to ageing and frequent exposure to the sun.

6.6. Changing tyres/tubes

6.6.1. Front wheels

It is possible to replace the tyres on the mounted front wheels. Proceed as follows in this regard:

Ensure that the respective wheel is raised off the ground and is freely rotatable, whereby the vehicle is supported beneath the loading area on the corresponding side (e.g. using a beverage crate). Alternatively, the cargo bike may also be lain on its side.



The long track rod beneath the loading area can bend if it is used to support the ProCargo CT1.
-> Do not use the track rod to prop up the bike.



The frame could become scratched if the cargo bike is lain on its side.
-> Lay a blanket, for example, down on the ground to protect the contact points of the ProCargo CT1.

6.6.2. Removing the rear wheel

- Switch off the Bosch drive unit and remove the battery.
- Lock the front wheel brake.

- Prop up the vehicle under the motor rail, using a beverage crate for example, so that the rear wheel is raised completely off the ground.



- Grip the connector on the ribbed section and pull it carefully forwards from the hub interface.



- Loosen the axle nuts around a few full turns on both sides.
- Lift the rear wheel at the axle nuts and pull the tab washers outwards on both sides so that they are no longer gripping into the dropout. (Belt tension does not have to be relieved for removal)



- Pull the rear wheel downwards out of the frame. The tab washers should thus no longer be gripping into the dropouts.
- Remove the belt from the front socket without twisting and then from the rear socket.



6.6.3. Changing the tyre/tube

- Unscrew the valve cap and large knurled nut from the valve.
- Release the air completely by applying pressure to the valve pin in the centre of the valve.

- Use tyre levers to loosen the tyre on one side of the rim. If necessary, use water and detergent to facilitate lifting of the tyre.
- Remove the tyre and tube and implement the desired change.



- Lightly inflate the tube (approx. diameter of 2 cm) and insert it into the tyre.
- Insert the valve through the valve hole in the rim and pull the tyre and tube combination from one side onto the rim.
- Observe the running direction of the tyre imprinted by the manufacturer.
- Then lever the other side of the tyre onto the rim using tyre levers.
- Turn the knurled nut onto the valve until it contacts the rim.
- Inflate the tyre to the maximum pressure indicated on the tyre wall so that the tyre sits evenly on the rim. A „plop“ sound is normal.
- Then lower the pressure to the desired value (refer to section 3.1.).
- Screw the valve cap onto the valve

6.6.4. Fitting the rear wheel

- Position the rear wheel beneath the dropouts and, very carefully to begin with, fit the belt onto the rear socket without twisting.
- Lift the belt onto the front socket without twisting and place the rear wheel in the frame dropouts. Ensure that the brake disc slides between the brake pads.



- Now remove the spacer being used for support (e.g. the beverage crate) so that the rear wheel is lowered down onto the ground.
- Check fastening of the tab washers. These should be seated securely in the dropouts.
- Tighten the axle nuts with a tightening torque of 30 to 40 Nm.
- Insert the connector at the NuVinci hub interface so that it clicks into place.
- At the same time, ensure that the arrow markers line up with one another.

6.7. Calibrating the NuVinci Harmon



It is imperative that the NuVinci Harmony is calibrated whenever two active orange bars are being indicated in the display of the Harmony twist grip with the drive unit activated.

If the NuVinci shift function is inconsistent or faulty, the NuVinci system may also have to be calibrated.

Calibration should be performed during a ride with the drive unit switched on, however, with the assistance deactivated (off).

Proceed as follows for calibration:

- Pedal with moderate force and maintain this throughout the entire calibration process.
- Hold the Mode key on the Harmony twist grip pressed until the hub begins the automatic switching processes for calibration after 5-7 s. Calibration is indicated via a „to and fro motion“ bar in the display, as well as noises of the servo motor at the rear. You can now release the Mode key. Continue pedalling moderately.
- If the servo motor is no longer generating any noises and the display indicator remains constant, calibration is complete.

6.8. Brakes

Work on the hydraulic brake system should be carried out by the Sortimo Service Team or a specialist workshop. Observe the yearly inspection (or every 3,000 km) recommended for the brake system by a specialist dealer or by Sortimo.

6.8.1. Wear of brake pads and brake discs

Brake pads and brake discs are subject to functional wear caused by friction between the two parts. Heavier loads on the cargo bike will lead to increased wear of both parts compared with a two-wheeled bike. Wear depends on the riding style, terrain, weather and ground conditions, meaning that no binding information can be given in this regard.

Brake discs must be replaced after approx. 4 to 5 changes of brake pad pairs, as they are made of a harder material. A regular inspection of the brake pads is recommended every 500 km.

6.8.2. Checking the brake pads

The brake pads must be replaced,

- when they are reduced to 2.5 mm thickness (height of carrier plate and friction lining)
- become contaminated with oil (leads to reduced braking power)

Check thickness of the brake pads as follows:

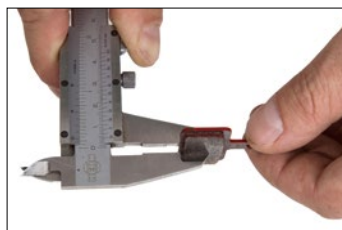
- First remove the circlip with pliers.



- Unscrew the Allen screw to remove the brake pads. Remove the brake pads from above.



- Use a calliper gauge to check the brake pad thickness



- Now replace the brake pads as required.
- Slide in the brake pads once again from above.
- Push the Allen screw through brake calliper and pads and tighten the Allen screw with a tightening torque of 3-5 Nm.
- Secure the screw with the circlip.

7. Cleaning and care

- If necessary, clean the ProCargo CT1 with water, a soft sponge or a soft brush.
- The Gates Carbon Drive Belt is also cleaned with water and does not need to be lubricated.
- The contacts of the battery and the battery holder on the frame can be wiped with a damp cloth. Wait until the contacts are dry before reattaching the battery.



A high-speed jet of water, for example from a garden hose, can cause damage to the bearings, NuVinci hub, Bosch battery, motor and display. The manufacturer is not liable for these damages.



The presence of oil on the brake discs or brake pads diminishes the braking action.
-> Avoid any contact from oil with the brake discs or pads!

8. Technical specifications

8.1. Component list

Drive unit	Motor	Bosch Performance Line Cruise CX 25 km/h
	Battery	Bosch PowerPack 500 Wh
	On-board computer	Bosch Purion
Acceleration	Gear shifting	NuVinci N380 SE hub with Harmony H8 twist grip
	Crank	ISIS Miranda Delta 170 mm
	Front Sprocket	Gates CDX 24 T
	Belt	Gates Carbon Drive CDX 111 T
	Rear Sprocket	Gates Carbon Drive CDX 28 T
Brakes	FW brakes	Tektro Auriga Twin, 180 mm
	RW brakes	Tektro Auriga Tune, 180 mm
Wheels	Front tyres	Schwalbe Big Ben Plus 55-406
	Rear tyres	Schwalbe Super Moto-X 62-584
	Rims	Ryde Andra 40 36H, FR: 20", RR: 27.5"
	Spokes	Black stainless steel (2.34 - 2.0 mm)
Human interface	Stem	Satori Compact 2, 31.8 mm, 95 mm, adjustable angle
	Handlebar	Satori Noir, 31.8 mm, 630 mm, 15° backsweep
	Grips	Herrmans DD36
	Seatpost	Satori Camber 31.6 mm, 400 mm
	Saddle	Selle Royal Shadow Gel
	Pedals	VP 658
	Mudguards	Tubus Wingee
Safety	Headlight	2x Supernova E3 E-Bike V521s
	Rear light	Supernova E3 Tail Light 2

8.2. Weights

Battery weight	2.5 kg
Curb weight including battery	approx. 46 kg
Permissible rider weight	100 kg
Permissible cargo on loading area	140 kg

8.3. Tightening torque of screws

Part	Torque/Nm
Bosch Purion on-board computer on handlebar	1
Handlebar grips	3
Brake pad locking screw	3 - 5
Brake discs (6x T25 screw)	4 - 6
Stem on steerer tube	5
Stem on handlebar	5 - 6
Brake levers (clamp on the handlebar)	5 - 7
Seatpost clamp	5 - 7
Brake calliper or adapter on fork or frame	6 - 8
Seatpost saddle clamp	9 - 10
"Pipes beneath loading area" clamping screws	14
Bosch chainring lockring	20 - 25
Pedals	30 - 35
Axle screws NuVinci hub	30 - 40
"V-arms on frame" screws	70

8.4. Frame number and nameplate

- The frame number is located on the front side of the motor casing.
- The nameplate is located on the rear side of the motor casing.



9. Liability for defects

In most European countries a 24-month warranty is stipulated by law, beginning on the day of purchase.

The original invoice must be submitted for the defect liability claim.

You are entitled to the warranty under the following conditions:

- There is a manufacturing defect, material defect or information error.
- The damage referred to in the complaint was already present at the time of delivery.
- The product was not altered due to function-related wear or ageing.
- The damage was not caused by violation of the intended use.
- Battery: this exhibits a residual capacity of less than 60% of the nominal capacity within two years (from the date of purchase) and a maximum 500 load cycles.



a charge cycle is complete charging of the battery with a single charge or several partial charges (e.g. two half charges).

The warranty does not include:

- All wear parts according to the list of wear parts, unless they are production or material defects
- Damage caused by improper use
- Damage caused by failure to observe the procedures described in the „Maintenance“ section
- Damage caused by improper repair tools and insufficient care
- Damage caused by the use of used parts
- Damage caused by subsequent mounting of non-standard equipment and technical modifications

10. EC Declaration of Conformity

-Translation-

EC declaration of conformity

**HNF GmbH
Bahnhofstraße 150
16359 Biesenthal**

HNF GmbH declares that the machine

Pro Cargo CT1

a Pedelec, meets all relevant provisions of Machinery Directive 2006/42/EC.

Furthermore, the machine complies with the following directive:

- Directive of Electromagnetic compatibility 2014/30/EC

The following other technical standards have been applied :

- DIN EN 15194:2017, Cycles - Electrically power assisted cycles - EPAC
- DIN EN ISO 4210: part 1-9, Cycles - Safety requirements for bicycles
- EDIN 79010:2017, Bicycles - Transportation bikes and Cargo Bikes

Document assignee: Joachim Osten, Bahnhofstraße 150, 16359 Biesenthal, Germany

HNF GmbH
Biesenthal,
19.07.2018

Kalle Nicolai / CTO

Benjamin Börries / CEO

11. Disposal



This symbol on your vehicle indicates that, in accordance with the WEEE Directive (2012/19/EU; Waste Electrical and Electronic Equipment Directive), the Batteries Directive (2006/66/EC) and national laws implementing these Directives, the product may not be disposed of with household waste.

Please take the pedelec to a local collection point at the end of its service life. Packaging materials must be separated by type and disposed of according to local regulations. You may return the battery to an e-bike retailer or send it to Sortimo for disposal in the supplied hazardous goods box:

Sortimo International GmbH
Dreilindenstraße 5
86441 Zusmarshausen

Service

The Sortimo team is at your side with help and advice:

Tel. +49 8291 850-499

Tel. +49 800 7678466

Fax. +49 800 7678499

E-Mail direct@sortimo.de

Sortimo®
Intelligent Mobility

1. INSPECTION

Date
Stamp / Signature of the dealer

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