

TRANSLATION OF THE ORIGINAL OPERATING  
INSTRUCTIONS

IMPORTANT

READ CAREFULLY BEFORE USE

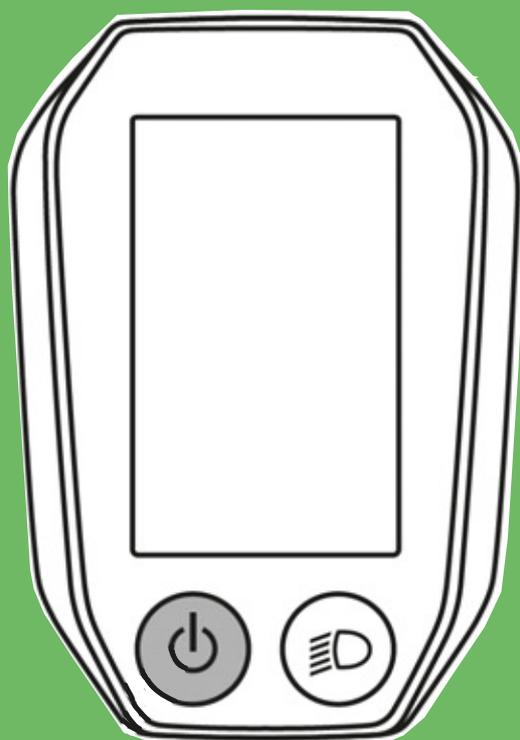
KEEP SAFE TO CONSULT AT A LATER DATE



**SHIMANO**

## Shimano 6100 operating instructions

Opero Evo 5R Di2, Opero Evo 5F Di2 Automatic Belt, Opero Evo 5F Di2 NL,  
Opero Evo 10



20-17-3142, 20-17-3144, 20-17-3066, 20-17-3067, 20-17-3068, 20-17-3072,  
20-17-3073, 20-17-3074, 20-17-3220, 20-17-3222

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# 1 About these operating instructions

## Thank you for your trust!

Pegasus pedelecs are premium quality sporting equipment – you have made an excellent choice. Your specialist dealer has advised you and assembled your product. Whether maintenance, inspection, conversion or repair, your specialist dealer will also be happy to assist you in the future.

### Notice

The *operating instructions* are not a substitute for personal instruction by the supplying specialist dealer.

The *operating instructions* are an integral part of the pedelec. Therefore, if it is re-sold at a later time, they must be handed over to the subsequent owner.

You receive these *operating instructions* with your new pedelec. Please take a little time to become familiar with your new pedelec and follow the tips and suggestions in the *operating instructions*. They will help you enjoy your Pegasus pedelec for a long time to come. We hope you have fun and wish you well on all of your rides!

These operating instructions are designed for the rider and the operator of the pedelec to ensure that non-professionals can use the pedelec safely.



Instructions for the specialist dealer are highlighted in grey and marked with a symbol. Specialist dealers have specialist training and qualifications and are thus able to identify risks and prevent hazards which may arise during maintenance, servicing and repairs on the pedelec. Information for specialist staff does not require non-professionals to take any action.

You can download the *operating instructions* onto your mobile phone at the following address, so that you can use them when you are out riding:



<https://www.pegasus-bikes.com/service/downloads.html>

## 1.1 Manufacturer

The pedelec manufacturer is:

ZEG Zweirad-Einkaufs-Genossenschaft eG  
Longericher Straße 2  
50739 Köln, Germany

Tel.: +49 221 17959 0  
Fax: +49 221 17959 31  
E-mail: [info@zeg.de](mailto:info@zeg.de)  
Internet: [www.zeg.de](http://www.zeg.de)

## 1.2 Type number and model

The *operating instructions* are an integral part of pedelecs with the following type numbers:

Type no.	Model	Pedelec type
20-17-3066	Pegasus Opero EVO 10 (Gent10) 500Wh	City and trekking bicycle
20-17-3067	Pegasus Opero EVO 10 (Trapez10) 500Wh	City and trekking bicycle
20-17-3068	Pegasus Opero EVO 10 (Wave10) 500Wh	City and trekking bicycle
20-17-3072	Pegasus Opero EVO 5F Di2 Automatic Belt (Gent5) 500Wh	City and trekking bicycle
20-17-3073	Pegasus Opero EVO 5F Di2 Automatic Belt (Trapes5) 500Wh	City and trekking bicycle
20-17-3074	Pegasus Opero EVO 5F Di2 Automatic Belt (Wave5) 500Wh	City and trekking bicycle
20-17-3142	Pegasus Opero EVO 5R Di2 (Gent5) 500Wh	City and trekking bicycle
20-17-3144	Pegasus Opero EVO 5R Di2 (Wave5) 500Wh	City and trekking bicycle
20-17-3220	Pegasus Opero EVO 5F Di2 (Gent5) (NL) 500Wh	City and trekking bicycle
20-17-3222	Pegasus Opero EVO 5F Di2 (Wave5) (NL) 500Wh	City and trekking bicycle

**Table 1: Type number, model and pedelec type**

\*The type number was not available when we went to press.

### 1.3 Identifying the operating instructions

You will find the *operating instructions* identification number at the bottom left-hand side of each page. The identification number consists of the document number, the version number and the release date.

Identification number	MY20P03-22_1.0_18.07.2019
-----------------------	---------------------------

Table 2: Identification number

### 1.4 Laws, standards and directives

The *operating instructions* comply with the essential requirements specified in:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/EU
- ISO/DIS 20607:2018 Safety of machinery – Instruction handbook – General drafting principles
- EN 15194:2018 Cycles – Electrically power assisted cycles – pedelec bicycles
- EN 11243:2016, Cycles – Luggage carriers for bicycles – Requirements and test methods
- EN ISO 17100:2016-05, Translation Services – Requirements for translation service.

### 1.5 Subject to change

The information contained in these *operating instructions* are the approved technical specifications at the time of printing. Any significant changes will be included in a new issue of the *operating instructions*.

You will find any modifications to these *operating instructions*:

<https://www.pegasus-bikes.com/service/downloads.html>

### 1.6 Language

The *original operating instructions* are written in German. A translation is not valid without the *original operating instructions*.

### 1.7 For your safety

The pedelec's safety concept comprises four elements:

- rider and/or operator instruction, and bicycle maintenance and repair by the specialist dealer
- the section on general safety
- the warnings in these *operating instructions*
- the safety markings on the nameplate and the pedelec.

#### 1.7.1 Instruction, training and customer service

The supplying specialist dealer will provide customer service. Contact details can be found on the back page of these *operating instructions* and on the data sheet. If you are unable to contact your specialist dealer, you will find other specialist dealers online at [www.pegasus-bikes.com](http://www.pegasus-bikes.com).

The rider or the operator of the pedelec will be instructed on the pedelec's functions in person when the supplying specialist dealer hands over the pedelec, if not before. In particular, this instruction will cover the pedelec's electrical functions and correct use of the charger.

Each rider to whom this bicycle is provided must receive instruction on the pedelec's functions. A printed copy of these *operating instructions* must be provided to each rider, who must take note of and observe them.

#### 1.7.2 Basic safety instructions

These *operating instructions* explains all general safety instructions in Section 2.

### 1.7.3 Warnings

Hazardous situations and actions are marked with warnings. The warnings in these *operating instructions* are indicated as follows:



Will lead to serious or even fatal injuries if ignored. High-risk hazard.



May lead to serious or even fatal injuries if ignored. Medium-risk hazard.



May lead to minor or moderate injuries. Low-risk hazard.



May lead to material damage if ignored.

### 1.7.4 Safety markings

The following safety markings are used on the pedelec's nameplates:

	General warning
	Adhere to the instructions for use

Table 3: Meaning of safety markings

## 1.8 For your information

### 1.8.1 Instructions for actions

Instructions for actions are structured in accordance with the following pattern:

- ✓ Requirements (optional)
- ▶ Instruction for action
- ⇒ Result of the action (optional)

### 1.8.2 Language conventions

The pedelec described in these *operating instructions* may be equipped with alternative equipment. The pedelec equipment is defined by its respective type number. Where applicable, the word *Alternative* beneath the heading indicates alternatively used components. The following terms are used for better legibility:

Term	Meaning
<i>Operating instructions</i>	Original operating instructions or translation of the original operating instructions
Pedelec	Electric motor driven cycle
Motor	Drive motor

The following conventions are used in these *operating instructions*:

Convention	Use
<i>Italics</i>	Glossary terms
SPACED	Indicators on the <i>display screen</i>
[▷ <i>Example, page numbering</i> ]	Cross references
•	Bulleted lists

## 1.9 Nameplate

The nameplate is situated on the frame. You will find the precise position of the nameplate in Figure 2. You will find thirteen pieces of information on the nameplate.

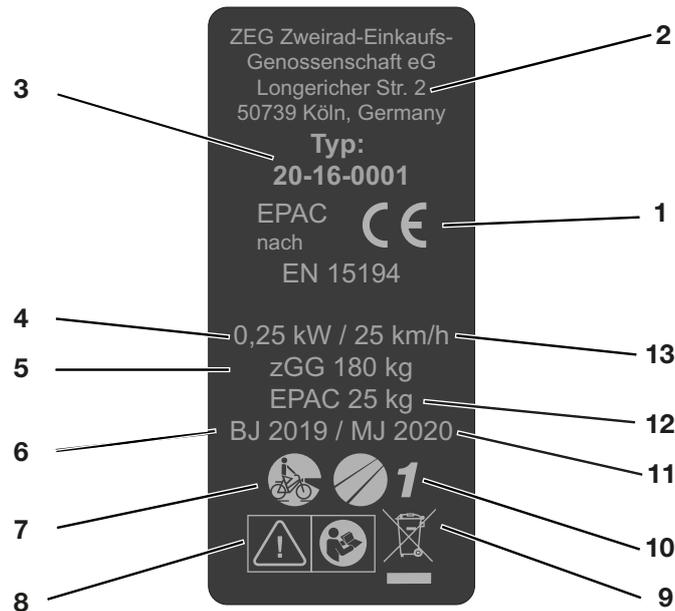


Figure 1: Nameplate, example

No.	Designation	Description
1	CE marking	The manufacturer uses the CE marking to declare that the pedelec complies with applicable requirements.
2	Manufacturer's contact details	You can contact the manufacturer at this address. You can find more information in Section 1.1.
3	Type number	All pedelec models have an eight-digit type number, which is used to specify the design model year, the type of pedelec and the version. You can find further information in Section 1.9.1.
4	Maximum continuous power	The maximum continuous power is the maximum power for the electric motor output shaft during 30 minutes.
5	Permitted total weight	The permitted total weight is the weight of the fully assembled pedelec with the rider and baggage.
6	<i>Year of manufacture</i>	The <i>year of manufacture</i> is the year in which the pedelec was manufactured. The production period is from August 2019 to July 2020.
7	Pedelec type	You can find further information in Section 1.9.3.
8	Safety markings	You can find more information in Section 2.6.
9	Disposal instructions	You can find more information in Section 9.
10	Area of use	You can find further information in Section 1.9.4.
11	Model year	The model year refers to the first production year that the series-manufactured pedelec was produced in the version and is not always identical with the <i>year of manufacture</i> . The <i>year of manufacture</i> may be before the model year in some cases. If no technical modifications are introduced to the series, production may continue of pedelecs from a previous model year.
12	Weight of ready-to-ride pedelec	The indicated weight for a ready-to-ride pedelec refers to the weight of a pedelec at the time of sale. The weight of each additional accessory must be added to this weight
13	<i>Shut-off speed</i>	Speed reached by the pedelec at the moment when the current has dropped to zero or to the no load current value.

### 1.9.1 Information on the nameplate

Alongside the warnings, product nameplates also contain other important information about the pedelec:

		Read the instructions
		Separate collection of electrical and electronic devices
		Separate collection of batteries
		Must not be thrown into fire (burning prohibited)
		Battery must not be opened
		Device of protection class II
		Only suitable for use indoors
		Fuse (device fuse)
		EU conformity
		Recyclable material
		Protect from temperatures above 50 °C and direct sunlight

Table 4: Relevance of safety instructions

## 2 Safety

### 2.1 General warnings

#### WARNING

##### **Risk of fire and explosion due to faulty battery**

The safety electronics on a damaged or faulty battery may fail. The residual voltage can cause a short circuit. The battery may self-ignite and explode.

- ▶ Remove batteries with external damage from service immediately and never charge them.
- ▶ Only operate the battery and accessories if they are in perfect condition.
- ▶ Only use batteries which are approved for use on your pedelec.
- ▶ Do not use the battery with defective connecting cables or defective contacts.
- ▶ Use the battery with BOSCH Systems pedelecs only. This is the only way that the battery will be protected from dangerous overloading.
- ▶ If the battery becomes deformed or begins to smoke, keep at a safe distance, disconnect the power supply at the socket, and notify the fire service immediately.
- ▶ Never extinguish a damaged battery with water or allow it to come into contact with water.
- ▶ If a battery is dropped or struck but shows no signs of external damage, remove it from service and observe it for at least 24 hours.
- ▶ Faulty batteries are hazardous goods. Dispose of faulty batteries properly and as quickly as possible.
- ▶ Store in a dry place until disposal. Never store in the vicinity of flammable substances.
- ▶ Never open or repair the battery.
- ▶ Charge the battery before use. Only use the charger included in the scope of delivery.

#### CAUTION

##### **Electric shock in case of damage**

Damaged chargers, cables and plug connectors increase the risk of electric shock.

- ▶ Check the charger, cable and plug connector before each use. Never use a damaged charger.

##### **Risk of fire and explosion due to short circuit**

Small metal objects may jumper the electrical connections of the battery. The battery may self-ignite and explode.

- ▶ Keep paper clips, screws, coins, keys and other small parts away and do not insert them into the battery.

##### **Risk of fire and explosion due to incorrect charger**

Batteries which are recharged with an unsuitable charger may become damaged internally. This may result in fire or an explosion.

- ▶ Only ever use the battery with the supplied charger.
- ▶ Mark the supplied charger clearly to prevent mix-ups – with the pedelec *frame number* or *type number*, for example.

##### **Risk of fire and explosion due to penetration by water**

The battery is only protected from simple spray water. Penetration by water can cause a short circuit. The battery may self-ignite and explode.

- ▶ Never immerse the battery in water.
- ▶ If there is reason to believe that water may have entered into the battery, the battery must be removed from service.

 **CAUTION**
**Risk of fire and explosion due to high temperatures**

Excessively high temperatures will damage the battery. The battery may self-ignite and explode.

- ▶ Protect the battery against heat.
- ▶ Never expose the battery to sustained direct sunlight.

**Fire caused by overheated charger**

The charger heats up when charging the battery. In case of insufficient cooling, this can result in fire or burns to the hands.

- ▶ Never use the charger on a highly flammable surface (e.g. paper, carpet etc.).
- ▶ Never cover the charger during the charging process.

Never leave the battery unattended during charging.

**Electric shock caused by penetration by water**

If water penetrates into the charger, there is a risk of electric shock.

- ▶ Never charge the battery outdoors.

**Notice**

If you leave a key inserted when riding or transporting the pedelec, it may break off or the locking system may open accidentally.

- ▶ Remove the key from the battery lock immediately after use.
- ▶ We recommend that you attach the key to a key ring.

**2.2 Toxic substances**
 **WARNING**
**Intoxication from suspension oil**

Suspension oil in the rear frame damper is toxic to the touch, irritates respiratory tracts and causes cancer, sterility and mutation in germ cells.

- ▶ Never disassemble the rear frame damper.
- ▶ Never allow suspension oil to come into contact with the skin.

 **CAUTION**
**Chemical burns to the skin and eyes caused by faulty battery**

Liquids and vapours may leak from damaged or faulty batteries. They can irritate the airways and cause burns.

- ▶ Avoid contact with leaked liquids.
- ▶ Ventilate with fresh air and consult a doctor if you suffer any pain or discomfort.
- ▶ Immediately consult a doctor in case of contact with the eyes or any discomfort.
- ▶ In case of contact with the skin, rinse off immediately with water.
- ▶ Ventilate the room well.

**Hazard for the environment due to leaking brake fluid**

The brake system contains a toxic, environmentally harmful brake fluid. Such fluids will contaminate if they enter the sewers or groundwater.

- ▶ The brake system must be repaired immediately if brake fluid leaks out. Contact your specialist dealer about repair.
- ▶ Dispose of leaking brake fluid in an environmentally responsible way in accordance with statutory regulations. Ask a specialist dealer for more information.


**CAUTION**
**Environmental hazard posed by oil and lubricants from the fork**

The fork contains toxic, environmentally harmful oils and lubricants. Such fluids will contaminate if they enter the sewers or groundwater.

- ▶ The fork must be repaired immediately if oils and lubricants are leaking out. Contact your specialist dealer about repair.
- ▶ Dispose of leaked oils and lubricants in an environmentally responsible way in accordance with statutory regulations. Ask a specialist dealer for more information.

**Environmental hazard posed by oil and lubricants from rear frame damper**

The rear frame damper contains toxic and environmentally harmful oils and lubricants. Such fluids will contaminate if they enter the sewers or groundwater.

- ▶ Dispose of oils and lubricants which have leaked from the rear frame damper in an environmentally responsible way in accordance with statutory regulations. Ask a specialist dealer for more information.

## 2.3 Requirements for the rider

If there are no legal requirements for riders of electrically power-assisted cycles, we recommend that the rider should be a minimum 15 years of age and have experience with muscle-powered bicycles.

The rider's physical and mental abilities must be adequate to use a muscle-powered pedelec.

## 2.4 Protection for vulnerable groups

You must keep batteries and charger away from children and people with reduced physical, sensory or mental capabilities or lacking in experience and knowledge.

If minors are to use the pedelec, comprehensive instruction should be provided by or in the presence of the legal guardians. Supervised use should also be scheduled until it is certain that the pedelec is being used as per these *operating instructions*.

## 2.5 Data privacy

During maintenance, the pedelec is connected to the diagnosis tool and data is transferred to Bosch Pedelec Systems (Robert Bosch GmbH) about the use of electric drive components to help improve the product. You will find more information on the Bosch Pedelec website

<https://www.bosch-ebike.com/en/>

## 2.6 Personal protective equipment

We recommend that you wear a suitable cycling helmet. We also recommend that you wear sturdy footwear and typical, close-fitting clothing for bicycles.

## 2.7 Safety markings and safety instructions

The nameplate contains the following safety markings and safety instructions:

Symbol	Explanation
	General warning
	Adhere to the instructions for use

Table 5: Meaning of safety markings

Symbol	Explanation
	Read the instructions
	Separate collection of electrical and electronic devices
	Separate collection of ordinary and rechargeable batteries
	Must not be thrown into fire (burning prohibited)
	It is forbidden to open any batteries
	Device of protection class II
	Only suitable for use indoors
	Fuse (device fuse)
	EU conformity
	Recyclable material
	Protect from temperatures above 50 °C and direct sunlight

Table 6: Relevance of safety instructions

## 2.8 Emergency

### 2.8.1 What to do in an emergency

- ▶ In the event of a hazard or danger in road traffic, apply the brakes on the pedelec until it comes to a halt. The brake acts as an emergency stop system in such cases.

### 2.8.2 First aid treatment

Symptoms which are caused by combustion gases or leaking fluids require medical attention.

#### After inhalation

Vapours may emit if the battery is damaged or used improperly. Get into fresh air and consult a doctor if you suffer any pain or discomfort. The vapours may cause respiratory tract irritation.

#### After skin contact

Remove any solid particles immediately. Rinse the affected area with plenty of water for at least 15 minutes. Then dab the affected skin gently. Do not rub dry. Remove contaminated clothing immediately. Immediately consult a doctor if there is any redness or abnormalities.

#### After contact with eyes

Rinse eyes with plenty of water for at least 15 minutes. Protect unaffected eye. Seek medical advice immediately.

#### After swallowing

Drink plenty of milk or water and induce vomiting. Seek medical advice immediately.

### 2.8.3 Fighting fire

#### WARNING



#### Intoxication

Inhaling vapours can cause intoxication.

- ▶ Stand on the side of the fire where the wind is coming from.
- ▶ Use breathing apparatus if possible.

The safety electronics on a damaged or faulty battery may fail. The residual voltage can cause a short circuit. The battery may self-ignite and explode.

- ▶ Keep your distance if the battery becomes deformed or starts to emit smoke.
- ▶ Evacuate everyone from the immediate area of the fire.
- ▶ Contact the fire service immediately!
- ▶ Use Class fire extinguishers to put out the fire.
- ▶ Never extinguish damaged batteries with water or allow them to come into contact with water.

## **2.8.4 Leaking fluids**

### **2.8.4.1 Brake fluid**

- ▶ The brake system must be repaired immediately if brake fluid leaks out. Contact your specialist dealer about repair.
- ▶ Dispose of leaking brake fluid in an environmentally responsible way in accordance with statutory regulations. Ask a specialist dealer for more information.

### **2.8.4.2 Oils and lubricants from the fork**

- ▶ The brake system must be repaired immediately if brake fluid leaks out. Contact your specialist dealer about repair.
- ▶ Dispose of leaking brake fluid in an environmentally responsible way in accordance with statutory regulations. Ask a specialist dealer for more information.

### **2.8.4.3 Oils and lubricants from the rear frame damper**

- ▶ Dispose of oils and lubricants which have leaked from the rear frame damper in an environmentally responsible way in accordance with statutory regulations. Ask a specialist dealer for more information.

### 3 Overview



Figure 2: Pedelec viewed from the right, example

1	<i>Front wheel</i>	10	Pannier rack
2	<i>Fork</i>	11	Rear light and reflector
3	Front guard	12	Rear guard
4	Headlight	13	Rear wheel
5	<i>Handlebars</i>	14	Kickstand
6	<i>Stem</i>	15	Chain
7	Frame	16	Chain guard
8	Seat post	17	Frame number
9	Saddle	18	<i>Battery and nameplate</i>

## 3.1 Description

### 3.1.1 Wheel and suspension

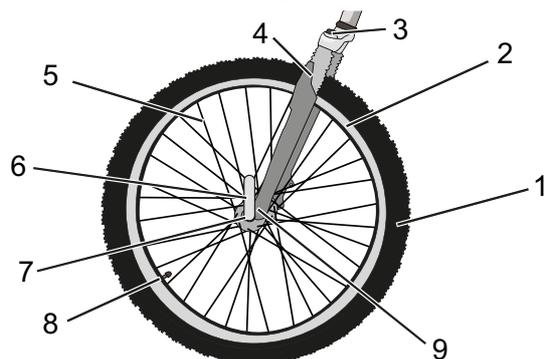


Figure 3: Components of the wheel, example of front wheel

- |   |   |
|---|---|
| 1 | Tyre                                    |
| 2 | Rim                                     |
| 3 | Suspension fork head with setting wheel |
| 4 | Shock absorber                          |
| 5 | Spoke                                   |
| 6 | Quick release                           |
| 7 | Hub                                     |
| 8 | Valve                                   |
| 9 | Fork end of the shock absorber          |

#### 3.1.1.1 Valve

Each wheel has a valve. It is used to fill the *tyre* with air. There is a valve cap on each valve. The screw-on valve cap keeps out dust and dirt.

The pedelec either has a conventional *Dunlop valve*, a *Presta valve* or a *Schrader valve*.

### 3.1.2 Suspension

Both forks and suspension forks are fitted in this model series. A suspension fork is based either on a steel spring or air suspension. Unlike a rigid fork, a suspension fork has two functions which improve floor contact and comfort: suspension and damping.

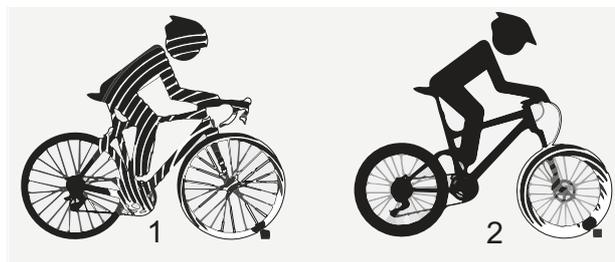


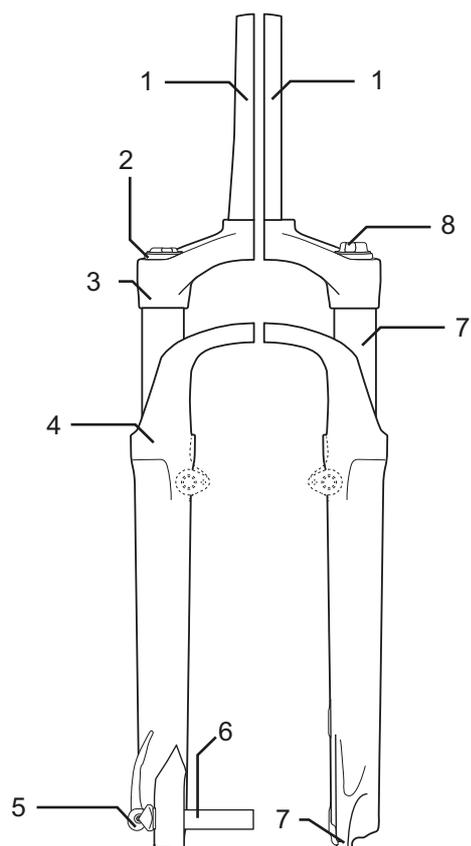
Figure 4: Pedelec without suspension (1) and with suspension (2) when riding over an obstacle

The suspension prevents an impact, such as one caused by a stone lying in the bike's path, from being channelled directly into the rider's body via the fork. The impact is absorbed by the suspension system instead. This causes the suspension fork to compress. The compression can be disabled so that a suspension fork reacts like a rigid fork. The switch to disable the fork is called a remote lockout.

After compressing, the suspension fork returns to its original position. If there is a damper, it decelerates movement, preventing the suspension system from springing back in an uncontrolled manner and stopping the fork from vibrating up and down. Dampers which dampen compressive deflection movements, i.e. a compression load, are called compression dampers or compression dashpots.

Dampers which dampen rebound deflection movements, i.e. a rebound load, are called rebound dampers or dashpots.

### 3.1.2.1 Steel suspension fork structure

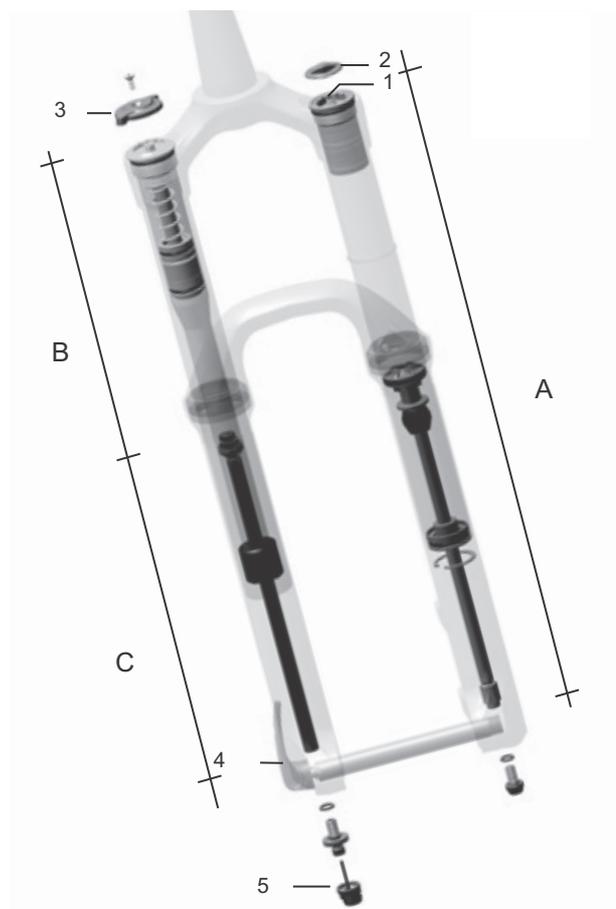


**Figure 5: Example showing Suntour fork**

The stem and handlebars are fastened to the fork steerer (1). The wheel is fastened to the quick release axle (6). Other elements: the compression setting (2), crown (3), Q-Loc (5), dust seal (6), fork end for quick release (7), stanchion (8) and spring (9)

### 3.1.2.2 Air suspension fork structure

The pedelec's fork features both air suspension and a compression damper plus a rebound damper in some cases.



**Figure 6: Example showing Yari fork**

You can see the following components in the diagram: Air valve (1), valve cap (2) fork lock (3), quick release (4) and rebound damper adjuster (5) and the assembly groups: Air suspension fork (A), compression damper assembly group (B) and rebound damper assembly group (C)

### 3.1.2.3 Structure of the FOX rear frame damper

The rear frame damper features air suspension, a compression damper and a rebound damper.

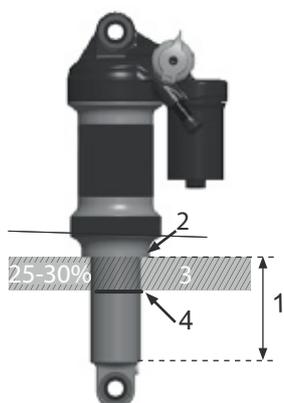


Figure 7: Example showing FOX rear frame damper

- 1 Guide rod eye
- 2 Air valve
- 3 Setting wheel
- 4 Lever
- 5 Air chamber
- 6 O-ring

### 3.1.2.4 Structure of the Suntour rear frame damper

The rear frame damper features air suspension, a compression damper and a rebound damper.

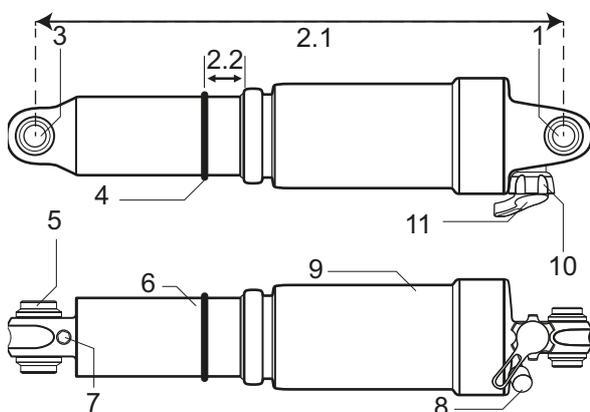


Figure 8: Example showing Suntour rear frame damper

- 1 Upper eye
- 2.1 Total damper length
- 2.2 SAG
- 3 Lower eye
- 4 O-ring
- 5 Sleeve
- 6 Damper unit
- 7 IFP (internal floating piston)

- 8 Air valve
- 9 Air chamber
- 10 Lockout lever
- 11 Rebound lever

### 3.1.3 Brake system

The pedelec's brake system comprises either a hydraulic:

- rim brake on the front and rear wheels
- disc brake on the front and rear wheels or
- a rim brake on the front and rear wheels and an additional back-pedal brake.

The mechanical brakes are used as an emergency stop system and bring the pedelec to a halt quickly and safely in the event of an emergency.

#### 3.1.3.1 Rim brake

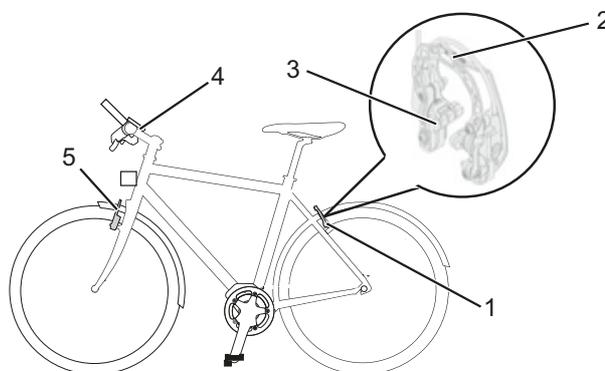


Figure 9: Rim brake components with details; Magura HS22 used as an example

- 1 Rear wheel rim brake
- 2 Brake booster
- 3 Brake lining
- 4 *Handlebars with brake lever*
- 5 Front wheel rim brake

The rim brake stops the wheel moving when the rider pulls the *brake lever*, causing two brake linings, positioned opposite one another, to be pressed onto the *rims*.



The hydraulic rim brake features a locking lever.

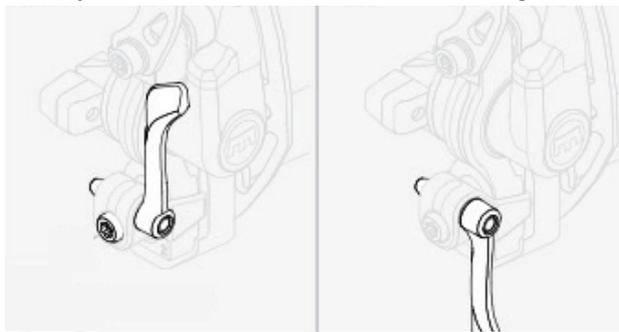


Figure 10: Rim brake locking lever, closed (1) and open (2)

The rim brake locking lever is not marked with any lettering. Only a specialist dealer may set the rim brake locking lever

### 3.1.3.2 Disc brake

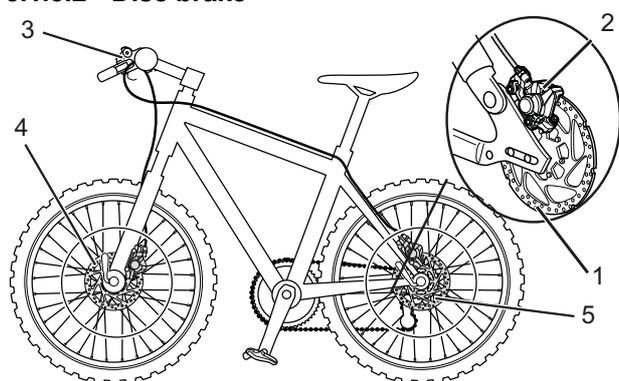


Figure 11: Pedelec brake system with a disc brake – example

- 1 Brake disc
- 2 Brake calliper with brake linings
- 3 *Handlebars with brake lever*
- 4 Front wheel brake disc
- 5 Rear wheel brake disc

On a pedelec with a disc brake, the brake disc is screwed permanently to the wheel *hub*.

The *brake lever* is pulled to increase brake pressure. The brake fluid is used to transfer pressure through the brake lines to the cylinders in the brake calliper. The braking force is boosted by a speed reduction and applied to the brake linings. These apply the brake disc mechanically. If the *brake lever* is pulled, the brake linings are pressed against the brake disc and the wheel movement is decelerated until it comes to a stop.

### 3.1.3.3 Back-pedal brake



Figure 12: Pedelec brake system with a back-pedal brake – example

- 1 Rear wheel rim brake
- 2 *Handlebars with brake lever*
- 3 Front wheel rim brake
- 4 *Pedal*
- 5 Back-pedal brake

The back-pedal brake stops the movement of the rear wheel when the rider pedals in the opposite direction to the direction of travel.

### 3.1.4 Electric drive system

The pedelec is driven by muscle power applied to the chain drive. The force which is applied by pedalling in the direction of travel drives the front chain wheel. The chain transmits the force onto the rear chain wheel and then onto the rear wheel.

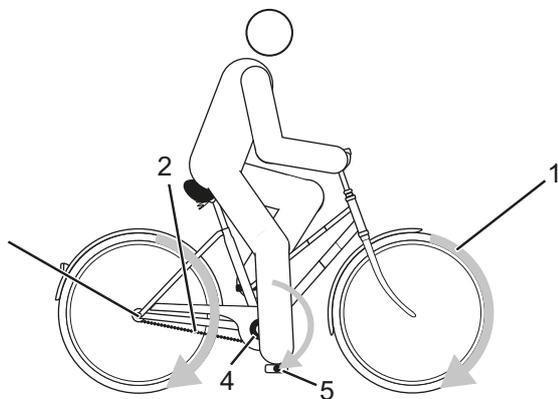


Figure 13: Diagram of mechanical drive system

- 1 Direction of travel
- 2 Chain
- 3 Rear chain wheel
- 4 Front chain wheel
- 5 Pedal

The pedelec also has an integrated electric drive system.

The electric drive system comprises the following components:

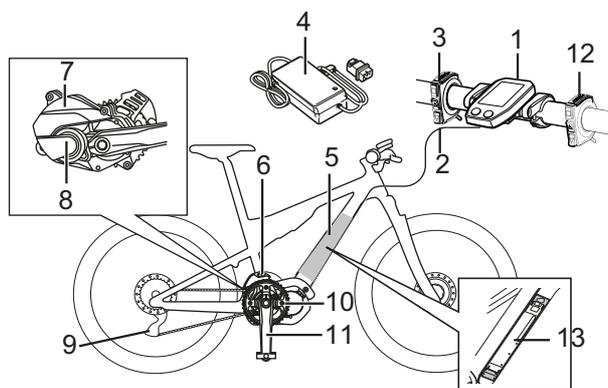


Figure 14: Diagram of electric drive system

- 1 Display
- 2 Connecting cable
- 3 Assistance button
- 4 Charger
- 5 Rechargeable battery

- 6 Chain tensioner
- 7 Drive unit cover
- 8 Drive unit
- 9 Rear derailleur (DI2)
- 10 Front chainring
- 11 Crank
- 12 Gear button
- 13 Rechargeable battery

As soon as the required muscle power from the rider pedalling passes a certain level, the motor is activated gently and assists the pedalling motion of the rider. The motor force is determined by the set level of assistance.

The pedelec does not have a separate emergency stop or emergency shut-off button.

The motor switches off automatically as soon as the rider no longer pedals, the temperature is outside the permitted range, there is an overload or the shut-off speed of 25 km/h has been reached.

A push assist system can be activated. The push assist continues to drive the pedelec at walking speed as long as the rider pushes the **long assistance lever** on the *handlebars*. The speed can be a maximum of 6 km/h in this case. The drive stops when the **long assistance lever** is released.

### 3.1.5 Rechargeable battery

The lithium ion battery has an internal electronic protection circuit, which is specifically designed for the charger and the pedelec. The battery temperature is monitored at all times. The battery is protected against deep discharge, overcharging, overheating and short circuit. In the event of a hazard, a protective circuit switches the battery off automatically. The battery also switches to sleep mode for self-protection when not used for a longer period.

If the remaining battery capacity is low, the following systems are gradually switched off in the following order:

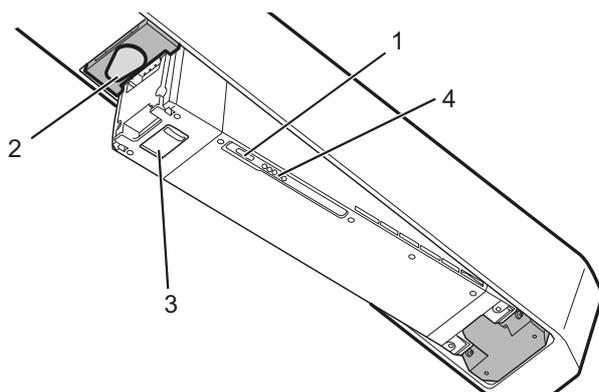
1. Pedal assistance (assistance mode automatically switches to [ECO], then assistance switches off. Assistance switches to [ECO] earlier if a battery-powered light is connected)
2. Gear shift
3. Light.

The battery's service life can be extended if it is well maintained and, above all, stored at the correct temperatures. The charging capacity will decrease with age, even if the battery is maintained properly. If the operating time is severely shortened after charging, this is a sign that battery has reached the end of its useful life.

Transportation temperature	5 °C - 25 °C
Ideal transportation temperature	10 °C - 15 °C
Storage temperature	5 °C - 25 °C
Ideal storage temperature	10 °C - 15 °C
Charging ambient temperature	10 °C - 30 °C

**Table 7: Rechargeable battery technical data**

The pedelec has an integrated rechargeable battery:



**Figure 15: Details of integrated battery, starting at bottom**

- 1 On-Off button (battery)
- 2 Key cover
- 3 Charging port cover
- 4 Operating status and battery level indicator

### 3.1.6 Charger

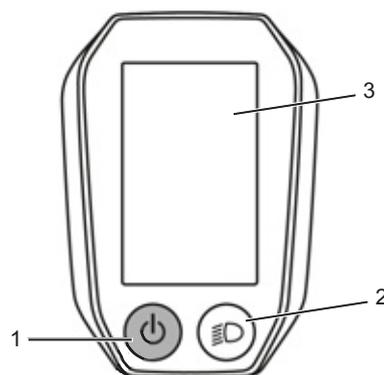
Each pedelec is supplied with a charger. Read the charger operating instructions.

### 3.1.7 Riding light

When the riding light is activated, the *headlight* and the rear light are switched on together.

### 3.1.8 Display

The display controls the drive system with two operating elements shifter and assistance lever and displays the journey data. The *display* has a button.



**Figure 16: Overview of the display with buttons (1 and 2) and screen (3)**

### 3.2 Proper use

The pedelec must only be used in perfect, fully functional condition. National requirements may apply to the pedelec which the standard equipment may not meet. For riding on public roads, some special regulations apply in relation to the *riding light*, *reflectors* and other components.

The general laws and the regulations for the prevention of accidents and environmental protection in the respective country of use must be adhered to. All check lists and instructions for actions in these *operating instructions* met. Approved accessories can be installed by specialist staff.

Each pedelec is assigned a *pedelec type*, which determines its proper use and area of use.

City and trekking bicycles	Child's bicycles/ bicycles for young adults	Mountain bikes	Racing bicycle	Cargo bike	Folding bicycle
					
<p>City and trekking bicycles are designed for daily, comfortable use. They are suitable for riding on public roads.</p>	<p>The legal guardians of minor riders must read and understand these <i>operating instructions</i> before commissioning.</p> <p>The contents of these <i>operating instructions</i> must be communicated to the riders in an age-appropriate manner.</p> <p>The cycles for children and young adults are suitable for riding on public roads. The size of the pedelec must be checked regularly for orthopaedic reasons.</p> <p>A check must be made at least every three months to make sure that the permitted total weight is being observed.</p>	<p>Mountain bikes are designed for sporting use. The design characteristics include a short wheelbase, a sitting position with the rider inclined towards the front, and a brake requiring low actuation force.</p> <p>A mountain bike is a piece of sporting equipment. It requires an adaptation period as well as physical fitness. Use requires the appropriate training; in particular riding in bends and braking should be practised.</p> <p>The strain on the rider, in particular the hands and wrists, arms, shoulders, neck and back, is accordingly high. Inexperienced riders tend to brake excessively and lose control as a result.</p>	<p>A racing bicycle is designed for fast rides on roads and paths with a good, undamaged road surface.</p> <p>A racing bicycle is a piece of sporting equipment and not a means of transport. A racing bicycle is characterised by its light-weight structure and a design which is stripped to the minimum parts required for riding.</p> <p>The frame geometry and the layout of the operating elements are designed in such a way that the bicycle can be ridden at high speeds. The frame design requires practice to ensure the ride is able to ride slowly, apply the brakes and get on and off the bike safely.</p> <p>The sitting position is athletic. The strain on the rider, in particular the hands and wrists, arms, shoulders, neck and back, is accordingly high. The sitting position therefore requires physical fitness.</p>	<p>The cargo bike is suitable for daily transportation of loads on public roads.</p> <p>The transportation of loads requires skill and physical fitness in order to balance the additional weight. The very varied loading conditions and weight distributions require special practice and skill when braking and riding in bends.</p> <p>A longer period is required to adaptation to the length, width and turning circle. The cargo bike requires cautious riding. You must pay attention to the traffic on public roads and the condition of the route accordingly.</p>	<p>The folding bicycle is suitable for use on public roads.</p> <p>A folding bicycle can be folded up and is thus suitable for space-saving transportation, for example on public transport or in a car.</p> <p>The folding function of the folding bicycle makes it necessary to use smaller wheels and longer brake cables and Bowden cables. Therefore, in case of an increased load, a reduction in riding stability and braking power, diminished comfort and reduced durability are to be expected.</p>

Table 8: Proper use

### 3.3 Improper use

Failure to adhere to the proper use poses a risk of personal injury and material damage. The pedelec is not suitable for the following uses:

- when the electrical drive has been manipulated
- riding with a damaged or incomplete pedelec
- riding over steps
- riding through deep water
- lending the pedelec to untrained riders
- carrying other people
- riding with excessive baggage
- riding with no hands
- riding on ice and snow
- improper servicing
- improper repair
- tough areas of use, such as professional competitions
- stunt riding or acrobatics.

City and trekking bicycles	Child's bicycles/ bicycles for young adults	Mountain bikes	Racing bicycle	Cargo bike	Folding bicycle
					
City and trekking bicycles are not sports bicycles. If used for sports, the rider can expect reduced riding stability and diminished comfort	Cycles for children and young adults are not toys.	Mountain bikes must be retrofitted with lighting, a guard and other fittings as specified by national laws and regulations before they are used on public roads.	Racing bikes must be retrofitted with lighting, a guard and other fittings as specified by national laws and regulations before they are used on public roads.	A cargo bike is not a touring bicycle or a sports bicycle.	The folding bicycle is not a sports bicycle.

Table 9: Information on incorrect use

## 3.4 Technical data

### 3.4.1 Pedelec

Transportation temperature	-20 °C - +60 °C
Storage temperature	-20 °C - +70 °C
Operation temperature	-10 °C - 50 °C
Charging ambient temperature	0 °C - 40 °C
Power output/system	250 W (0.25 kW)
Shut-off speed	25 km/h

Table 10: Pedelec technical data

### 3.4.2 Rechargeable battery

Transportation temperature	-20 °C - +60 °C
Storage temperature	-20 °C - +60 °C
Charging ambient temperature	0 °C - 40 °C
Charge voltage	100–240 V AC
Nominal voltage	36 V DC

Table 11: Rechargeable battery technical data

### 3.4.3 Emissions

A-weighted emission sound pressure level	< 70 dB(A)
Total vibration level for the hands and arms	< 2.5 m/s <sup>2</sup>
Highest effective value of weighted acceleration for the entire body	< 0.5 m/s <sup>2</sup>

Table 12: Emissions from the pedelec\*

\*The safety requirements as per Electromagnetic Compatibility Directive 2014/30/EU have been met. The pedelec and the charger can be used in residential areas without restriction.

### 3.4.4 Tightening torque

Axle nut tightening torque	35 Nm - 40 Nm
Handlebars clamping screw maximum tightening torque*	5 Nm - 7 Nm

Table 13: Tightening torque values

\*if there is no other data on the component

### 3.5 Environmental requirements

You can be ride the pedelec within a temperature range between 5 °C and 35 °C. The drive system is limited in its performance outside this temperature range.

<b>Optimal operating temperature</b>	5 °C - 35 °C
--------------------------------------	--------------

During winter use, especially at temperatures below 0 °C, we recommend that you don't insert a battery charged and stored at room temperature into the pedelec until just before setting off. We recommend using thermal protection sleeves when riding longer distances in the cold.

As a general rule, you should avoid temperatures under -10 °C or over +60 °C.

You must also keep within the following temperature ranges:

Transportation temperature	-10 °C - 50 °C
Storage temperature	-10 °C - 50 °C
Work environment temperature	15 °C - 25 °C
Charging temperature	0 °C - 40 °C

**Table 14: Pedelec technical data**

The nameplate contains symbols for the pedelec's area of use. Check what roads and paths you may use before you ride the pedelec for the first time.

Area of use	City and trekking bicycles	Child's bicycles/ bicycles for young adults	Mountain bikes	Racing bicycle	Cargo bike	Folding bicycle
<b>1</b>	Suitable for tar-macked and paved roads.	Suitable for tar-macked and paved roads.		Suitable for tar-macked and paved roads.	Suitable for tar-macked and paved roads.	Suitable for tar-macked and paved roads.
<b>2</b>	Suitable for tar-macked roads, cycle paths and firm gravel paths and roads, and longer sections with moderate slopes and jumps up to 15 cm.	Suitable for tar-macked roads, cycle paths and roads, and longer sections with moderate slopes and jumps up to 15 cm.	Suitable for tar-macked roads, cycle paths and easy to demanding off-road riding, sections with moderate slopes and jumps up to 61 cm.	Suitable for tar-macked roads, cycle paths and firm gravel paths and roads, and longer sections with moderate slopes and jumps up to 15 cm.		
<b>3</b>			Suitable for tar-macked roads, cycle paths and easy to demanding off-road riding, limited downhill use and jumps up to 122 cm.			
<b>4</b>			Suitable for tar-macked roads, cycle paths and easy to extremely difficult off-road riding, unlimited downhill use and any jumps.			

**Table 15: Area of use**

The pedelec is unsuitable for the following areas of use:

Area of use	City and trekking bicycles	Child's bicycles/ bicycles for young adults	Mountain bikes	Racing bicycle	Cargo bike	Folding bicycle
 <b>1</b>	 Never drive off-road or perform jumps.	 Never drive off-road or perform jumps.		 Never drive off-road or perform jumps.	 Never drive off-road or perform jumps.	 Never drive off-road or perform jumps.
 <b>2</b>	Never drive off-road or perform jumps over 15 cm.	Never drive off-road or perform jumps over 15 cm.	Never drive off-road or perform jumps over 15 cm.	Never drive off-road or perform jumps over 15 cm.		
 <b>3</b>			Never ride downhill or perform jumps over 61 cm.			
 <b>4</b>			Never traverse extremely difficult off-road terrain or perform jumps over 122 cm.			

### 3.6 Description of controls and screens

#### 3.6.1 Battery level indicator

The five green LEDs on the battery level indicator show the battery charge status when the battery is switched on. Each LED represents 20% of the battery level.

You can check the battery level by looking at the LEDs on the battery. The LED statuses are lit (■), non-lit (□) and flashing (⚡).

	100 - 81%
	80 - 61%
	60 - 41%
	40 - 21%
	20 - 1%
	0% when the battery is not fitted to the pedelec
	0% when the battery is fitted to the pedelec

Table 16: Charge level of the battery

The charge level for the activated battery is also shown on the *display screen*. If the battery level falls below 5%, all the LEDs on the battery level indicator will go out. However, the battery level is still shown on the *display screen*.

System errors and warnings are displayed by various light patterns on the *battery level indicator*. There is a table of system messages in the Appendix.

#### 3.6.2 Handlebars

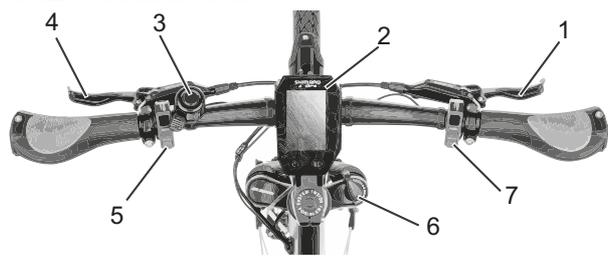


Figure 17: Detailed view of pedelec from rider position, example

- 1 Rear brake lever
- 2 Display
- 3 Bell
- 4 Front brake lever
- 5 Assistance button
- 6 Fork lock on the suspension fork
- 7 Gear button

#### 3.6.3 Display screen buttons

The *display* has two buttons.

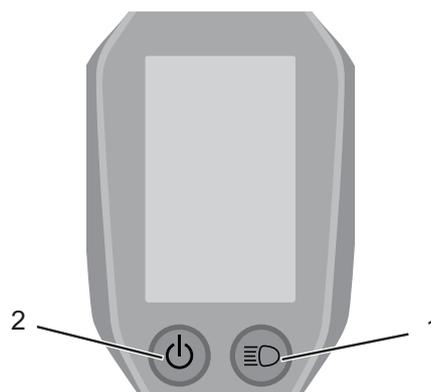


Figure 18: Overview of the structure of the display's operating elements

Symbol	Use
1	Riding light button
2	On-Off button (display)

Table 17: Operating elements overview

#### 3.6.4 Display screen indicators

The *display* has eleven on-screen indicators:



Figure 19: On-screen indicators overview

	Use
1	Unit of measure for speed
2	Current speed
3	Battery level
4	Clock
5	Riding light symbol
6	Level of assistance
7	Gear shift operating mode
8	Function display
9	Gear indicator
10	Motor power used
11	System messages (if available)

Table 18: On-screen indicators overview

### 3.6.4.1 Gear indicator

The rider has the choice between an automatic and manual gear shift. The selected gear shift type is shown on the display screen.

Screen display	Function
AUTO	The electric drive system selects the ideal gear.
MANUAL	The rider selects the gears.

Table 19: Symbols of the gear recommendation function

### 3.6.4.2 Battery level indicator

The battery level indicator indicates the battery level as a percentage in a bar symbol.

	100 - 81%
	80 - 61%
	60 - 41%
	40 - 21%
	20 - 1%
	0%

Table 20: Charge level of the battery

### 3.6.4.3 Level of assistance

The higher the level of assistance, the more the drive system assists the rider when pedalling. The following levels of assistance are available:

Screen display	Details
HIGH	High level of assistance.
NORM	Normal assistance
ECO	Low level of assistance
OFF	Assistance off
WALK	Activated push assist

Table 21: Overview of levels of assistance

### 3.6.5 Function display

The function display shows two different items of information:

- journey information and
- system settings.

#### 3.6.5.1 Journey information

The displayed journey information can be switched. The current selected journey information is displayed on the display screen. You can choose:

Screen display	Function
DST	Distance travelled since the last reset
ODO	Display of the total distance travelled (cannot be changed)
RANGE*	Estimated range of the available battery charge
TIME	Trip time
AVG	Average speed
MAX	Maximum achieved speed
CADENCE	Number of crank revolutions per minute
CLOCK	Clock

Table 22: Journey information

### 3.6.5.2 System settings and data

In order to see the system settings and data, the rider has to call up the system settings. The rider can change the values of the system settings, but not the system data.

Screen display	Function
CLEAR S	Changes journey information values
CLOCK	Clock
START MODE	Selects start gear
BACKLIGHT	Backlight
BRIGHTNESS	Sets the brightness of the backlight
BEEP	Sets the beep sound
UNIT	Switches displayed unit of measure
LANGUAGE	Select the language
FONT COLOR	Selects the colours
ADJUST	Sets the gear shift
AUTO	Pre-sets the pedalling frequency
EXIT	Returns to the main screen

Table 23: System settings

### 3.6.5.3 Default settings

Screen display	Function
BACKLIGHT	ON
BRIGHTNESS	3
BEEP	ON
UNIT	km
LANGUAGE	English
FONT COLOR	White

Table 24: Default settings

### 3.6.5.4 Displayed speed

A selection can be made in the system settings to determine whether the speed is displayed in kilometres per hour [km/h] or miles per hour [mph].

### 3.6.5.5 Gear shift operating mode

The rider has the choice between an automatic and manual gear shift.

Screen display	
AUTO	The electric drive system selects the ideal gear.
MANUAL	The rider selects the gears.

Table 25: Symbols of the gear recommendation function

### 3.6.5.6 System message

The drive system monitors itself continuously and if an error is detected, it is indicated by a system message. The drive system distinguishes between two system messages. Warning and error.

### Warnings

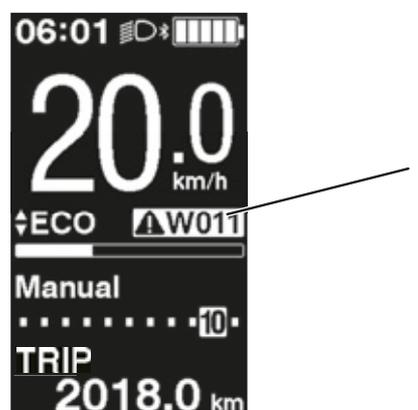


Figure 20: Example: Warning W010

Warnings are displayed between the selected gear and the battery level indicator on the screen. There are limitations to the system's operation, depending on the error type. There is a table of system messages and remedial measures in the Appendix chapter.

## Error messages



Figure 21: Example: Error message E010

Error messages are shown on the entire display. There are limitations to the drive system's operation, depending on the error type. There is a table of error messages and remedial measures in the Appendix chapter.

## 3.6.6 Operating elements

The electric drive system is operated using the display screen (II) and the left-hand control panel (I). The right-hand control panel (III) switches the gears.

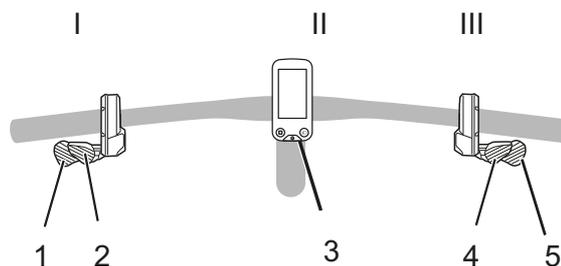


Figure 22: Control panel overview

Designation	
1	Long assistance lever
2	Short assistance lever
3	Display
4	Long shifter
5	Short shifter

Table 26: Control panel overview

## 4 Transporting and storing



### 4.1 Physical transport characteristics

#### 4.1.1 Dimensions during transportation

There was no information relating to the box dimensions at the time of going to press. You'll find the information in the latest *operating instructions* on the retailer portal.

#### 4.1.2 Transport weight

There was no information relating to the box dimensions at the time of going to press. You'll find the information in the latest *operating instructions* on the retailer portal.

#### 4.1.3 Designated handles/lifting points

There was no information relating to the box dimensions at the time of going to press. You'll find the information in the latest *operating instructions* on the retailer portal.

### 4.2 Transporting



#### Crash caused by unintentional activation

There is a risk of injury if the drive system is activated unintentionally.

- ▶ Remove the battery before the pedelec is transported.

#### Risk of fire and explosion due to high temperatures

Excessively high temperatures will damage the battery. Batteries may self-ignite and explode.

- ▶ Never expose batteries to sustained direct sunlight.



#### Oil leak if no transport securing device

The brake securing device prevents the brakes from being applied accidentally during transportation. This could cause irreparable damage to the brake system or an oil leak, which will harm the environment.

- ▶ Never pull the *brake lever* when the wheel has been dismantled.
- ▶ Always use the transport securing system when transporting dismantled wheels.

#### Notice

Oil and grease may leak from the pedelec if it is lying flat.

If the shipping box with a pedelec is lying flat or standing on one end, it does not provide the *frame* and wheels with adequate protection against damage.

- ▶ Transport the pedelec in an upright position only.

Bicycle rack systems which use the *handlebars* or *frame* to hold the pedelec in an upside-down position exert inadmissible forces on its components during transportation. This can cause the supporting parts to break.

- ▶ Never use bicycle rack systems which use the pedelec's *handlebars* or *frame* to hold it in an upside-down position.
- ▶ Take into account the weight of the ready-to-use pedelec when transporting it.
- ▶ Remove the *display screen* and the batteries before transporting the pedelec.
- ▶ Protect the electrical components and connections on the pedelec from the weather conditions with suitable protective covers.
- ▶ Remove accessories such as drinking bottles before transporting the pedelec.
- ▶ You must use a suitable bicycle rack system when transporting by car.

### Notice

The specialist dealer will advise you on how to select a suitable rack system properly and how to use it safely.

- ▶ If you ship the pedelec, we recommend that you have it partially dismantled and packaged properly by the specialist dealer.
- ▶ Transport the pedelec in a dry, clean position where it is protected from direct sunlight.

#### 4.2.1 Transporting the battery

Batteries are subject to hazardous goods regulations. Undamaged batteries may be transported by private persons in road traffic.

Commercial transport requires compliance with regulations concerning packaging, labelling and the transportation of hazardous goods. Open contacts must be covered and the battery securely packaged.

#### 4.2.2 Shipping the battery

The battery is considered a hazardous good and only trained persons may pack and ship a battery. Contact your specialist dealer regarding any battery shipment.

#### 4.2.3 Using the brake transport securing system

- ▶ Insert the transport securing devices between the brake linings.
- ⇒ The transport securing device is squeezed between the two linings.

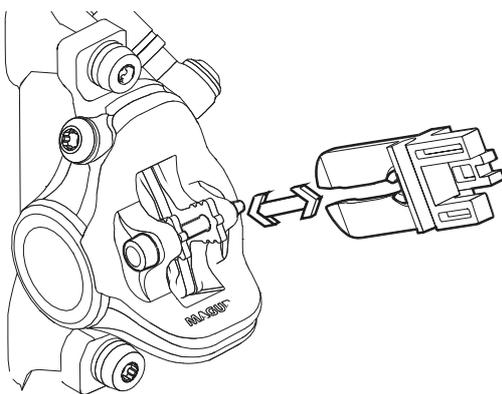


Figure 23: Fastening the transport securing device

## 4.3 Storing

### CAUTION

#### Risk of fire and explosion due to high temperatures

Temperatures over 60 °C can also cause liquid to leak from the battery and the battery will become damaged. Batteries may self-ignite and explode.

- ▶ Protect batteries against heat.
- ▶ Never store in proximity to hot or flammable objects.
- ▶ Never expose batteries to continuous direct sunlight and never store near heaters.

### Notice

Oil and grease may leak from the pedelec if it is lying flat.

If the shipping box with a pedelec is lying flat or standing on one end, it does not provide the *frame* and wheels with adequate protection against damage.

- ▶ Store the pedelec in an upright position only.
- ✓ If the pedelec features a hydraulic seat post, fix only the lower seat post or the frame into a fitting stand to prevent damage to the upper seat post and the seat post lever.
- ✓ Never place a pedelec with a hydraulic seat post upside down on the floor; otherwise you, will damage the seat post lever.
- ✓ Store the pedelec, battery and charger in a dry, clean location.

Optimum pedelec storage temperature	20 °C
Optimum battery storage temperature	22 °C - 26 °C

Table 27: Storage temperature for batteries, the pedelec and charger

- ✓ Temperatures under -10 °C or over +60 °C should generally be avoided. Storage at about 20 °C is beneficial to a long service life.

### 4.3.1 Break in operation

#### Notice

The battery discharges when not in use. This can cause irreparable damage to the battery.

- ▶ The battery must be recharged every 6 months.

The battery may become damaged if it is connected permanently to the charger.

- ▶ Never connect the battery to the charger permanently.

The display battery discharges when it is not in use. This can cause it to be irreparably damaged.

- ▶ Recharge the display battery for at least 1 hour every 3 months.

If the pedelec is to be removed from service for longer than four weeks, for the winter, for example, you need to prepare it for a break in operation.

#### 4.3.1.1 Preparing a break in operation

- ✓ Remove battery from the pedelec.
- ✓ Charge battery to around 30%–60%.
- ✓ The pedelec needs to be cleaned with a damp cloth and preserved with wax spray. Never wax the friction surfaces of the brake.
- ✓ Before longer periods without use, it is recommendable to have your specialist dealer carry out an inspection and basic cleaning and apply preservative agent.

#### 4.3.1.2 Taking out of operation

- ▶ Store the pedelec, battery and charger in a dry, clean environment. We recommend storing them in uninhabited rooms with smoke alarms. Dry locations with an ambient temperature of about 20 °C are ideal.
- ▶ Recharge the display battery for at least 1 hour every 3 months.
- ▶ Check the battery level after 6 months. If only one LED on the battery level indicator lights up, recharge the battery to around 30% - 60%.



## 5 Assembly

### WARNING

#### Injury to the eyes

Problems may arise if the settings are not made to components properly and you may sustain serious injuries as a result.

- ▶ Always wear safety glasses to protect your eyes during assembly.

### CAUTION

#### Crushing caused by unintentional activation

There is a risk of injury if the drive system is activated unintentionally.

- ▶ Remove the battery if it is not absolutely necessary for assembly

- ✓ Assemble the pedelec in a clean, dry environment.

The *work environment* temperature should be between 15 °C and 25 °C.

Work environment temperature	15 °C - 25 °C
------------------------------	---------------

**Table 28: Work environment temperature**

- ✓ If a fitting stand is used, it must be approved for a maximum weight of 30 kg.
- ✓ We recommend that you always disconnect the battery from the pedelec when using the fitting stand to reduce weight.

### 5.1 Required tools

The following tools are required to assemble the pedelec:

- Knife
- Hexagon socket spanner 2 (2.5 mm, 3, mm 4 mm, 5 mm, 6 mm and 8 mm)
- Torque wrench with working range between 5 and 40 Nm
- Twelve-point square socket T25
- Ring spanner (8 mm, 9 mm, 10 mm), 13 mm, 14 mm and 15 mm) and
- Cross, flat head and ordinary screwdriver.

## 5.2 Unpacking

### CAUTION

#### Hand injuries caused by cardboard packaging

The shipping carton is closed with metal staples. There is a risk of puncture wounds and cuts when unpacking and crushing the packaging.

- ▶ Wear suitable hand protection.
- ▶ Remove the metal staples with pliers before the shipping carton is opened.

The packaging material consists mainly of cardboard and plastic film.

- ▶ The packaging has to be disposed of in accordance with the regulations of the authorities.

### 5.2.1 Scope of delivery

The pedelec was completely assembled in the factory for test purposes and then dismantled for transportation.

The pedelec is 95–98% pre-assembled. The scope of delivery includes:

- the pre-assembled pedelec
- the front wheel
- the pedals
- quick release (optional)
- the charger
- the *operating instructions*.

The battery is supplied separately from the pedelec.

## 5.3 Commissioning

### CAUTION

#### Risk of fire and explosion due to incorrect charger

Batteries which are recharged with an unsuitable charger may become damaged internally. This may result in fire or an explosion.

- ▶ Only ever use the battery with the supplied charger.
- ▶ Mark the supplied charger clearly to prevent mix-ups – with the pedelec *frame number* or *type number*, for example.

#### Burns from hot drive

The drive cooler can become extremely hot during use. Contact may cause burns.

- ▶ Leave the drive unit to cool before cleaning.

Only trained specialist staff may perform initial commissioning since initial commissioning of the pedelec requires special tools and specialist knowledge.

Experience has shown that a pedelec which has not yet been sold is automatically handed to end users as soon as it appears ready to ride.

- ▶ For this reason, every pedelec must be prepared, so that it is fully ready for use immediately after being assembled.
- ▶ All assembly work described in the assembly report (see appendix) must be performed to ensure the pedelec is ready to ride. It describes all safety-relevant inspections, tests and maintenance tasks for the pedelec in a separate list.
- ▶ Complete an assembly report for quality assurance purposes.

## 5.3.1 Checking the battery

### WARNING

#### Risk of fire and explosion due to faulty battery

The safety electronics may fail if the battery is damaged or faulty. The residual voltage can cause a short circuit. The battery may self-ignite and explode.

- ▶ Never charge a faulty battery.

The battery must be checked before it is charged for the first time.

- ▶ Press the *On-Off button (battery)*.
- ⇒ If none of the LEDs on the battery level indicator light up, the battery may be damaged.
- ⇒ The battery may be fully charged if at least one, but not all, of the LEDs on the battery level indicator is lit up.
- ▶ Once the battery has been charged, insert it into the pedelec.

## 5.3.2 Installing the wheel in the Suntour fork

Only applies to pedelecs with this equipment

### 5.3.2.1 Installing the wheel with screw-on axle (15 mm)

- ▶ Insert the axle completely on the drive side.

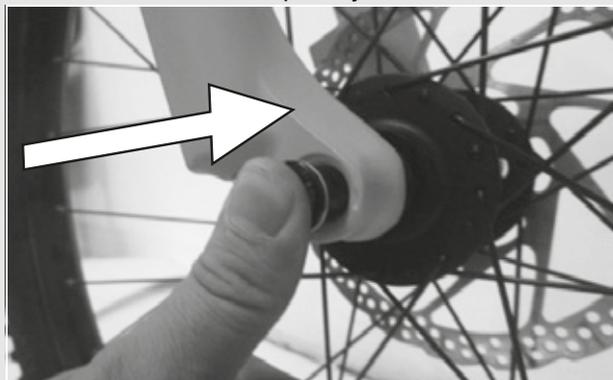


Figure 24: Fully inserting the axle

- ▶ Tighten the axle with a 5 mm hexagon socket spanner to 8–10 Nm.

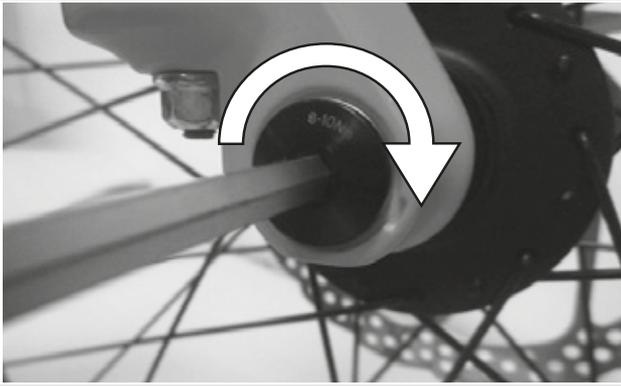


Figure 25: Tightening the axle

- ▶ Insert the securing screw on the non-drive side.



Figure 26: Pushing the quick release lever into the axle

- ▶ Tighten the securing screw with a 5 mm hexagon socket spanner to 5–6 Nm.

⇒ The lever is mounted.

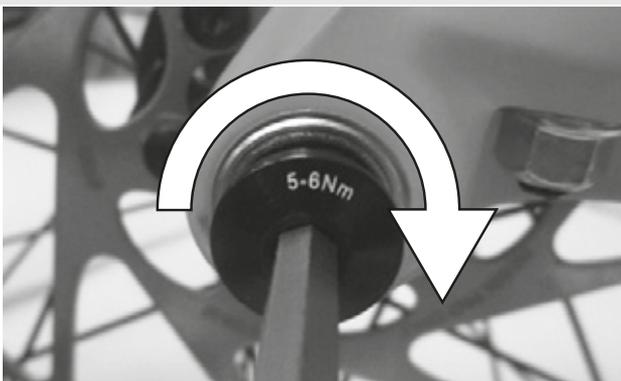


Figure 27: Tightening the securing screw

### 5.3.2.2 Installing the wheel with screw-on axle (20 mm)

- ▶ Insert the axle completely on the drive side.

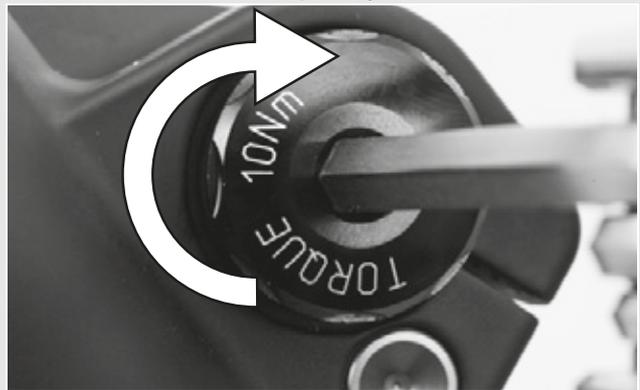


Figure 28: Tightening the inserted axle

- ▶ Tighten the securing clip with a 4 mm hexagon socket spanner to 7 Nm.



Figure 29: Tightening the axle

### 5.3.2.3 Installing the wheel with a quick release axle

**CAUTION**

#### Crash caused by loose quick release axle

A faulty or incorrectly installed quick release axle may become caught in the brake disc and block the wheel. This will cause a crash.

- ▶ Never fit a defective quick release axle.

#### Crash caused by faulty or incorrectly installed quick release axle

The brake disc becomes very hot during operation. Parts of the quick release axle may become damaged as a result. The quick release axle becomes loose. This will cause a crash with injuries.

- ▶ The quick release axle and the brake disc must be opposite one another.

**CAUTION**

#### Crash caused by incorrectly set quick release axle

Insufficient clamping force will cause a detrimental transmission of force. The suspension fork or the quick release axle may break. This will cause a crash with injuries.

- ▶ Never fasten a quick release axle with a tool, such as a hammer or pliers.

- ▶ Insert the axle into the hub on the drive side. Clamping version II.

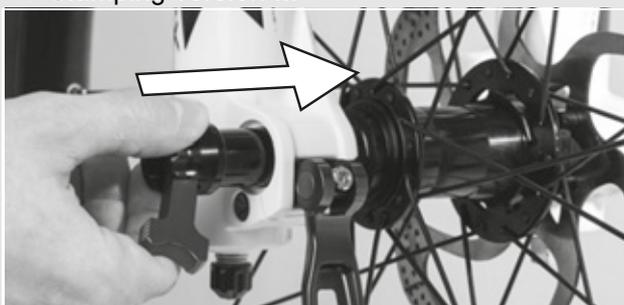


Figure 30: Pushing the axle into the hub

- ▶ Tighten the axle with the red handle.

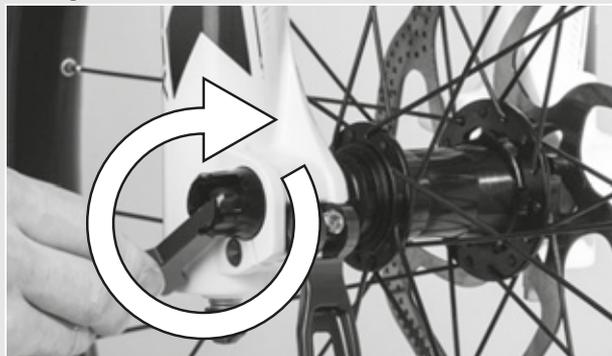


Figure 31: Tightening the axle

- ▶ Push the quick release lever into the axle.

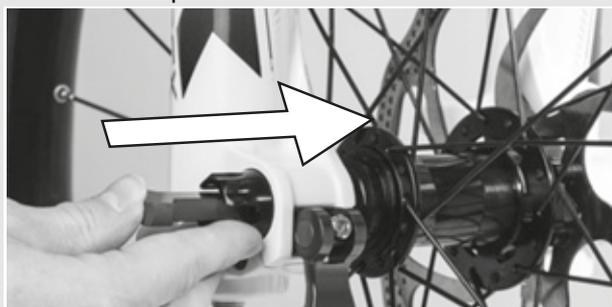


Figure 32: Pushing the quick release lever into the axle

- ▶ Reverse the quick release lever.

⇒ The lever is secured.



Figure 33: Securing the lever

- ▶ Check the position and clamping force of the quick release lever. The quick release lever must be flush with the lower housing. You must be able to see a slight impression on the palm of your hand when you close the quick release lever.



Figure 34: Perfect position for the clamping lever

- ▶ Use a 4 mm hexagon socket spanner to adjust the clamping lever clamping force if required. Afterwards, check the quick release lever position and clamping force.

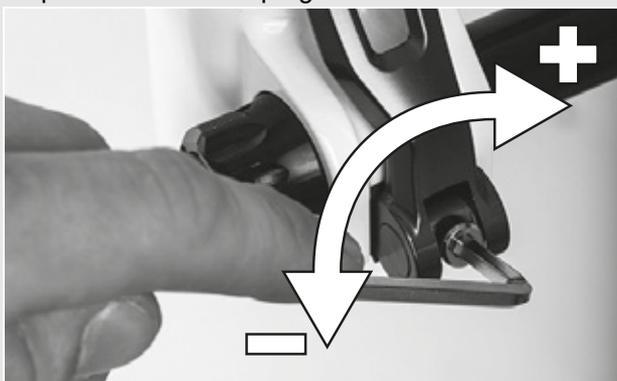


Figure 35: Adjusting the quick release clamping force

### 5.3.3 Installing the wheel with a quick release

#### CAUTION

#### Crash caused by unfastened quick release

A faulty or incorrectly installed quick release may become caught in the brake disc and block the wheel. This will cause a crash.

- ▶ Never fit a defective quick release.

#### Crash caused by faulty or incorrectly installed quick release

The brake disc becomes very hot during operation. Parts of the quick release may become damaged as a result. The quick release comes loose. This will cause a crash with injuries.

- ▶ The front wheel quick release lever and the brake disc must be situated on opposite sides.

#### Crash caused by incorrectly set clamping force

Excessively high clamping force will damage the quick release and cause it to lose its function.

Insufficient clamping force will cause a detrimental transmission of force. The suspension fork or the quick release may break. This will cause a crash with injuries.

- ▶ Never fasten a quick release using a tool (e.g. hammer or pliers).
- ▶ Only use the clamping lever with the specified set clamping force.

- ▶ Before installing, ensure that the quick release flange is extended. Open the lever completely.

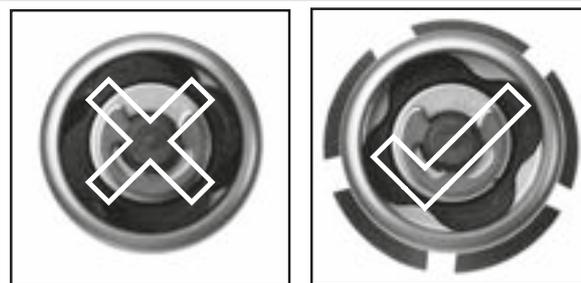


Figure 36: Closed and opened flange

- ▶ Push in the quick release until you hear a clicking sound. Make sure that the flange is extended.

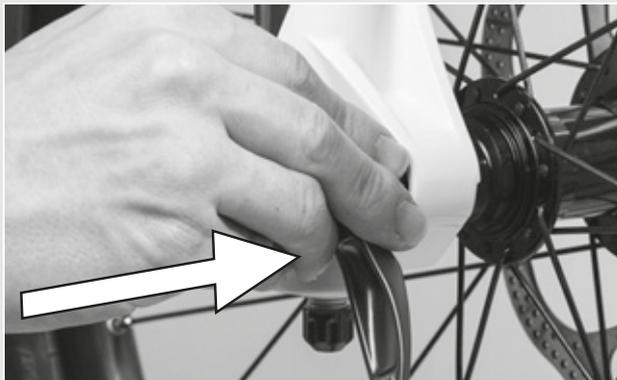


Figure 37: Pushing the quick release in

- ▶ Adjust the clamping with a half-open clamping lever until the flange reaches the fork end.

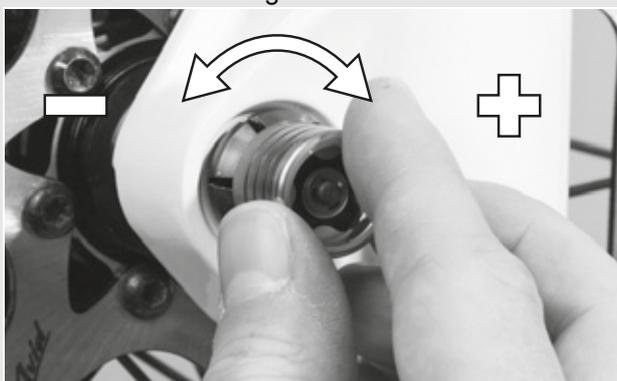


Figure 38: Adjusting the clamping

- ▶ Fully close the quick release. Check the quick release to ensure it is firmly in place and adjust on the flange if necessary.

⇒ The lever is secured.



Figure 39: Closing the quick release

### 5.3.4 Installing the wheel in the FOX fork

Only applies to pedelecs with this equipment

#### 5.3.4.1 Wheel with quick release (15 mm)

The procedure for installing the 15 x 100 mm and 15 x 110 mm quick releases is the same.

- ▶ Place the front wheel in the fork ends of the fork. Push the axle through the fork end on the non-drive side and hub.

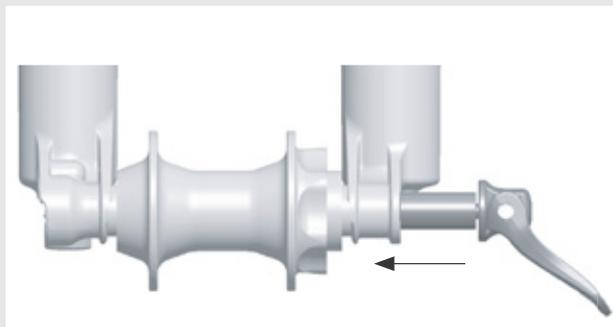


Figure 40: Pushing the quick release in

- ▶ Open the axle lever.
- ▶ Turn the axle five to six complete revolutions clockwise into the axle nut.
- ▶ Close the quick release lever. The lever must be tensioned to the point that it leaves a mark on your hand.
- ▶ The lever must be 1 to 20 mm ahead of the fork leg in the closed position.

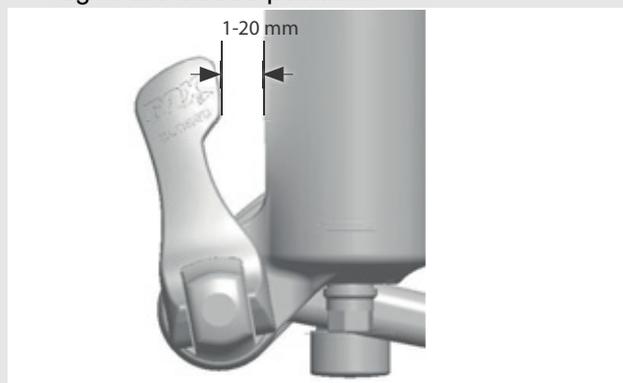
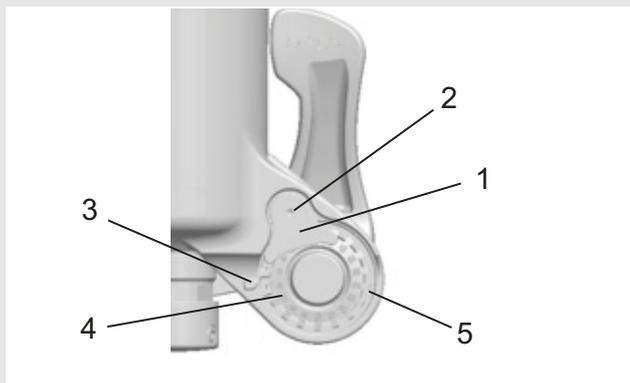


Figure 41: Spacing between lever and fork leg

- ⇒ If the lever is tensioned too little or too much when closed in the recommended position (1 to 20 mm ahead of the fork), the quick release must be adjusted.

### 5.3.4.2 Adjusting the FOX quick release



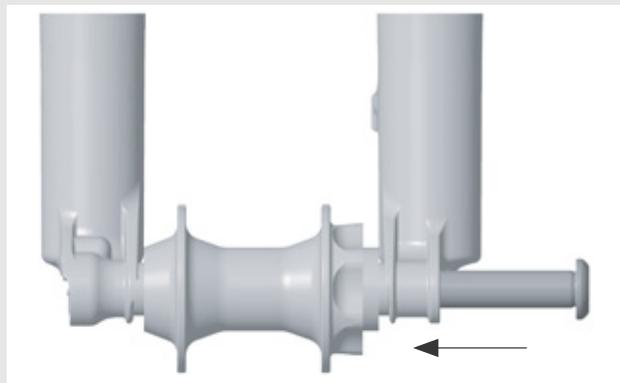
**Figure 42: Structure of quick release from rear with (1) axle nut lock, (2) axle nut securing screw, (3) directional arrow, (4) axle setting value and (5) axle nut**

- ▶ Record the axle setting value (4) indicated by the directional arrow (3).
- ▶ Loosen the axle nut securing screw (2) with a 2.5 mm hex key by approx. four revolutions, but do not remove the screw completely.
- ▶ Turn the quick release lever to the open position and loosen the axle by approx. four revolutions.
- ▶ Press the axle inward from the side of the open lever. This pushes out the axle nut securing screw so that you can turn it out of the way.
- ▶ Push the axle further forward and turn the axle nut clockwise to increase the lever tension or anti-clockwise to reduce the lever tension.
- ▶ Reinsert the axle nut lock and tighten the screw to 0.9 Nm (8 in-lb).
- ▶ Repeat the steps for installing the axle to check proper installation and correct adjustment.

### 5.3.4.3 Installing the wheel with Kabolt axles

The procedure for installing the 15 x 100 mm and 15 x 110 mm Kabolt axles is the same.

- ▶ Place the front wheel in the fork ends of the fork. Push the Kabolt axle through the fork end on the non-drive side and hub.



**Figure 43: Pushing the Kabolt axle in**

- ▶ Tighten the Kabolt axle screw to 17 Nm (150 in-lb) with a 6 mm hex key.

### 5.3.4.4 Checking the stem and handlebars

#### Checking connections

- ▶ Stand in front of the pedelec to check whether the handlebars, stem and fork steerer are firmly attached to one another. Clamp the front wheel between your legs. Grasp the handlebar grips. Try to twist the handlebars towards the front wheel.
- ⇒ The stem must not move or twist.

**Firm hold**

- ▶ Place your entire body weight on the handlebars with the quick release lever closed to check that the stem is firmly in place.
- ⇒ The handlebars shaft must not move downwards in the fork steerer.
- ▶ If the handlebars shaft should move in the fork steerer, increase the quick release lever tensioning. To do so, turn the knurled nut slightly in a clockwise direction with the quick release lever open.
- ▶ Close the lever and check the stem is firmly in position.

**Checking the headset backlash**

- ▶ To check the handlebar headset backlash, close the quick release lever on the stem. Place the fingers of one hand on the upper headset cup, pull the front wheel brake with the other hand and try to push the pedelec backwards and forwards.
- ▶ The headset cup halves must not move towards one another while you are doing this. Note that there may be noticeable backlash due to worn-out bearing bushes or brake lining backlash in suspension forks and disc brakes.
- ▶ If there is headset backlash in the steering headset, you must adjust it as soon as possible; otherwise, the headset will become damaged. You must make the adjustment as described in the stem manual.

**5.3.5 Pedelec sale**

- ▶ Complete the data sheet on the *operating instructions* envelope.
- ▶ Note down the key manufacturer and its number.
- ▶ Adjust the pedelec to the rider.
- ▶ Set the *stand* and the *shifter*, and show the purchaser the settings.
- ▶ Instruct the operator or rider on how to use all the pedelec's functions.

## 6 Operation

### 6.1 Risks and hazards



#### WARNING

#### Injuries and death caused by other road users

Other road users, trucks, cars or pedestrians often underestimate the speed of pedelecs. Likewise, other road users frequently do not see pedelec riders. This may cause a crash with serious injuries or even death.

- ▶ Wear a cycling helmet and high-visibility, reflective clothing.
- ▶ Always take a defensive approach to riding.
- ▶ Avoid the blind spots of vehicles turning off and reduce your speed as a precaution when other road users turn right.

#### Injuries and death caused by riding incorrectly

A pedelec is not a bicycle. Incorrect riding and underestimated speeds soon result in hazardous situations. This may cause a fall with serious injuries or even death.

- ▶ If you haven't ridden on a pedelec for some time, get accustomed to the speed first before you ride at speeds over 12 km/h. Increase the level of assistance on your pedelec gradually.
- ▶ Practice hard braking on a regular basis.
- ▶ Take and complete a riding safety course.



#### CAUTION

#### Crash caused by loose clothing

Shoe laces, scarves and other loose items may become entangled in the spokes on the *wheels* and on the *chain drive*. This may cause a crash with injuries.

- ▶ Wear sturdy footwear and close-fitting clothing.



#### CAUTION

#### Risk of fire and burning due to hot motor

The motor housing becomes hot when riding. Touching it may cause burns to the skin or other objects.

- ▶ Never touch the motor housing directly after riding.
- ▶ Never place the pedelec on a flammable surface, such as grass or wood, directly after use.

#### Crash caused by soiling

Heavy soiling can impair pedelec functions, such as braking. This may cause a crash with injuries.

- ▶ Remove coarse soiling before riding.

#### Crash caused by poor road conditions

Loose objects, such as branches and twigs, may become caught in the wheels and cause a crash with injuries.

- ▶ Be aware of the road conditions.

Ride slowly and brake in good time.

#### Notice

Heat or direct sunlight can cause the *tyre pressure* to increase above the permitted maximum pressure. This can destroy the *tyres*.

- ▶ Never park the pedelec in the sun.
- ▶ On hot days, regularly check the *tyre pressure* and adjust it as necessary.

When riding downhill, high speeds may be reached.

The pedelec is only designed to exceed a speed of 25 km/h for short periods. The *tyres* in particular can fail if exposed to a continuous load.

- ▶ Decelerate the pedelec with the brakes if you reach speeds greater than 25 km/h.

## Notice

Moisture penetrating at low temperatures may impair individual pedelec functions due to the open structural design.

- ▶ Always keep the pedelec dry and free from frost.
- ▶ If the pedelec is to be used at temperatures below 3 °C, the specialist dealer must carry out an inspection and prepare the pedelec for winter usage first.

If you leave a key inserted when riding or transporting the pedelec, it may break off or the locking system may open accidentally.

- ▶ Remove the key from the battery lock immediately after use.
- ▶ We recommend that you attach the key to a key ring.

Off-road riding subjects the joints in the arms to severe strain.

- ▶ Take a break from riding every 30 to 90 minutes, depending on the road surface conditions

### 6.1.1 Tips for a greater range

How far can a pedelec actually travel? There is no simple answer to this question as range depends on many influencing factors. A single battery charge may only last fewer than 20 kilometres but much more than 100 is also possible. There are a few tips which will help you maximize the range.

#### Cadence

Pedalling frequencies higher than 50 revolutions per minute optimise drive unit efficiency. However, very slow pedalling uses up a great deal of energy.

#### Weight

Weight should be minimised. The total weight of the pedelec and baggage should not be unnecessarily high.

### Stopping & starting

Stopping and starting all the time is less economical than long stretches at the same speed, just like with a car.

### Gear shift

Shifting gears correctly also makes pedelecs more efficient: It is best to set off and ride up hills using a low gear and switch up a gear depending on the speed and terrain. The on-board computer provides gear shift recommendations.

### Tyre pressure

Rolling resistance can be minimised if tyres are inflated to the right pressure. Tip: Use the maximum permitted tyre pressure to optimize your range.

### Motor power indicator

Keep an eye on the motor power indicator on the display screen and adjust your riding accordingly. A long bar indicates high power consumption.

### Battery & temperature

Battery performance is reduced as the temperature drops since this increases electrical resistance. As a result, you should expect the range to be shorter than normal in winter.

### 6.1.2 Personal protective equipment

We recommend that you wear a suitable cycling helmet. We also recommend that you wear sturdy footwear and typical, close-fitting, reflective cycling clothing.

## 6.2 Before the first ride



### Crash caused by incorrectly adjusted torques

If a screw is fastened too tightly, it may break. If a screw is not fastened enough, it may loosen. This will cause a crash with injuries.

- ▶ Always observe the indicated torques on the screw or in the *operating instructions*.

Only a correctly adjusted pedelec will guarantee you the desired ride comfort and health-promoting activity. Therefore adjust the *saddle*, the *handlebars* and the *suspension* to your body and your preferred riding style before the first ride.

### 6.2.1 Adjusting the saddle

#### 6.2.1.1 Adjusting the saddle tilt

The saddle tilt must be adjusted to the seat height, the saddle and handlebar position, and the saddle shape to ensure an optimum fit. The seating position can be optimised in this way if needed. First, readjust the saddle after finding the handlebar position you prefer.

- ⇒ Place the saddle tilt in the horizontal position to adjust the pedelec to your needs for initial use.

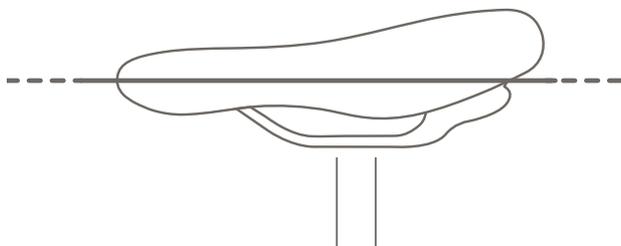


Figure 44: Horizontal saddle tilt

### 6.2.2 Determining the seat height

- ✓ To determine the seat height safely, either push the pedelec near to a wall, so that you can lean on the wall to support yourself or ask another person to hold the pedelec for you.
- ▶ Climb onto the bicycle.
- ▶ Place your heel on the pedal and extend your leg, so that the pedal is at the lowest crank rotation point.
- ⇒ The rider sits straight on the saddle if the seat is at an optimum height. If this is not the case, you can adjust the length of the seat post to your needs.

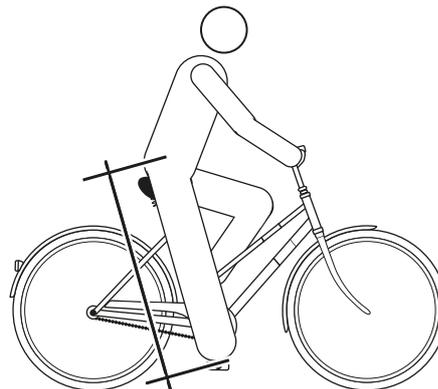


Figure 45: Optimal saddle height

#### 6.2.2.1 Adjusting the seat height with quick release

- ▶ Open the quick release on the seat post to change the seat height. To do so, push the clamping lever away from the seat post.

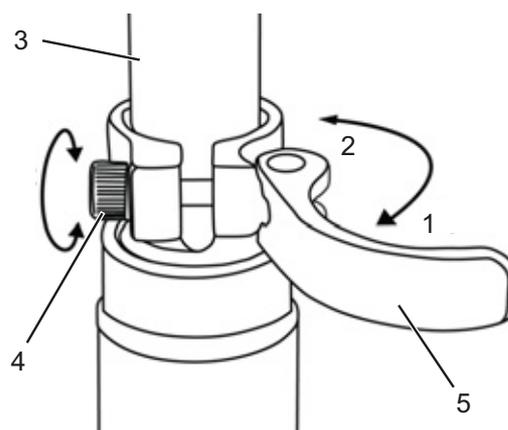


Figure 46: Seat post quick release (3)

The seat post quick release with clamping lever (5) and setting bolt (4) in the open position (1) and in the direction of the closed position (2).

- ▶ Set the seat post at the required height.



### Crash caused by an excessively high seat post setting

A seat post which is set too high will cause the seat post or the frame to break. This will cause a crash with injuries.

- ▶ Do not pull the seat post out of the frame beyond the minimum insertion depth marking.

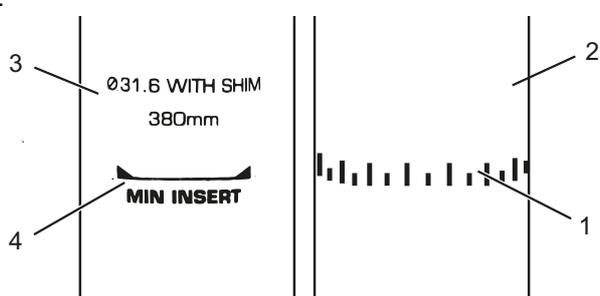


Figure 47: Detailed view of the seat post – examples of the minimum insertion depth marking

- ▶ To close it, push the seat post clamping lever as far as it will go into the seat post.
- ▶ Check the clamping force of quick releases.

#### 6.2.2.2 Height-adjustable seat post

##### Only applies to pedelecs with this equipment

- ✓ When using your seat post for the first time, you must give it a firm push downwards to set it in motion. This is due to the natural tendency of the seal to repel oil from the seal surface. You only need to do this before the first use or after a longer period of non-use. Once you have displaced the post through its deflection, the oil spreads on the seal and the post begins to function normally.

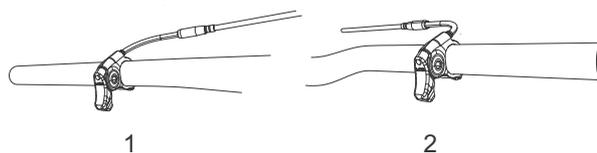


Figure 48: The seat post activation lever can be installed either on the left (1) or the right (2) side of the handlebars

#### Lowering the saddle

- ✓ To lower the saddle, press your hand down on the saddle or sit on the saddle. Press the seat post activation lever and hold it down.
- ▶ Release the lever once you have reached the required height.

#### Raising the saddle

- ▶ Pull the seat post activation lever.
- ▶ Remove any pressure on the saddle and release the lever once you have reached the required height.

#### 6.2.2.3 Adjusting the seat position

The saddle can be shifted on the saddle frame. The right horizontal position ensures an optimal leverage position for legs. This prevents knee pain and painful incorrect pelvis positions. If you have displaced the saddle more than 10 mm, you then need to adjust the saddle height again since both settings affect one another.

- ✓ To adjust the seat position safely, either push the pedelec near to a wall, so that you can lean on the wall to support yourself or ask another person to hold the pedelec for you.
- ▶ Climb onto the bicycle.
- ▶ Place the pedals into the vertical position (3 o'clock position) with your feet.
- ⇒ The rider is sitting in the optimal sitting position if the knee cap perpendicular line runs through the pedal axle. If the perpendicular line crosses behind the pedal, bring the saddle forward. If the perpendicular line crosses in front of the pedal, bring the saddle back. Move the saddle

within its permitted displacement range only (marked on the saddle stay).

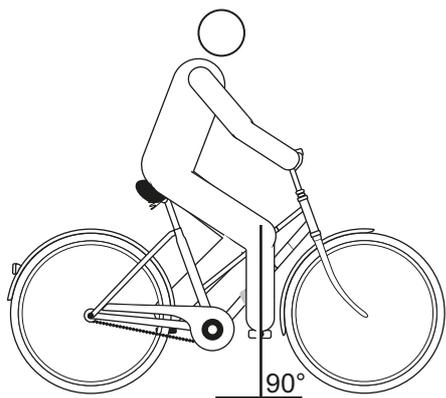


Figure 49: Knee cap perpendicular line



- ✓ The handlebar settings must only be adjusted while the pedelec is stationary.
- ▶ Unfasten and adjust the designated screw connections, and clamp them with the maximum tightening torque for the clamping screws of the handlebars.

## 6.2.3 Adjusting the handlebars

### 6.2.3.1 Adjusting the stem

#### ! CAUTION

#### Crash caused by loose stem

Incorrectly fastened screws may come loose due to impact. The stem may no longer be firmly fixed in its position as a result. This will cause a crash with injuries.

- ▶ Check the handlebars and the quick release system are firmly in position after the first two hours of riding.

### 6.2.3.2 Adjusting the height of the handlebars

#### ! CAUTION

#### Crash caused by incorrectly set clamping force

Excessively high clamping force will damage the quick release and cause it to lose its function. Insufficient clamping force will cause a detrimental transmission of force. This can cause components to break. This will cause a crash with injuries.

- ▶ Never fasten a quick release using a tool (e.g. hammer or pliers).
  - ▶ Only use the clamping lever with the specified set clamping force.
- 
- ▶ Open the clamping lever.
  - ▶ Pull the locking lever on the stem up, and simultaneously pivot the handlebars into the desired position.
- ⇒ You feel the locking lever click into place.
- ▶ Pull out the handlebars to the required height.
  - ▶ Lock the quick release.

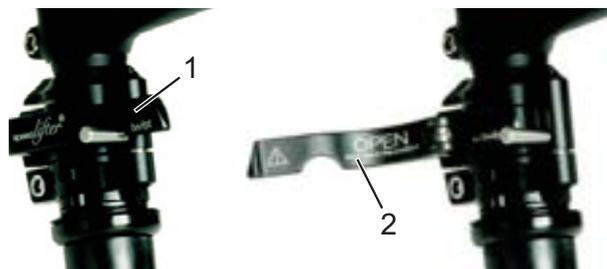


Figure 50: Open (2) and closed (1) clamping lever on the stem; by.schulz speedlifter used as an example

### 6.2.3.3 Turning the handlebars to the side

Only applies to pedelecs with this equipment



#### Crash caused by incorrectly set clamping force

Excessively high clamping force will damage the quick release and cause it to lose its function.

Insufficient clamping force will cause a detrimental transmission of force. This will cause a crash with injuries.

- ▶ Never fasten a quick release using a tool (e.g. hammer or pliers).
  - ▶ Only use the clamping lever with the specified set clamping force.
- 
- ▶ Open the clamping lever.
  - ▶ Pull the locking lever on the stem up, and simultaneously pivot the handlebars into the desired position.
- ⇒ You feel the locking lever click into place.
- ▶ Pull out the handlebars to the required height.
  - ▶ Lock the quick release.

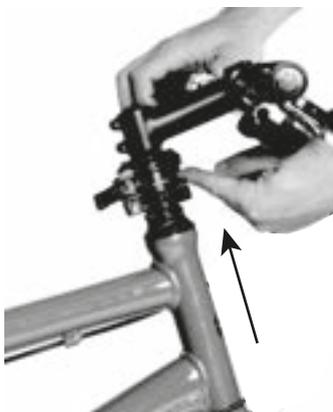


Figure 51: Pushing locking lever upwards – by.schulz speedlifter used as an example

### 6.2.3.4 Checking the clamping force in quick releases

- ▶ Open and close the quick releases on the stem or the seat post.
- ⇒ The clamping force is sufficient if the clamping lever can be moved easily from the open final position into the middle and has to be pressed with the fingers or base of the thumb from the middle point onwards.

### 6.2.3.5 Adjusting the quick release clamping force

- ▶ If the *clamping lever on the handlebars* cannot be moved into its final position, screw out the *knurled nut*.
- ▶ Tighten the *knurled nut* on the seat post if the *clamping lever's* clamping force is not sufficient.
- ▶ If you are unable to set the clamping force, the specialist dealer will need to check the quick release.

## 6.2.4 Adjusting the brake lever

### 6.2.4.1 Adjusting the pressure point on a Magura brake lever



#### Brake failure due to incorrect setting

If the pressure point is set with brakes where the brake linings and brake disc have reached their wear limit, the brakes may fail and cause an accident with injury.

Before you set the pressure point, ensure that the brake linings and brake disc have not reached their wear limit.

The pressure point setting is adjusted using the twist knob.

- ▶ Turn the twist knob towards the plus (+) symbol.
- ⇒ The *brake lever* moves closer to the handlebar grip. Re-adjust the grip distance as necessary.
- ⇒ The lever pressure point activates sooner.

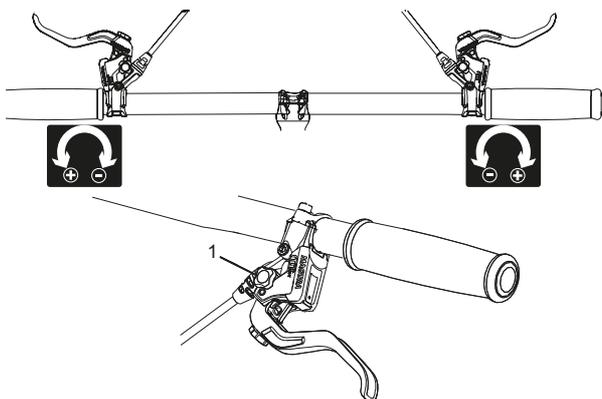


Figure 52: Using the twist knob (1) to adjust the pressure point

### 6.2.4.2 Adjusting the grip distance

**⚠ WARNING**

**Crash caused by incorrectly set grip distance**

If brake cylinders are set incorrectly or installed wrongly, the braking power may be lost at any time. This may cause a crash with injuries.

- ▶ Once the grip distance has been set, check the position of the brake cylinder and adjust it as necessary.

Never correct the brake cylinder position without special tools. Have a specialist dealer correct it.

- ▶ The brake lever grip distance can be adjusted to ensure that it can be reached more easily. Contact your specialist dealer if the brake handle is too far from the handlebars or is hard to use.

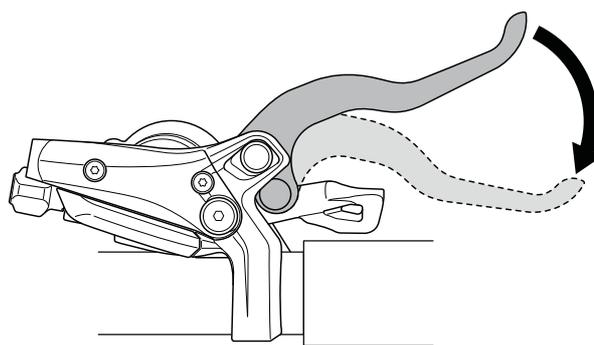


Figure 53: Brake lever grip distance

### 6.2.4.3 Adjusting the grip distance on a Magura brake lever

Only applies to pedelecs with this equipment

Use a T25 TORX® wrench to turn the setting screw to adjust the grip distance.

- ▶ Turn the setting screw in the minus (-) direction.
  - ⇒ The brake lever moves closer to the handlebar grip.
- ▶ Turn the setting screw in the plus (+) direction.
  - ⇒ The brake lever moves away from the handlebar grip.

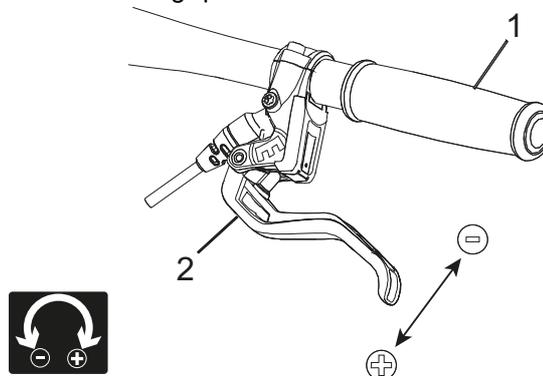


Figure 54: Using the setting screw (2) to adjust the distance from the brake lever to the handlebar grip (1)

## 6.2.5 Adjusting the suspension of the Suntour fork

### Only applies to pedelecs with this equipment

The following Suntour forks can be installed in this series of models:

Aion-35 Boost	Air suspension fork
NCX	Air suspension fork
NEX	Steel suspension fork
XCM-ATB	Steel suspension fork
XCM	Steel suspension fork
XCR32	Air suspension fork
XCR34	Air suspension fork

Figure 55: Overview of Suntour forks



### Crash caused by incorrectly set suspension

If the suspension is adjusted incorrectly, the fork may become damaged, so that problems may occur when steering. This will cause a crash with injuries.

- ▶ Never ride the pedelec without air in the air suspension fork.
- ▶ Never use the pedelec without adjusting the suspension fork to the rider's weight.

### Notice

Settings on the chassis change riding performance significantly. You need to get used to the pedelec and break it in to prevent accidents.

The adjustment shown here represents a basic setting. The rider should change the basic setting to suit the surface and his/her preferences.

- ▶ It is advisable to make a note of the basic setting. This way, it can be used as the starting point for subsequent, optimised settings and to safeguard against unintentional changes.

### 6.2.5.1 Adjusting the negative deflection

Negative deflection (sag) is compression of the fork caused by the weight of the rider and their gear (e.g. a backpack), the sitting position and the frame geometry. This sag is not caused by riding.

Each rider has a different weight and sitting position. The sag depends on the rider's position and weight and should be between 15% and 30% of the maximum fork deflection, depending on pedelec usage and preferences.

### 6.2.5.2 Adjusting the air suspension fork negative deflection

#### Only applies to pedelecs with this equipment

- ▶ The air valve is located under a cover on the head of the left shock absorber. Screw off the cover.



Figure 56: Screw caps in different designs

- ▶ Screw a high-pressure pump onto the valve.
- ▶ Pump the suspension fork up to the desired pressure. Never exceed the recommended maximum air pressure. Comply with the values of the filling pressure table.
- ▶ Remove the high-pressure pump.

Rider weight	AION, NEX	XCR 32, XCR 34
< 55 kg	35 - 50 psi	40 - 55 psi
55 - 65 kg	50 - 60 psi	55 - 65 psi
65 - 75 g	60 - 70 psi	65 - 75 psi
75 - 85 kg	70 - 85 psi	75 - 85 psi
85 - 95 kg	85 - 100 psi	85 - 95 psi
< 100 kg	+ 105 psi	+ 100 psi
Max. pressure	150 psi	180 psi

**Table 29: Filling pressure table for Suntour air forks**

- ▶ Measure the distance between the crown and the dust wiper of the fork. This distance is the total deflection of the fork.
  - ▶ Push a temporarily attached cable tie downward against the dust wiper of the fork.
  - ▶ Put on your usual bicycling clothing, including luggage.
  - ▶ Sit on the pedelec in your usual riding position and support yourself (e.g. against a wall or tree).
  - ▶ Get off the pedelec without allowing it to deflect.
  - ▶ Measure the distance between the dust wiper and the cable tie. This dimension is the sag. The sag value should be between 15% (hard) and 30% (soft) of the total fork deflection.
  - ▶ Increase or reduce the air pressure until you have reached the desired sag.
- ⇒ Once the sag is correct, re-tighten the blue air cover cap clockwise.
- ⇒ If you cannot achieve the desired sag, you may need to make an internal adjustment. For this purpose, contact your specialist dealer.

### 6.2.5.3 Adjusting the steel suspension fork negative deflection

#### Only applies to pedelecs with this equipment

You can adjust the fork by tensioning the spring to the rider's weight and their preferred riding style. It is not the coil spring hardness which is adjusted; it is its pre-tensioning. This reduces the fork's negative deflection when the rider sits on the pedelec.



**Figure 57: Negative deflection setting wheel on the suspension fork crown**

- ▶ The setting wheel may be located under a plastic cover on the suspension fork crown. Remove the plastic cover by pulling it off upwards.
  - ▶ Turn the negative deflection setting wheel in a clockwise direction to increase the spring pre-tensioning. Turn the negative deflection setting wheel in an anti-clockwise direction to reduce it.
- ⇒ The ideal setting in relation to the weight of the rider has been achieved when the shock absorber deflects 3 mm under the stationary load of the rider. Reattach the cover after the adjustment.

### 6.2.5.4 Adjusting the rebound

#### Only applies to pedelecs with this equipment

The rebound defines the speed at which the fork rebounds after being loaded. The rebound setting depends on the air pressure setting. Higher sag settings require lower rebound settings.

- ▶ Turn the rebound adjuster clockwise to the closed position until it stops.

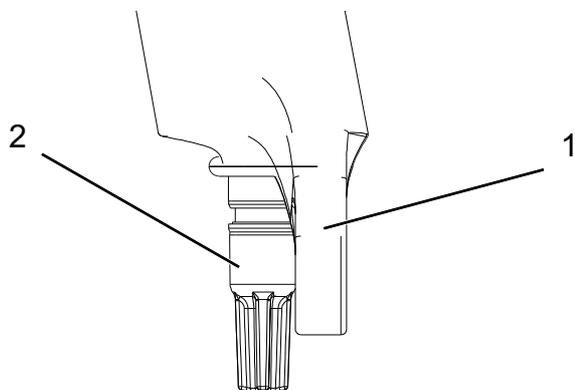


Figure 58: Suntour rebound adjuster (2) on the fork (1)

- ▶ Turn the rebound adjuster anti-clockwise.
- ⇒ Adjust the rebound in such a way that the fork rebounds quickly, but without bottoming out upward during testing. Bottoming out is where the fork rebounds too quickly and stops moving abruptly once it has reached the full rebound distance. You will hear and feel a slight knock when this occurs.

### 6.2.6 Adjusting the suspension of the FOX fork

#### Only applies to pedelecs with this equipment



#### Crash caused by incorrectly set suspension

If the suspension is adjusted incorrectly, the fork may become damaged, so that problems may occur when steering. This will cause a crash with injuries.

- ▶ Never ride the pedelec without air in the air suspension fork.
- ▶ Never use the pedelec without adjusting the suspension fork to the rider's weight.

#### Notice

Settings on the chassis change riding performance significantly. You need to get used to the pedelec and break it in to prevent accidents.

The adjustment shown here represents a basic setting. The rider should change the basic setting to suit the surface and his/her preferences.

- ▶ It is advisable to make a note of the basic setting. This way, it can be used as the starting point for subsequent, optimised settings and to safeguard against unintentional changes.

#### 6.2.6.1 Adjusting the negative deflection

Negative deflection (sag) is compression of the fork caused by the weight of the rider and their gear (e.g. a backpack), the sitting position and the frame geometry. This sag is not caused by riding. Each rider has a different weight and sitting position. The sag depends on the rider's position and weight and should be between 15% and 20% of the maximum fork deflection, depending on pedelec usage and preferences.

- ✓ When adjusting the sag, ensure that each compression adjuster is in the open position, i.e. turned clockwise until it stops.
- ✓ The pressure is to be measured at an ambient temperature of 21 to 24 °C.

- ▶ The air valve is located under a blue cover on the head of the left shock absorber. Screw off the cover anti-clockwise.
- ▶ Place a high-pressure pump on the valve.
- ▶ Pump the suspension fork up to the desired pressure. Never exceed the recommended maximum air pressure. Comply with the values of the filling pressure table.
- ▶ Remove the high-pressure pump.

Rider weight	Rhythm 34	Rhythm 36
<b>Minimum air pressure</b>	<b>40 psi (2.8 bar)</b>	<b>40 psi (2.8 bar)</b>
54 - 59 kg	58 psi	55 psi
59 - 64 kg	63 psi	59 psi
64 - 68 kg	68 psi	63 psi
68 - 73 kg	72 psi	67 psi
73 - 77 kg	77 psi	72 psi
77 - 82 kg	82 psi	76 psi
82 - 86 kg	86 psi	80 psi
86 - 91 kg	91 psi	85 psi
91 - 95 kg	96 psi	89 psi
95 - 100 kg	100 psi	93 psi
100 - 104 kg	105 psi	97 psi
104 - 109 kg	110 psi	102 psi
109 - 113 kg	114 psi	106 psi
<b>Max. pressure</b>	<b>120 psi (8.3 bar)</b>	<b>120 psi (8.3 bar)</b>

Table 30: Filling pressure table for the FOX air fork

- ▶ Measure the distance between the crown and the dust wiper of the fork. This distance is the "total deflection of the fork."
- ▶ Push the O-ring downward against the dust wiper of the fork. If an O-ring is not available, attach a cable tie to the stanchion temporarily.
- ▶ Put on your usual bicycling clothing, including luggage.
- ▶ Sit on the pedelec in your usual riding position and support yourself (e.g. against a wall or tree).
- ▶ Get off the pedelec without allowing it to deflect.

- ▶ Measure the distance between the dust wiper and the O-ring or cable tie. This dimension is the sag. The recommended sag value is between 15% (hard) and 20% (soft) of the "total fork deflection."
  - ▶ Increase or reduce the air pressure until you have reached the desired sag.
- ⇒ Once the sag is correct, re-tighten the blue air cover cap clockwise.

If you cannot achieve the desired sag, you may need to make an internal adjustment. For this purpose, contact your specialist dealer.



### 6.2.6.2 Adjusting the rebound

The rebound defines the speed at which the fork rebounds after being loaded. The rebound setting depends on the air pressure setting. Higher sag settings require lower rebound settings.

- ▶ Turn the rebound adjuster clockwise to the closed position until it stops.



Figure 59: FOX rebound adjuster (1) on the fork

- ▶ Turn the rebound adjuster anti-clockwise.
- ⇒ Adjust the rebound in such a way that the fork rebounds quickly, but without bottoming out upward during testing. Bottoming out is where the fork rebounds too quickly and stops moving abruptly once it has reached the full rebound distance. You will hear and feel a slight knock when this occurs.

## 6.2.7 Setting the Suntour rear frame damper

Only applies to pedelecs with this equipment

### 6.2.7.1 Adjusting the negative deflection

#### Notice

If the air pressure in the rear frame damper is exceeded or undershot, the damper can be permanently damaged.

Do not exceed the maximum air pressure of 300 psi (20 bar).

Negative deflection (sag) is compression of the rear frame damper caused by the weight of the rider and their gear (e.g. a backpack), the sitting position and the frame geometry. This sag is not caused by riding. Each rider has a different weight and sitting position. The sag depends on the rider's position and weight and should be between 25% and 30% of the maximum Rear frame damper, depending on pedelec usage and preferences.

- ▶ Set the compression adjuster to the OPEN position so that the sag setting is not affected.
- ▶ Remove the cap on the air valve.
- ▶ Attach a high-pressure damper pump to the valve.
- ▶ Adjust the air pressure of the damper so that it corresponds to your weight.
- ▶ Remove the high-pressure pump.
- ▶ Measure the distance between the rubber air chamber seal and the end of the damper. This distance is the "total damper deflection".
- ▶ Put on your usual bicycling clothing, including luggage. Sit on the pedelec in your usual riding position and support yourself against an object such as a wall or tree.
- ▶ Push the O-ring downward against the rubber air chamber seal.
- ▶ Get off the pedelec without allowing it to deflect.

- ▶ Measure the distance between the rubber air chamber seal and the O-ring. This dimension is the sag. The recommended sag value is between 15% (hard) and 25% (soft) of the "total damper deflection."

- ▶ Increase or reduce the air pressure until you have reached the desired sag.

### 6.2.7.2 Adjusting the rebound

The rebound defines the speed at which the rear frame damper rebounds after being loaded. The rebound setting depends on the air pressure setting. Higher sag settings require lower rebound settings.



Figure 60: Suntour rebound adjuster wheel (1) on the rear frame damper

- ▶ Turn the rebound adjuster wheel towards the – symbol to increase rebounding.
- ▶ Turn the rebound adjuster wheel towards the + symbol to reduce compressive deflection movement.

### 6.2.7.3 Setting the compression

The compression damper setting of the rear frame damper makes it possible to set the damper according to the conditions of the ground. The compression damper setting specifies the speed at which the rear frame damper deflects after being loaded.

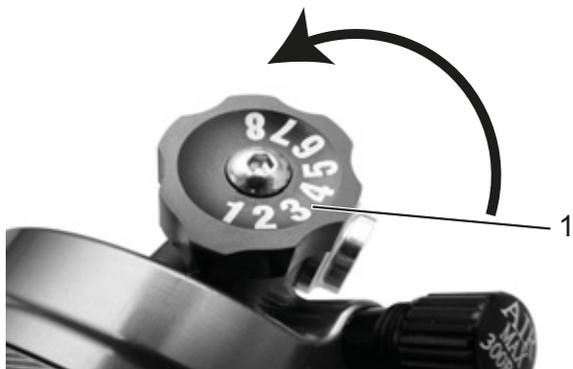


Figure 61: Suntour compression adjuster on the rear frame damper

- ▶ Turn the compression adjuster towards the – symbol to increase rebounding.
- ▶ Turn the compression adjuster towards the + symbol to reduce compressive deflection movement.

## 6.2.8 Setting the FOX rear frame damper

**Only applies to pedelecs with this equipment**

### 6.2.8.1 Adjusting the negative deflection

#### Notice

If the air pressure in the rear frame damper is exceeded or undershot, the damper can be permanently damaged.

Do not exceed the maximum air pressure of 350 psi (24.1 bar). The minimum air suspension pressure of 50 psi (3.4 bar) must be complied with.

Negative deflection (sag) is compression of the rear frame damper caused by the weight of the rider and their gear (e.g. a backpack), the sitting position and the frame geometry. This sag is not caused by riding. Each rider has a different weight and sitting position. The sag depends on the rider's position and weight and should be between 25% and 30% of the maximum rear frame damper, depending on pedelec usage and preferences.

- ▶ Set the compression adjuster to the OPEN position.
- ▶ Adjust the air pressure of the damper so that it corresponds to your weight.
- ▶ Attach the high-pressure pump to the damper. Slowly compress the damper over 25% of the deflection 10 times until you have reached the desired pressure. This equalises the air pressure between the positive and negative air chambers, and the pressure indication on the pump manometer changes accordingly.

Remove the high-pressure pump.

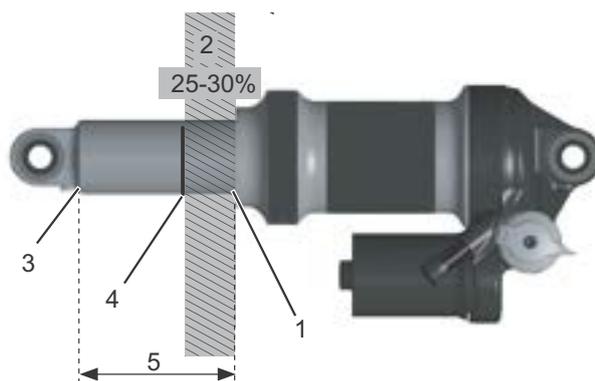


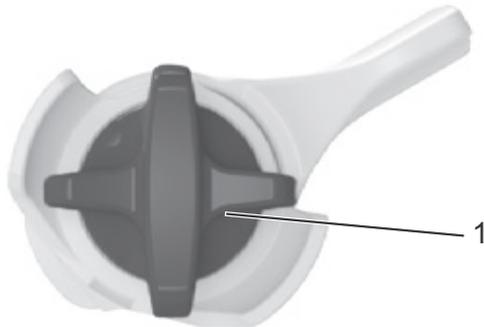
Figure 62: FOX rear frame damper

The negative deflection (2) is the distance between the O-ring (4) and the rubber air chamber seal (1). The total deflection of the rear frame damper (5) is the distance between the end of the rear frame damper (3) and the rubber air chamber seal (1)

- ▶ Measure the distance between the rubber air chamber seal (1) and the end of the damper (3). This distance is the "total damper deflection" (5).
- ▶ Put on your usual bicycling clothing, including luggage. Sit on the pedelec in your usual riding position and support yourself against an object such as a wall or tree.
- ▶ Push the O-ring (4) downward against the rubber air chamber seal (1).
- ▶ Get off the pedelec without allowing it to deflect.
- ▶ Measure the distance between the rubber air chamber seal and the O-ring. This dimension is the sag. The recommended sag value is between 25% (hard) and 30% (soft) of the "total damper deflection" (5).
- ▶ Increase or reduce the air pressure until you have reached the desired sag.

### 6.2.8.2 Adjusting the rebound

The rebound defines the speed at which the rear frame damper rebounds after being loaded. The rebound setting depends on the air pressure setting. Higher sag settings require lower rebound settings.



**Figure 63: FOX rebound adjuster wheel (1) on the rear frame damper**

- ▶ Turn the rebound adjuster clockwise to the closed position until it stops.
- ▶ Determine your rebound setting based on the air pressure. Turn the rebound adjuster back anti-clockwise by the number of clicks specified in the table below:

Air pressure (psi)	Recommended rebound setting
< 100	Open (anti-clockwise)
100 - 120	11
120 - 140	10
140 - 160	9
160 - 180	8
180 - 200	7
200 - 220	6
220 - 240	5
240 - 260	4
260 - 280	3
280 - 300	2

**Table 31: Filling pressure table for the FOX air fork**

### 6.2.9 Retracting the brake linings

Disc brakes require wearing-in time. The braking force increases over time. You therefore need to be aware that the braking force may increase during the wearing-in period. The same happens after brake pads or discs are replaced.

- ▶ Accelerate pedelec to about 25 km/h.
- ▶ Brake pedelec until it comes to a halt.
- ▶ Repeat process 30–50 times.
- ▶ The brake linings and brake discs are now retracted and provide optimal braking power.

## 6.3 Error messages

### 6.4 Battery error message

The battery indicates errors with different LED statuses. The LED statuses are lit (■), non-lit (□) and flashing (▨).

Type	Status	Lighting pattern	Remedy
System error	Communication error with the bicycle system.		<ul style="list-style-type: none"> <li>▶ Check that the charging cable is firmly and properly connected.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
Temperature protection	If the temperature exceeds the guaranteed operating range, the battery will switch off.		<ul style="list-style-type: none"> <li>▶ Store battery in a cool place where there is no direct sunlight until the battery interior temperature has fallen sufficiently.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
Error during security authentication	This is displayed if no original drive unit is connected. This is displayed if one of the cables is not connected.		<ul style="list-style-type: none"> <li>▶ Connect an original battery and an original drive unit.</li> <li>▶ Check the status of the cables.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
Charge error	This is displayed if an error occurs during the charging process.		<ul style="list-style-type: none"> <li>▶ Remove the plug connector between the battery and charger.</li> <li>▶ Press the On-Off button when only the battery is connected.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
Battery malfunction	Electrical fault in the battery.		<ul style="list-style-type: none"> <li>▶ Plug the charger into the battery.</li> <li>▶ Remove the charger.</li> <li>▶ Press the On-Off switch when the battery is connected.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>

Table 32: Battery error messages

### 6.5 Warning message

Code	Cause	Limitation	Remedy
W011	The bike's speed cannot be detected.	The maximum speed before pedal assistance is provided may be lower than normal.	<ul style="list-style-type: none"> <li>▶ Check that the speed sensor is fitted correctly.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
W013	The torque sensor may not have initialized completely successfully.	Pedal assistance is possibly less than normal.	<ul style="list-style-type: none"> <li>▶ Take your foot off the pedal.</li> <li>▶ Press the battery On-Off button and switch the system on again.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
W032	A mechanical rear derailleur may have been fitted instead of an electronic one.	The pedal assistance provided in the WALK level of assistance is possibly less than normal.	<ul style="list-style-type: none"> <li>▶ Re-fit the front derailleur for which the system is designed.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>

Table 33: List of warnings

## 6.6 Error message screen

If an error message is shown over the entire display, follow the procedure indicated below to reset the screen.

- ▶ Press the **On-Off button (battery)**.
- ▶ Take the battery from the mount.

Contact your specialist dealer if the problem persists.

Code	Cause	Limitation	Remedy
E010	A system error has been detected.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Press the On-Off button (battery).</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
E013	An anomaly has been detected in the drive unit firmware.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Contact your specialist dealer.</li> </ul>
E014	The speed sensor may have been installed incorrectly.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Contact your specialist dealer.</li> </ul>
E020	A communication error has been detected between the battery and the drive unit.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Check that the cable between the drive unit and the battery is connected properly.</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
E021	The battery connected to the drive unit meets the system standard but is not supported.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Press the On-Off button (battery).</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
E022	The battery connected to the drive unit does not meet the system standard.	Switch-off of all system functions.	<ul style="list-style-type: none"> <li>▶ Press the On-Off button (battery).</li> <li>▶ Contact your specialist dealer if the problem persists.</li> </ul>
E030	The fitted front derailleur is different to the one configured in the system.	No assistance will be provided during the ride.	<ul style="list-style-type: none"> <li>▶ Contact your specialist dealer.</li> </ul>
E033	The current firmware does not support system operation.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Contact your specialist dealer.</li> </ul>
E043	The display firmware may have been corrupted.	No pedal assistance is provided during the ride.	<ul style="list-style-type: none"> <li>▶ Contact your specialist dealer.</li> </ul>

**Table 34: List of warnings**

## 6.7 Accessories

We recommend a parking stand into which either the front or rear wheel can be inserted securely for pedelecs which do not have a kickstand. The following accessories are recommended:

Description	Article number
Protective cover for electrical components	080-41000 ff
Panniers, system component*	080-40946
Rear wheel basket, system component*	051-20603
Bicycle box, system component*	080-40947
Parking stand universal stand	XX-TWO14B

**Table 35: Accessories**

\*System components are matched to the pannier rack and provide sufficient stability due to special transmission of force.

\*\*System components are matched to the drive system.

### 6.7.1 Child seat

#### WARNING

##### Crash caused by incorrect child seat

Neither the pannier rack nor the pedelec down tube are suitable for child seats and may break. Such an incorrect position may cause a crash with serious injuries for the rider and the child.

Never attach a child seat to the saddle, handlebars or down tube.

#### CAUTION

##### Crash caused by improper handling

When using child seats, the pedelec's handling characteristics and stability change considerably. This can cause a loss of control, a crash and injuries.

- ▶ You should practice how to use the child seat safely before using the pedelec in public spaces.

#### CAUTION

##### Risk of crushing due to exposed springs

The child may crush his/her fingers on exposed springs or open mechanical parts of the saddle or the seat post.

- ▶ Never install saddles with exposed springs if a child seat is being used.
- ▶ Never install seat posts with suspension with open mechanical parts or exposed springs if a child seat is being used.

#### Notice

- ▶ Observe the legal regulations on the use of child seats.
- ▶ Observe the operating and safety instructions for the child seat system.
- ▶ Never exceed the total weight of the pedelec.

The specialist dealer will advise you on choosing a suitable child seat system for the child and the pedelec.

The specialist dealer must install the child seat the first time to ensure that it is safely fitted.

When installing a child seat, the specialist dealer makes sure that the seat and the fastening mechanism for the seat are suitable for the pedelec and that all components are installed and firmly fastened. They will also ensure that shift cables, brake cables, hydraulic and electrical cables are adjusted as necessary, the rider's freedom of movement is not restricted and the pedelec's permitted total weight is not exceeded.

The specialist dealer will provide instruction on how to handle the pedelec and the child seat.

The specialist dealer will advise you on choosing a suitable child seat system for the child and the pedelec.

The specialist dealer must install the child seat the first time to ensure that it is safely fitted.

When installing a child seat, the specialist dealer makes sure that the seat and the fastening mechanism for the seat are suitable for the pedelec and that all components are installed and firmly fastened. They will also ensure that shift

cables, brake cables, hydraulic and electrical cables are adjusted as necessary, the rider's freedom of movement is not restricted and the pedelec's permitted total weight is not exceeded.

The specialist dealer will provide instruction on how to handle the pedelec and the child seat.

### 6.7.2 Bicycle trailers



#### Crash caused by brake failure

The brake may not work sufficiently if there is an excessive trailer load. The long braking distance can cause a crash or an accident and injuries.

- ▶ Never exceed the specified trailer load.

#### Notice

- ▶ The operating and safety notes for the trailer system must be observed.
- ▶ The statutory regulations on the use of bicycle trailers must be observed.
- ▶ Only use type-approved coupling systems.

A pedelec which is approved for towing a trailer will bear an appropriate adhesive label. Only bicycle trailers with a support load and total mass which do not exceed the permitted values may be used.

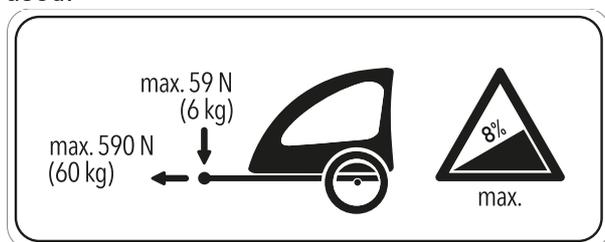


Figure 64: Trailer sign

The specialist dealer will advise on choosing a suitable trailer system for the pedelec. The specialist dealer must install the trailer the first time to ensure that it is safely fitted.

### 6.7.3 Pannier rack

The specialist dealer will advise on choosing a suitable pannier rack.

The specialist dealer must install the pannier rack the first time to ensure that it is safely fitted.

When installing a pannier rack, the specialist dealer will make sure that the fastening mechanism for the rack is suitable for the pedelec and that all components are installed and firmly fastened. They will also ensure that shift cables, brake cables and hydraulic and electrical lines are adjusted as necessary, the rider's freedom of movement is not restricted and the permitted total weight of the pedelec is not exceeded.

The specialist dealer will provide instruction on how to handle the pedelec and the pannier rack.

## 6.8 Before each ride



### Crash caused by difficult-to-spot damage

If the pedelec topples over or you have a fall or an accident, there may be difficult-to-spot damage to components such as the brake system, quick releases or *frame*. This may cause a crash with injuries.

- ▶ Take the pedelec out of service and have a specialist dealer carry out an inspection.

### Crash caused by material fatigue

Intensive use can cause material fatigue. A component may suddenly fail in case of material fatigue. This may cause a crash with injuries.

- ▶ Remove the pedelec from service immediately if there are any signs of material fatigue. Have the specialist dealer check the state.
- ▶ Have the specialist dealer carry out a basic inspection regularly. During the inspection, the specialist dealer will inspect the pedelec for any signs of material fatigue on the frame, fork, suspension element mountings (if there are any) and components made of composite materials.

Carbon becomes brittle when exposed to heat radiation such as heating. This can cause the carbon part to break and result in a crash with injuries.

- ▶ Never expose carbon parts on the pedelec to strong sources of heat.

## 6.9 Check list before each ride

- ▶ Check the pedelec before each ride.
- ⇒ Do not use the pedelec if there is evidently something wrong with it.

<input type="checkbox"/>	Check that the pedelec is complete.
<input type="checkbox"/>	Check the battery is firmly in place.
<input type="checkbox"/>	Check that the lighting, reflector and brake, for instance, are sufficiently clean.
<input type="checkbox"/>	You must check that the mudguards, the pannier rack and the chain guard are securely installed.
<input type="checkbox"/>	Check that the front and rear wheels run true. This is particularly important if the pedelec been transported or secured with a lock.
<input type="checkbox"/>	Check the valves and the tyre pressure. Adjust as necessary before each ride.
<input type="checkbox"/>	If the pedelec has a hydraulic rim brake, check whether the locking levers are fully closed in their final positions.
<input type="checkbox"/>	Check the front and rear wheel brakes to make sure that they are working properly. To do so, push the brake levers while stationary to check whether resistance is generated in the usual brake lever position. The brake must not lose any brake fluid.
<input type="checkbox"/>	Check that the riding light is working.
<input type="checkbox"/>	Check for unusual noises, vibrations, smells, staining, deformation, cracks, scores, abrasion and wear. This indicates material fatigue.
<input type="checkbox"/>	Inspect suspension system for cracks, dents, bumps, parts or leaking oil. Look at concealed sections on the pedelec's lower surface.
<input type="checkbox"/>	Use body weight to compress suspension system. Adjust to the optimum sag value if suspension is too soft.
<input type="checkbox"/>	If quick releases are used check them to make sure that they are fully closed in their end position. If quick release axle systems are used, make sure that all attachment screws are tightened to the correct torque.
<input type="checkbox"/>	Be alert to any unusual operating sensations when braking, pedalling or steering.
<input type="checkbox"/>	Check that the ABS indicator lamp lights up correctly on pedelecs with an ABS system.

## 6.10 Using the kickstand

### CAUTION

#### Crash caused by a lowered kickstand

The kickstand does not fold up automatically. There is a risk of crashing if riding with the kickstand lowered.

- ▶ Raise the kickstand completely before setting off.

### Notice

The pedelec's force of weight may cause the kickstand to sink into soft ground and the pedelec may topple over.

- ▶ The pedelec must be parked on firm, level ground only.
- ▶ It is particularly important to check that the pedelec is stable if it is equipped with accessories or loaded with baggage.

### 6.10.1 Raising the kickstand

- ▶ Before the ride, raise the kickstand completely with your foot.

#### 6.10.1.1 Parking the pedelec

- ▶ Use your foot to lower the kickstand completely before parking.
- ▶ Park the pedelec carefully and check that it is stable.

## 6.11 Using the pannier rack

### CAUTION

#### Crash caused by loaded pannier rack

The pedelec is handled differently with a loaded *pannier rack*, in particular when the rider needs to steer and brake. This can lead to a loss of control. This may cause a crash with injuries.

- ▶ You should practice how to use a loaded *pannier rack* safely before using the pedelec in public spaces.

### CAUTION

#### Crash caused by unsecured baggage

Loose or unsecured objects on the *pannier rack*, e.g. belts, may become caught in the rear wheel. This may cause a crash with injuries.

Objects which are fastened to the pannier rack may cover the pedelec's *reflectors* and the *riding light*. Other users may not see the pedelec on public roads as a result. This may cause a crash with injuries.

- ▶ Secure any objects which are attached to the *pannier rack* sufficiently.
- ▶ Objects fastened to the *pannier rack* must never cover the *reflectors*, the *headlight* or the *rear light*.

#### Crushing the fingers in the spring flap

The spring flap on the *pannier rack* operates with a high clamping force. There is a risk of crushing the fingers.

- ▶ Never allow the spring flap to snap shut in an uncontrolled manner.
- ▶ Be careful where you position your fingers when closing the spring flap.

### Notice

The maximum load bearing capacity is indicated on the *pannier rack*.

- ▶ Never exceed the permitted *total weight* when loading the pedelec.
- ▶ Never exceed the maximum load bearing capacity of the pannier rack.
- ▶ Never modify the *pannier rack*.
- ▶ Distribute the baggage as evenly as possible on the left- and right-hand side of the pedelec.
- ▶ We recommend the use of panniers and baggage baskets.

## 6.12 Rechargeable battery

### WARNING

#### Risk of fire and explosion due to faulty battery

The safety electronics on a damaged or faulty battery may fail. The residual voltage can cause a short circuit. The battery may self-ignite and explode.

- ▶ Remove batteries with external damage from service immediately and never charge them.
- ▶ Only operate the battery and accessories if they are in perfect condition.
- ▶ Only use batteries which are approved for use on your pedelec.
- ▶ Do not use the battery with defective connecting cables or defective contacts.
- ▶ Use the battery with BOSCH Systems pedelecs only. This is the only way that the battery will be protected from dangerous overloading.
- ▶ If the battery becomes deformed or begins to smoke, keep at a safe distance, disconnect the power supply at the socket, and notify the fire service immediately.
- ▶ Never extinguish a damaged battery with water or allow it to come into contact with water.
- ▶ If a battery is dropped or struck but shows no signs of external damage, remove it from service and observe it for at least 24 hours.
- ▶ Faulty batteries are hazardous goods. Dispose of faulty batteries properly and as quickly as possible.
- ▶ Store in a dry place until disposal. Never store in the vicinity of flammable substances.
- ▶ Never open or repair the battery.
- ▶ Charge the battery before use. Only use the charger included in the scope of delivery.
- ▶ Avoid wide temperature fluctuations.

### CAUTION

#### Chemical burns to the skin and eyes caused by faulty battery

Liquids and vapours may leak from a damaged or faulty battery. Excessive temperatures can also cause liquid to leak from the battery and the battery will become damaged. Such liquids can irritate the airways and cause burns.

- ▶ Avoid any contact with leaked liquids:
  - Immediately consult a doctor if liquid comes into contact with eyes or causes any discomfort.
  - If liquid comes into contact with the skin, rinse off immediately with water.
  - Ventilate the room well.
- ▶ Protect the battery against heat over 60 °C, e.g. against permanent direct sunlight.

#### Risk of fire and explosion due to short circuit

Small metal objects may jumper the electrical connections of the battery. The battery may self-ignite and explode.

- ▶ Keep paper clips, screws, coins, keys and other small parts away and do not insert them into the battery.

#### Risk of fire and explosion due to penetration by water

The battery is only protected from simple spray water. Penetration by water can cause a short circuit. The battery may self-ignite and explode.

- ▶ Never immerse the battery in water.
- ▶ Never clean the battery with a pressure washer.
- ▶ If there is reason to believe that water may have entered into the battery, the battery must be removed from service.

## Notice

If you leave a key inserted when riding or transporting the pedelec, it may break off or the locking system may open accidentally.

- ▶ Remove the key from the battery lock immediately after use.
- ▶ We recommend that you attach the key to a key ring.

- ✓ Switch off the battery and the drive system before removing or inserting the battery.

### 6.12.1 Side down tube battery

- ✓ Switch off the battery and the drive system before removing or inserting the battery.

#### 6.12.1.1 Inserting the battery

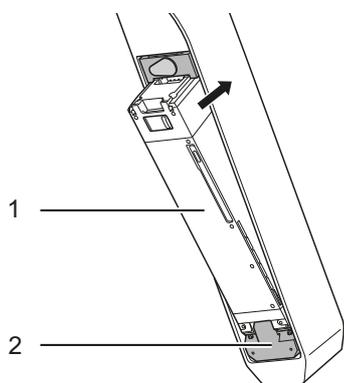


Figure 65: Positioning battery (1) on mount (2)

- ▶ Place the battery on the contacts in its lower mount. Push the battery inwards.
- ⇒ There is an audible clicking noise.
- ▶ Secure the battery by closing. Remove key.
- ▶ Check the inserted battery to make sure it is fastened and firmly in place.

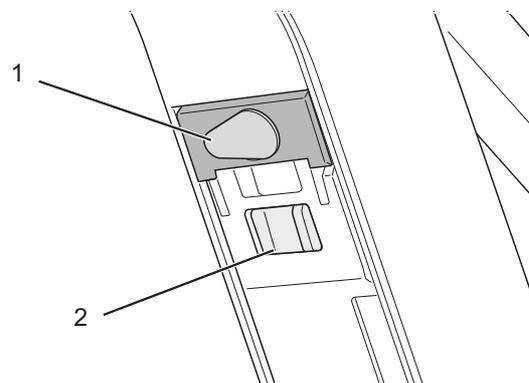


Figure 66: Closed key cover (1) and charge cap (2)

- ▶ Before setting off, ensure that the key cover and charge cap are closed.

#### 6.12.1.2 Removing the battery

- ▶ Remove key cover.
- ▶ Insert key into the key cylinder in the battery mount. The position of the key has no effect on the battery mount. You can insert the key in any position. You cannot remove the key if it is not in the insert position.

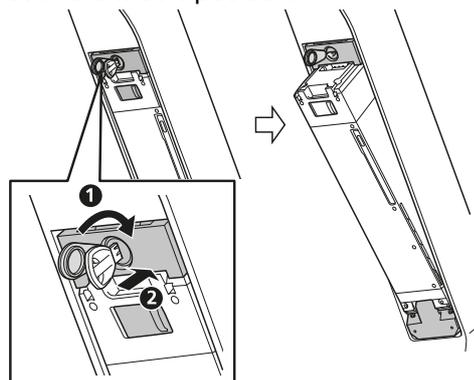


Figure 67: Removing and inserting the down tube battery

- ▶ Turn the key in a clockwise direction to unlock the battery (1) and press the key into place (2).
- ⇒ The battery is unlocked.
- ▶ Support the battery in your hand to ensure that it won't fall out. Remove the key and re-insert the battery lock cover. Remove the battery using removal handle.

## 6.12.2 Charging the battery

### WARNING

#### Fire and explosion due to defective batteries

The safety electronics on damaged or faulty batteries may fail. The residual voltage can cause a short circuit. Batteries may self-ignite and explode.

- ▶ Never charge a faulty battery

### CAUTION

#### Fire caused by overheated charger

The charger heats up when charging the battery. In case of insufficient cooling, this can result in fire or burns to the hands.

- ▶ Never use the charger on a highly flammable surface (e.g. paper, carpet etc.).
- ▶ Never cover the charger during the charging process.
- ▶ Never leave battery unattended during charging.

#### Electric shock caused by penetration by water

If water penetrates into the charger, there is a risk of electric shock.

- ▶ Never charge the battery outdoors.

#### Electric shock in case of damage

Damaged chargers, cables and plug connectors increase the risk of electric shock.

- ▶ Check the charger, cable and plug connector before each use. Never use a damaged charger.

### Notice

- ▶ If an error occurs during the charging process, a system message is displayed. Remove the charger and battery from operation immediately and follow the instructions.

- ✓ The ambient temperature during the charging process must be within the range from 0 °C to 40 °C.
  - ✓ The battery can remain on the pedelec or can be removed for charging.
  - ✓ Interrupting the charging process does not damage the battery.
  - ✓ If pedelec features two batteries, charging for both batteries is started via pannier rack battery.
- ▶ Remove the rubber cover from the battery.
  - ▶ Connect the mains plug of the charger to a normal domestic, grounded socket.

#### Connection data

230 V, 50 Hz

### Notice

- ▶ Check that mains voltage is correct. The power source voltage must match the voltage indicated on the charger nameplate. Chargers labelled 230 V may also be operated at 220 V.
- ▶ Connect the charging cable to the battery's charging port.
- ✓ The charging process starts automatically.
- ▶ The LED light on the charger will light up once charging starts.

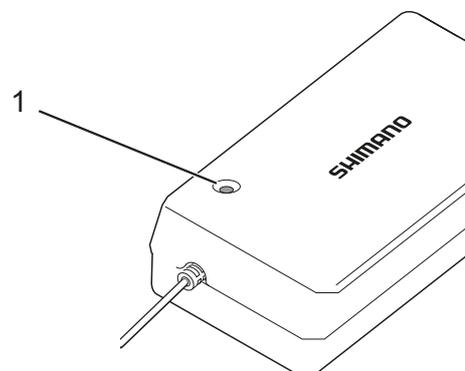


Figure 68: LED light on the charger

The LED light on the charger has three statuses:

	Status	Meaning
	Lit	The charger is recharging the battery.
	Flashing	There is a charging error.
	Switched off	Battery disconnected

**CAUTION**

**Risk of fire and explosion caused by damaged batteries**

The safety electronics on damaged or faulty batteries may fail. The residual voltage can cause a short circuit. Batteries may self-ignite and explode.

- ▶ If the battery becomes deformed or begins to smoke, keep at a safe distance, disconnect the power supply at the socket, and notify the fire service immediately.
- ▶ Never extinguish damaged batteries with water or allow them to come into contact with water.

**Notice**

- ▶ If an error occurs during the charging process, a system message is displayed. Remove the charger and battery from operation immediately and follow the instructions.
- ▶ You can check the battery level by looking at the LEDs on the battery. The LED statuses are lit (  ), non-lit (  ) and flashing (  ).

▶ You can check the current charging status by pressing the battery's On-Off switch.

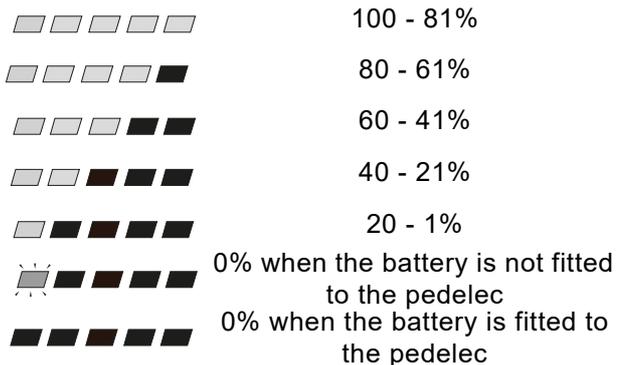


Table 36: Charge level of the battery

⇒ The charging process is complete when the LEDs on the operating status and battery level indicator go out.

## 6.13 Electric drive system

### 6.13.1 Switching on the drive system



#### Crash caused by lack of readiness for braking

When it is switched on, the drive system can be activated by the application of force on the pedals. There is a risk of a crash if the drive is activated unintentionally, and the brake is not reached.

- ▶ Never start the electric drive system, or switch it off immediately, if the brake cannot be reached safely and reliably.

- ✓ A sufficiently charged battery has been inserted into the pedelec.
- ✓ Never place your feet on the pedals when switching on. If the pedals are moved when switching on, a system error is caused.
- ✓ The battery is firmly positioned. The key has been removed.
- ✓ The system cannot be switched on while charging.

There are 2 options for switching on the drive system:

#### 6.13.1.1 Switching on using the display

- ▶ Press and hold the **On-Off button (display)** for 2 seconds.

### 6.13.1.2 Switching on using the battery

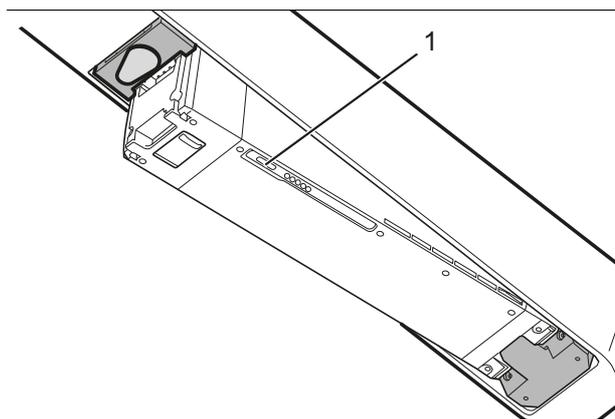


Figure 69: On-off button on the battery

- ▶ Press the **On-Off button (battery)** briefly.
  - ⇒ The LED light will light up and indicate the remaining battery capacity.
  - ⇒ If the drive system is switched on, the drive is activated as soon as the pedals are moved with sufficient force.

### 6.13.2 Switching off the drive system

The system switches off automatically ten minutes after the last command.

There are 2 options for switching off the drive system:

#### 6.13.2.1 Switching off using the display

- ▶ Press and hold the **On-Off button (display)** for 2 seconds.

#### 6.13.2.2 Switching off using the battery

- ▶ Press and hold the **On-Off button (battery)** for 6 seconds.
  - ⇒ If the drive system is switched on, the drive is activated as soon as the pedals are moved with sufficient force.

### 6.13.3 Display



#### CAUTION

#### Crash caused by distraction

A lack of concentration while riding increases the risk of an accident. This may cause a crash with serious injuries.

- ▶ Never allow yourself to be distracted by the display.
- ▶ Stop pedelec if you want to make inputs on the display other than a change in level of assistance. Only enter data when the bicycle is stationary.

#### Notice

- ▶ Do not use the display as a handle. You may irreparably damage the display if you use it to lift the pedelec.

The display screen is operated using the display screen (II) and the left-hand control panel (I). The right-hand control panel (III) switches the gears.

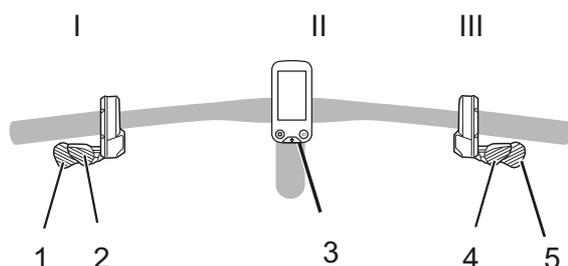


Figure 70: Control panel overview

	Designation
1	Long assistance lever
2	Short assistance lever
3	Display
4	Long shifter
5	Short shifter

Table 37: Control panel overview

### 6.13.3.1 Using the riding light

- ✓ The drive system must be switched on.
- ▶ Press the light button.
- ⇒ The light is switched on. The riding light symbol is shown on the screen.
- ▶ Press the light button.

The light is switched off

### 6.13.4 Using the push assist system



#### CAUTION

#### Injury caused by pedals

The pedals turn when using the push assist due to the system design.

- ▶ You must steer the pedelec securely with both hands when using push assist.
- ▶ Allow for enough freedom of movement for the pedals.

The push assist helps the rider to push the pedelec. The speed can be a maximum of 6 km/h in this case. The tractive power of the push assist and its speed can be influenced by the selection of gear. We recommend using first gear for cycling uphill to protect the drive.

### 6.13.4.1 Select WALK level of assistance

- ▶ Push the **long assistance lever** for about 2 seconds.
- ⇒ The level of assistance WALK is displayed.
- ⇒ If a warning is sounded during switchover, it is impossible to switch to the WALK level of assistance. This may be due to the current speed not being 0 km/h, pressure being applied to the pedals or similar.
- ▶ Release the **long assistance lever**.

#### 6.13.4.2 Switching on the push assist

- ▶ Push the **long assistance lever** to switch on the push assist system.

#### Switching off the push assist

- ▶ Release the **long assistance lever** to switch off the push assist system.

#### 6.13.4.3 Exit WALK level of assistance

- ▶ Push the **short assistance lever** to change from the WALK level of assistance to the level of assistance last used.
- ▶ If the **long assistance lever** is not pushed for longer than one minute, the level of assistance is reset to the level of assistance used previously.

#### 6.13.4.4 Selecting the level of assistance

The following levels of assistance are available:

Screen display	Details
BOOST	High level of assistance.
TRAIL	Normal assistance
ECO	Low level of assistance
OFF	Assistance off
WALK	Activated push assist

Table 38: Overview of levels of assistance

- ▶ Push the **long assistance lever** briefly to increase the level of assistance.
- ▶ Push the **short assistance lever** to reduce the level of assistance.

#### 6.13.5 Switching the journey information

The displayed journey information can be switched.

- ▶ Press the **button (display)** repeatedly until the desired item of *journey information* is displayed.

Screen display	Function
DST	Distance travelled since the last reset
ODO	Display of the total distance travelled (cannot be changed)
RANGE	Estimated range of the available battery charge *1
TIME	Possible journey time *1 *2 *3
AVG	Average speed *3
MAX	Maximum achieved speed *3
CADENCE	Number of crank revolutions per minute *3

Table 39: Journey information

\*1 The figures for possible journey distances are estimated and should be used for reference purposes only.

\*2 These data are displayed as follows:

1. RANGE
2. HIGH
3. NORM
4. ECO

\*3 Optional screen display.

### 6.13.5.1 Opening the settings menu

- ✓ You can only change the settings when you stop.
- ▶ Press the **button (display)**.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly to move the cursor on the menu.

Screen display	Function
CLEAR	Clears the settings
CLOCK	Setting the clock
START MODE	Adjusts the start-up transmission
BACKLIGHT	Adjusts the backlight
BRIGHTNESS	Adjusts display screen brightness
BEEP	Switches the beep on and off
UNIT	Adjusts journey distance unit: km/h or m.p.h.
LANGUAGE	Adjusts language
FONT COLOR	Makes colour setting
ADJUST	Adjusts the electronic gear shift
GEAR SETTING	Adjusts the gear shift point
GEAR SHIFT INFO	Switches the gear recommendation on and off
RD PROTECTION RESET	Activates the rear derailleur reset
EXIT	Returns to the main screen

Table 40: Journey information

### 6.13.5.2 Closing the settings menu

- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until EXIT is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The *settings menu* is closed.

### 6.13.5.3 Deleting the journey information

The TRIP distance completed can be deleted. TIME, AVG and MAX are also deleted if the distance is deleted.

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until CLEAR is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see three selection options:

Screen display	Function
EXIT	Returns to the menu list display screen
DST	Deletes the journey information
DEFAULT	Resets the bicycle computer settings *

Table 41: Journey information change options

- ⇒ \* Elements and default values which are reset by a [reset]:

Function	Setting
Backlight	ON
Beep	ON
Unit	km
Language	English
Brightness	3
Font color	White

Table 42: Journey information change options

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until TRIP is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The data have been cleared.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.4 Setting the clock

Configure the clock settings. First set the hours and then the minutes. You can change the values quickly by keeping the **long assistance lever** or the **short assistance lever** pressed down.

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until CLOCK is displayed.
- ▶ Press the **button (display)**.
- ⇒ The set time is displayed. The hour indicator is highlighted.
- ▶ Push the **long assistance lever** or the **short assistance lever** repeatedly until the required hour is displayed.
- ▶ Press the **button (display)**.
- ⇒ The minute indicator is highlighted.
- ▶ Push the **long assistance lever** or **short assistance lever** repeatedly briefly until the required minute is displayed.
- ▶ Press the **button (display)**.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.5 Setting the start-up transmission

When the start-up [Start mode] is enabled, the selected start-up transmission is used when the pedelec is started. The transmission may automatically shift to the pre-set gear if you set off after being stationary.

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until START MODE is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see two selection options:

Screen display	Function
OFF	Start-up transmission deactivated
[1 - 11]	Gear 1 - 11

Table 43: Start-up transmission change options

- ▶ Push the **long assistance lever** or the **short assistance lever** repeatedly until the required setting is highlighted.
- ▶ Press the **button (display)**.

- ⇒ The selected start-up transmission is activated.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.6 Changing the backlight

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until BACKLIGHT is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see three selection options:

Screen display	Function
ON	Light always on.
OFF	Light always off.
MANUAL	Is switched on and off with the battery-powered light

Table 44: Light change options

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The light settings have been changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.7 Changing the brightness

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until BRIGHTNESS is displayed.
- ▶ Press the **button (display)**.
- ⇒ You can choose from 5 brightness options.
- ⇒ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The brightness has been changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.8 Changing the beep sound

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until BEEP is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see two selection options:

Screen display	Function
ON	Beep sound always on.
OFF	Beep sound always off.

**Table 45: Beep sound change options**

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The beep sound has been changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.9 Changing the units

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until UNIT is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see two selection options:

Screen display	Function
KM	Unit in km.
MILE	Unit in miles

**Table 46: Units change options**

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The unit has been changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.10 Changing the language

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until LANGUAGE is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see six selection options:

Language
ENGLISH
Français
Deutsch
Nederlands
Italiano
Español

**Table 47: Language change options**

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required language is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The language is changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.11 Changing the font colour

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until FONT COLOR is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see two selection options:

Screen display	Function
WHITE	Black letters on a white background
BLACK	White letters on a black background

**Table 48: Font colour change options**

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The FONT COLOR has been changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.12 Setting the automatic gear sequence



You can configure the gear shift point in the SHIFT SETTING menu option. Special knowledge and tools are required for setting the gear shift. These settings must only be made by a specialist dealer.

### 6.13.5.13 Change the gear shift info

You can choose whether gear shift info is displayed or not.

- ✓ The *settings menu* is open.
- ▶ Push the **long assistance lever** or **short assistance lever** briefly repeatedly until SHIFT INFO is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see two selection options:

Screen display	Function
ON	Activate gear shift info
OFF	Deactivate gear shift info

Table 49: Gear shift info change options

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The gear shift info has been changed.
- ⇒ The display screen switches back to the start screen.

### 6.13.5.14 Rear derailleur reset

The rear derailleur protection function will trigger to protect the system if the pedelec is exposed to a severe impact – due to a fall, for example. The connection between the motor and the link is interrupted instantly, rendering the rear derailleur inoperable.

If you open RD PROTECTION RESET, the connection between the motor and link is re-established and the rear derailleur function reset.

- ✓ The *settings menu* is open.
- ▶ Press the **button (display)** repeatedly until RD PROTECTION RESET is displayed.
- ▶ Press the **button (display)**.
- ⇒ You will see two selection options:

Screen display	Function
OK	Rear derailleur reset is in progress
CANCEL	Returns to the menu list display screen

Table 50: Rear derailleur reset change options

- ▶ Push the **long assistance lever** or the **short assistance lever** briefly until the required function is highlighted.
- ▶ Press the **button (display)**.
- ⇒ The display screen switches back to the start screen.
- ▶ Turn the crank.
- ⇒ The connection between the motor and the link is restored.

## 6.14 Brake

### DANGER

#### Hydraulic fluid can be fatal if it is swallowed and penetrates into the respiratory system

Hydraulic fluid may leak out after an accident or due to material fatigue. Hydraulic fluid can be fatal if swallowed and inhaled.

#### First aid treatment

- ▶ Wear gloves and safety goggles as protective equipment. Keep unprotected persons away.
- ▶ Remove those affected from the danger area to fresh air. Never leave those affected unattended.
- ▶ Ensure sufficient ventilation.
- ▶ Immediately remove clothing items contaminated with hydraulic fluid.
- ▶ Serious slip hazard due to hydraulic fluid leakage.
- ▶ Keep away from naked flames, hot surfaces and sources of ignition.
- ▶ Avoid contact with skin and eyes.
- ▶ Do not inhale vapours or aerosols.

#### After inhalation

- ▶ Take in fresh air; consult doctor if any pain or discomfort.

#### After skin contact

- ▶ Wash affected skin with soap and water and rinse well. Remove contaminated clothing. Consult doctor if any pain or discomfort.

#### After contact with eyes

- ▶ Rinse eyes under flowing water for at least ten minutes with the lids open; also rinse under lids. Consult eye doctor if pain or discomfort continues.

### DANGER

#### After swallowing

- ▶ Rinse out mouth with water. Never induce vomiting! Risk of aspiration!
- ▶ Place a person lying on their back who is vomiting in a stable recovery position on their side. Seek medical advice immediately.

#### Environmental protection measures

- ▶ Never allow hydraulic fluid to flow into the sewage system, surface water or groundwater.
- ▶ Notify the relevant authorities if fluid penetrates the ground or pollutes water bodies or the sewage system.

### WARNING

#### Crash caused by brake failure

Oil or lubricant on the brake disc in a disc brake or on the rim of a rim brake can cause the brake to fail completely. This may cause a crash with serious injuries.

- ▶ Never allow oil or lubricant to come into contact with the brake disc or brake linings or on the rim of a rim brake.
- ▶ If the brake linings have come into contact with oil or lubricant, contact a dealer or a workshop to have the components cleaned or replaced.

If the brakes are applied continuously for a long time (e.g. while riding downhill for a long time), the fluid in the brake system may heat up. This may create a vapour bubble. This will cause air bubbles or any water contained in the brake system to expand. This may suddenly make the lever travel wider. This may cause a crash with serious injuries.

- ▶ Release the brake regularly when riding downhill for a longer period of time.

**WARNING****Amputation due to rotating brake disc**

The brake disc in disc brakes is so sharp that it can cause serious injuries to fingers if they are inserted into the brake disc openings.

Always keep fingers well away from the rotating brake disc.

**CAUTION****Crash caused by wet conditions**

The *tyres* may slip on wet roads. In wet conditions you must also expect a longer braking distance. The braking sensation differs from the usual sensation. This can cause loss of control or a crash, which may result in injuries.

- ▶ Ride slowly and brake in good time.

**Crash caused by incorrect use**

Handling the brake improperly can lead to loss of control or crashes, which may result in injuries.

- ▶ Shift your body weight backwards and down as far as possible.
- ▶ Practice braking and emergency braking before using the pedelec in public spaces.
- ▶ Never use the pedelec if you can feel no resistance when you grip the brake handle. Consult a specialist dealer.

**Burns caused by heated brake**

The brakes may become very hot during operation. There is a risk of burns or fire in case of contact.

- ▶ Never touch the components of the brake directly after the ride.

**CAUTION****Crash after cleaning or storage**

The brake system is not designed for use on a pedelec which is placed on its side or turned upside down. The brake may not function correctly as a result. This can cause a crash, which may result in injuries.

- ▶ If the pedelec is placed on its side or turned upside down, apply the brake a couple of times before setting off to ensure that it works as normal.
- ▶ Never use the pedelec if it no longer brakes as normal. Consult a specialist dealer.

The drive force of the motor is shut off during the ride as soon as the rider no longer pedals. The drive system does not switch off when braking.

- ▶ In order to achieve optimum braking results, do not pedal while braking.

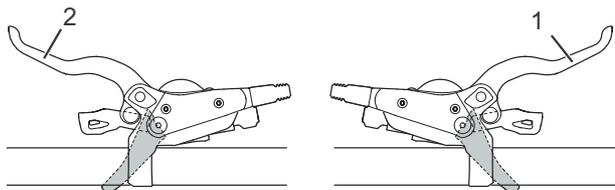
**6.14.1 Using the brake lever**

Figure 71: Front (2) and rear (1) brake lever; Shimano brake used as an example

- ▶ Push the *left brake lever for the front wheel brake and the right lever for the rear wheel brake* until the desired speed is reached.

## 6.14.2 Using the back-pedal brake

### Only applies to pedelecs with this equipment

- ✓ The best braking effect is achieved if the pedals are in the 3 o'clock and 9 o'clock position when braking. To bridge the free travel between the riding movement and the braking movement, it is recommendable to pedal a little beyond the 3 o'clock and 9 o'clock position before you pedal in the opposite direction to the *direction of travel* and start braking.
- ▶ Pedal in the opposite direction to the *direction of travel* until the desired speed has been reached.

## 6.15 Suspension and damping

### 6.15.1 Adjusting the compression of the Fox fork

#### Only applies to pedelecs with this equipment

The compression adjuster makes it possible to make quick adjustments to the suspension behaviour of the fork to suit changes in terrain. It is intended for adjustments made during the ride.

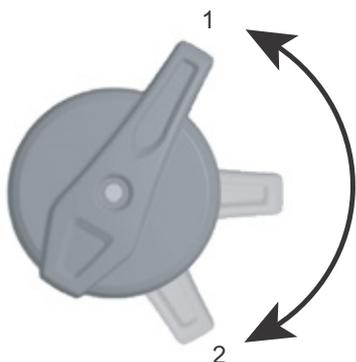


Figure 72: FOX compression adjuster with the OPEN (1) and HARD (2) positions

- ▶ Compression damping is lowest in the OPEN position, making the fork feel softer. Use the HARD position if you want the fork to feel stiffer and you are riding on soft ground. The lever positions between the OPEN and HARD positions enable fine adjustment of compression damping.

We recommend setting the lever of the compression adjuster to the OPEN mode position first.

## 6.15.2 Adjusting the compression of the Fox damper

### Only applies to pedelecs with this equipment

The compression adjuster makes it possible to make quick adjustments to the suspension behaviour of the damper to suit changes in terrain. It is intended for adjustments made during the ride.



Figure 73: FOX compression adjuster on the rear frame damper with the OPEN (1), MEDIUM (2) and HARD (3) positions

- ▶ Use the OPEN position for rough descents, the MEDIUM position for rough terrain and the HARD position for efficient climbing. First set the compression adjuster to the OPEN position.

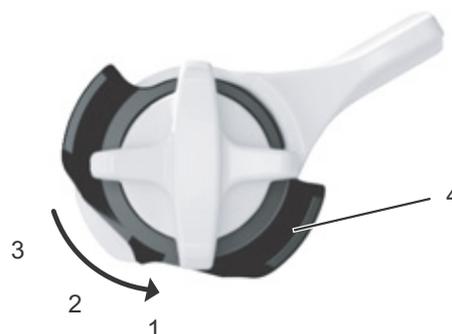


Figure 74: Fine adjustment of the OPEN position is made using the adjuster (4)

The FOX rear frame damper features fine adjustment for the OPEN position.

- ✓ We recommend that fine adjustments be made when the compression adjuster is in the MEDIUM or HARD position.
- ▶ Pull out the adjuster.
- ▶ Turn the adjuster to position 1, 2 or 3. Setting 1 is for the softest riding performance, whereas 3 is for the hardest.
- ▶ Press the adjuster in to lock in the setting.

## 6.16 Gear shift

The selection of the appropriate gear is a prerequisite for a physically comfortable ride and making sure that the electric drive system functions properly. The ideal pedalling frequency is between 70 and 80 revolutions per minute.

- ▶ It is advisable to stop pedalling briefly when changing gears. This makes it easier to switch gears and reduces wear on the drivetrain.

### 6.16.1 Using the derailleur gears

#### Only applies to pedelecs with this equipment

The speed and range can be increased while applying the same force if you select the right gear. Use the derailleur gears.

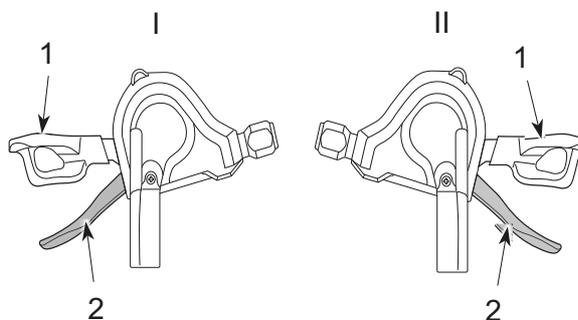


Figure 75: Down shifter (1) and up shifter (2) on the left (I) and right (II) gear shift

- ▶ Select the appropriate gear with the *shifter*.
  - ⇒ The gear shift switches the gear.
  - ⇒ The shifter returns to its original position.
- ▶ Clean the rear derailleur if the gear change blocks.

### 6.16.2 Using the hub gear

#### Only applies to pedelecs with this equipment



#### Crash caused by incorrect use

If the rider applies too much pressure on the pedals during a gear change and activates the shifter or changes several gears at a time, their feet may slip from the pedals. As a result, the pedelec may flip over or fall, which may cause injury.

Switching down several gears to a low gear may cause the twist grip outer sleeve to suddenly come off. This will not have an adverse effect on the twist grip's correct functioning since the outer guide returns to its original position after the gear change is complete.

- ▶ Apply little pressure on the pedals while changing gears.
- ▶ Never change more than one gear at a time.

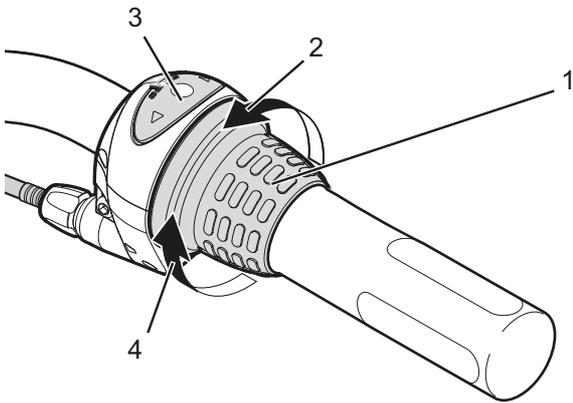
#### Notice

The interior hub is not completely waterproof. If water gets into the hub, it may rust and the gear switch function may no longer function as a result.

- ▶ Never use the pedelec in places where water may get into the hub.

In rare cases, noises may be heard from the rear derailleur in the hub interior after a gear change. This is normal when gears are changed.

Do not detach the hub. If you need to detach it, contact your dealer.



**Figure 76: Example; Shimano Nexus gear shift: Twist grip (1) for the hub gear with its screen (3), the direction of rotation to switch up a gear (2) and the direction of rotation to switch down a gear (4)**

- ▶ Turn the twist grip.
- ⇒ The gear shift switches the gear.
- ⇒ The number on the screen display shows the changed gear.

## 7 Cleaning and servicing

### Cleaning check list

<input type="checkbox"/>	Clean the pedals	after each ride
<input type="checkbox"/>	Clean the suspension fork and, if necessary, rear frame damper	after each ride
<input type="checkbox"/>	Cleaning the battery	once a month
<input type="checkbox"/>	Chain (mainly tarmacked road)	Every 250–300 km
<input type="checkbox"/>	Basic cleaning and preservation of all components	at least every six months
<input type="checkbox"/>	Clean the charger	at least every six months
<input type="checkbox"/>	Clean and lubricate the height-adjustable seat post	every six months

### Maintenance check list

<input type="checkbox"/>	Check USB rubber cover position	before each ride
<input type="checkbox"/>	Check for tyre wear	once a week
<input type="checkbox"/>	Check for rim wear	once a week
<input type="checkbox"/>	Check tyre pressure	once a week
<input type="checkbox"/>	Check brakes for wear	once a month
<input type="checkbox"/>	Check electrical cables and Bowden cables for damage and ensure they are fully functional	once a month
<input type="checkbox"/>	Check chain tension	once a month
<input type="checkbox"/>	Check tension of the spokes	every three months
<input type="checkbox"/>	Check the gear shift setting	every three months
<input type="checkbox"/>	Check suspension fork and, if necessary, rear frame damper for wear and ensure fully functional	every three months
<input type="checkbox"/>	Check for wear on brake discs	at least every six months



### Crash and falling caused by unintentional activation

There is a risk of injury if the drive system is activated unintentionally.

- ▶ Remove the battery before cleaning.

The following servicing measures must be performed regularly. Servicing can be performed by the operator and rider. In case of any doubt, consult the specialist dealer.

### 7.1 Cleaning after each ride

#### Required tools and cleaning agents:

- Cloth
- Air pump
- Brush
- Water
- Dish-washing liquid
- Bucket

#### 7.1.1 Cleaning the suspension fork

- ▶ Remove dirt and deposits on the stanchions and deflector seals with a damp cloth.
- ▶ Check the stanchions for dents, scratches, staining or leaking oil.
- ▶ Check the air pressure.
- ▶ Lubricate the dust seals and stanchions.

#### 7.1.2 Cleaning the rear frame damper

- ▶ Remove dirt and deposits from the damper body with a damp cloth.
- ▶ Check rear frame damper for dents, scratches, staining or leaking oil.

#### 7.1.3 Cleaning the pedals

- ▶ Clean with a brush and soapy water after riding through dirt or rain.
- ⇒ Service the pedals after cleaning.

## 7.2 Basic cleaning



### CAUTION

#### Crash caused by brake failure

The braking effect may be unusually poor temporarily after cleaning, servicing or repairing the pedelec. This may cause a crash with injuries.

- ▶ Never apply care products or oil to the brake discs or brake linings, or the braking surfaces on the rims.
- ▶ After cleaning, servicing or repair, carry out a few test brake applications.

### Notice

Water may enter into the inside of the bearings if you use a steam jet. This dilutes the lubricant inside, the friction increases and, as a result, the bearings are permanently damaged in the long term.

- ▶ Never clean the pedelec with a steam jet.

Greased parts, such as the seat post, the handlebars or the stem, may no longer be safely and reliably clamped.

- ▶ Never apply grease or oil to clamping sections.

#### Required tools and cleaning agents:

- Cloths
- Sponge
- Air pump
- Brush
- Toothbrush
- Paintbrush
- Watering can
- Bucket
- Water
- Dish-washing liquid
- Degreaser
- Lubricant
- Brake cleaner or spirit

- ✓ Remove battery and display before basic cleaning.

### 7.2.1 Cleaning the frame

- ▶ Soak dirt stains on the frame with dish-washing detergent if the dirt is thick and ingrained.
- ▶ After leaving it to soak for a time, remove the dirt and mud with a sponge, brush and toothbrush.
- ▶ Use a watering can or your hand to rinse the frame to finish off.
- ▶ Service the frame after cleaning.

### 7.2.2 Cleaning the stem

- ▶ Clean stem with a cloth and soapy water.
- ▶ Service the stem after cleaning.

### 7.2.3 Cleaning the rear frame damper

- ▶ Clean rear frame damper with a cloth and soapy water.

### 7.2.4 Cleaning the wheel



### WARNING

#### Crash caused by braking hard on rims

A rim can break and block the wheel if you brake hard. This may cause a crash with serious injuries.

Check rim *wear* on a regular basis.

- ▶ Check the tyres, rims, spokes and spoke nipples for any damage when cleaning the wheel.
- ▶ Use a sponge and a brush to clean the hub and spokes from the inside to the outside.
- ▶ Clean the rim with a sponge.

### 7.2.5 Cleaning the drive elements

- ▶ Spray the cassette, the chain wheels and the front derailleur with a degreasing agent.
- ▶ Clean coarse dirt with a brush after soaking for a short time.
- ▶ Wash down all parts with dish-washing detergent and a toothbrush.
- ▶ Service the drive elements after cleaning.

### 7.2.6 Cleaning the chain

#### Notice

- ▶ Never use aggressive (acid-based) cleaners, rust removers or degreasers when cleaning the chain.
  - ▶ Do not use chain cleaning devices or chain cleaning baths.
- 
- ▶ Slightly dampen a brush with dish-washing liquid. Brush both sides of the chain.
  - ▶ Dampen a cloth with soapy water. Place the cloth on the chain.
  - ▶ Hold and apply slight pressure while slowly turning the rear wheel, so the chain passes through the cloth.
  - ▶ If the chain is still dirty afterwards, clean it with lubricant.
  - ▶ Service the chain after cleaning.

### 7.2.7 Cleaning the battery



#### Risk of fire and explosion due to penetration by water

The battery is only protected from simple spray water. Penetration by water can cause a short circuit. The battery may self-ignite and explode.

- ▶ Never clean the battery with a high-pressure water device, water jet or compressed air.
- ▶ Keep the contacts clean and dry.
- ▶ Never immerse the battery in water.
- ▶ Never use cleaning agents.
- ▶ Remove the battery from the pedelec before cleaning.

#### Notice

- ▶ Do not clean the battery with solvents, such as thinners, alcohol, oil and corrosion protection, or with cleaning agents.
- 
- ▶ Clean the battery electrical connections with a dry cloth or brush only.
  - ▶ Wipe off the decorative sides with a damp cloth.

## 7.2.8 Cleaning the display

### Notice

If water enters into the display screen, it will be permanently damaged.

- ▶ Never immerse the display in water.
- ▶ Never clean with a high-pressure water device, water jet or compressed air.
- ▶ Never use cleaning agents.
- ▶ Remove the display from the pedelec before cleaning.

- ▶ Carefully clean the display with a damp, soft cloth.

## 7.2.9 Cleaning the drive unit

### CAUTION

#### Burns from hot drive

The drive cooler can become extremely hot during use. Contact may cause burns.

- ▶ Leave the drive unit to cool before cleaning.

### Notice

If water enters into the drive unit, the unit will be permanently damaged.

- ▶ Never immerse the drive unit in water.
  - ▶ Never clean with a high-pressure water device, water jet or compressed air.
  - ▶ Never use cleaning agents.
  - ▶ Never open.
- 
- ▶ Carefully clean the drive unit with a damp, soft cloth.

## 7.2.10 Cleaning the brake

### WARNING

#### Brake failure due to water penetration

The brake seals are unable to withstand high pressures. Damaged brakes can fail and cause an accident with injury.

- ▶ Never clean the pedelec with compressed air or a high-pressure water device.
- ▶ Take great care when using a hosepipe. Never point the water jet directly at the seal section.

- ▶ Clean brake and brake discs with a brush, water and dish-washing detergent.
- ▶ Clean brake discs thoroughly with brake cleaner or spirit.

## 7.3 Servicing

#### Required tools and cleaning agents:

- Cloths
- Toothbrushes
- Dish-washing liquid
- Care oil for frames
- Silicone or Teflon oil
- Acid-free lubricating grease
- Fork oil
- Chain oil
- Degreaser
- Spray oil
- Teflon spray

### 7.3.1 Servicing the frame

- ▶ Dry frame after cleaning.
- ▶ Spray with care oil. Clean off the care oil again after a short time.

### 7.3.2 Servicing the stem

- ▶ Apply silicone or Teflon oil to the stem shaft tube and the quick release lever pivot point.
- ▶ If you have speedlifter Twist, also apply oil to the unlocking bolt using the groove in the speedlifter body.
- ▶ Apply a little acid-free lubricant grease between the stem quick release lever and the sliding piece to reduce the quick release lever operating force.

### 7.3.3 Servicing the fork

- ▶ Treat the dust seals with fork oil.

### 7.3.4 Servicing the drive elements

- ▶ Spray the cassette, the chain wheels and the front derailleur with a degreasing agent.
- ▶ Clean coarse dirt with a brush after soaking for a short time.
- ▶ Wash down all parts with dish-washing detergent and a toothbrush.

### 7.3.5 Servicing the pedals

- ▶ Treat with spray oil after cleaning.

### 7.3.6 Servicing the chain

- ▶ Grease the chain thoroughly with chain oil after cleaning.

### 7.3.7 Servicing the drive elements

- ▶ Service front and rear derailleur articulated shafts and jockey wheels with Teflon spray.

## 7.4 Maintenance

### CAUTION

#### Crash and falling caused by unintentional activation

There is a risk of injury if the drive system is activated unintentionally.

- ▶ Remove the battery before maintenance.

The following maintenance measures must be performed on a regular basis. They can be carried out by the operator and rider. In case of any doubt, consult the specialist dealer.

### 7.4.1 Wheel

### WARNING

#### Crash caused by braking hard on rims

A rim can break and block the wheel if you brake hard. This may cause a crash with serious injuries.

- ▶ Check *rim wear* on a regular basis.

### Notice

If the tyre pressure is too low in the tyre, the tyre does not achieve its load bearing capacity. The tyre is not stable and may come off the rim.

If the tyre pressure is too high, the tyre may burst.

- ▶ Check the tyre pressure as per specifications
- ▶ *Adjust the tyre pressure* as necessary.

- ▶ Check *tyre wear*.
- ▶ Check the *tyre pressure*.
- ▶ Check the *rims* for wear.
  - The rims of a rim brake with invisible wear indicator are worn as soon as the wear indicator becomes visible in the area of the rim joint.
  - The rims with visible wear indicator are worn as soon as the black, all-round groove on the pad friction surface is no longer visible. We recommend that you also replace the *rims* with every second brake lining replacement.
- ▶ Check the tension of the spokes.

## 7.4.2 Checking the tyres

- ▶ Check the tyre wear. The tyre is worn if the anti-puncture protection or the carcass cords are visible.
- ⇒ A specialist dealer will need to change the tyre if it is worn.

## 7.4.3 Checking the rims

- ▶ Check the *rims* for wear. The rims are worn as soon as the black, all-round groove on the pad friction surface becomes invisible.
- ⇒ Worn rims must be replaced by a specialist dealer.
- ⇒ We recommend that you also replace the *rims* at the same time as every second brake lining replacement.

## 7.4.4 Checking and adjusting the tyre pressure

### 7.4.4.1 Dunlop valve

The tyre pressure cannot be measured on the simple Dunlop valve. The tyre pressure is therefore measured in the filling hose when pumping slowly with the bicycle pump.

It is recommendable to use a bicycle pump with a pressure gauge. The operating instructions for the bicycle pump must be adhered to.



- ▶ Unscrew and remove the valve cap.
- ▶ Connect the bicycle pump.
- ▶ Pump up the tyre slowly and pay attention to the tyre pressure in the process.
- ▶ Correct the tyre pressure according to specifications in the Pedelec pass.
- ▶ If the tyre pressure is too high, unfasten the union nut, let out air and tighten the

union nut again.

- ▶ Remove the bicycle pump.
- ▶ Screw the valve cap tight.
- ▶ Screw the rim nut gently against the rim with the tips of your fingers.

### 7.4.4.2 Presta valve



✓ It is recommendable to use a bicycle pump with a pressure gauge. The operating instructions for the bicycle pump must be adhered to.

- ▶ Unscrew and remove the valve cap.

- ▶ Open the knurled nut around four turns.

- ▶ Carefully apply the bicycle pump so that the valve insert is not bent.

- ▶ Pump up the tyre slowly and pay attention to the tyre pressure in the process.

- ⇒ The tyre pressure has been adjusted as per the specifications.

- ▶ Remove the bicycle pump.

- ▶ Tighten the knurled nut with your fingers.

- ▶ Screw the valve cap tight.

Screw the rim nut gently against the rim with the tips of your fingers.

### 7.4.4.3 Schrader valve



✓ It is recommendable to use a bicycle pump with a pressure gauge. The operating instructions for the bicycle pump must be adhered to.

- ▶ Unscrew and remove the valve cap.

- ▶ Connect the bicycle pump.

- ▶ Pump up the tyre slowly and pay attention to the tyre pressure in the process.

- ⇒ The tyre pressure has been adjusted as per the specifications.

- ▶ Remove the bicycle pump.

- ▶ Screw the valve cap tight.

- ▶ Screw the rim nut gently against the rim with the tips of your fingers.

### 7.4.5 Brake system



#### Crash caused by brake failure

Worn brake discs and brake linings, as well as a lack of hydraulic fluid in the brake cable, reduce the braking power. This may cause a crash with injuries.

- ▶ Check the brake disc, brake linings and the hydraulic brake system on a regular basis and replace if necessary.

The maintenance interval for the brake depends on the weather conditions and how frequent the pedelec is used. If the pedelec is used under extreme conditions such as rain, dirt or high mileage, maintenance must be performed more frequently.

### 7.4.6 Checking the brake linings for wear

Check brake linings after brake has been fully applied 1,000 times.

- ▶ Check that the brake linings are no less than 1.8 mm wide at any point and no less than 2.5 mm between the brake lining and supporting plate.
  - ▶ Push brake lever and hold. In doing so, check the transport safety wear gauge can fit between the brake lining supporting plates.
- ⇒ The brake linings have not reached their wear limit. If they have, a specialist dealer will need to replace the brake linings.

### 7.4.7 Checking the pressure point

- ▶ Push brake lever and hold several times.
- ⇒ If you are unable to clearly detect the pressure point and it changes, a specialist dealer needs to vent the brake.

### 7.4.8 Checking the brake discs for wear

- ▶ Check that the brake disc is no less than 1.8 mm at any point.
- ⇒ The brake discs have not reached the wear limit. If they have, a specialist dealer will need to replace brake discs.

### 7.4.9 Electrical cables and brake cables

- ▶ Check all visible electrical cables and cables for damage. If the sheathing is compressed, for example, the pedelec will need to be removed from service until the cables have been replaced.
- ▶ Check all electrical cables and cables to make sure they are fully functional.

### 7.4.10 Gear shift

- ▶ Check the gear shift and the *shifter* or the *twist grip* setting and adjust it as necessary.

### 7.4.11 Stem

- ▶ The stem and quick release system should be inspected at regular intervals. The specialist dealer should adjust them if necessary.
- ▶ If the hexagon socket head screw is also loosened, the headset backlash also needs to be adjusted. Medium-strength thread locker, such as Loctite blue, then needs to be applied to the loosened screws and the screws tightened as per specifications.
- ▶ Check for wear and signs of corrosion (maintain with an oily cloth) and for oil leaks.

### 7.4.12 USB port

#### Notice

Any moisture which enters through the USB port may trigger a short circuit in the *display*.

- ▶ Regularly check the position of the *cover on the USB port* and adjust it as necessary.

### 7.4.13 Checking the belt and chain tension

#### Notice

Excessive chain tension increases wear.

If the chain tension is too low, there is a risk that the *chain* or the *drive belt* will slip off the *chain wheels*.

► Check the chain tension once a month.

⇒ Check the chain tension in three or four positions, turning the crank a full revolution.

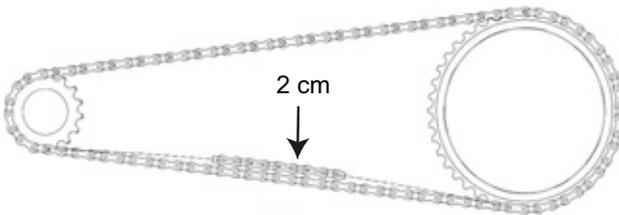


Figure 77: Checking the chain tension

- If the *chain* can be pushed more than 2 cm, the *chain* or *drive belt* will need to be tensioned again by the specialist dealer.
- If the *chain* or the *drive belt* can only be pushed up and down less than 1 cm, you will need to slacken the *chain* or the *drive belt*.
- ⇒ The optimum chain tension is achieved if the *chain* or the *drive belt* can be pushed a maximum of 2 cm in the middle between the pinion and the toothed wheel. The crank must also turn without resistance.
- ⇒ If a hub gear is featured, the rear wheel must be pushed backwards or forwards to tighten the chain. Only a specialist should do this.
- Check the handlebar grip is firmly in position.

### 7.5 Maintenance message

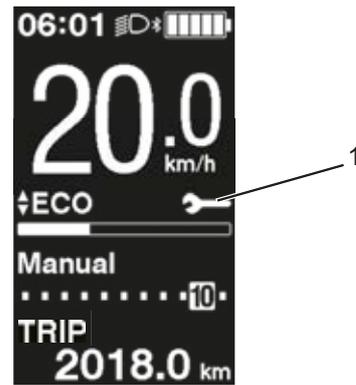


Figure 78: Maintenance message (1)

The maintenance message informs the user that the pedelec needs maintenance. A symbol is shown on the display if the pedelec reaches the pre-set date or total distance travelled. The specialist dealer needs to connect the pedelec to an E-TUBE PROJECT for this purpose.



## 8 Maintenance

### WARNING

#### Injury due to damaged brakes

Special tools and specialist knowledge are required to repair the brakes. Incorrect or unauthorised assembly can damage the brakes. This may lead to an accident with injuries.

- ▶ Only specialist dealers may carry out repairs on brakes.

Never carry out work or changes (such as dismantling, sanding or painting) which are not explicitly allowed and described in the brake user manual.

#### Injury to the eyes

Problems may arise if the settings are not made properly and you may sustain serious injuries as a result.

Always wear safety glasses to protect your eyes when carrying out maintenance work such as replacing components.

### CAUTION

#### Crash and falling caused by unintentional activation

There is a risk of injury if the drive system is activated unintentionally.

- ▶ Remove the battery before inspection.

#### Crash caused by material fatigue

If the service life of a component has expired, the component may suddenly fail. This may cause a crash with injuries.

- ▶ Have the specialist dealer carry out basic cleaning of the pedelec every six months, preferably at the same time as the required servicing work.

### CAUTION

#### Hazard for the environment due to toxic substances

The brake system contains toxic and environmentally harmful oils and lubricants. Such fluids will contaminate if they enter the sewers or groundwater.

- ▶ Dispose of lubricants and oils left over after repairs in an environmentally responsible way
- ▶ in accordance with statutory regulations.

### Notice

The motor is maintenance-free and may only be opened by qualified specialist personnel.

- ▶ Never open the motor.

You must have the specialist dealer perform maintenance every six months as a minimum. This is the only way to ensure that the pedelec remains safe and fully functional.

Technical expertise, special tools and special lubricants are required no matter whether disc brakes need replacing, brakes venting or wheels changing. The pedelec may become damaged if the stipulated maintenance intervals and procedures are not carried out. That is why only specialist dealers may carry out maintenance.

- ▶ The retailer will check the pedelec based on the maintenance table in the appendix.
- ▶ The specialist dealer will inspect the pedelec for any signs of material fatigue during basic cleaning.
- ▶ The specialist dealer will check the software version of the drive system and update it. The electrical connections are checked, cleaned and preservative agent is applied. The electrical cables are inspected for damage.
- ▶ The specialist dealer will dismantle and clean the entire suspension fork interior and exterior. They will clean and lubricate the dust seals and slide bushings, check the torques and adjust the fork to the rider's preferred position. They will also replace the sliding collar if the clearance is too great (more than 1 mm on the fork bridge).

- ▶ The specialist dealer will fully inspect the interior and exterior of the rear frame damper, overhaul the rear frame damper, replace all air seals on air forks, overhaul the air suspension, change the oil and replace the dust wipers.
- ▶ They will pay particular attention to rim and brake wear. The spokes are re-tightened in accordance with the findings.

## 8.1 Axle with quick release



### Crash caused by unfastened quick release

A faulty or incorrectly installed quick release may become caught in the brake disc and block the wheel. This will cause a crash.

- ▶ Install the front wheel quick release lever on the opposite side to the brake disc.

### Crash caused by faulty or incorrectly installed quick release

The brake disc becomes very hot during operation. Parts of the quick release may become damaged as a result. The quick release comes loose. This will cause a crash with injuries.

- ▶ The front wheel quick release lever and the brake disc must be situated on opposite sides.

### Crash caused by incorrectly set clamping force

Excessively high clamping force will damage the quick release and cause it to lose its function.

Insufficient clamping force will cause a detrimental transmission of force. The suspension fork or the frame may break. This will cause a crash with injuries.

- ▶ Never fasten a quick release using a tool (e.g. hammer or pliers).

Only use the clamping lever with the specified set clamping force.

## 8.1.1 Checking the quick release

- ▶ Check the position and clamping force of the quick release lever. The quick release lever must be flush with the lower housing. You must be able to see a slight impression on the palm of your hand when you close the quick release lever.



Figure 79: Adjusting the quick release clamping force

- ▶ Use a 4 mm hexagon socket spanner to adjust the clamping lever clamping force if required. Afterwards, check the quick release lever position and clamping force.

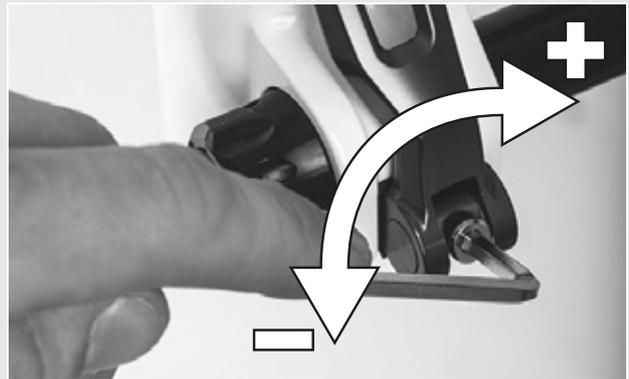


Figure 80: Adjusting the quick release clamping force

## 8.2 Adjusting the gear shift

If you cannot select the gears effortlessly, you will need to adjust the setting for the shift cable tension.

- ▶ Carefully pull the *adjusting sleeve* away from the shifter housing, turning it as you do so.
- ▶ Check the gear shift function after each adjustment.

### 8.2.1 Cable-operated gear shift, single-cable

Only applies to pedelecs with this equipment

- ▶ For a smooth gear shift, adjust the adjusting sleeves on the shifter housing.

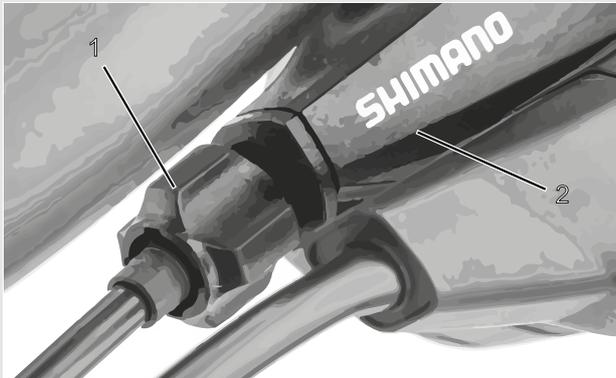


Figure 81: Adjusting sleeve (1) for the single-cable, cable-operated gear shift with shifter housing (2), example

### 8.2.2 Cable-operated gear shift, dual-cable

Only applies to pedelecs with this equipment

- ▶ For a smooth gear shift, set the adjusting sleeves underneath the chain stay on the frame.
- ▶ The shift cable has around 1 mm play when it is pulled out gently.

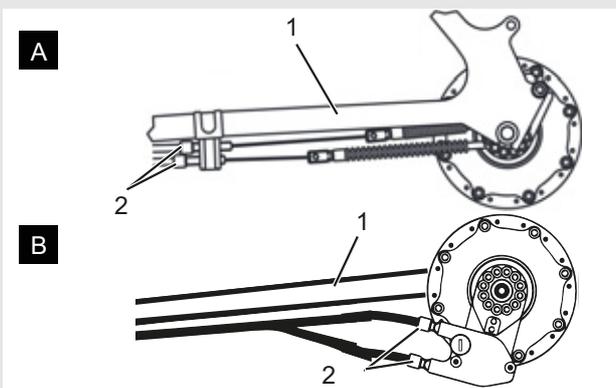


Figure 82: Adjusting sleeves (2) on two alternative versions (A and B) of a dual-cable, cable-operated gear shift on the chain stay (1)

### 8.2.3 Cable-operated twist grip, dual-cable

Only applies to pedelecs with this equipment

- ▶ For a smooth gear shift, set the adjusting sleeves on the shifter housing.
- ⇒ There is noticeable play of around 2–5 mm (1/2 gear) when twisting the twist grip.

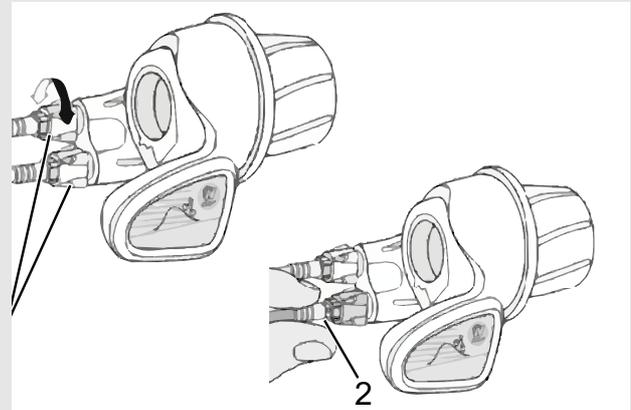


Figure 83: Twist grip with adjusting sleeves (1) and play of the gear shift (2)

## 9 Troubleshooting, fault clearance and repair

### 9.1 Troubleshooting and fault clearance



#### Risk of fire and explosion due to faulty battery

The safety electronics may fail if the battery is damaged or faulty. The residual voltage can cause a short circuit. Batteries may self-ignite and explode.

- ▶ Batteries with external damage must be removed from service immediately.
- ▶ Never allow damaged batteries to come into contact with water.
- ▶ If a battery is dropped or struck but shows no signs of external damage, remove it from service and observe it for at least 24 hours.
- ▶ Faulty batteries are hazardous goods. Dispose of faulty batteries properly and as quickly as possible.
- ▶ Store in a dry place until disposal. Never store in the vicinity of flammable substances.

Never open or repair the battery.

The components of the drive system are checked constantly and automatically. If an error is detected the corresponding error code will appear on the *display screen*. Depending on the type of error, the drive will also be automatically switched off.

#### 9.1.1 The drive system or display do not start up

If the display and/or the drive system do not start up, proceed as follows:

- ▶ Check whether the battery is switched on. If not, start the battery.
- ⇒ Contact specialist dealer if the battery level indicator LEDs do not light up.
- ▶ If the LEDs on the battery level indicator light up, but the drive system does not start up, remove the battery.

- ▶ Insert the battery.
- ▶ Start the drive system.
- ▶ If the drive system does not start up, remove the battery.
- ▶ Clean all the contacts with a soft cloth.
- ▶ Insert the battery.
- ▶ Start the drive system.
- ▶ If the drive system does not start up, remove the battery.
- ▶ Fully charge the battery.
- ▶ Insert the battery.
- ▶ Start the drive system.
- ▶ If the drive system does not start up, remove the display.
- ▶ Fasten the display.
- ▶ Start the drive system.
- ▶ Contact your specialist dealer if the drive system does not start up.

#### 9.1.2 Error messages

If an error message is displayed, run through the following actions:

- ▶ Make a note of the system message.
- ▶ Shut off and re-start the drive system.
- ▶ If the system message is still displayed, remove and then re-insert the battery.
- ▶ Re-start the drive system.
- ▶ If the system message is still displayed, contact your specialist dealer.

## 9.2 Assistance function

Symptom	Cause	Remedy
Assistance is not available.	Is the battery charged sufficiently?	<ul style="list-style-type: none"> <li>▶ Check the battery level.</li> <li>▶ If the battery is almost flat, recharge it.</li> </ul>
	Are you riding on long inclines in summer weather or have you been carrying a heavy load for a long time?	<ul style="list-style-type: none"> <li>▶ Turn off the drive system.</li> <li>▶ Wait a while and then check again.</li> </ul>
	The battery may be too hot.	
	The drive unit (DU-E6100/DU-E6110), the bicycle computer (SC-E6100) or the assistance switch (SW-E6010/SW-E7000) may be connected incorrectly or one or more of them may have a problem.	<ul style="list-style-type: none"> <li>▶ Contact your specialist dealer.</li> </ul>
	Is the speed too high?	<ul style="list-style-type: none"> <li>▶ Check the on-screen indicators.</li> <li>▶ The electronic gear assistance only works up to a maximum speed of 25 km/h.</li> </ul>
Assistance is not available.	Are you pedalling?	<ul style="list-style-type: none"> <li>▶ The pedelec is not a motorbike. You also need to pedal.</li> </ul>
	Is the assistance mode set to [OFF]?	<ul style="list-style-type: none"> <li>▶ Set the assistance mode to a different level of assistance than [OFF].</li> <li>▶ Contact your specialist dealer if you still feel that the pedelec does not provide assistance.</li> </ul>
	Is the system switched on?	<ul style="list-style-type: none"> <li>▶ Press the battery on-off button to switch it on again.</li> </ul>
The assisted journey distance is too short.	The journey distance can be shorter depending on the road conditions, the gear level and the entire light usage time.	<ul style="list-style-type: none"> <li>▶ Check the battery level.</li> <li>▶ If the battery is almost flat, recharge it.</li> </ul>
	The battery does not perform as well in winter weather.	This does not indicate a problem.
	The battery is a consumable. Repeated charging and long periods of use cause the battery to degrade (loss of power).	<ul style="list-style-type: none"> <li>▶ If the distance you can cover with one single charge is very short, replace the battery with a new one.</li> </ul>
	Is the battery fully charged?	<ul style="list-style-type: none"> <li>▶ If the distance covered with a fully charged battery has become shorter, the battery may be affected. Replace the battery with a new one.</li> </ul>
It is difficult to pedal.	Are the tyres pumped to an adequate pressure?	<ul style="list-style-type: none"> <li>▶ Pump up the tyres.</li> </ul>
	Is the assistance mode set to OFF?	<ul style="list-style-type: none"> <li>▶ Select the level of assistance [BOOST].</li> <li>▶ Contact your specialist dealer if you still feel that the pedelec does not provide assistance.</li> </ul>
	The battery charge might be low.	<ul style="list-style-type: none"> <li>▶ Check how powerful assistance is again after charging the battery.</li> <li>▶ Contact your specialist dealer if you still feel that the pedelec does not provide assistance.</li> </ul>
	Have you switched on the system with your foot on the pedal?	<ul style="list-style-type: none"> <li>▶ Switch the system on again without applying pressure to the pedal.</li> <li>▶ Contact your specialist dealer if you still feel that the pedelec does not provide assistance.</li> </ul>

**Table 51: Level of assistance error solution**

### 9.3 Rechargeable battery

Symptom	Cause	Remedy
The battery discharges quickly.	The battery may be at the end of its service life.	▶ Replace the battery with a new one.
All five battery indicators are continuously lit.	The drive unit firmware version may not be up to date.	▶ Contact your specialist dealer.
The battery cannot be recharged.	Is the charger mains plug firmly connected to the socket?	▶ Pull out the charger mains plug and reconnect it again. ▶ Try charging again. ▶ If the battery still won't recharge, contact your specialist dealer.
	Is the charger plug firmly inserted into the battery?	▶ Pull out the charger mains plug and reconnect it again. ▶ Try charging again. ▶ If the battery still won't recharge, contact your specialist dealer.
	Is the adapter firmly connected to the charger plug or the battery's charging port?	▶ Connect the adapter firmly to the charger plug or the battery's charging port. ▶ Re-start the charging process. ▶ Contact your specialist dealer if the battery still does not charge.
	Is the battery, the connection terminal for the battery charger or the charger adapter dirty?	▶ Wipe the connection terminal with a dry cloth to clean it. ▶ Try charging again. ▶ If the battery still won't recharge, contact your specialist dealer.
The battery does not start charging when the charger is connected.	The battery may be at the end of its service life.	▶ Replace the battery with a new one.
The battery and charger become hot.	The temperature of the battery or the charger may have exceeded the operating temperature range.	▶ Stop the charging process. ▶ Wait a while and then start charging again. ▶ If the battery is too hot to touch, there might be a problem with the battery. Contact your specialist dealer.
The charger is hot.	If the charger is used continuously to charge batteries, it may become hot.	▶ Wait a while before using the charger again.
The LED on the charger does not light up.	Is the charger plug firmly inserted into the battery?	▶ Check the connection to the external body before inserting the charger plug again. ▶ If nothing changes, contact your specialist dealer.
	Is the battery fully charged?	The LED on the battery charger will go out when the battery is fully charged. This is not a malfunction. ▶ Pull out the charger mains plug and reconnect it again. ▶ Then try charging again. ▶ If the LED on the charger still does not light up, contact your specialist dealer.
The battery cannot be removed.		▶ Contact your specialist dealer.
The battery cannot be inserted.		▶ Contact your specialist dealer.
Fluid is leaking from the battery.		<b>⚠ WARNING</b>
		▶ Move away from the battery immediately. ▶ Contact the fire service immediately. ▶ Observe all the safety instructions in Section 2 Safety.
There is an unusual smell.		<b>⚠ WARNING</b>
		▶ Move away from the battery immediately. ▶ Contact the fire service immediately. ▶ Observe all the safety instructions in Section 2 Safety.

Table 52: Error solution for battery

Symptom	Cause	Remedy
Fumes are emitted from the battery.		 <b>WARNING</b>
		<ul style="list-style-type: none"> <li>▶ Move away from the battery immediately.</li> <li>▶ Contact the fire service immediately.</li> <li>▶ Observe all the safety instructions in Section 2 Safety.</li> </ul>

Table 52: Error solution for battery

## 9.4 Lighting

Symptom	Cause	Remedy
The front light or rear light does not go on, even when the switch is pressed.	The basic settings in the electric drive system have probably been configured incorrectly. The light is defective.	<ul style="list-style-type: none"> <li>▶ Take the pedelec out of service immediately.</li> <li>▶ Contact your specialist dealer.</li> </ul>

Table 53: Error solution for battery

## 9.5 Display

Symptom	Cause	Remedy
No data are shown on the monitor if you press the on-off button on the battery.	The battery charge level may be insufficient.	<ul style="list-style-type: none"> <li>▶ Charge the battery.</li> <li>▶ Switch the power on.</li> </ul>
	Is the power switched on?	▶ Keep the battery on-off button pressed down to switch on the power again.
	Is the battery charged?	▶ If the battery is fitted to the pedelec and is being charged, it cannot be switched on. Stop the charging process.
	Is the connector fitted to the mount correctly?	▶ Check whether the power cable connector connecting the motor unit to the drive unit has not disconnected. If you are not sure, contact your specialist dealer.
	A component may be connected which the system is unable to recognise.	▶ Contact your specialist dealer.
The gear level is not shown on the display.	The gear level is only shown if the electronic gear shift is used.	▶ Check whether the power cable pug has been disconnected. If you are not sure, contact your specialist dealer.
The settings menu cannot be opened while you are riding.	The product is designed in such a way that the settings menu cannot be opened if the system detects that someone is riding the pedelec. This is not a malfunction.	▶ Stop the pedelec and then adjust the settings.

Table 54: Error solution for the display

## 9.6 Miscellaneous

Symptom	Cause	Remedy
Two beeps will sound if a switch is pressed but the switch cannot be operated.	Pressed switch mode has been deactivated.	▶ This is not a malfunction.
Three beeps are sounded.	A fault or warning has occurred.	▶ This occurs when a warning or an error is shown on the display screen. Follow the instructions for the code indicated on screen in Section 6.2 System Messages.
When you use an electronic gear shift, you can feel that pedal assistance becomes weaker when the gear is changed.	This is because the computer sets the pedal assistance to the optimum level.	▶ This is not a malfunction.
You hear a noise after shifting gears.		▶ Contact your specialist dealer.
It is normal to hear a noise coming from the rear wheel when cycling as normal.	The gear shift setting may not have been made properly.	▶ Contact your specialist dealer.
If you stop the pedelec, gear transmission does not switch to the position pre-configured in the functional feature.	You may have applied too much pressure onto the pedals.	▶ It is easier to change gears if you press onto the pedals gently.

Table 55: Error solution for battery

## 9.7 Repair

Special knowledge and tools are required for many repairs. That is why only a specialist dealer may perform repairs such as:

- Replacing tyres and rims
- Replacing brake pads and brake linings
- Replacing and tensioning the chain.

### 9.7.1 Use original parts and lubricants only

The individual pedelec parts have been carefully selected and matched to one other.

Only original parts and lubricants must be used for maintenance and repair.

The constantly updated accessory approval and parts list are Section 11, Documents and Drawings.

### 9.7.2 Replacing the lighting

- ▶ Only use components of the respective power class for replacement.

### 9.7.3 Setting the headlight

- ▶ The *headlight* must be set, so that its light beam shines on the road 10 m in front of the pedelec.

## 10 Recycling and disposal

### WARNING

#### Risk of fire and explosion

The safety electronics on a damaged or faulty battery may fail. The residual voltage can cause a short circuit. The battery may self-ignite and explode.

- ▶ Remove battery with any external damage from service immediately and never recharge it.
- ▶ If the battery becomes deformed or begins to smoke, keep at a safe distance, disconnect the power supply at the socket, and notify the fire service immediately.
- ▶ Never extinguish damaged batteries with water or allow them to come into contact with water.
- ▶ Faulty batteries are hazardous goods. Dispose of faulty batteries properly as quickly as possible.
- ▶ Store in a dry place until disposal. Never store in the vicinity of flammable substances.

Never open or repair the battery.

### CAUTION

#### Chemical burns to the skin and eyes

Liquids and vapours may leak from a damaged or faulty battery. They can irritate the airways and cause burns.

- ▶ Avoid contact with leaked liquids.
- ▶ Immediately consult a doctor in case of contact with the eyes or any discomfort.
- ▶ In case of contact with the skin, rinse off immediately with water.
- ▶ Ventilate the room well.

### CAUTION

#### Hazard for the environment

The fork, rear frame damper and hydraulic brake system contain toxic and environmentally harmful oils and lubricants. Such fluids will contaminate if they enter the sewers or groundwater.

- ▶ Dispose of lubricants and oils in an environmentally responsible way in accordance with statutory regulations.



This device is marked according to the European Directive 2012/19/EU on waste electrical and electronic equipment – WEEE and the European Directive 2006/66/EC on accumulators. The directive provides the framework for the return and recycling of used devices



across the EU. As a consumer, you are legally required to return all used batteries of any type. It is forbidden to dispose of batteries in domestic waste. The manufacturer is obliged to take back used and old batteries free of charge as per Section 9 German Batteries Act. You thus meet statutory obligations and help to protect the environment. The pedelec, battery, motor, display screen and charger are recyclable materials. You must dispose of and recycle them separately from the domestic waste in compliance with applicable statutory regulations. Sorted waste collection and recycling saves on raw material reserves and ensures that all the regulations for health and environmental protection are met when the product and/or the battery are recycled.

- ▶ Never dismantle the pedelec, batteries or charger for disposal.
- ▶ The pedelec, display screen, the unopened and undamaged battery and the charger can be returned to any specialist dealer free of charge. Depending on the region, further disposal options may be available.

Store the individual parts of the decommissioned pedelec in a dry place, free from frost, where they are protected from direct sunlight.

## 11 Documents

### 11.1 Parts list

There was no information relating to a parts list yet at the time of going to press. You'll find the information in the latest *operating instructions*.

## 11.2 Assembly report

Date:

Frame number:

Components	Description		Criteria		Measures if rejected
	Assembly/inspection	Tests	Acceptance	Rejection	
<b>Front wheel</b>	Assembly		O.K.	Loose	Adjust quick release
<b>Kickstand</b>	Check mount fastening	Functional check	O.K.	Loose	Retighten screws
<b>Tyres</b>		Tyre pressure check	O.K.	Tyre pressure too low/ too high	Adjust tyre pressure
<b>Frame</b>	Check for damage – fracture, scratches		O.K.	Damage detected	<i>Take out of operation, new frame</i>
<b>Handles, coverings</b>	Check mount fastening		O.K.	Not provided	Retighten screws, new handles or coverings as specified in parts list
<b>Handlebars, stem</b>	Check mount fastening		O.K.	Loose	Retighten screws; new stem as specified in parts list if necessary
<b>Steering headset</b>	Check for damage	Functional check	O.K.	Loose	Retighten screws
<b>Saddle</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Seat post</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Protective plate</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Pannier rack</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Attachments</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Bell</b>		Functional check	O.K.	No ring, too quiet, missing	New bell as specified in the parts list
<b>Suspension elements</b>					
<b>Fork, suspension fork</b>	Check for damage		O.K.	Damage detected	New fork as specified in the parts list
<b>Rear frame damper</b>	Check for damage		O.K.	Damage detected	New fork as specified in the parts list
<b>Suspension seat post</b>	Check for damage		O.K.	Damage detected	New fork as specified in the parts list
<b>Brake system</b>					
<b>Brake lever</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Brake fluid</b>	Check fluid level		O.K.	Too little	Refill with brake fluid; new brake hoses if damaged
<b>Brake linings</b>	Check brake linings, brake discs or rims for damage		O.K.	Damage detected	New brake linings, brake discs or rims
<b>Back-pedal brake braking armature</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Light system</b>					
<b>Rechargeable battery</b>	First examination		O.K.	Error message	<i>Take out of service</i> ; contact battery manufacturer, new battery
<b>Light cabling</b>	Connections, correct wiring		O.K.	Cable defective, no light	New cabling
<b>Rear light</b>	Side light	Functional check	O.K.	No constant light	<i>Take out of service</i> ; new rear light as specified in parts list; replace battery if necessary
<b>Front light</b>	Side light, daytime riding light	Functional check	O.K.	No constant light	<i>Take out of service</i> ; new front light as specified in parts list; replace battery if necessary
<b>Reflectors</b>	All complete, state, fastening		O.K.	Damaged or not all complete	New reflectors

Components	Description		Criteria		Measures if rejected
<b>Drive/gear shift</b>					
Chain/cassette/ pinion/chainring	Check for damage		O.K.	Damage	Refasten if necessary or replace as specified in parts list
Chain guard/spoke guard	Check for damage		O.K.	Damage	Replace as specified in parts list
Bottom bracket axle/ crank	Check mount fastening		O.K.	Loose	Retighten screws
Pedals	Check mount fastening		O.K.	Loose	Retighten screws
Shifter	Check mount fastening	Functional check	O.K.	Loose	Retighten screws
Shift cables	Check for damage	Functional check	O.K.	Loose or defective	Adjust shift cables; new shift cables if necessary
Front derailleur	Check for damage	Functional check	O.K.	Gear shift difficult or not possible	Adjust
Rear derailleur	Check for damage	Functional check	O.K.	Gear shift difficult or not possible	Adjust
<b>Electric drive</b>					
Display	Check for damage	Functional check	O.K.	No screen display, defective screen display	Restart, test battery, new software, or new display; <i>take out of service</i> ,
Electric drive control panel	Check for damage	Functional check	O.K.	No response	Restart; contact control panel manufacturer, new control panel
Tachometer		Speed measurement	O.K.	Pedelec travelling 10% too fast/slow	Shut off pedelec until source of fault is found
Cabling	Visual inspection		O.K.	Failure in system, damage, kinked cables	New cabling
Battery mount	Firmly in position, lock, contacts	Functional check	O.K.	Loose; lock doesn't close, no contacts	New battery mount
Motor	Visual inspection and mount		O.K.	Damage, loose	Refasten motor, contact motor manufacturer, new motor
Software	Check version		In latest version	Not latest version	Import update

### Technical inspection, checking safety, test ride

Components	Description		Criteria		Measures if rejected
	Assembly/inspection	Tests	Acceptance	Rejection	
Brake system		Functional check	O.K.	No full braking; braking distance too long	Locate defective part in brake system and correct
Gear shift under operating load		Functional check	O.K.	Problems when shifting gear	Readjust gear shift
Suspension components (fork, shock absorber, seat post)		Functional check	O.K.	Suspension too deep or no longer exists	Locate defective component and correct
Electric drive		Functional check	O.K.	Loose connection, problems when riding, accelerate	Locate defective part in electric drive and correct
Light system		Functional check	O.K.	No continuous light, too bright	Locate defective part in light system and correct
Test ride			No strange noises.	Strange noises.	Locate source of noise and correct

Date	
Fitter's name:	
Final inspection by workshop manager	

## 11.3 Maintenance log

### Diagnosis and documentation of current status

Date:

Frame number:

Components	Frequency	Description			Criteria		Measures if rejected
		Inspection	Tests	Maintenance	Acceptance	Rejection	
Front wheel	6 months	Assembly			O.K.	Loose	Adjust quick release
Kickstand	6 months	Check mount fastening	Functional check		O.K.	Loose	Retighten screws
Tyres	6 months		Tyre pressure check		O.K.	Tyre pressure too low/too high	Adjust tyre pressure
Frame	6 months	Check for damage – fracture, scratches			O.K.	Damage detected	Shut off pedelec; new frame
Handles, coverings	6 months	Wear; check if fastened securely			O.K.	Not provided	Retighten screws, new handles or coverings as specified in parts list
Handlebars, stem	6 months	Check mount fastening			O.K.	Loose	Retighten screws; new stem as specified in parts list if necessary
Steering headset	6 months	Check for damage	Functional check	Lubricating and adjustment	O.K.	Loose	Retighten screws
Saddle	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Seat post	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Protective plate	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Pannier rack	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Attachments	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Bell	6 months		Functional check		O.K.	No ring, too quiet, missing	New bell as specified in the parts list
<b>Suspension elements</b>							
Fork, suspension fork	To manufacturer's specifications	Check for damage – corrosion, fracture		Maintenance as specified by manufacturer Lubrication, oil change as specified by manufacturer	O.K.	Damage detected	New fork as specified in the parts list
Rear frame damper	To manufacturer's specifications	Check for damage – corrosion, fracture		Maintenance as specified by manufacturer Lubrication, oil change as specified by manufacturer	O.K.	Damage detected	New fork as specified in the parts list
Suspension seat post	To manufacturer's specifications	Check for damage		Maintenance as specified by manufacturer	O.K.	Damage detected	New fork as specified in the parts list
<b>Brake system</b>							
Brake lever	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Brake fluid	6 months	Check fluid level		Depending on time of year	O.K.	Too little	Top up brake fluid; <i>take out of service</i> if damaged; new brake hoses
Brake linings	6 months	Check brake linings, brake discs or rims for damage			O.K.	Damage detected	New brake linings, brake discs or rims
Back-pedal brake braking armature	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Brake system	6 months	Check mount fastening		Functional check	O.K.	Loose	Retighten screws

Components	Frequency	Description			Criteria		Measures if rejected
		Inspection	Tests	Maintenance	Acceptance	Rejection	
Light system							
Rechargeable battery		First examination			O.K.	Error message	Contact battery manufacturer; <i>take out of service</i> , new battery
Light cabling		Connections, correct wiring			O.K.	Cable defective, no light	New cabling
Rear light		Side light	Functional check		O.K.	No constant light	New rear light as specified in parts list; replace battery if necessary
Front light		Side light, daytime riding light	Functional check		O.K.	No constant light	New front light as specified in parts list; replace battery if necessary
Reflectors		All complete, state, fastening			O.K.	Damaged or not all complete	New reflectors
Drive/gear shift							
Chain/cassette/pinion/chainring		Check for damage			O.K.	Damage	Refasten if necessary or replace as specified in parts list
Chain guard/spoke guard		Check for damage			O.K.	Damage	Replace as specified in parts list
Bottom bracket axle/crank		Check mount fastening			O.K.	Loose	Retighten screws
Pedals		Check mount fastening			O.K.	Loose	Retighten screws
Shifter		Check mount fastening	Functional check		O.K.	Loose	Retighten screws
Shift cables		Check for damage	Functional check		O.K.	Loose or defective	Adjust shift cables; new shift cables if necessary
Front derailleur		Check for damage	Functional check		O.K.	Gear shift difficult or not possible	Adjust
Rear derailleur		Check for damage	Functional check		O.K.	Gear shift difficult or not possible	Adjust
Electric drive							
Display		Check for damage	Functional check		O.K.	No screen display, defective screen display	Restart, test battery, new software, or new display; <i>take out of service</i> ,
Electric drive control panel		Check drive for damage	Functional check		O.K.	No response	Restart; contact control panel manufacturer, new control panel
Tachometer			Speed measurement		O.K.	Pedelec travelling 10% too fast/slow	Shut off pedelec until source of fault is found
Cabling		Visual inspection			O.K.	Failure in system, damage, kinked cables	New cabling
Battery mount		Firmly in position, lock, contacts	Functional check		O.K.	Loose; lock doesn't close, no contacts	New battery mount
Motor		Visual inspection and mount			O.K.	Damage, loose	Refasten motor, contact motor manufacturer, new motor; <i>take out of service</i>
Software		Check version			In latest version	Not latest version	Import update

### Technical inspection, checking safety, test ride

Components	Description	Criteria			Measures if rejected
		Assembly/inspection	Tests	Acceptance	
Brake system		Functional check	O.K.	No full braking; braking distance too long	Locate defective part in brake system and correct
Gear shift under operating load		Functional check	O.K.	Problems when shifting gear	Readjust gear shift
Suspension components (fork, shock absorber, seat post)		Functional check	O.K.	Suspension too deep or no longer exists	Locate defective component and correct
Electric drive		Functional check	O.K.	Loose connection, problems when riding, accelerate	Locate defective part in electric drive and correct
Light system		Functional check	O.K.	No continuous light, too bright	Locate defective part in light system and correct
Test ride			No strange noises.	Strange noises.	Locate source of noise and correct

Date	
Fitter's name:	
Final inspection by workshop manager	

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## 13 Glossary

### Brake lever

*Source: EN 15194:2017:* lever used to apply the brake.

### Braking distance

*Source: EN 15194:2017:* distance travelled by a pedelec between the commencement of braking and the point at which the pedelec comes to rest.

### Cargo bike

*Source: DIN 79010:* bicycle mainly designed to carry goods.

### CE marking

*Source: Directive 2006/42/EC on Machinery:* the manufacturer uses the CE marking to declare that the Pedelec complies with the applicable requirements.

### City and trekking bicycles

*Source: EN-ISO 4210 - 2:* pedelec designed for use on public roads primarily for means of transportation or leisure.

### Consumables

*Source: EN 82079-1:* any part or material that is necessary for continued use or maintenance of the product.

### Decommissioning

*Source: DIN 31051:* intentional, unlimited interruption in an object's functional capability.

### Disc brake

*Source: EN 15194:2017:* brake in which brake pads are used to grip the lateral faces of a thin disc attached to or incorporated in the wheel hub.

### Drive belt

*Source: EN 15194:2017:* seamless ring belt which is used as a means of transmitting motive force.

### Electrical control system

*Source: EN 15194:2017:* electronic and/or electrical component, or an assembly of components provided for installation into a vehicle, together with all electrical connections

and associated wiring for the motor electrical power assistance.

### Electrically power assisted cycle, pedelec

*Source: EN 15194:2017:* electrically power assisted cycle, equipped with pedals and an auxiliary electric motor, which cannot be propelled exclusively by means of the auxiliary electric motor, except in start-up assistance mode.

### Fault

*Source: EN 13306:2018-02, 6.1:* state of an item (4.2.1) characterized by inability to perform a required function (4.5.1), excluding the inability during preventive maintenance or other planned actions, or due to lack of external resources.

### Folding bicycle

*Source: EN-ISO 4210-2:* bicycle designed to fold into a compact form, facilitating transport and storage.

### Fork steerer

*Source: EN 15194:2017:* part of a fork that rotates about the steering axis of a bicycle frame head tube. It is normally connected to the fork crown or directly to the fork legs, and is normally the point of connection between the fork and the handlebar stem.

### Fracture

*Source: EN 15194:2017:* unintentional separation into two or more parts.

### Instruction handbook

*Source: ISO/FDIS 20607:2018:* part of the user information that machine manufacturers provide to machine operators; it contains guidance, instructions and tips related to the use of the machine in all its life cycle phases.

### Maintenance

*Source: DIN 31051:* maintenance is generally performed at regular intervals and often carried out by trained technical staff. This ensures a maximum service life and low wear and tear for the maintained items. Proper maintenance is often also a pre-requisite for providing a warranty.

**Maximum continuous power**

*Source: ZEG:* the maximum continuous power is the maximum power for the electric motor output shaft during 30 minutes.

**Maximum saddle height**

*Source: EN 15194:2017:* vertical distance from the ground to the point where the top of the seat surface is intersected by the seat-post axis, measured with the saddle in a horizontal position and with the seat-post set to the minimum insertion-depth mark.

**Maximum tyre pressure**

*Source: EN 15194:2017:* maximum tyre pressure recommended by the tyre or rim manufacturer for a safe and efficient performance. If the rim and tyre both indicate a maximum tyre pressure, the maximum inflation pressure is the lower of the two pressures indicated.

**Minimum insertion depth mark**

*Source: EN 15194:2017:* mark indicating the minimum insertion-depth of handlebar stem into fork steerer (fork stem) or seat post into frame.

**Model year**

*Source: ZEG:* the model year refers to the first production year that the series-manufactured pedelec was manufactured in the version in question and is not always identical with the year of manufacture. The year of manufacture may be before the model year in some cases. If no technical modifications are introduced to the series, production may continue of pedelecs from a previous model year.

**Mountain bike**

*Source: EN-ISO 4210-2:* bicycle designed for use off-road on rough terrain, on public roads, and on public pathways, equipped with a suitably strengthened frame and other components, and, typically, with wide-section tyres with coarse tread patterns and a wide range of transmission gears.

**Off-road rough terrain**

*Source: EN 15194:2017:* coarse pebble tracks, forest trails, and other general off-road tracks where tree roots and rocks are likely to be encountered.

**Permitted total weight**

*Source: EN 15194:2017:* weight of the fully assembled pedelec plus the rider and baggage, as specified by the manufacturer.

**Quick-release device, quick release**

*Source: EN 15194:2017:* lever actuated mechanism that connects, retains or secures a wheel or any other component.

**Racing bicycle**

*Source: EN-ISO 4210-2:* bicycle intended for high-speed amateur use on public roads having a steering assembly with multiple grip positions allowing for an aerodynamic posture, a multi-speed transmission system, tyre width not greater than 28 mm and a maximum mass of 12 kg for the fully assembled bicycle.

**Seat post**

*Source: EN 15194:2017:* component that clamps the saddle (with a bolt or assembly) and connects it with the frame.

**Shut-off speed**

*Source: EN 15194:2017:* speed reached, by the pedelec, at the moment the current has dropped to zero or to the no load current value.

**Spare part**

*Source: EN 13306:2018-02, 3.5:* item intended to replace a corresponding item in order to retain or maintain the original required function of the item.

**Suspension fork**

*Source: EN 15194:2017:* front fork incorporating controlled, axial flexibility to reduce the transmission of road-shocks to the rider.

**Suspension frame**

*Source: EN 15194:2017:* frame incorporating controlled, vertical flexibility to reduce the transmission of road-shocks to the rider.

**Type number**

*Source: ZEG:* all pedelec models have an eight-digit type number which is used to specify the design model year, the type of pedelec and the version.

**Wear**

*Source: DIN 31051:* reduction in useful life (4.3.4), caused by chemical and/or physical processes.

**Weight of ready-to-ride bicycle**

*Source: ZEG:* the indicated weight for a ready-to-ride bicycle refers to the weight of a pedelec at the time of sale. The weight of each additional accessory must be added to this weight.

**Wheel**

*Source: EN 15194:2017:* assembly or combination of hub, spokes or disc, and rim, but excluding tyre assembly.

**Work environment**

*Source: EN ISO 9000:2015:* set of conditions under which work is performed

**Year of manufacture**

*Source: ZEG:* the year of manufacture is the year in which the Pedelec was manufactured. The production period is always from August to July of the following year

**Young adult bicycle**

*Source: EN-ISO 4210-2:* bicycle designed for use on public roads by a young adult whose weight is less than 40 kg, with maximum saddle height of 635 mm or more and less than 750 mm. (see ISO 4210).

## Appendix

### I. Translation of the original EC declaration of conformity

The manufacturer:

ZEG Zweirad-Einkaufs-Genossenschaft eG  
 Longericher Str. 2  
 50739 Köln, Germany

hereby declares that the electrically power assisted cycles of types:

20-17-3142, 20-17-3144, 20-17-3066, 20-17-3067, 20-17-3068, 20-17-3072, 20-17-3073, 20-17-3074,  
 20-17-3220, 20-17-3222

*Year of manufacture 2019 and year of manufacture 2020*

comply with all applicable requirements of *Machinery Directive 2006/42/EC*. Furthermore, the electrically power assisted cycles comply with all applicable basic requirements of *Electromagnetic Compatibility Directive 2014/30/EU*.

The following standards were applied: *ISO/DIS 20607:2018* Safety of machinery – Instruction handbook – General drafting principle; *EN 15194:2018* Cycles – Electrically power assisted cycles – EPAC bicycles and *EN 11243:2016* Cycles – *Luggage carriers for bicycles – Requirements and test methods*.

Ms. Janine Otto (Technical Editor), c/o ZEG Zweirad-Einkaufs-Genossenschaft eG, Longericher Straße 2, 50739 Köln, Germany, is authorised to compile the technical documentation.



Cologne, 26/06/2019

.....  
 Place, date and signature

Egbert Hageböck

-Chairman-