

# TRANSLATION OF THE ORIGINAL OPERATING INSTRUCTIONS

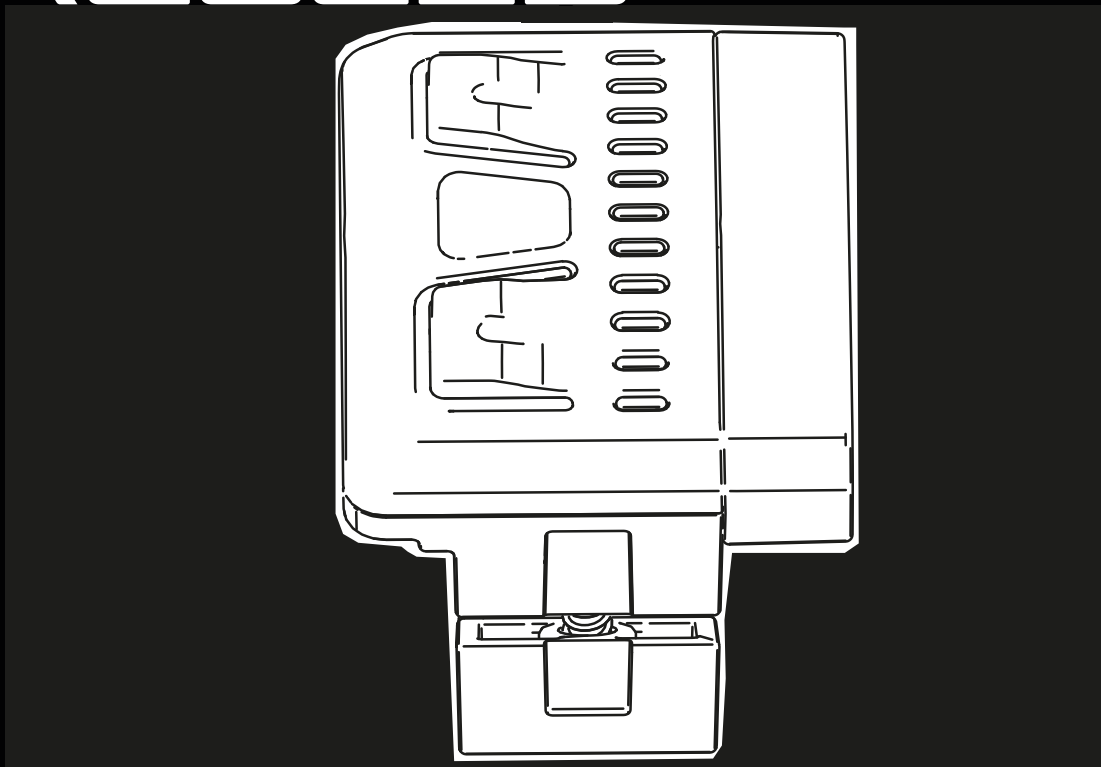
IMPORTANT

READ CAREFULLY BEFORE USE



# FAZUA

# HERCULES



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Pedelecs

FUTURA Fold Carbon I-10S

21-Y-0001

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**Thank you for your trust!**

HERCULES pedelecs are premium quality bicycles. You have made an excellent choice. Your specialist dealer will provide you with guidance and instruction and assemble your product. Your specialist dealer will also be happy to assist you in the future whether you require maintenance, conversion or repair.

**Notice**

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

These 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 are receiving these operating instructions with your new pedelec. Please take time to become familiar with your new pedelec and follow the tips and suggestions in the operating instructions. They will help you to enjoy your 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 mainly designed for the rider or the operator. They aim to ensure that non-professionals can use the pedelec safely.



Sections are also designed especially for the specialist dealer. These sections aim to ensure that specialist dealers complete initial assembly and maintenance safely and reliably. The sections for specialist dealers are highlighted in grey and marked with a spanner symbol.



Download the operating instructions onto your phone at the following link, so that you can use them when you are out riding:

<https://www.hercules-bikes.de/de/de/index/downloads.html>.

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# 1 About these operating instructions

## 1.1 Manufacturer

The pedelec manufacturer is:

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Website: [www.hercules-bikes.de](http://www.hercules-bikes.de)

Subject to internal changes

The information contained in these *operating instructions* are the approved technical specifications at the time of printing. Any significant changes are included in a new published version of the *operating instructions*. You will find any modifications to these *operating instructions* at:

<https://www.hercules-bikes.de/de/de/index/downloads.htm>

## 1.2 Language

The *original operating instructions* are written in German. A translation is invalid without the *original operating instructions*.

## 1.3 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 20607:2018 Safety of machinery – Instruction handbook – General drafting principles
- EN 15194:2018 Cycles – Electrically power assisted cycles – pedelec bicycles
- EN 11243:2016, Cycles – Pannier racks for bicycles – Requirements and test methods
- ISO 17100:2016-05 Translation Services – Requirements for translation services.

## 1.4 For your information

Different markings are used in the operating instructions to make them easier to read.

### 1.4.1 Warnings

Warnings indicate hazardous situations and actions. You will find warnings in the *operating instructions*:



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 if ignored. Low-risk hazard.

**Notice**

May lead to material damage if ignored.

## 1.4.2 Markups



Instructions for specialist dealers are highlighted in grey. They are indicated by a screwdriver symbol. Information for specialist dealers does not require non-professionals to take any action.

You will find stylised forms of typeface in the *operating instructions*:

Stylised form	Use
<i>Italics</i>	Glossary term
<u>Underlined in blue</u>	Link
<u>Underlined in grey</u>	Cross references
✓ Check marks	Requirements
▶ Triangle	Instruction for action
1 Instruction for action	Several instructions for action in specified order
⇒	Result of the action
SPACED	Indicators on the display screen
•	Bulleted lists
Only applies to pedelecs with this equipment	Each type has a different kind of equipment. A note beneath the heading indicates components which can be used as an alternative.

Table 1: Markups

## 1.5 Nameplate

The nameplate is situated on the frame. You can see the exact position of the nameplate in Figure 2.

You will find thirteen pieces of information on the nameplate.



Figure 1: Example Nameplate

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 the address. You can find more information in Section 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 more information in Section 1.
4	Maximum continuous power	The maximum continuous power is the greatest possible power for the electric motor output shaft over 30 minutes.
5	Maximum permitted total weight	The maximum permitted total weight is the weight of the fully assembled pedelec with the rider and baggage.
6	Year of manufacture	The <i>year of manufacture</i> is the year in which the pedelec was manufactured. The production period is from August 2020 to July 2021.
7	Pedelec type	You can find more information in Section 3.3.
8	Safety markings	You can find more information in Section 1.4.
9	Disposal instructions	You can find more information in Section 10.
10	Area of use	You can find more information in Section 3.8.
11	Model year	The model year refers to the first production year that the series-manufactured pedelec was produced in the version concerned. The year of manufacture is different to the model year in some cases.
12	Weight of the ready-to-ride pedelec	The weight of the ready-to-ride pedelec is specified as a weight of 25 kg or above and refers to its weight at the time of purchase. You must add each additional accessory to the weight.
13	Shut-off speed	The speed that the pedelec reaches at the moment when the current has dropped to zero or to the no-load current value.

Table 2: Nameplate details



## 1.6 Type number and model

These operating instructions are an integral part of pedelecs with the type numbers:

Type no.	Model	Pedelec type
21-Y-0001	Futura Fold Carbon I-10	Folding bicycle

Table 3: Type number, model and pedelec type

## 1.7 Identifying the operating instructions

The Identification number position is located on bottom left-hand side on each page. The identification number is composed of the document number, the version number and the release date.

<b>Identification number</b>	MY21H05-2_1.0_30.11.2020
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## 2 Safety

### 2.1 Residual risks

#### 2.1.1 Risk of fire and explosion

##### 2.1.1.1 Rechargeable battery

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

- ▶ Only use and charge the battery and accessories if they are in perfect condition.
- ▶ Never open or repair the battery.
- ▶ Batteries with external damage must be removed from service immediately.
- ▶ If a battery is dropped or struck, remove it from service and observe it for at least 24 hours.
- ▶ Faulty batteries are hazardous goods. Dispose of faulty batteries in the correct manner. Store battery in a dry place until disposal. Never store in the vicinity of flammable substances.

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

- ▶ Never immerse the battery in water.
- ▶ Put battery out of service if you suspect water has penetrated it.

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

- ▶ Protect the battery against heat.
- ▶ Never store next to hot objects.
- ▶ Never expose the battery to sustained direct sunlight.
- ▶ Avoid wide temperature fluctuations.

Chargers with excessive voltage damage batteries. This may result in fire or an explosion.

- ▶ Only use batteries approved for the pedelec. Clearly label the supplied charger.

Metal objects may interconnect the battery's electrical terminals. The battery may self-ignite and explode.

- ▶ Never insert paper clips, screws, coins, keys and other small parts into the battery.

##### 2.1.1.2 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 charger on a highly flammable surface.
- ▶ Never cover the charger during charging.
- ▶ Never leave the battery unattended during charging.

##### 2.1.1.3 Hot components

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

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

### 2.1.2 Electric shock

#### 2.1.2.1 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.

### 2.1.2.2 Water penetration

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

- ▶ Never charge the battery outdoors.

### 2.1.2.3 Condensate

Condensation may form in the charger and battery when the temperature changes from cold to hot, which might cause a short circuit.

- ▶ Wait until both charger and battery are at room temperature before connecting the charger or battery.

## 2.1.3 Risk of a crash

### 2.1.3.1 Incorrect quick release setting

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

### 2.1.3.2 Incorrect tightening torque

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 torque on the screw or in the *operating instructions*.

## 2.1.4 Risk of amputation

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 discs.

## 2.1.5 Key breaking off

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 to the battery lock.

## 2.2 Toxic substances

### 2.2.1 Brake fluid

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

- ▶ Never dismantle the brake system.
- ▶ Avoid contact with skin.
- ▶ Do not inhale vapours.

### 2.2.2 Suspension oil

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

- ▶ Never dismantle the rear frame damper or the suspension fork.
- ▶ Avoid contact with skin.

### 2.2.3 Defective battery

Liquids and vapours may leak from damaged or faulty batteries. Excessively high temperatures may also cause liquids and vapours to leak from the battery. Such liquids and vapours can irritate the airways and cause burns.

- ▶ Never dismantle the battery.
- ▶ Avoid contact with skin.
- ▶ Do not inhale vapours.

## 2.3 Requirements for the rider

The rider must demonstrate adequate physical, motor and mental abilities to ride on public roads. A minimum age of 14 years is recommended.

## 2.4 Vulnerable groups

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

If minors use the pedelec, a legal guardian must should provide them with comprehensive instructions.

## 2.5 Personal protective equipment

Wear a suitable cycling helmet, sturdy footwear and typical close-fitting clothing to provide protection.

## 2.6 Safety markings and safety instructions

The pedelec and battery nameplates contain these safety markings and safety instructions:



Symbol	Explanation
	General warning
	Adhere to the instructions for use

Table 4: 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 5: Safety instructions

## 2.7 What to do in an emergency

### 2.7.1 Dangerous situation in road traffic

- ▶ In the event of any hazards or dangers 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.

### 2.7.2 Leaked brake fluid

- ▶ Remove those affected from the danger area to fresh air.
- ▶ Never leave those affected unattended.
- ▶ Immediately remove any clothing items contaminated with brake fluid.
- ▶ Never inhale vapours. Ensure sufficient ventilation.
- ▶ Wear gloves and safety glasses as protective equipment.
- ▶ Keep unprotected persons away.
- ▶ Take care with leaked brake fluid as it poses a slip hazard.
- ▶ Keep leaked brake fluid away from naked flames, hot surfaces and sources of ignition.
- ▶ Avoid contact with skin and eyes.

#### After inhalation

- ▶ Take in fresh air. Immediately consult a doctor in case of any discomfort.

#### After skin contact

- ▶ Wash affected skin with soap and water and rinse well. Remove contaminated clothing. Consult doctor in the event of 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. Immediately consult a doctor in case of any pain or discomfort.

**After swallowing**

- ▶ Rinse out mouth with water. Never induce vomiting. Risk of aspiration!
- ▶ If a person is lying on their back and vomiting, place them in the recovery position. Seek medical advice immediately.

**Environmental protection measures**

- ▶ Never allow brake fluid to flow into the sewage system, water courses or groundwater.
- ▶ Notify the relevant authorities if fluid penetrates the ground, water courses or the sewage system.
- ▶ Consult a doctor immediately in the event of any pain or discomfort caused by combustion gas or leaking fluids.

**2.7.3 Battery vapours emitted**

Vapours may be emitted if the battery is damaged or used improperly. The vapours may cause respiratory tract irritation.

- ▶ Get into fresh air.
- ▶ Consult doctor in the event of pain or discomfort.

**After contact with eyes**

- ▶ Carefully rinse eyes with plenty of water for at least 15 minutes. Protect unaffected eye. Seek medical advice immediately.

**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, pain or discomfort.

**2.7.4 Battery fire**

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.

- 1 Keep your distance if the battery becomes deformed or starts to emit smoke.
  - 2 If charging, remove the plug connector from the socket.
  - 3 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.

Inhaling vapours can cause intoxication.

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

**2.7.5 Leaked brake fluid**

The brake system must be repaired immediately if brake fluid leaks out. Dispose of leaking brake fluid in an environmentally responsible way in accordance with statutory regulations.

- ▶ Contact your specialist dealer.

**2.7.6 Oil and lubricant leaks from the fork**

Dispose of oils and lubricants which have leaked from the rear frame damper in an environmentally responsible way in compliance with statutory regulations.

- ▶ Contact your specialist dealer.

**2.7.7 Oil and lubricant leaks 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.

- ▶ Contact your specialist dealer.

### 3 Overview



Figure 2: Pedelec viewed from right: HERCULES Futura Fold Carbon I-10 used as example

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

## 3.1 Description

### 3.1.1 Wheel

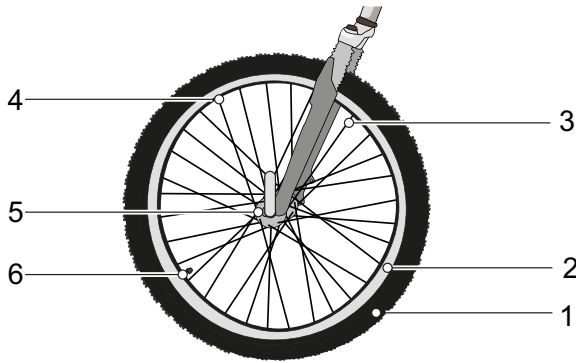


Figure 3: Visible wheel components

- |   |               |
|---|---------------|
| 1 | Tyres         |
| 2 | Rim           |
| 3 | Spoke         |
| 4 | Spoke nipples |
| 5 | Hub           |
| 6 | Valve         |

The wheel comprises the *wheel* itself, an inner tube with a valve and a tyre.

#### 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 has either

- a classic Dunlop valve,
- a French valve (also known as a Sclaverand or Presta valve) or
- a Schrader valve.

## 3.1.2 Suspension

### 3.1.2.1 Suspension fork

Unlike a rigid fork, a suspension fork has two functions which improve floor contact and comfort: suspension and damping. The suspension prevents an impact, such as one caused by a stone lying in the pedelec'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.



Figure 4: Pedelec without suspension (1) and with suspension (2)

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.

The compression can be disabled in any suspension fork. A suspension fork will then behave like a rigid fork.

### Negative deflection

Sag is the percentage of total deflection that is compressed by the rider's weight, including equipment (such as a backpack), their seating position and frame geometry. Sag is not caused by riding.

The pedelec rebounds at a controlled speed if it is optimally adjusted. The wheel stays in contact with the ground when passing over bumps (blue line).

The fork head, handlebars and rider broadly follow the terrain when riding over bumps. The suspension motion is predictable and controlled.

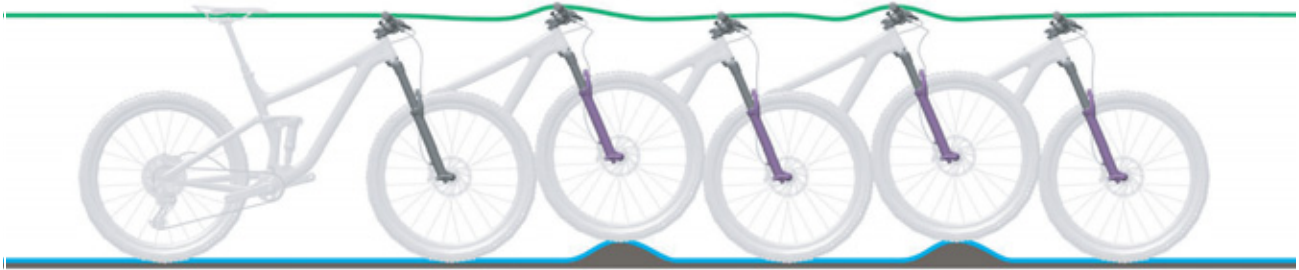


Figure 5: Optimum fork riding performance

When optimally adjusted, the fork counteracts deflection, stays higher in its deflection range and

helps the rider to maintain speed while riding on hilly parts of terrain.

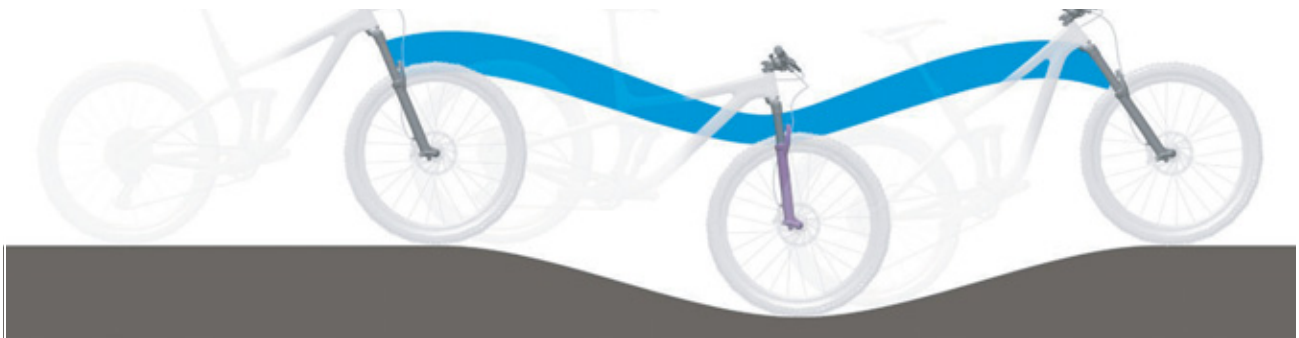


Figure 6: Optimum fork riding performance on hilly terrain

When optimally adjusted, the fork deflects quickly and unhindered when the bike hits bumps and absorbs a bump. Traction is retained (blue line).

The fork responds quickly to the bump. The headset and handlebars rise slightly when absorbing a bump (green line).



Figure 7: Optimum fork riding performance over bumps



### 3.1.2.2 Steel suspension fork

The stem and handlebars are fastened to the fork steerer. The wheel is fastened to the axle.

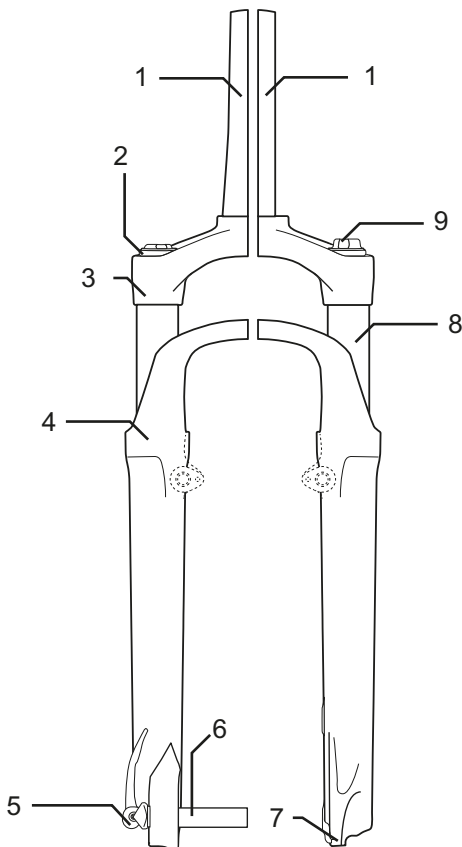


Figure 8: Suntour steel suspension fork as an example

- 1 Fork steerer
- 2 Sag setting wheel
- 3 Crown
- 4 Dust seal
- 5 Q-Loc
- 6 Axle
- 7 Fork end
- 8 Stanchion
- 9 Compression setting

### 3.1.3 Brake system

The pedelec features a hydraulic brake system. The brake fluid is in a closed hose system. If the rider pushes the brake lever, the brake fluid activates the brake on the wheel.

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

#### 3.1.3.1 Disc brake

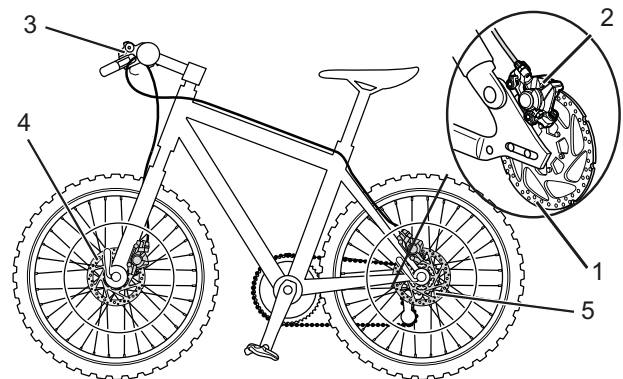


Figure 9: Brake system with disc brake – example

- 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 pushed to increase brake pressure. The brake fluid is used to transfer pressure through the brake cables 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 pushed, the brake linings are pressed against the brake disc and the wheel movement is decelerated until it comes to a stop.

### 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.

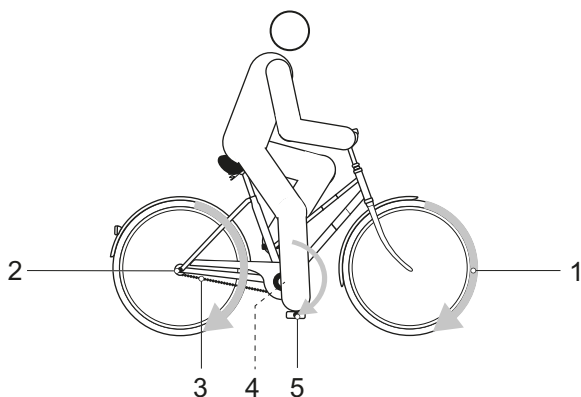


Figure 10: Diagram of mechanical drive system

- 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 is made up of 5 components:

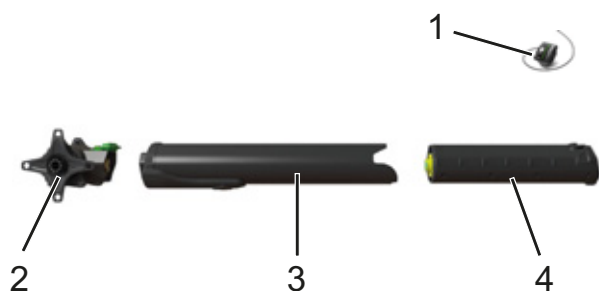


Figure 11: Diagram of electric drive system

- 1 Control panel
- 2 Bottom-bracket gears
- 3 *Motor*
- 4 *Rechargeable battery*
- 5 A charger designed for the battery.

### 3.1.5 Motor

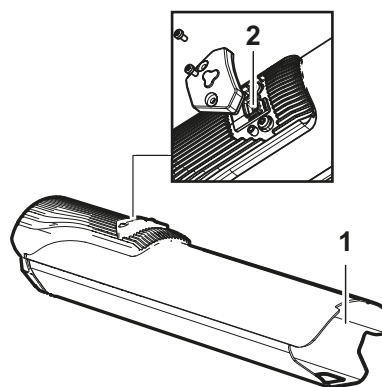


Figure 12: Motor

As soon as the required muscle power from the rider pedalling passes a certain level, the motor is activated gently and assists the rider's pedalling motion. The motor force is determined by the set level of assistance. The system performance is determined using the pedal assistance settings on the control panel.

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.

When you step on the pedals again and the speed drops below 25 km/h, the system starts again

A push assist system can be activated. The speed depends on the selected gear. The rider slows the pedelec down to their own pace by holding the pedelec more firmly while pushing.

### 3.1.6 Rechargeable battery

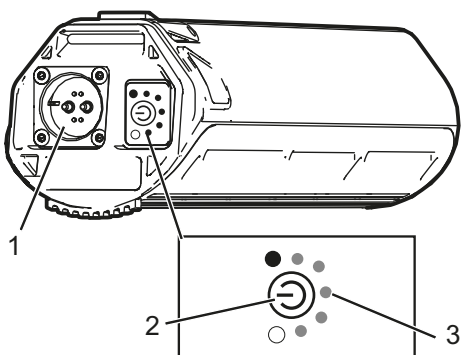


Figure 13: Rechargeable battery, view of charging port side

- 1 Charging port
- 2 On-Off button
- 3 Charge level (battery)

The lithium ion battery has an internal electronic protection circuit, This battery is specifically designed for the charger and pedelec motor. 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. If the pedelec has not been moved for 10 hours and no button has been pressed on the control panel, the electric drive system and the battery automatically switch off to save energy. The same applies if the battery level falls below 30%, the pedelec has not been moved for 3 hours and no button has been pressed on the control panel.

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 6: Rechargeable battery technical data

When the battery is switched on, the battery level indicator shows the start animation. The LEDs then briefly indicate the charge level of the battery.

If the battery is switched on, the charge level can be queried by briefly pressing the On-Off button.

### 3.1.7 Control panel

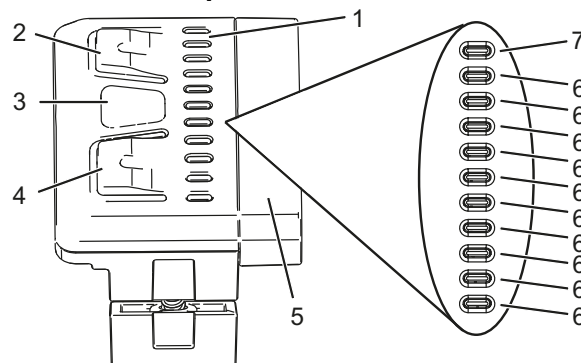


Figure 14: Overview of the structure and control panel

Designation	
1	Display bar
2	Top button
3	Middle button
4	Bottom button
5	Extension cable
6	Battery level indicator or pedal assistance
7	Status screen

Table 7: Overview of control panel

## 3.2 Charger

The lithium ion battery has an internal electronic protection circuit, It is matched to the charger. You must therefore only use the supplied charger to charge the pedelec.

<b>Nominal input voltage</b>	100 ... 240 V AC
<b>Frequency</b>	50 ... 60 Hz
<b>Output voltage</b>	42 V DC
<b>Charging current</b>	2 A
<b>Operating temperature</b>	-20 ... +60 °C
<b>Storage temperature</b>	-20 ... +60 °C
<b>Protection class</b>	IP 54
<b>Weight about</b>	0.6 kg

Table 8: Charger technical data

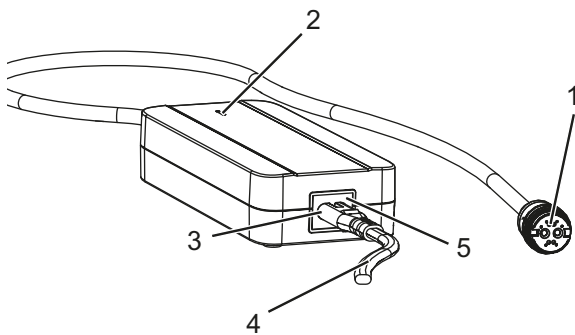


Figure 15: Charger detail

- 1 Mains plug
- 2 Charger LED indicator
- 3 Mains plug
- 4 Connecting cable
- 5 Power jack

### 3.3 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.

The rechargeable batteries are designed to supply power to the pedelec motor only and must not be used for other purposes.

Each pedelec is assigned a pedelec type, which determines its proper use, function 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 maximum 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 and the rider must be physically fit. 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 lightweight 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. You need to be cautious when riding a cargo bike. 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 9: Proper use for each pedelec type

### 3.4 Improper use

Failure to adhere to the proper use poses a risk of personal injury and material damage. It is prohibited to use the pedelec in the following ways:

- when the electrical drive system has been manipulated
- riding with a damaged or incomplete pedelec
- riding over steps
- riding through deep water
- charging with an incorrect charger
- 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 bell 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 bell 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 10: Information on improper use

### 3.5 Data privacy information

When the pedelec is connected to the BOSCH diagnosis tool, data is transferred to Bosch eBike Systems (Robert Bosch GmbH) regarding the use of rechargeable battery, including its temperature and cell voltage, to help improve the product. You will find more detailed information on the BOSCH website: [www.bosch-ebike.com/en/](http://www.bosch-ebike.com/en/).

#### 3.5.1 Maximum permitted total weight

The pedelec may only be loaded to its maximum permitted total weight (PTW). The maximum permitted total weight is the weight of the fully assembled pedelec with the rider and baggage.

Type no.	Model	PTW [kg]
21-Y-0001	Futura Fold Carbon I-10	135

## 3.6 Technical data

### 3.6.1 Pedelec

Transportation temperature	-15 ... +60 °C
Storage temperature	-15 ... +60 °C
Discharging temperature	-15 ... +60 °C
Operating temperature	-0 ... +45 °C
Discharging temperature	-15 ... +60 °C
Charging temperature	0 ... +45 °C
<i>Work environment</i> temperature	15 °C - 25 °C
Power output/system	250 W (0.25 kW)
Shut-off speed	25 km/h
Weight of ready-to-ride pedelec	See nameplate

Table 11: Pedelec technical data

#### Motor

Continuous power rating	250 W
Max. output	400 W
Torque on chain, max.	60 Nm
Nominal voltage	36 V
Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
Protection class	IP 54
Weight about	2 kg

Table 12: Technical data for Fazua motor

#### Bottom-bracket gears

Assistance torque, max.	60 Nm
Q factor, min.	135 (without crank arm)
Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
Protection class	IP 54
Chainline	49, 52 mm
Weight about	1.3 kg

Table 13: Bottom-bracket gears technical data

### Rechargeable battery

Type	Lithium ion battery
Nominal voltage	36 V
Nominal capacity	7 Ah
Power	252 Wh
Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
Discharging temperature	-20 ... +60 °C
Charging temperature	0 ... +45 °C
Protection class	IP 54
Weight about	1.4 kg

Table 14: Rechargeable battery technical data

### Control panel

Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
Protection class (with USB cover closed)	IP54
Weight about	0.075 kg

Table 15: Technical data for control panel

### Charger

Nominal input voltage	100 ... 240 V AC
Frequency	50 ... 60 Hz
Output voltage	42 V DC
Charging current	2 A
Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
Protection class	IP 54
Weight about	0.6 kg

Table 16: Charger technical data

### 3.6.2 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 17: 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.

### 3.6.3 Tightening torque

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

**Table 18: Tightening torque values**

\*if there is no other data on the component



### 3.7 Description of controls and screens

#### 3.7.1 Handlebars

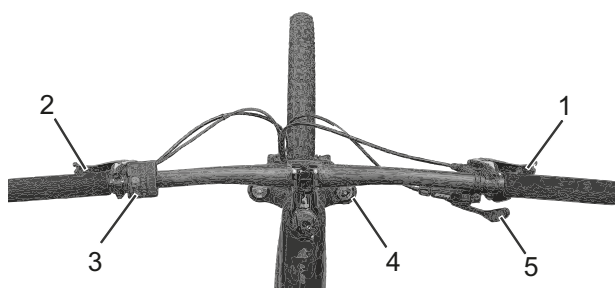


Figure 16: Detailed view of pedelec from rider position, example

- 1 Rear brake lever
- 2 Front brake lever
- 3 Control panel
- 4 Fork lock on the suspension fork
- 5 Shifter

#### 3.7.2 Rechargeable battery

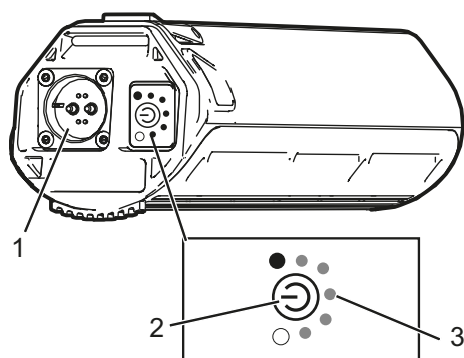


Figure 17: Rechargeable battery, view of charging port side

- 1 Charging port
- 2 On-Off button
- 3 Charge level (battery)

When the battery is switched on, the battery level indicator shows the start animation. The LEDs then briefly indicate the charge level of the battery. The five green LEDs on the battery level indicator show the charge level when the battery is switched on. Each LED represents 20% of the charge level. When the battery is discharged, the last LED lights up intermittently.

The charge level of the battery is also shown on the display.

### 3.7.3 Control panel indicators

#### 3.7.4 Control panel

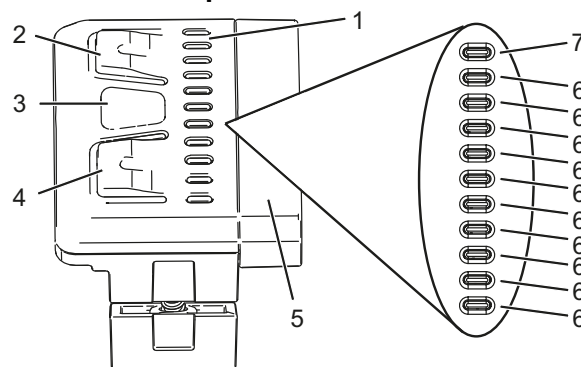


Figure 18: Overview of the structure and operating elements

Designation	
1	Display bar
2	Top button
3	Middle button
4	Bottom button
5	Extension cable
6	Battery level indicator or pedal assistance
7	Status screen

Table 19: Operating elements overview

The control panel controls the drive system via three buttons and displays either the charge level of the battery or the pedal assistance selected.

The pedelec's battery powers the control panel when a sufficiently charged battery is inserted into the pedelec and the drive system is switched on.

#### 3.7.4.1 Display bar

Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +60 °C
Protection class (with USB cover closed)	IP54
Weight about	0.075 kg

Table 20: Display technical data

The control panel display bar consists of 11 LEDs. The uppermost LED serves as a status display to provide information on the status of your e-bike. The remaining 10 LEDs serve as an indicator for the battery level and pedal assistance.

## Status screen

The status screen indicates a status change or an existing fault. The status indicator does not light up if no fault is detected.

The different colours of the status screen have the following meaning:

Colour	Meaning
Green	The status screen flashes green briefly after the drive pack has been successfully installed into the pedelec. This gives you a visual signal that the system can now be switched on.
Yellow	The status screen turns yellow briefly when a "soft fault" is detected. This means that there is a temporary or non-critical disturbance, which in most cases leads to a loss of performance. You can still ride your pedelec even if a "soft fault" occurs. However, this is not recommended.
Red	The status screen briefly turns red when a "hard fault" is detected. The pedelec can no longer be used and must be serviced if a "hard fault" occurs.

**Table 21: Meaning of status screen colours**

### 3.7.4.2 Level of assistance

You can adjust the desired level of assistance using the control panel. The pedal assistance can be changed at any time.

Level of assistance	Use
NONE	Motor assistance is deactivated. The pedelec can be used as a normal bicycle.
BREEZE	Low but effective support for maximum range.
RIVER	Reliable assistance for most usage situations.
ROCKET	Maximum assistance for very demanding excursions.

**Table 22: Overview of levels 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:

The following levels of assistance are possible:

Level of assistance	Colour	Max. assistance factor	Max. output
NONE	WHITE	0%	0 W
BREEZE	GREEN	75%	125 W
RIVER	BLUE	150%	250 W
ROCKET	PINK	240%	400 W

## Remaining range

Precise information about the range of your system is not possible before or during an excursion. Several factors can influence the range of your pedelec, such as level of assistance, speed, gear switching habits, tyre type and pressure, route and weather conditions, weight of rider and pedelec or the condition or age of the battery.

### 3.8 Environmental requirements

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

<b>Optimal operating temperature</b>	22 °C - 26 °C
--------------------------------------	---------------

**Table 23: Optimum temperatures**

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.











Temperatures under -10 °C and over +40 °C must be avoided.

You must also keep within the following temperature ranges:

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











**Table 24: 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 bicycle 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 tarmacked and paved roads.	 Suitable for tarmacked and paved roads.		 Suitable for tarmacked and paved roads.	 Suitable for tarmacked and paved roads.	 Suitable for tarmacked and paved roads.
 <b>2</b>	Suitable for tarmacked roads, cycle paths and firm gravel paths and roads, and longer sections with moderate slopes and jumps up to 15 cm.	Suitable for tarmacked roads, cycle paths and firm gravel paths and roads, and longer sections with moderate slopes and jumps up to 15 cm.	Suitable for tarmacked roads, cycle paths and firm gravel paths and roads, and longer sections with moderate slopes and jumps up to 15 cm.	Suitable for tarmacked 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 tarmacked roads, cycle paths and easy to demanding off-road riding, sections with moderate slopes and jumps up to 61 cm.			
 <b>4</b>			Suitable for tarmacked roads, cycle paths and easy to demanding off-road riding, limited downhill use and jumps up to 122 cm.			

**Table 25: 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.			

## 4 Transporting and storing

### 4.1 Physical transport characteristics

#### Weight and dimensions during transportation

Type no.	Frame	Box dimensions [cm]	Weight [kg]	Shipping weight [kg]
21-Y-0001	57	t.b.a.	t.b.a.	t.b.a.
	61	t.b.a.	t.b.a.	t.b.a.
	65	t.b.a.	t.b.a.	t.b.a.

\*Vehicle weight without battery. The vehicle's total weight depends on the battery used.

#### 4.1.1 Designated handles/lifting points

The box does not have any handles.

## 4.2 Transportation



### Crash caused by unintentional activation

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

- ▶ Remove the battery.

### 4.2.1 Using the brake transport securing system

Applicable for pedelec disc brakes only



### Oil leak if no transport securing device

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

- ▶ Never push the brake lever when the wheel has been dismantled.
  - ▶ Always use the transport securing system when transporting or shipping.
- 
- ▶ Insert the **transport securing devices** between the brake linings.
- ⇒ Transport securing device is squeezed between the two linings and prevents undesired sustained braking which can cause brake fluid to leak out.

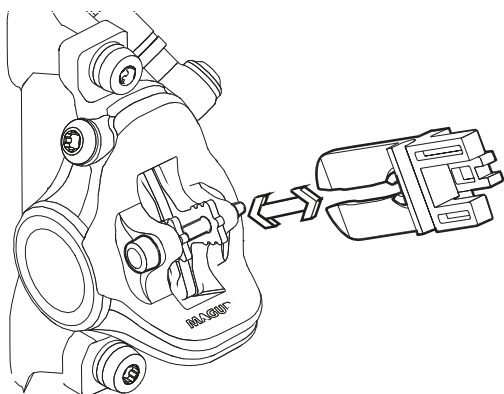


Figure 19: Fastening the transport securing device

### 4.2.2 Transporting the pedelec

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. The specialist dealer will advise you on how to select a suitable rack system properly and how to use it safely.
- ▶ Take into account the weight of the ready-to-use pedelec when transporting it.
- ▶ Protect the electrical components and connections on the pedelec from the weather conditions with suitable protective covers.
- ▶ Transport the battery in a dry, clean position where it is protected from direct sunlight.

### 4.2.3 Shipping a pedelec

- ▶ When shipping the pedelec, we recommend that you have the specialist dealer partially dismantle the pedelec and place it in the proper packaging.

### 4.2.4 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.

### 4.2.5 Shipping the battery

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

## 4.3 Storing

- ▶ Store pedelec, battery and charger in a clean, dry place where they are protected from sunlight. Do not store outdoors to ensure a long service life.

Optimum pedelec storage temperature	10 °C - 20 °C
-------------------------------------	---------------

**Table 26: Storage temperature for batteries and the pedelec**

- ✓ Temperatures under -10 °C or over +40 °C must generally be avoided.
- ✓ Storage at about 10 °C to 20 °C is beneficial to a long battery life.
- ✓ Store pedelec, display, battery and charger separately.

### 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 irreparable damage to it.

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

- ▶ Remove the display from its bracket if the pedelec is not going to be used for up to four weeks. Store the display away safely in a dry environment at room temperature.
- ▶ If the pedelec is removed from service for longer than four weeks, you need to prepare it for a break in operation.

### 4.3.1.1 Preparing a break in operation

- ✓ Remove the rechargeable 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 Carrying out a break in operation

- 1 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 10 °C to 20 °C are ideal.
- 2 Recharge the display battery for at least 1 hour every 3 months.
- 3 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

#### Risk of eye injury

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

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

### CAUTION

#### Crash and crushing hazard caused by unintentional activation

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

- ▶ Remove the battery.

- ✓ Assemble the pedelec in a clean, dry environment.
- ✓ The *work environment* temperature should be between 15 °C and 25 °C.
- ✓ The fitting stand used must be approved for a maximum weight of at least 30 kg.

### 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
- Ratchet,
- 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.
- TORX® T25 wrench I

## 5.2 Unpacking

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

Pedelects are fully 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 Preparing the battery

### 5.3.1 Checking the battery

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

- 1 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 lights up.



## 5.4 Commissioning



### Burns from hot drive

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

- ▶ Leave the drive unit to cool before assembly.

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 customers as soon as it appears ready to ride.

- ▶ For this reason, every pedelec must be prepared, so it is fully ready for use immediately after being assembled.
- ▶ The assembly report (see Section [11.2](#)) describes all safety-relevant inspections, tests and maintenance tasks for the bicycle in a separate list. All assembly work must be completed to ensure the pedelec is ready to ride.
- ▶ Complete an assembly report for quality assurance purposes.

### 5.4.1 Checking the stem and handlebars

#### 5.4.1.1 Checking the connections

- 1 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.
  - 2 Try to twist the handlebars towards the front wheel.
- ⇒ The stem must not move or twist.

#### 5.4.1.2 Firm hold

- 1 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.
- 2 If the handlebars shaft should move in the fork steerer, increase the quick release lever tensioning. To do so, turn the knurled nut slightly clockwise with the quick release lever open.
  - 3 Close the lever and check the stem is firmly in position.

#### 5.4.1.3 Checking the headset backlash

- 1 To check the handlebar headset backlash, close the quick release lever on the stem.
- 2 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.
- 3 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.
- 4 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.

## 5.5 Pedelec sale

- ▶ Complete Pedelec pass on the *operating instructions* envelope.
- ▶ Note down the battery key manufacturer and its number.
- ▶ Adjust the pedelec to the rider; see Section [6.6](#).
- ▶ Adjust the *stand* and *shifter*.
- ▶ 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 pedelecs. 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. Reduce 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 levels of assistance gradually.
- ▶ Practice braking hard on a regular basis.
- ▶ Take and complete a riding safety course.

#### Injuries and death 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 or your mobile phone.
- ▶ Stop bicycle if you want to make inputs on the display other than a change in level of assistance. Only enter data when the S pedelec is stationary.

#### 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.

#### 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.

 **CAUTION**
**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.

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 when it is raining.

**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.

**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 intervals. The *tyres* in particular can fail if exposed to a continuous load.

- ▶ Use the brakes to decelerate the pedelec if you reach speeds greater than 25 km/h.

**Notice**

Moisture penetrating at low temperatures may impair individual 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 it for winter use.

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 and your physical fitness.

**6.2 Personal protective equipment**

It is recommended that you wear a suitable cycling helmet, sturdy footwear and typical, close-fitting, reflective sports clothing.

**6.3 Tips for a greater range**

The pedelec's 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 generally help you maximize range.

**Suspension elements**

- ▶ Only open suspension fork and damper when necessary on terrain or gravel paths. Block suspension fork and damper on tarmacked roads or on hills.

**Mileage**

The more own physical effort the rider makes, the greater the attainable range.

- ▶ Shift down 1-2 gears to increase the induced power and pedalling frequency.

**Pedalling frequency**

- ▶ Ride using pedalling frequencies of over 50 revolutions per minute. This optimises the electric drive's efficiency.
- ▶ Avoid pedalling very slowly.

**Weight**

- ▶ Minimise the total weight of pedelec and baggage.

**Stopping and starting**

- ▶ Ride long distances at a constant speed.
- ▶ Avoid stopping and starting frequently.

**Gear shift**

- ▶ Use a low gear and a low level of assistance on hills and when setting off.
- ▶ Switch up a gear depending on the speed and terrain.

**Tyre pressure**

- ▶ Always use the maximum permitted tyre pressure.

**Battery and temperature**

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

- ▶ Use a thermal protection sleeve on the battery in winter.

## 6.4 Error messages

The status screen indicates a status change or an existing fault. The status indicator does not light up if no fault is detected.

The different colours of the status screen have the following meaning:

Colour	Meaning
Green	The status screen flashes green briefly after the drive pack has been successfully installed into the pedelec. This gives you a visual signal that the system can now be switched on.
Yellow	The status screen turns yellow briefly when a "soft fault" is detected. This means that there is a temporary or non-critical disturbance, which in most cases leads to a loss of performance. You can still ride your pedelec even if a "soft fault" occurs. However, this is not recommended.
Red	The status screen briefly turns red when a "hard fault" is detected. The pedelec can no longer be used and must be serviced if a "hard fault" occurs.

**Table 27: Meaning of status screen colours**

- Please contact your specialist dealer immediately in the case of an ongoing "soft fault" or a "hard fault".

"Soft faults" on the pedelec are most commonly caused by data missing from the speed sensor.

In the case of a permanent "soft fault", you can re-install the speed sensor magnets. If the problem persists, please contact your FAZUA service partner or visit the FAZUA service platform ([www.fazua.com/service](http://www.fazua.com/service)).

For a permanent "hard fault", please contact your FAZUA service partner or visit the FAZUA service platform ([www.fazua.com/service](http://www.fazua.com/service)).



## 6.5 Instruction and customer service

Your supplying specialist dealer will provide customer service. Contact details can be found on the pedelec pass for these operating instructions. The specialist dealer will explain all the pedelec functions to you in person, this being when the specialist dealer hands over the pedelec at the latest. These operating instructions are provided to you with every pedelec, so that you can consult them at a later stage.

Your specialist dealer will also be happy to assist you in the future whether you require maintenance, conversion or repair.

## 6.6 Adjusting the pedelec



**CAUTION**

### 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 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.

### 6.6.1 Adjusting the saddle

#### 6.6.1.1 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 adjust the handlebars, then the saddle.

- ▶ Adjust the saddle tilt to horizontal.

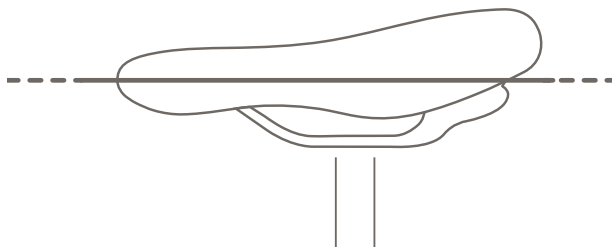


Figure 20: Horizontal saddle tilt

#### 6.6.1.2 Determining the seat height

- ✓ To adjust the seat height safely, either
  - Push the pedelec near to a wall, so that the rider can lean on the wall to support themselves or
  - ask another person to hold the pedelec.

1 Climb onto the pedelec.

2 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, adjust the length of the seat post to your needs.

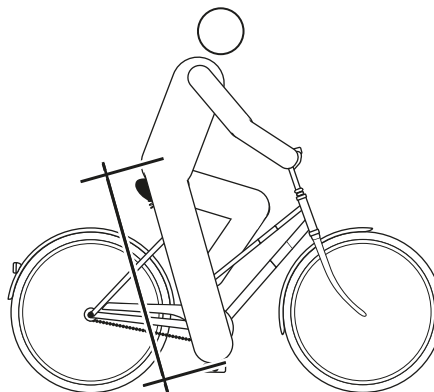


Figure 21: Optimal saddle height

### 6.6.1.3 Adjusting the seat height with quick release

- 1 Open the quick release on the seat post to change the seat height (1). To do so, push the clamping lever away from the seat post (3).

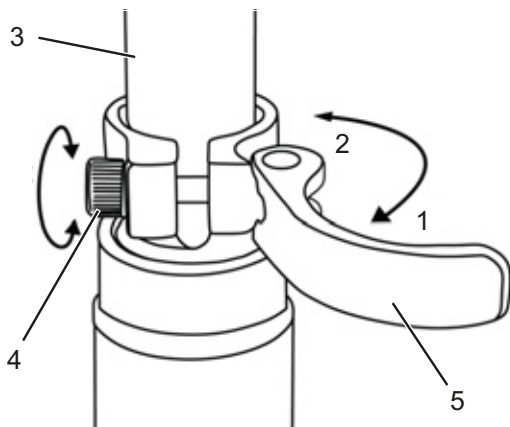


Figure 22: Opening the seat post quick release

- 2 Set the seat post to 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.

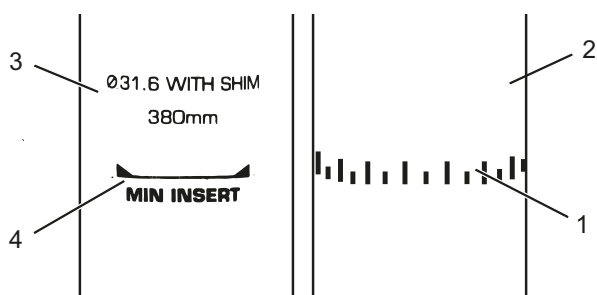


Figure 23: Detailed view of the seat post – examples of the minimum insertion depth marking

- 3 To close it, push the seat post clamping lever as far as it will go into the seat post (2).
- 4 Check the clamping force of quick releases.

### 6.6.1.4 Height-adjustable seat post

Only applies to pedelecs with this equipment

#### Preparing

- ▶ 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.

#### Lowering the saddle

- 1 Press your hand down on the saddle or sit on the saddle to lower the saddle.

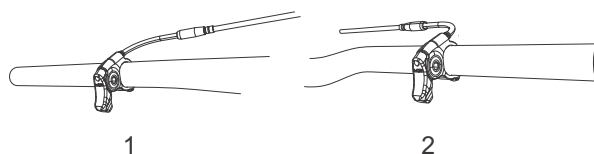


Figure 24: The seat post lever can be installed either on the left (1) or right (2) side of the handlebars

- 2 Press the seat post lever and hold it down.
- 3 Release the seat post lever once you have reached the required height.

#### Raising the saddle

- 1 Press the seat post lever and hold it down.
- 2 Remove any pressure from the saddle.
- 3 Release the seat post lever once you have reached the required height.

### 6.6.1.5 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 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.

- 1 Climb onto the pedelec.
- 2 Place the pedals into the vertical position with your feet.

The rider is sitting in the optimal sitting position if the perpendicular line from the kneecap runs through the pedal axle.

- 3.1 If the perpendicular line crosses behind the pedal, bring the saddle further forward.
- 3.2 If the perpendicular line crosses in front of the pedal, bring the saddle further back.
- 4 Move the saddle within its permitted displacement range only (marked on the saddle stay).

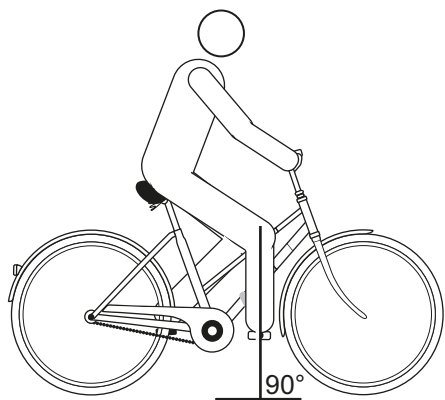


Figure 25: Knee cap perpendicular line

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



### 6.6.2 Adjusting 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 result in unfavourable 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.

### 6.6.3 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.

#### 6.6.3.1 Adjusting the height of the handlebars

- 1 Open the stem clamping lever.

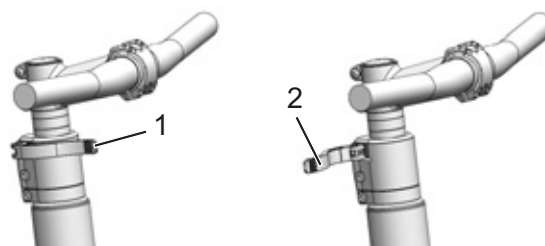
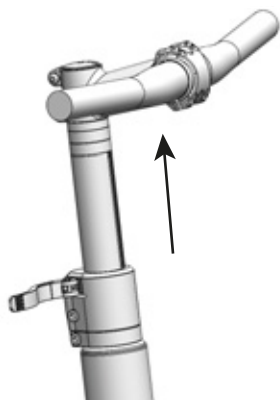


Figure 26: Open (2) and closed (1) stem clamping lever; All Up used as an example





**Figure 27: Pulling the locking lever upwards; All Up used as an example**

- 2 Pull out the handlebars to the required height. Observe minimum insertion depth.
- 3 Close the stem clamping lever.

### 6.6.3.2 Adjusting the quick release clamping force

- ▶ If the *handlebar clamping lever* stops before reaching its end position, unscrew the *knurled nut*.
- ▶ Tighten the *knurled nut* on the seat post if the *seat post clamping lever's* clamping force is not effective enough.
- ▶ If you are unable to set the clamping force, the specialist dealer will need to check the quick release.

### 6.6.4 Adjusting the brake

The brake lever grip distance can be adjusted to ensure that it can be reached more easily. The pressure point can also be adjusted to the rider's preferences.

- ▶ Contact your specialist dealer if your brake is not described.

### 6.6.5 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.

- 1 Accelerate pedelec to about 25 km/h.
  - 2 Brake pedelec until it comes to a halt.
  - 3 Repeat process 30–50 times.
- ⇒ The disc brake is retracted and provides optimal braking power.

## 6.7 Accessories

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

<i>Description</i>	<i>Article number</i>
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 28: 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.

## 6.8 Check list before each ride

► Check the pedelec before each ride.

⇒ Take the pedelec out of service if you spot any anomalies.

<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 bicycle 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"/>	If quick releases are used check them to make sure that they are fully closed in their end position.
<input type="checkbox"/>	Be alert to any unusual operating sensations when braking, pedalling or steering.

## 6.9 Raising the kickstand

- ▶ Use your foot to raise the kickstand completely before setting off.

## 6.10 Using the pannier rack



### 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.

### 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.

### 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 *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*.

- ▶ Distribute the baggage as evenly as possible between the left- and right-hand side.
- ▶ We recommend the use of panniers and baggage baskets.

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

- ▶ Never exceed the maximum permitted *total weight* when packing the pannier.
- ▶ Never exceed the maximum load bearing capacity of the pannier rack.
- ▶ Never modify the pannier rack.

## 6.11 Using the saddle

- ▶ Do not wear studded jeans as these can damage the saddle covering.
- ▶ Wear dark clothes for your first few rides as new leather saddles can stain clothing.

## 6.12 Charger

### 6.12.1 Connecting the charger to the mains

- ▶ Connect the mains plug on the connecting cable to the power jack on the charger. Connect the mains plug (country-specific) on the connecting cable to the power supply.

Nominal input voltage	100 ... 240 V AC
Frequency	50 ... 60 Hz

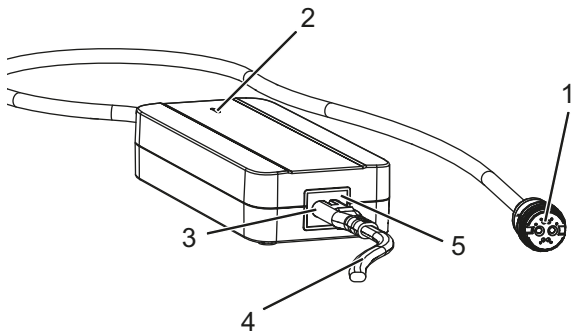


Figure 28: Charger with mains plug (1), LED display charger (2), mains plug (3), connection cable (4) and power jack (5)

## 6.13 Rechargeable battery

### 6.13.1 Charging the battery

- ✓ The ambient temperature during the charging process must be within the range from 0 °C to +45 °C. The battery cannot be charged at a temperature outside of the permitted charging temperature, even when connected to the charger. It can only be charged again when the permitted charging temperature is reached.
- ✓ The battery can remain in the drive unit or be removed for charging.
- ✓ Interrupting the charging process does not damage the battery.

#### 6.13.1.1 Charging the battery in the drive unit

- ▶ Insert the charger plug into the charging socket on the battery used in the drive unit.

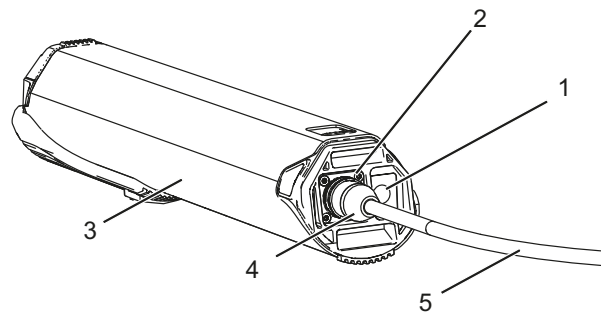


Figure 29: Drive unit with battery level indicator (1), charging socket (2), drive unit with battery (3), charger plug (4) and connection cable (5)

- ⇒ Charging begins as soon as the charger plug is connected to the charging socket on the connected battery.
- ⇒ The charge level is displayed by the battery level indicator on the battery. Every LED represents 20% of the capacity. Once 5 LEDs are illuminated, the battery is completely charged.
- ⇒ Once the battery is fully charged, the LEDs on the battery level indicator go out. You can check the charge level by briefly pressing the On-Off button on the battery.
- ▶ Once charging is complete, unplug the charger from the mains and the battery from the charger.

#### 6.13.1.2 Charging the battery on the pedelec

- ✓ The drive unit is located on the pedelec.
- ▶ Connect the charger plug to the pedelec charging socket.

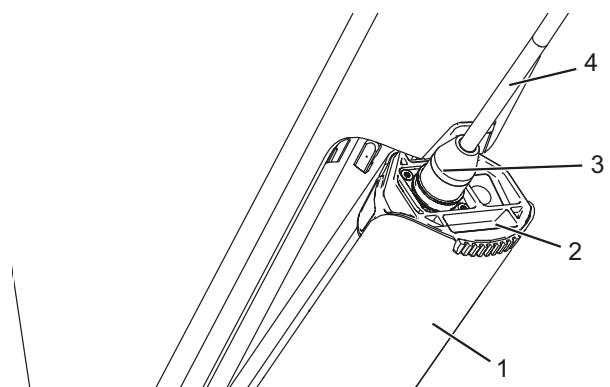


Figure 30: Drive unit (1) with battery level indicator (2), charger plug (3) and connection cable (4)

- ⇒ Charging begins as soon as the charger plug is connected to the charging socket on the connected battery.
- ⇒ The charge level is displayed by the battery level indicator on the battery. Every LED represents 20% of the capacity. Once 5 LEDs are illuminated, the battery is completely charged.
- ⇒ Once the battery is fully charged, the LEDs on the battery level indicator go out. You can check the charge level by briefly pressing the On-Off button on the battery.
- ▶ Once charging is complete, unplug the charger from the mains and the battery from the charger.

### 6.13.2 Inserting the battery into the drive unit

#### Notice

Dirt causes friction when inserting the battery into the drive unit and complicates the process.

- ▶ Always clean the battery (1) and drive unit (2) before use and maintain a clean condition.

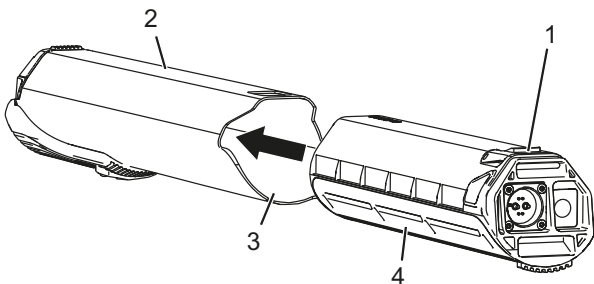


Figure 31: Inserting the battery into the drive unit

- ▶ To insert the battery (4) into the drive unit (2), hold the drive unit (2) in one hand and the battery (4) in the other. Make sure that the discharging socket is positioned towards the battery holder (3).
- ▶ Connect the two components by carefully inserting the battery (4) into the battery holder (3) on the drive unit (2).
- ▶ Once the battery (4) is fully inserted, the battery (4) is automatically locked by the battery lock (1).

### 6.13.3 Removing the battery from the drive unit

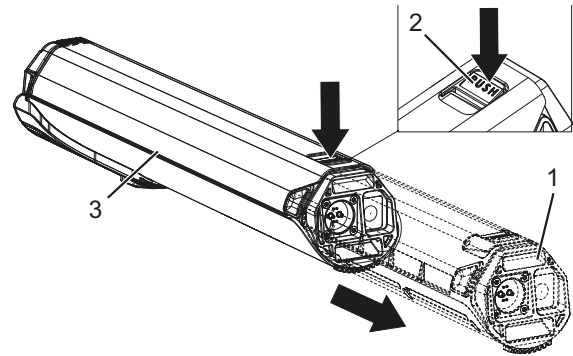


Figure 32: Removing the battery from the drive unit

- ▶ To remove the battery (1) from the drive unit (3), press the battery lock (2) whilst simultaneously pulling out the battery (1) from the battery holder.

## 6.14 Drive unit

### 6.14.1 Installing the drive unit on the pedelec

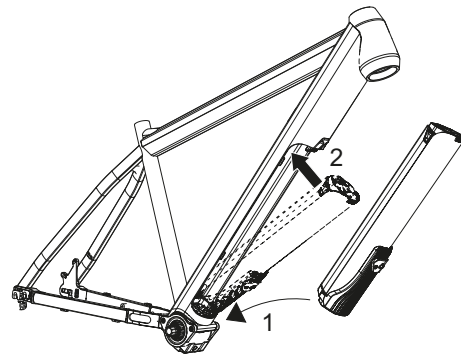


Figure 33: Inserting the drive unit into the pedelec

- ✓ A charged battery must be inserted in the drive unit.
- ▶ (1) Position the interface to the bottom bracket axle directly under the down tube on the pedelec, in front of the free interface on the bottom bracket axle.
- ▶ (2) Swing the upper end of the drive unit into the down tube until the locking hook engages.
- ▶ Check that the drive unit is firmly attached.

Lock the drive unit to protect it against theft.

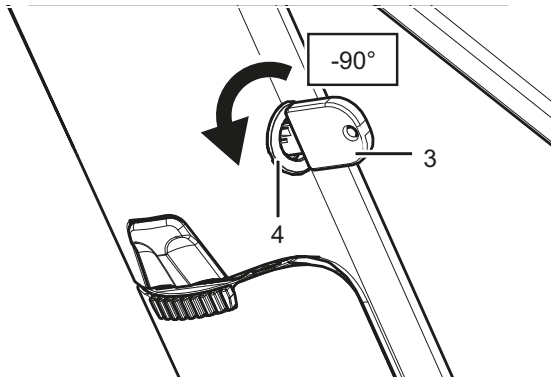


Figure 34: Locking the drive unit

- ▶ Insert the lock (3) into the cylinder (4).
- ▶ Turn the key (3) anti-clockwise.

### 6.14.2 Removing the drive unit from the pedelec

**Notice**

- ▶ When removing the drive unit, hold it firmly to prevent it from falling out of the frame.

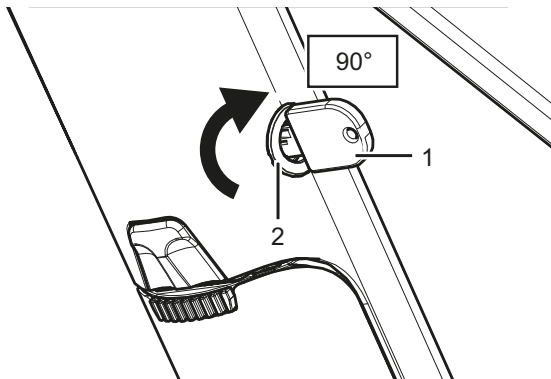


Figure 35: Unlocking the drive unit

- ▶ Insert the lock (1) into the cylinder (2).
- ▶ Turn the key (1) clockwise.

⇒ The drive unit is now unlocked.

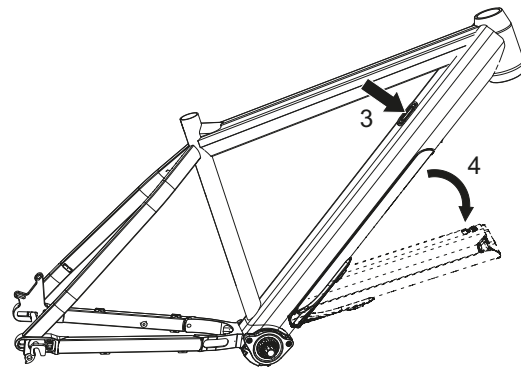


Figure 36: Removing the drive unit from the pedelec

- ▶ Hold the drive unit firmly with one hand.
- ▶ Press the drive unit firmly against the frame.
- ▶ With the other hand, press the push button (3).
- ▶ Swing the drive unit out of the frame and remove the drive unit.

## 6.15 Electric drive system

### 6.15.1 Switching on the electric 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.
  - ✓ The battery is firmly positioned. The key has been removed.
  - ✓ The drive unit has been inserted on the pedelec.
  - ✓ The speed sensor is properly connected to the bottom bracket axle and the spoke magnet is in the correct position.
  - ▶ Press any button on the control panel.
  - ⇒ The control panel will display the start animation and is ready for operation.

### 6.15.2 Switching off the drive system

Always switch the pedelec off after parking to prevent the pedelec from moving unintentionally and protect the battery. There are 4 ways to switch the drive system off:

#### 1 Middle button

- ▶ Press and hold the middle button on the control panel for 2 seconds.

#### 2 Drive pack

- ▶ Remove the drive unit from the pedelec.

#### 3 Rechargeable battery

- ▶ Switch the battery off.

#### 4 Standstill

- ▶ Bring the pedelec to a halt.
- ⇒ The battery level indicator LEDs display a switch-off animation and the battery is switched off.

### 6.15.3 Drive system standstill

The pedelec shuts down

- ▶ If the pedelec has not been moved for 10 hours and no button has been pressed on the control panel or
- ▶ If the battery level drops below 30%, the pedelec has not been moved for 3 hours and no button has been pressed on the control panel.
- ⇒ If the pedelec is at a standstill, the system automatically switches off the battery.

If your drive system is at a standstill, the battery switches off to conserve the remaining energy.

If the battery is no longer installed in the drive pack or connected to the charger after 12 hours and no button has been pressed on the battery, the battery will switch off to preserve the remaining energy. To start a system that has been shut down, switch the battery on.



## 6.16 Control panel

### Notice

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

### 6.16.1 Using the push assist system



#### Injury from pedals or wheels

The pedals and the drive wheel turn when the push assist system is used. There is a risk of injury if the pedelec wheels are not in contact with the ground when the push assist system is used (e.g. when carrying the pedelec up stairs or when placing it on a bicycle rack).

- ▶ Only use the push assist mode when pushing the pedelec.
- ▶ 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 user can slow the pedelec to their own walking pace by holding the bicycle firmly while pushing.

- ▶ Use the control panel to set the pedal assistance to NONE.
- ▶ Press and hold the **bottom button** on the control panel. After 2 seconds, the push assist system is activated.
- ▶ To deactivate the push assist system, release the **bottom button** on the control panel.

### 6.16.2 Selecting the level of assistance

- ▶ Press the top or bottom button on the control panel. The following levels of assistance are possible:

Level of assistance	Use
NONE	Motor assistance is deactivated. The pedelec can be used as a normal pedelec.
BREEZE	Low but effective support for maximum range.
RIVER	Reliable assistance for most usage situations.
ROCKET	Maximum assistance for very demanding excursions.

Table 29: Overview of levels of assistance

Level of assistance	Colour	Max. assistance factor	Max. output
NONE	WHITE	0%	0 W
BREEZE	GREEN	75%	125 W
RIVER	BLUE	150%	250 W
ROCKET	PINK	240%	400 W

## 6.17 Brake

### WARNING

#### Crash caused by brake failure

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. Any air bubbles or water contained in the brake system may expand due to heat. 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.
- ▶ Never use the pedelec if the brakes don't work properly or you can feel no resistance when you grip the brake handle. 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.

Correct handling of the brake helps control the pedelec and prevents crashes.

- ▶ In order to achieve optimum braking results, do not pedal while braking.
- ▶ Shift your body weight backwards and down as far as possible.
- ▶ Practice braking and emergency braking before using the pedelec in public spaces.

#### 6.17.1 Using the brake lever

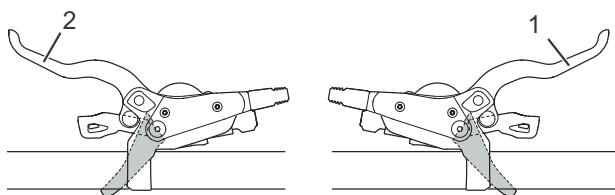


Figure 37: Front (2) and rear (1) brake lever – Shimano brake used as an example

- ▶ Push the left-hand *brake lever* to apply the *front wheel brake*.
- ▶ Push the right-hand *brake lever* to apply the *rear wheel brake*.

## 6.18 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.

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

### 6.18.1 Using the derailleur gears

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

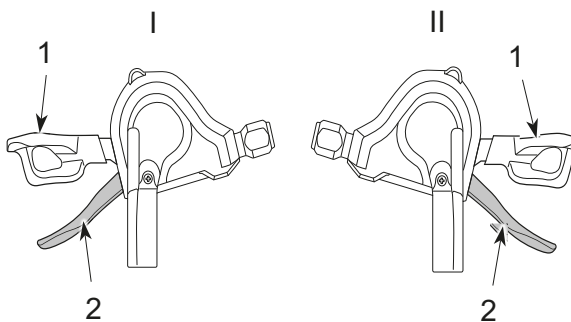


Figure 38: Down shifter (1) and up shifter (2) on the left (I) and right (II) gear shift

- ▶ Select the appropriate gear with the *shifter*.
  - ⇒ The gear shift switches the gear.
  - ⇒ The shifter returns to its original position.
- ▶ Clean and lubricate the rear derailleur if gear changes block.

## 6.19 Folding

### Notice

- ▶ Never crush or bend cables, electric cables or brake cables when folding.

### 6.19.1 Folding up your pedelec

Only applies to pedelecs with this equipment

The pedelec is folded in eight steps.

- 1 Switch off electric drive system (see Section 6.15.2).
- 2 Lower kickstand (see Section 6.9).
- 3 Remove display (see Section 6.13.1.1).
- 4 Take out battery (see Section 6.12.1.1, 6.12.2.1 or 6.12.3.1).
- 5 Fold pedal up (see Section 6.19.1.1).
- 6 Fold up the stem (see Section 6.19.1.2 or 6.19.1.3).
- 7 Push in the seat post (see Section 6.19.1.4).
- 8 Fold up the frame (see Section 6.19.1.5).

#### 6.19.1.1 Folding up the pedal

- 1 Push the pedal against the pedal crank with the foot.

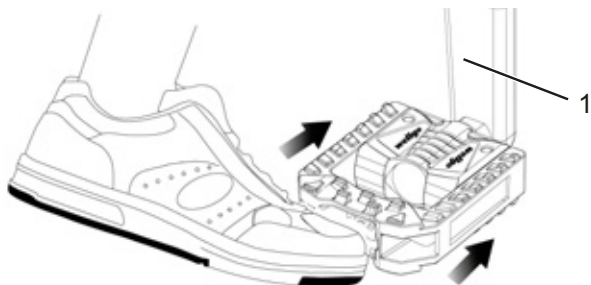


Figure 39: Pushing the pedal against the pedal crank (1)

- 2 Fold the pedal against the pedal crank.

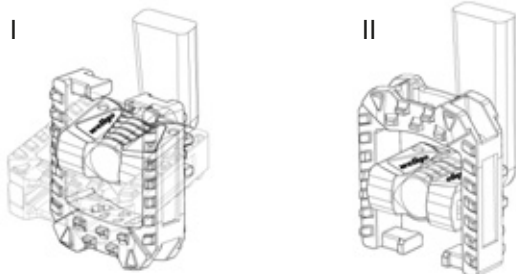


Figure 40: Folding the pedal up (I) or down (II)

#### 6.19.1.2 Folding up the stem, version I

Only applies to pedelecs with this equipment

- 1 Open the *clamping lever on the stem quick release*.
  - 2 Pull the *locking lever on the stem* upwards and simultaneously pivot it 90° to the right or the left.
- ⇒ You feel the *handlebars* click into place.
- 3 Push in the *handlebars*.
  - 4 Close the *clamping lever on the stem quick release*.



Figure 41: Opened clamping lever on the stem quick release (3) on the stem (2), version I, with locking lever on the stem (1)

#### 6.19.1.3 Folding up the stem, version II

Only applies to pedelecs with this equipment

- 1 Open the *clamping lever on the stem quick release*.
  - 2 Push the *unlocking knob*.
  - 3 Pivot the *handlebars* 90° to the right or left.
- ⇒ You feel the *handlebars* click into place.
- 4 Close the *clamping lever on the stem quick release*.



Figure 42: Stem, version II with clamping lever on the stem quick release (1) and unlocking knob (2)

### 6.19.1.4 Pushing in the seat post

- 1 Open the *clamping lever for the quick release on the seat post*.
- 2 Push in the *saddle* to the minimum position.
- 3 Close the *clamping lever for the quick release on the seat post*.

### 6.19.1.5 Folding up the frame

- 1 Pivot the *frame locking lever* upwards.
- ⇒ The *frame clamping lever* can be opened freely.
- 2 Open the *frame clamping lever*.
  - 3 Pivot in the frame as far as it will go.



### Crash caused by using the opened locking lever incorrectly

The frame will suddenly fold together while the cyclist is riding if the locking lever is open. This will cause a crash with serious injuries.

- ▶ Only use the pedelec with the locking lever closed.



Figure 43: Closed (1) and opened (2) frame locking lever

### 6.19.2 Preparing the bicycle so that it is ready to ride again

The bicycle is prepared so that it is ready to ride again in eight steps.

- 1 Use your foot to lower the *kickstand* completely before parking.
- 2 *Fold out the frame* (see Section 6.19.2.1.)
- 3 *Adjust the stem* (see Section 6.5.3).
- 4 *Adjust the saddle* (see Section 6.5.1).
- 5 *Fold out the pedal* (see Section 6.19.2.2).
- 6 *Insert the battery* (see Section 6.12.1.2, 6.12.2.2 or 6.12.3.2)
- 7 *Attach display* (see Section 6.13.1.2).
- 8 Switch on the electric system (see Section 6.19.2).

#### 6.19.2.1 Folding out the frame

- 1 Completely fold out the frame.
  - 2 Close the *frame clamping lever*.
- ⇒ The *frame clamping lever* rests on the limit stop. The *frame locking lever* holds the *frame clamping lever*. The *frame clamping lever* is closed.

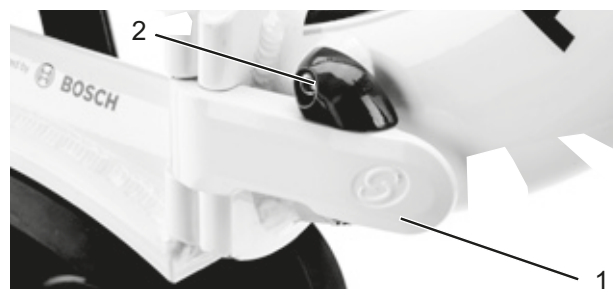


Figure 44: Closed frame clamping lever (1) and closed frame locking lever (2)

### 6.19.2.2 Folding out the pedal

- ▶ Push the pedal against the pedal crank with the foot from the front.

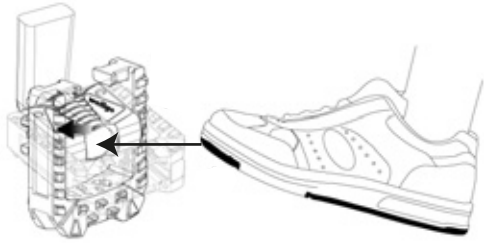


Figure 45: Pushing the pedal against the pedal crank (1)

- ▶ Use the foot to fold the pedal up or down.

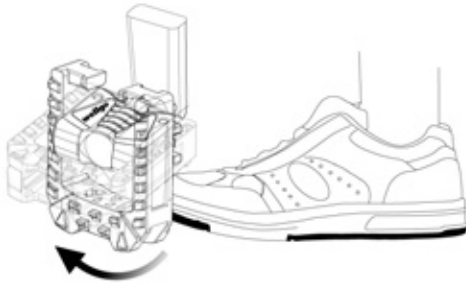


Figure 46: Folding up the pedal

## 6.20 Parking the pedelec

### 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.

---

Moisture penetrating at low temperatures may impair individual 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 it for winter use.

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The pedelec's force of weight may cause the kickstand to sink into soft ground, possibly causing the pedelec to topple over as a result.

- ▶ The pedelec must be parked on firm, level ground only.

- 
- 1 Switch off the drive system (see Section 6.15.2).
  - 2 After getting off, use your foot to lower the kickstand completely before parking.
  - 3 Park the pedelec carefully and check that it is stable.
  - 4 Clean the suspension fork and pedals (see Section 7.1.)
  - 5 Protect the saddle with a saddle cover if you park the pedelec outside.
  - 6 Secure the pedelec with a lock.
  - 7 Remove the on-board computer (see Section 6.13.1.1), the battery (see Section 6.12.1.1, 6.12.2.1 or 6.12.3.1) and, where necessary, your mobile phone (see Section 6.10.4) to protect against theft.

## 7 Cleaning and servicing

### Cleaning check list

<input type="checkbox"/>	Clean the pedals	after each ride
<input type="checkbox"/>	Suspension fork	after each ride
<input type="checkbox"/>	Cleaning the battery	once a month
<input type="checkbox"/>	Chain	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

### 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

### 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.
- ▶ Apply the brakes a few times to test them after cleaning, servicing or repair

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 brakes a couple of times before setting off to ensure that they work as normal

### 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 cleaning.



### Notice

Water may enter 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 pressure washer.

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.

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 brakes a couple of times before setting off to ensure that they work as normal

Servicing measures must be performed regularly. Contact your specialist dealer if you are unsure.

## 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 from the stanchions and deflector seals with a damp cloth.
- ▶ Check the stanchions for dents, scratches, staining or leaking oil.
- ▶ Lubricate the dust seals and stanchions.

### 7.1.2 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

### 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 thorough cleaning.

### 7.2.1 Cleaning the frame

- 1 Soak the entire frame with dish-washing detergent if the dirt is thick and ingrained.
- 2 After leaving it to soak for a short time, remove the dirt and mud with a sponge, brush and toothbrushes.
- 3 Use a watering can or your hand to rinse the frame.
- 4 Service the frame after cleaning.

### 7.2.2 Cleaning the stem

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

### 7.2.3 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.

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

### 7.2.4 Cleaning the drive elements

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

### 7.2.5 Cleaning the chain

#### Notice

- ▶ Never use aggressive (acid-based) cleaners, rust removers or degreasers when cleaning the chain.
- ▶ Never use chain cleaning devices or chain cleaning baths.

- 1 Slightly dampen a brush with dish-washing liquid. Brush both sides of the chain.
- 2 Dampen a cloth with soapy water. Place the cloth on the chain.
- 3 Hold and apply slight pressure while slowly turning the rear wheel, so the chain passes through the cloth.
- 4 If the chain is still dirty afterwards, clean with lubricant.
- 5 Service the chain after cleaning.

### 7.2.6 Cleaning the battery

#### **CAUTION**

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

### Notice

- ▶ Never clean the battery with solvents, such as oil, thinners, alcohol or corrosion protection, or with cleaning agents.
- ▶ Clean the battery electrical connections with a dry cloth or paintbrush only.
- ▶ Wipe off the decorative sides with a damp cloth.

#### 7.2.7 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 pressure washer, water jet or compressed air.
- ▶ Never use cleaning agents.
- ▶ Remove the display from the pedelec before cleaning.

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

#### 7.2.8 Cleaning the motor

### Notice

If water penetrates the motor, it will be permanently damaged.

- ▶ Never immerse the motor in water.
- ▶ Never clean with a pressure washer, water jet or compressed air.
- ▶ Never use cleaning agents.
- ▶ Carefully clean the motor with a soft, damp cloth.

#### 7.2.9 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 a pressure washer or compressed air.
- ▶ 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.

#### 7.2.10 Cleaning the saddle

### Notice

- ▶ Never clean with a pressure washer.
- ▶ Never clean with solvent or chemical agents.
- ▶ Clean the saddle with lukewarm water and a cloth dampened with natural soap.

#### 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 the frame.
- ▶ 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

- 6 Treat front and rear derailleur articulated shafts and jockey wheels with Teflon spray.

### 7.3.5 Servicing the pedals

- ▶ Treat pedals with spray oil.

### 7.3.6 Servicing the chain

- ▶ Lubricate the chain thoroughly with chain oil.

## 7.4 Maintenance

The following maintenance measures must be performed on a regular basis.

### 7.4.1 Wheel



#### 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.

1 Check the *tyres* for wear.

2 Check the *tyre pressure*.

3 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.

4 Check the tension of the spokes.

#### 7.4.1.1 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.

#### 7.4.1.2 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.

⇒ Contact your specialist dealer to have the rims replaced. We recommend that you also replace the *rims* at the same time as every second brake lining replacement.

### 7.4.1.3 Checking and adjusting the tyre pressure

#### 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 against the specifications.
- ▶ *Adjust the tyre pressure as necessary.*

#### Dunlop valve

Only applies to pedelecs with this equipment



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.

- 1 Unscrew and remove the valve cap.
- 2 Connect the bicycle pump.
- 3 Pump up the tyre slowly and pay attention to the tyre pressure in the process.
- 4 Correct the tyre pressure according to specifications in the Pedelec pass.
- 5 If the tyre pressure is too high, unfasten the union nut, let air out and re-tighten the union nut.
- 6 Remove the bicycle pump.
- 7 Screw the valve cap tight.
- 8 Screw the rim nut gently against the rim with the tips of your fingers.

#### Presta valve

Only applies to pedelecs with this equipment



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

- 1 Unscrew and remove the valve cap.
- 2 Open the knurled nut around four turns.
- 3 Carefully apply the bicycle pump so that the valve insert is not bent.
- 4 Pump up the tyre slowly and pay attention to the tyre pressure in the process.
- 5 Correct the tyre pressure as per the specifications on the tyre.
- 6 Remove the bicycle pump.
- 7 Tighten the knurled nut with your fingers.
- 8 Screw the valve cap tight.
- 9 Screw the rim nut gently against the rim with the tips of your fingers.

### 7.4.1.4 Checking and adjusting the tyre pressure – Schrader valve

Only applies to pedelecs with this equipment



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

- 1 Unscrew and remove the valve cap.
  - 2 Attach the bicycle pump.
  - 3 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.
- 4 Remove the bicycle pump.
  - 5 Screw the valve cap tight.

- 6 Screw the rim nut (1) gently against the rim with the tips of your fingers.

### 7.4.2 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 hydraulic brake system on a regular basis. Contact your specialist dealer if any of these components have become worn.

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

### 7.4.3 Checking the brake linings for wear

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

- 1 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.
- 2 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. Contact your specialist dealer if any of these components have become worn.

### 7.4.4 Checking the pressure point

- ▶ Pull brake lever and hold repeatedly several times.
- ⇒ If you are unable to clearly detect the pressure point and it changes, the brake needs to be bled. Contact your specialist dealer.

### 7.4.5 Checking the brake discs for wear

- ▶ Check that the brake disc measures no less than 1.8 mm in depth at any point.
- ⇒ The brake discs have not reached their wear limit yet; brake discs need to be replaced if they have. Contact your specialist dealer.

### 7.4.6 Checking the electrical cables and brake cables

- ▶ Check all visible electrical cables and Bowden cables for damage. If the sheathing is compressed, a brake is defective or a light does not work, the pedelec must be removed from service until the lines or cables have been repaired. Contact your specialist dealer.

### 7.4.7 Checking the gear shift

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

### 7.4.8 Checking the stem

- ▶ The stem and quick release system must 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.
- ▶ Contact your specialist dealer if there is any wear or signs of corrosion.

### 7.4.9 Checking the USB port

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

### 7.4.10 Checking the chain tension

#### Notice

Excessive chain tension increases wear. If the chain tension is too low, there is a risk that the *chain* will slip off the *chain wheels*.

- ▶ Check the chain tension once a month.

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

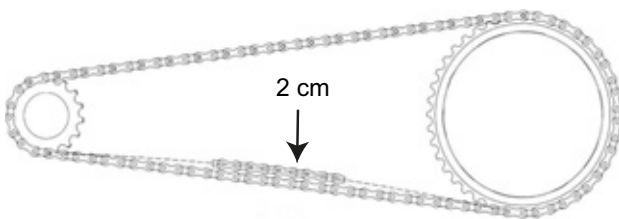


Figure 47: Checking the chain tension

- 2 If the *chain* can be pushed more than 2 cm, the *chain* will need to be re-tensioned by your specialist dealer.
  - 3 If the *chain* can only be pushed up and down less than 1 cm, the *chain* needs to be slackened as required.
- ⇒ The ideal chain tension has been achieved if the *chain* 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.
- 4 If a hub gear is fitted, the rear wheel must be pushed backwards or forwards to tighten the chain. Contact your specialist dealer.
  - 5 Check the handlebar grip is firmly in position.



## 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.
- ▶ Only carry out work or changes, such as dismantling, sanding or painting, which are permitted and described in the brake operating instructions.

#### 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 during maintenance work.

### 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 only qualified specialist personnel may open it.

- ▶ 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. No matter whether disc brakes need replacing, brakes venting or wheels changing, many maintenance tasks require technical expertise, special tools and special lubricants. 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 Section [Section 11.3, page 79].
- ▶ 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 1mm 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 Suspension system

The correct execution of maintenance on the suspension system not only guarantees a long service life, but also ensures optimal performance. Each maintenance interval shows the maximum cycling hours for the corresponding type of recommended maintenance. Depending on terrain and environmental conditions, the performance can be optimised through shorter maintenance intervals.

### 8.1.1 Rear frame damper

Only applies to pedelecs with this equipment

#### Maintenance intervals

RockShox rear frame damper		
<input type="checkbox"/>	Service air chamber assembly	every 50 hours
<input type="checkbox"/>	Service damper and spring	every 200 hours
FOX rear frame damper		
<input type="checkbox"/>	Complete maintenance (full interior and exterior inspection, damper overhaul, air spring overhaul, oil change and dust wiper replacement)	every 125 hours or once a year
Suntour rear frame damper		
<input type="checkbox"/>	Complete shock absorber service including damper reassembly and air seal replacement	every 100 hours

## WARNING

### Injury due to explosion

The air chamber is pressurised. If the air system is serviced in a rear frame damper, it can explode and cause serious injury.

- ▶ Wear safety goggles, protective gloves and safety clothing when assembling or carrying out maintenance on the bicycle.
- ▶ Release the air for the air chambers. Detach all air insert fittings.
- ▶ Never service or dismantle a rear frame damper if it has not completely rebounded.

## WARNING

### Intoxication from suspension oil

Suspension oil irritates the respiratory tract, leads to germ cell mutations and sterility, causes cancer and is toxic to touch.

- ▶ Always wear safety goggles and nitrile gloves when working with suspension oil.
- ▶ Never perform maintenance when you are pregnant.
- ▶ Use an oil catchment tray under the section where the rear frame damper is serviced.

## CAUTION

### Hazard for the environment due to toxic substances

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

Special tools, special lubricants and knowledge of suspension components are required to maintain and repair the rear frame damper.

The rear frame damper may become damaged if the procedure is not followed as described. Only specialist dealers may carry out maintenance on rear frame damper.

## 8.1.2 Suspension fork

Only applies to pedelecs with this equipment

### Maintenance intervals

Suntour suspension fork		
<input type="checkbox"/>	<b>Maintenance 1</b> Functional check, fastening and wear test	every 50 hours
<input type="checkbox"/>	<b>Maintenance 2</b> Maintenance 1 + cleaning entire fork interior and exterior / cleaning and lubrication of dust seals and guides/ plastic bushings / check torques	every 100 hours
FOX suspension fork		
<input type="checkbox"/>	Full maintenance (complete interior/ exterior inspection, damper overhaul, replacement of air seals on air forks, air suspension overhaul, oil change and dust wiper replacement).	every 125 hours or once a year
RockShox suspension fork		
<input type="checkbox"/>	Maintenance of stanchions for: Paragon™, XC™ 28, XC 30, 30™, Judy®, Recon™, Sektor™, 35™*, Bluto™, REBA®, SID®, RS-1™, Revelation™, PIKE®, Lyrik™, Yari™, BoXXer	every 50 hours
<input type="checkbox"/>	Maintenance of spring and damper unit for: Paragon, XC 28, XC 30,30 (2015 and earlier), Recon (2015 and earlier), Sektor (2015 and earlier), Bluto (2016 and earlier), Revelation (2017 and earlier), REBA (2016 and earlier), SID (2016 and earlier), RS-1 (2017 and earlier), BoXXer (2018 and earlier)	every 100 hours
<input type="checkbox"/>	Maintenance of spring and damper unit for: 30 (2016+), Judy (2018+), Recon (2016+), Sektor (2016+), 35 (2020+)*, Revelation (2018+), Bluto (2017+), REBA (2017+), SID (2017+), RS-1 (2018+), PIKE (2014+), Lyrik (2016+), Yari (2016+), BoXXer (2019+)	every 200 hours

### WARNING

#### Injury due to explosion

The air chamber is pressurised. If the air system is serviced in a faulty suspension fork, it can explode and cause serious injury.

- ▶ Wear safety goggles, protective gloves and safety clothing when assembling or carrying out maintenance on the bicycle.
- ▶ Release the air for the air chambers. Detach all air insert fitments.
- ▶ Never service or dismantle a suspension fork if it has not completely rebounded.

### CAUTION

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

The suspension fork 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.

Special tools, special lubricants and knowledge of suspension components are required to service and repair suspension forks.

The suspension fork may be damaged if procedures are not followed as described. Only specialist dealers may carry out maintenance on the suspension fork.

### 8.1.3 Suspension seat post

Only applies to pedelecs with this equipment

#### Maintenance intervals

by.schulz seat post		
<input type="checkbox"/>	Check all screws for correct tightening torques for: G1 and G2	After 250 km and every 1,500 km
Suntour suspension seat post		
<input type="checkbox"/>	<b>Maintenance 1</b>	every 100 hours
RockShox suspension seat post		
<input type="checkbox"/>	Venting of remote control lever and/or maintenance of lower seat post unit for: Reverb™ A1/A2/B1, Reverb Stealth A1/A2/B1/C1*, Reverb AXS™ A1*	every 50 hours
<input type="checkbox"/>	Venting of remote control lever and/or maintenance of lower seat post unit for: Reverb B1, Reverb Stealth B1/C1*, Reverb AXS A1*	every 200 hours
<input type="checkbox"/>	Complete maintenance of seat post for: Reverb A1/A2, Reverb Stealth A1/A2	every 200 hours
<input type="checkbox"/>	Complete maintenance of seat post for: Reverb B1, Reverb Stealth B1	every 400 hours
<input type="checkbox"/>	Complete maintenance of seat post for: Reverb AXS A1*, Reverb Stealth C1*	every 600 hours
All other suspension seat posts		
<input type="checkbox"/>	Maintenance	every 100 hours

Special tools, special lubricants and knowledge of suspension components are required to service and repair suspension seat posts.

The suspension seat post may be damaged if procedures are not followed as described. Only specialist dealers may carry out maintenance on the suspension seat post.

### 8.2 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.

### 8.2.1 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 48: Adjusting the quick release clamping force

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

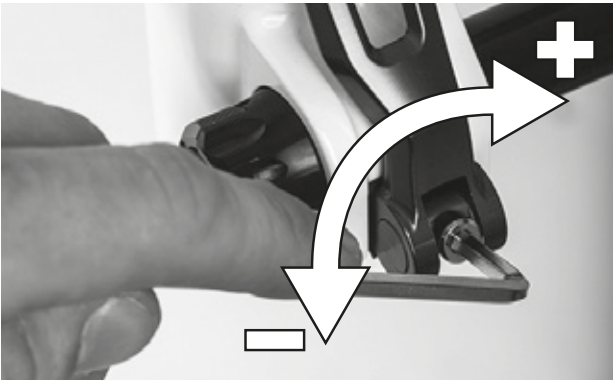


Figure 49: Adjusting the quick release clamping force

### 8.3 Maintaining the 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 stem's quick release system are firmly in position after the first two hours of riding.

### 8.4 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.

#### 8.4.1 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.

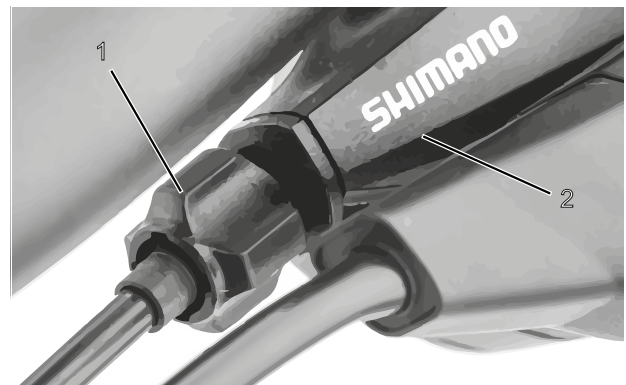


Figure 50: Adjusting sleeve (1) for the single-cable, cable-operated gear shift with shifter housing (2), example

### 8.4.2 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.

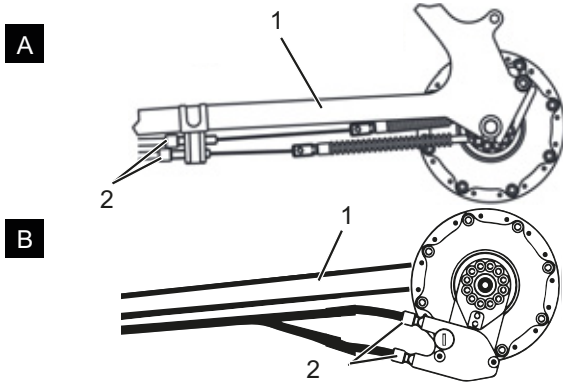


Figure 51: Adjusting sleeves (2) on two alternative versions (A and B) of a dual-cable, cable-operated gear shift on the chain stay (1)

### 8.4.3 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.

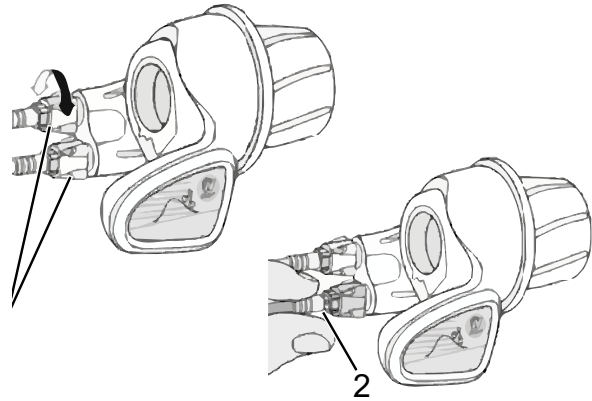


Figure 52: Twist grip with adjusting sleeves (1) and play of the gear shift (2)

## **9 Troubleshooting, fault clearance and repair**

### **9.1 Troubleshooting and fault clearance**

The components of the drive system are checked constantly and automatically. If an error is detected, an error message appears on the *display*. The drive may be shut off automatically, depending on the type of error.

#### **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:

- 1** 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.
- 2** If the LEDs on the battery level indicator light up, but the drive system does not start up, remove the battery.
- 3** Insert the battery.
- 4** Start the drive system.
- 5** If the drive system does not start up, remove the battery.
- 6** Clean all the contacts with a soft cloth.
- 7** Insert the battery.
- 8** Start the drive system.
- 9** If the drive system does not start up, remove the battery.
- 10** Fully charge the battery.
- 11** Insert the battery.
- 12** Start the drive system.
- 13** If the drive system does not start up, remove the display.
- 14** Fasten the display.
- 15** Start the drive system.
- 16** Contact your specialist dealer if the drive system does not start up.

### 9.1.2 Assistance function errors

Symptom	Cause	Remedy
Assistance is not available.	Is the battery charged sufficiently?	<ol style="list-style-type: none"> <li>1 Check battery is charged.</li> <li>2 Recharge the battery if it is almost flat.</li> </ol>
	Are you riding up long inclines in summer weather or have you been carrying a heavy load for a long time? The battery may be too hot.	<ol style="list-style-type: none"> <li>1 Switch off the drive system.</li> <li>2 Wait a moment and then check again.</li> </ol>
	The rechargeable battery, the display or the assistance switch may be connected incorrectly or one or more of them may have a problem.	▶ Contact your specialist dealer.
	Is the speed too high?	▶ Check on-screen indicators. The electronic gear assistance only works up to a maximum speed of 25 km/h.
Assistance is not available.	Are the pedals being pushed?	▶ The pedelec is not a motorbike. Push the pedals.
	Is the assistance mode set to [OFF]?	<ol style="list-style-type: none"> <li>1 Set the assistance mode to a different level of assistance than [OFF].</li> <li>2 Contact your specialist dealer if you still feel that the no assistance is being supplied.</li> </ol>
	Is the system switched on?	▶ Press the battery on-off button to switch it on again.
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.	<ol style="list-style-type: none"> <li>1 Check battery is charged.</li> <li>2 Recharge the battery if it is almost flat.</li> </ol>
	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).	▶ If the distance you can cover with one single charge is very short, replace the battery with a new one.
	Is the battery fully charged?	▶ If the distance covered with a fully charged battery has become shorter, the battery may be affected. Replace the battery with a new one.
It is difficult to pedal.	Are the tyres pumped to an adequate pressure?	▶ Pump up tyres.
	Is the assistance mode set to OFF?	<ol style="list-style-type: none"> <li>1 Set level of assistance to [BOOST].</li> <li>2 Contact your specialist dealer if you still feel that the no assistance is being supplied.</li> </ol>
	The battery charge might be low.	▶ Check how powerful assistance is again after charging the battery. Contact your specialist dealer if you still feel that the S pedelec does not provide assistance.
	Have you switched on the system with your foot on the pedal?	<ol style="list-style-type: none"> <li>1 Switch the system on again without applying pressure to the pedal. Contact your specialist dealer if you still feel that the S pedelec does not supply assistance.</li> </ol>

Table 30: Level of assistance error solution

### 9.1.3 Battery error

Symptom	Cause	Remedy
The battery discharges quickly.	The battery may be at the end of its useful life.	▶ Replace the battery with a new one.
The battery cannot be recharged.	Is the charger mains plug firmly connected to the socket?	<ol style="list-style-type: none"> <li>1 Pull out the charger mains plug and reconnect it again.</li> <li>2 Try charging again.</li> <li>3 If the battery still won't recharge, contact your specialist dealer.</li> </ol>
	Is the charger plug firmly inserted into the battery?	<ol style="list-style-type: none"> <li>1 Pull out the charger mains plug and reconnect it again.</li> <li>2 Try charging again.</li> <li>3 If the battery still won't recharge, contact your specialist dealer.</li> </ol>
	Is the adapter firmly connected to the charger plug or the battery's charging port?	<ol style="list-style-type: none"> <li>1 Connect the adapter firmly to the charger plug or the battery's charging port.</li> <li>2 Re-start the charging process.</li> <li>3 Contact your specialist dealer if the battery still does not charge.</li> </ol>
	Is the battery, the connection terminal for the battery charger, charger adapter or battery dirty?	<ol style="list-style-type: none"> <li>1 Wipe the connection terminal with a dry cloth to clean it.</li> <li>2 Try charging again.</li> <li>3 If the battery still won't recharge, contact your specialist dealer.</li> </ol>
The battery does not start charging when the charger is connected.	The battery may be at the end of its useful 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.	<ol style="list-style-type: none"> <li>1 Stop the charging process.</li> <li>2 Wait a while and then start charging again.</li> <li>3 If the battery is too hot to touch, there might be a problem with the battery. Contact your specialist dealer.</li> </ol>
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?	<ol style="list-style-type: none"> <li>1 Check the connection to the external body before inserting the charger plug again.</li> <li>2 If nothing changes, contact your specialist dealer.</li> </ol>
	Is the battery fully charged?	<p>The LED on the battery charger will go out when the battery is fully charged. This is not a malfunction.</p> <ol style="list-style-type: none"> <li>1 Pull out the charger mains plug and reconnect it again.</li> <li>2 Then try charging again.</li> <li>3 If the LED on the charger still does not light up, contact your specialist dealer.</li> </ol>
The battery cannot be removed.		▶ Contact your specialist dealer.
The battery cannot be inserted.		▶ Contact your specialist dealer.
Fluid is leaking from the battery.		▶ Observe all the safety instructions in Section 2 Safety.

Table 31: Error solution for battery



Symptom	Cause	Remedy
There is an unusual smell		<ol style="list-style-type: none"> <li>1 Move away from the battery immediately.</li> <li>2 Contact the fire service immediately.</li> <li>3 Observe all the safety instructions in Section 2 Safety.</li> </ol>
Fumes are emitted from the battery.		<ol style="list-style-type: none"> <li>1 Move away from the battery immediately.</li> <li>2 Contact the fire service immediately.</li> <li>3 Observe all the safety instructions in Section 2 Safety.</li> </ol>

Table 31: Error solution for battery

### 9.1.4 Display errors

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.	<ol style="list-style-type: none"> <li>1 Charge the battery.</li> <li>2 Switch the power on.</li> </ol>
	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 power cable correctly?	▶ Check that the power cable connector has not been 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 screen.	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.
The time display is flashing "0:00".	The coin cell in the display has come to the end of its service life.	▶ Replace the coin cell in the display.

Table 32: Display error solution

### 9.1.5 Lighting does not work

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.	<ol style="list-style-type: none"> <li>1 Take the pedelec out of service immediately.</li> <li>2 Contact your specialist dealer.</li> </ol>

Table 33: Error solution for battery

### 9.1.6 Other errors

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.

Table 34: Error solution for battery

Symptom	Cause	Remedy
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.
A noise can be heard after switching.		► 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 34: Error solution for battery

## 9.2 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 rims and brake linings or brake discs
- Replacing and tensioning the chain.

### 9.2.1 Original parts and lubricants

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 lists are in Section 11 Documents and Drawings.

Observe the operating instructions for the new components.

### 9.2.2 Replacing the lighting

- Only use components of the respective power class for replacement.

### 9.2.3 Adjusting the headlight

- The *headlight* must be set, so that its light beam shines on the road 10 m in front of the pedelec.

### 9.2.4 Tyre clearance check

The tyre needs to be checked each time a suspension fork tyre is changed to another size.

- 1 Release pressure from the fork.
- 2 Press fork together fully.
- 3 Measure the gap between the top of the tyre and the crown's lower surface. The gap must not be less than 10 mm. If the tyre is too large, the tyre will touch the crown's lower surface if the fork is fully pressed together.
- 4 Release pressure on fork and pump it up again if it is an air suspension fork.
- 5 Take into account the fact that the gap will be smaller if there is a guard. Check again to ensure that there is sufficient clearance for the tyre.

## 10 Recycling and disposal



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. Separate collection and recycling saves reserves of raw materials and ensures that all the regulations for protection of health and the environment are adhered to when recycling the product and/or the battery.

- ▶ 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

### 11.1.1 Futura Fold Carbon I-10

21-Y-0001

Component	
Fork	Carbon, rigid, 1.5"
Handlebars	Trekking AL, 31.8 mm, 15° backsweep
Stem	AL, height-adjustable, 90 mm, with "All Up" height adjustment, 150 mm
Saddle	Selle Royal LookIn Relaxed
Seat post	Kalloy SP-DC1, AL, 350 mm, Ø30.9 mm
Crank set	FSA CK-8658-1, Hollow Carbon
Rear derailleur	Shimano ZEE
Shifter	Shimano Deore, SL-M6000
Cassette/cassette sprocket	Shimano CS-HG50 11-36T
Chain	KMC X10E
Disc, rear	Shimano SM-RT10/160mm
Front rim	Mach1 650
Rear rim	Mach1 650
Hub, front	Shimano MT400, Boost, with 15 mm quick release axle, centre lock
Hub, rear	Shimano MT400, Boost, with 12 mm quick release axle, centre lock
Tyres	Schwalbe Big Apple RaceGuard, 50-406, 20-inch
Hose	Schwalbe AV 7
Front lamp	Busch & Müller ILU, up to 30 Lux, integrated into front guard
Rear lamp	Busch & Müller ILU jr., integrated into rear guard
Pannier rack	i-Rack, system carrier, with spring flap
Lock	ABUS battery lock, with Plus cylinder
Motor	Fazua Drivepack Evation 1.0
Battery manufacturer name	Fazua Evation 1.0 252 DownTube
Display	Fazua remote controller



## 11.2 Assembly report

Date:

Frame number:

Components	Description		Criteria		Measures if rejected
	Assembly/inspection	Tests	Acceptance	Rejection	
Front wheel	Assembly		O.K.	Loose	Adjust quick release
Kickstand	Check mount fastening	Functional check	O.K.	Loose	Retighten screws
Tyres		Tyre pressure check	O.K.	Tyre pressure too low/ too high	Adjust tyre pressure
Frame	Check for damage – fracture, scratches		O.K.	Damage detected	<i>Take out of operation, new frame</i>
Handles, coverings	Check mount fastening		O.K.	Not provided	Retighten screws, new handles or coverings as specified in parts list
Handlebars, stem	Check mount fastening		O.K.	Loose	Retighten screws; new stem as specified in parts list if necessary
Steering headset	Check for damage	Functional check	O.K.	Loose	Retighten screws
Saddle	Check mount fastening		O.K.	Loose	Retighten screws
Seat post	Check mount fastening		O.K.	Loose	Retighten screws
Protective plate	Check mount fastening		O.K.	Loose	Retighten screws
Pannier rack	Check mount fastening		O.K.	Loose	Retighten screws
Attachments	Check mount fastening		O.K.	Loose	Retighten screws
Bell		Functional check	O.K.	No ring, too quiet, missing	New bell as specified in the parts list
<b>Suspension elements</b>					
Fork, suspension fork	Check for damage		O.K.	Damage detected	New fork as specified in the parts list
Rear frame damper	Check for damage		O.K.	Damage detected	New fork as specified in the parts list
Suspension seat post	Check for damage		O.K.	Damage detected	New fork as specified in the parts list
<b>Brake system</b>					
Brake lever	Check mount fastening		O.K.	Loose	Retighten screws
Brake fluid	Check fluid level		O.K.	Too little	Refill with brake fluid; new brake hoses if damaged
Brake linings	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	Check mount fastening		O.K.	Loose	Retighten screws
<b>Light system</b>					
Rechargeable battery	First examination		O.K.	Error message	<i>Take out of service</i> ; contact battery manufacturer, 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	<i>Take out of service</i> ; new rear light as specified in parts list; replace if necessary
Front light	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 if necessary
Reflectors	All complete, state, fastening		O.K.	Damaged or not all complete	New reflectors

Components	Description		Criteria	Measures if rejected	
<b>Drive/gear shift</b>					
<b>Chain/cassette/pinion/chainring</b>	Check for damage		O.K.	Damage	Refasten if necessary or replace as specified in parts list
<b>Chain guard/spoke guard</b>	Check for damage		O.K.	Damage	Replace as specified in parts list
<b>Bottom bracket axle/crank</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Pedals</b>	Check mount fastening		O.K.	Loose	Retighten screws
<b>Shifter</b>	Check mount fastening	Functional check	O.K.	Loose	Retighten screws
<b>Shift cables</b>	Check for damage	Functional check	O.K.	Loose or defective	Adjust shift cables; new shift cables if necessary
<b>Front derailleur</b>	Check for damage	Functional check	O.K.	Gear shift difficult or not possible	Adjust
<b>Rear derailleur</b>	Check for damage	Functional check	O.K.	Gear shift difficult or not possible	Adjust
<b>Electric drive</b>					
<b>Display</b>	Check for damage	Functional check	O.K.	No screen, defective screen display	Restart, test battery, new software, or new display – <i>take out of service</i> ,
<b>Electric drive control panel</b>	DriveCheck for damage	Functional check	O.K.	No response	Restart; contact control panel manufacturer, new control panel
<b>Tachometer</b>		Speed measurement	O.K.	Pedelec travelling 10% too fast/slow	Take pedelec out of service until the source of the error is found
<b>Cabling</b>	Visual inspection		O.K.	Failure in system, damage, kinked cables	New cabling
<b>Battery mount</b>	Firmly in position, lock, contacts	Functional check	O.K.	Loose; lock doesn't close, no contacts	New battery mount
<b>Motor</b>	Visual inspection and mount		O.K.	Damage, loose	Refasten motor, contact motor manufacturer, new motor
<b>Software</b>	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	
<b>Brake system</b>		Functional check	O.K.	No full braking; braking distance too long	Locate defective part in brake system and correct
<b>Gear shift under operating load</b>		Functional check	O.K.	Problems when shifting gear	Readjust gear shift
<b>Suspension components (fork, shock absorber, seat post)</b>		Functional check	O.K.	Suspension too deep or no longer exists	Locate defective component and correct
<b>Electric drive</b>		Functional check	O.K.	Loose connection, problems when riding, accelerate	Locate defective part in electric drive and correct
<b>Light system</b>		Functional check	O.K.	No continuous light, too bright	Locate defective part in light system and correct
<b>Test ride</b>			No strange noises	Strange noises	Locate source of noise and correct

<b>Date:</b>	
<b>Fitter's name:</b>	
<b>Final inspection by workshop manager</b>	



## 11.3 Maintenance instructions

### 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	Take pedelec out of service, 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 Pedelec 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

\* see Section 8.1

Components	Frequency	Description			Criteria		Measures if rejected
		Inspection	Tests	Maintenance	Acceptance	Rejection	
<b>Light system</b>							
<b>Rechargeable battery</b>	6 months	First examination			O.K.	Error message	Contact battery manufacturer; <i>take out of service</i> , new battery
<b>Light cabling</b>	6 months	Connections, correct wiring			O.K.	Cable defective, no light	New cabling
<b>Rear light</b>	6 months	Side light	Functional check		O.K.	No constant light	New rear light as specified in parts list; replace if necessary
<b>Front light</b>	6 months	Side light, daytime riding light	Functional check		O.K.	No constant light	New front light as specified in parts list; replace if necessary
<b>Reflectors</b>	6 months	All complete, state, fastening			O.K.	Damaged or not all complete	New reflectors
<b>Drive/gear shift</b>							
<b>Chain/cassette/pinion/chainring</b>	6 months	Check for damage			O.K.	Damage	Refasten if necessary or replace as specified in parts list
<b>Chain guard/spoke guard</b>	6 months	Check for damage			O.K.	Damage	Replace as specified in parts list
<b>Bottom bracket axle/crank</b>	6 months	Check mount fastening			O.K.	Loose	Retighten screws
<b>Pedals</b>	6 months	Check mount fastening			O.K.	Loose	Retighten screws
<b>Shifter</b>	6 months	Check mount fastening	Functional check		O.K.	Loose	Retighten screws
<b>Shift cables</b>	6 months	Check for damage	Functional check		O.K.	Loose or defective	Adjust shift cables; new shift cables if necessary
<b>Front derailleur</b>	6 months	Check for damage	Functional check		O.K.	Gear shift difficult or not possible	Adjust
<b>Rear derailleur</b>	6 months	Check for damage	Functional check		O.K.	Gear shift difficult or not possible	Adjust
<b>Electric drive</b>							
<b>Display</b>	6 months	Check for damage	Functional check		O.K.	No screen, defective screen display	Restart, test battery, new software, or new display – <i>take out of service</i> ,
<b>Electric drive control panel</b>	6 months	DriveCheck for damage	Functional check		O.K.	No response	Restart; contact control panel manufacturer, new control panel
<b>Tachometer</b>	6 months		Speed measurement		O.K.	Pedelec travelling 10% too fast/slow	Take pedelec out of service until the source of the error is found
<b>Cabling</b>	6 months	Visual inspection			O.K.	Failure in system, damage, kinked cables	New cabling
<b>Battery mount</b>	6 months	Firmly in position, lock, contacts	Functional check		O.K.	Loose; lock doesn't close, no contacts	New battery mount
<b>Motor</b>	6 months	Visual inspection and mount			O.K.	Damage, loose	Refasten motor, contact motor manufacturer, new motor; <i>take out of service</i>
<b>Software</b>	6 months	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	
<b>Brake system</b>	6 months	Functional check	O.K.	No full braking; braking distance too long	Locate defective part in brake system and correct
<b>Gear shift under operating load</b>	6 months	Functional check	O.K.	Problems when shifting gear	Readjust gear shift
<b>Suspension components (fork, shock absorber, seat post)</b>	6 months	Functional check	O.K.	Suspension too deep or no longer exists	Locate defective component and correct
<b>Electric drive</b>	6 months	Functional check	O.K.	Loose connection, problems when riding, accelerate	Locate defective part in electric drive and correct
<b>Light system</b>	6 months	Functional check	O.K.	No continuous light, too bright	Locate defective part in light system and correct
<b>Test ride</b>	6 months	Functional check	No strange noises	Strange noises	Locate source of noise and correct

Date:	
Fitter's name:	
Final inspection by workshop manager	

#### Notes

**Notes**

## 12 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).

**12.1 Abbreviations**

ABS anti-blocking system

ECP electronic cell protection

**12.2 Simplified terms**

The following terms are used for better legibility:

Term	Meaning
Operating instructions	Original operating instructions
Motor	Drive motor, sub-system

**Table 35: Simplified terms**

## 13 Appendix

### I. Translation of the original EC/EU Declaration of Conformity

#### Manufacturer

HERCULES GmbH  
Longericher Strasse 2  
50739 Köln, Germany

#### Authorised representative for documentation\*

Janine Otto  
c/o ZEG Zweirad-Einkaufs-Genossenschaft eG  
Longericher Strasse 2  
50739 Köln, Germany

The machine, pedelec types:

21-P-0001            E-IMPERIAL I-R5            City and trekking bicycle

Year of manufacture 2020 and year of manufacture 2021, complies with the following applicable EU provisions:

- Machinery Directive 2006/42/EC
- Directive 2011/65/EU RoHS and
- Electromagnetic Compatibility Directive 2014/30/EU

The safety objectives in the Low Voltage Directive 2014/35/EU have been met in compliance with Appendix I, No. 1.5.1 of the Machinery Directive 2006/42/EC.

The following harmonised standards have been applied:

- ISO 20607:2018 Safety machinery – Instruction handbook – General drafting principles
- EN 15194:2017, Cycles – Electrically power assisted cycles – EPAC Bicycles

The following other technical standards have been applied:

- EN 11243:2016: Cycles – Pannier racks for bicycles – Requirements and test methods



Cologne, 16.11.2020

.....  
Georg Honkomp, CEO HERCULES GmbH

\* Community member who is authorised to compile the technical documentation

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