

# TRANSLATION OF THE ORIGINAL OPERATING INSTRUCTIONS

IMPORTANT

READ CAREFULLY BEFORE USE

KEEP SAFE TO CONSULT AT A LATER DATE



**BOSCH**



BULLS Twenty 6 EVO; BULLS Twenty 6 EVO Team

20-26-3001; 20-26-4001

# Contents

1	About these operating instructions	6	3.2	Proper use	23
1.1	Manufacturer	6	3.3	Improper use	24
1.2	Type number and model	6	3.4	Technical data	25
1.3	Identifying the operating instructions	6	3.4.1	Pedelec	25
1.4	Subject to change	6	3.4.2	ActiveLine motor	25
1.5	Language	7	3.4.3	ActiveLine Plus motor	25
1.6	Laws, standards and directives	7	3.4.4	Performance Line Cruise motor	25
1.7	For your information	7	3.4.5	Performance Line Speed motor	25
1.7.1	Warnings	7	3.4.6	Performance Line CX motor	25
1.7.2	Markups	7	3.4.7	Pedelec lighting	26
1.8	Nameplate	8	3.4.8	PowerPack 300 battery	26
2	Safety	9	3.4.9	PowerPack 400 battery	26
2.1	General warnings	9	3.4.10	PowerPack 500 battery	26
2.2	Toxic substances	10	3.4.11	PowerTube battery	26
2.3	Requirements for the rider	11	3.4.12	Purion display	26
2.4	Vulnerable groups	11	3.4.13	USB port	26
2.5	Data privacy	11	3.4.14	BOSCH pedelec ABS BAS100	27
2.6	Personal protective equipment	11	3.4.15	Emissions	27
2.7	Safety markings and safety instructions	11	3.4.16	Tightening torque	27
2.8	Emergency	12	3.5	Environmental requirements	28
2.8.1	What to do in an emergency	12	3.6	Description of controls and screens	30
2.8.2	First aid treatment	12	3.6.1	Handlebars	30
2.8.3	Fighting fire	13	3.6.2	Battery level indicator	30
2.8.4	Leaking fluids	13	3.6.3	Control panel on-screen indicators	30
2.8.4.1	Oils and lubricants from the fork	13	3.6.3.1	Unit of measure for speed	30
2.8.4.2	Oils and lubricants from the rear frame damper	13	3.6.3.2	Tachometer screen	30
3	Overview	14	3.6.3.3	Function display	31
3.1	Description	15	3.6.3.4	Gear recommendation	31
3.1.1	Wheel	15	3.6.3.5	Tachometer screen	31
3.1.1.1	Valve	15	3.6.3.6	Function display	31
3.1.2	Suspension	15	3.6.4	System message	34
3.1.2.1	Rigid fork	15	3.6.5	ABS indicator lamp	34
3.1.2.2	Suspension fork	15	4	Transporting and storing	35
3.1.2.3	Steel suspension fork	16	4.1	Physical transport characteristics	35
3.1.2.4	Air suspension fork	16	4.1.1	Dimensions during transportation	35
3.1.2.5	Suntour rear frame damper	17	4.1.2	Transport weight	35
3.1.2.6	FOX rear frame damper	17	4.1.3	Designated handles/lifting points	35
3.1.3	Brake system	17	4.2	Transporting	35
3.1.3.1	Rim brake	17	4.2.1	Transporting the battery	36
3.1.3.2	Disc brake	18	4.2.2	Shipping the battery	36
3.1.3.3	Back-pedal brake	18	4.2.3	Using the brake transport securing system	36
3.1.3.4	ABS	18	4.3	Storing	36
3.1.4	Electric drive system	20	4.3.1	Break in operation	36
3.1.5	Rechargeable battery	20	4.3.1.1	Preparing a break in operation	36
3.1.5.1	Frame battery	21	4.3.1.2	Taking out of operation	36
3.1.5.2	Pannier rack battery	21	5	Assembly	37
3.1.5.3	Integrated battery	22	5.1	Required tools	37
3.1.6	Display	22	5.2	Unpacking	37
3.1.7	Riding light	22	5.2.1	Scope of delivery	37
3.1.8	Charger	22			

5.3	Commissioning	38	6.5.6.4	Adjusting the air suspension fork rebound	56
5.3.1	Checking the battery	38	6.5.7	Adjusting the FOX fork	56
5.3.2	Installing the wheel in the Suntour fork	38	6.5.7.1	Adjusting the negative deflection	56
5.3.2.1	Screw-on axle (15 mm)	38	6.5.7.2	Adjusting the rebound	57
5.3.2.2	Screw-on axle (20 mm)	39	6.5.8	Setting the Suntour rear frame damper	58
5.3.2.3	Quick release axle	39	6.5.8.1	Adjusting the negative deflection	58
5.3.2.4	Quick release	41	6.5.8.2	Adjusting the rebound	58
5.3.3	Installing the wheel in the FOX fork	42	6.5.8.3	Setting the compression	58
5.3.3.1	Quick release (15 mm)	42	6.5.9	Setting the FOX rear frame damper	59
5.3.3.2	Kabolt axle	43	6.5.9.1	Adjusting the negative deflection	59
5.3.4	Checking the stem and handlebars	43	6.5.9.2	Adjusting the rebound	59
5.3.4.1	Checking connections	43	6.6	Accessories	61
5.3.4.2	Firm hold	43	6.6.1	Child seat	61
5.3.4.3	Checking the headset backlash	43	6.6.2	Bicycle trailers	62
5.4	Pedelec sale	43	6.6.3	Pannier rack	62
6	Operation	44	6.7	Before each ride	63
6.1	Risks and hazards	44	6.8	Check list before each ride	63
6.1.1	Personal protective equipment	45	6.9	Using the kickstand	64
6.2	Tips for a greater range	45	6.9.1	Raising the kickstand	64
6.3	Error message	46	6.9.1.1	Parking the pedelec	64
6.3.1	Display	46	6.10	Using the pannier rack	64
6.3.2	Rechargeable battery	48	6.11	Rechargeable battery	65
6.4	Instruction and customer service	49	6.11.1	Frame battery	65
6.5	Adjusting the pedelec	49	6.11.1.1	Removing the frame battery	65
6.5.1	Adjusting the saddle	49	6.11.1.2	Inserting the frame battery	65
6.5.1.1	Adjusting the saddle tilt	49	6.11.2	Pannier rack battery	65
6.5.1.2	Determining the seat height	49	6.11.2.1	Removing the pannier rack battery	65
6.5.1.3	Adjusting the seat height with quick release	50	6.11.2.2	Inserting the pannier rack battery	65
6.5.1.4	Height-adjustable seat post	50	6.11.3	Integrated battery	65
6.5.1.5	Adjusting the seat position	51	6.11.3.1	Removing the integrated battery	65
6.5.2	Adjusting the handlebars	51	6.11.3.2	Inserting the integrated battery	66
6.5.3	Adjusting the stem	51	6.11.4	Charging the battery	66
6.5.3.1	Adjusting the height of the handlebars	51	6.11.5	Charging the dual battery	67
6.5.3.2	Adjusting the quick release clamping force	52	6.11.5.1	Charging process when two batteries are used	67
6.5.4	Setting the brake	52	6.11.5.2	Charging process when one battery is used	67
6.5.4.1	Setting the grip distance on a Magura HS33 brake lever	52	6.11.6	Using double battery model with a single battery only	67
6.5.4.2	Setting the grip distance on a Magura HS22 brake lever	53	6.11.7	Waking the battery	67
6.5.4.3	Setting the grip distance on a Magura disc brake lever	53	6.12	Electric drive system	68
6.5.4.4	Setting the pressure point on a Magura brake lever	54	6.12.1	Switching on the electric drive system	68
6.5.5	Retracting the brake linings	54	6.12.2	Switching off the drive system	68
6.5.6	Adjusting Suntour fork	54	6.13	Display	69
6.5.6.1	Adjusting the negative deflection	54	6.13.1	Overview of actions on the display screen	69
6.5.6.2	Adjusting the steel suspension fork negative deflection	55	6.13.2	Switching on the display	69
6.5.6.3	Adjusting the air suspension fork negative deflection	55	6.13.3	Switching off the display	69
			6.14	Using the push assist system	70
			6.14.1	Using the riding light	70
			6.14.2	Selecting the level of assistance	70

6.14.3	Journey information	70	7.2.8	Cleaning the display	82
6.14.3.1	Switching the journey information	70	7.2.9	Cleaning the drive unit	82
6.14.3.2	Resetting the trip distance	70	7.2.10	Cleaning the brake	83
6.14.3.3	Resetting the range	71	7.3	Servicing	83
6.14.3.4	Changing the tachometer unit	71	7.3.1	Servicing the frame	83
6.14.3.5	Displaying versions and type numbers	71	7.3.2	Servicing the stem	83
6.14.4	Using the USB port	71	7.3.3	Servicing the fork	83
6.14.5	Replacing the battery	71	7.3.4	Servicing the drive elements	83
6.15	Brake	72	7.3.5	Servicing the pedals	83
6.15.1	Using the brake lever	73	7.3.6	Servicing the chain	83
6.15.2	Using the back-pedal brake	73	7.3.7	Servicing the drive elements	83
6.15.3	Using ABS	73	7.4	Maintenance	84
6.15.3.1	While riding	74	7.4.1	Wheel	84
6.16	Suspension and damping	74	7.4.1.1	Checking the tyres	84
6.16.1	Adjusting the compression in the Suntour fork	74	7.4.1.2	Checking the rims	84
6.16.2	Adjusting the compression in the Suntour rear frame damper	75	7.4.1.3	Checking and adjusting the tyre pressure – Dunlop valve	84
6.16.3	Adjusting the compression in the Fox fork	75	7.4.1.4	Checking and adjusting the tyre pressure – presta valve	85
6.16.4	Adjusting the compression in the Fox rear frame damper	76	7.4.1.5	Checking and adjusting the tyre pressure – Schrader valve	85
6.16.5	Adjusting the rebound in the RockShox rear frame damper	76	7.4.2	Brake system	85
6.16.6	Adjusting the compression in a RockShox damper	77	7.4.3	Checking the brake linings for wear	85
6.17	Gear shift	77	7.4.4	Checking the pressure point	85
6.17.1	Using the derailleur gears	77	7.4.5	Checking the brake discs for wear	86
6.17.2	Using the hub gear	77	7.4.6	Electrical cables and brake cables	86
6.17.3	Using eShift	78	7.4.7	Gear shift	86
6.17.3.1	eShift with Shimano DI2 automatic hub gears	78	7.4.8	Stem	86
6.17.3.2	eShift with manual Shimano DI2 hub gears	79	7.4.9	USB port	86
6.17.3.3	eShift with Shimano DI2 automatic hub gears	79	7.4.10	Checking the belt and chain tension	86
6.17.3.4	eShift with NuVinci H Sync/enviolo with Optimized H Sync	79	8	Maintenance	87
6.17.3.5	eShift with Rohloff E-14 Speedhub 500/14	79	8.1	Axle with quick release	88
7	Cleaning and servicing	80	8.1.1	Checking the quick release	88
7.1	Cleaning after each ride	80	8.2	Adjusting the gear shift	88
7.1.1	Cleaning the suspension fork	80	8.2.1	Cable-operated gear shift, single-cable	89
7.1.2	Cleaning the rear frame damper	80	8.2.2	Cable-operated gear shift, dual-cable	89
7.1.3	Cleaning the pedals	80	8.2.3	Cable-operated twist grip, dual-cable	89
7.2	Basic cleaning	81	9	Troubleshooting, fault clearance and repair	90
7.2.1	Cleaning the frame	81	9.1	Troubleshooting and fault clearance	90
7.2.2	Cleaning the stem	81	9.1.1	The drive system or display do not start up	90
7.2.3	Cleaning the wheel	81	9.1.2	Error message	90
7.2.4	Cleaning the drive elements	81	9.1.3	Assistance function errors	91
7.2.5	Cleaning the rear frame damper	81	9.1.4	Battery error	92
7.2.6	Cleaning the chain	82	9.1.5	Display errors	93
7.2.7	Cleaning the battery	82	9.1.6	Lighting does not work	94
			9.1.7	Other errors	94
			9.2	Repair	95
			9.2.1	Original parts and lubricants	95
			9.2.2	Replacing the lighting	95
			9.2.3	Adjusting the headlight	95

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9.2.4	Tyre clearance check	95
10	Recycling and disposal	96
11	Documents	97
11.1	Parts list	97
11.2	Assembly report	98
11.3	Maintenance log	100
11.4	Charger operating instructions	103
13	Glossary	113
13.1	Abbreviations	115
13.2	Simplified terms	115
I.	Translation of the original EU Declaration of Conformity	116

# 1 About these operating instructions

## Thank you for your trust!

BULLS *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:

[www.bulls.de/service/downloads](http://www.bulls.de/service/downloads).

## 1.1 Manufacturer

The pedelec manufacturer is:

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

Tel.: +49 221 17959 0  
Fax: +49 221 17959 31  
Email: [info@zeg.de](mailto:info@zeg.de)  
Website: [www.zeg.de](http://www.zeg.de)

## 1.2 Type number and model

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

Type no.	Model	Pedelec type
20-26-4001	Twenty 6 Evo 26"	Bicycle for young adults
20-26-3001	Twenty 6 Evo Team 26	Bicycle for young adults

Table 1: Type number, model and pedelec type

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

## 1.3 Identifying the operating instructions

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

Identification number MY20B01 - 52\_1.0\_02.10.2019

## 1.4 Subject to change

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

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

[www.bulls.de/service/downloads](http://www.bulls.de/service/downloads).

## 1.5 Language

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

## 1.6 Laws, standards and directives

These *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 – Luggage carriers for bicycles – Requirements and test methods
- EN ISO 17100:2016-05, Translation Services – Requirements for translation service.

## 1.7 For your information

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

### 1.7.1 Warnings

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



**DANGER**

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



**WARNING**

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



**CAUTION**

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

**Notice**

May lead to material damage if ignored.

## 1.7.2 Markups

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

Convention	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
<i>Only applies to pedelecs with this equipment</i>	Other models feature other equipment. A note beneath the heading indicates components which can be used as an alternative.

Table 2: Markups

Instructions for the specialist dealer are highlighted in grey and marked with a spanner symbol. Information for specialist dealers does not require non-professionals to take any action.



## 1.8 Nameplate

The nameplate is situated on the frame. You will find the precise position of the nameplate in

Figure 2. You will find thirteen pieces of information on the nameplate.



Figure 1: Nameplate, example

No.	Designation	Description
1	CE marking	The manufacturer uses the CE marking to declare that the pedelec complies with applicable requirements.
2	Manufacturer's contact details	You can contact the manufacturer at this address. You can find more information in Section 1.1.
3	Type number	All pedelec models have an eight-digit type number, which is used to specify the design model year, the type of pedelec and the version. You can find more information in Section 1.2.
4	Maximum continuous power	The maximum continuous power is the maximum power for the electric motor output shaft during 30 minutes.
5	Permitted total weight	The permitted total weight is the weight of the fully assembled pedelec with the rider and baggage.
6	Year of manufacture	The <i>year of manufacture</i> is the year in which the pedelec was manufactured. The production period is from August 2019 to July 2020.
7	Pedelec type	You can find more information in Section 3.2.
8	Safety markings	You can find more information in Section 1.7.
9	Disposal instructions	You can find more information in Section 10.
10	Area of use	You can find more information in Section 3.5.
11	Model year	The model year refers to the first production year that the series-manufactured pedelec was produced in the version and is not always identical with the <i>year of manufacture</i> . The <i>year of manufacture</i> may be before the model year in some cases. If no technical modifications are introduced to the series, production may continue of pedelecs from a previous model year.
12	Weight of the ready-to-ride pedelec	The indicated weight for a ready-to-ride pedelec refers to the weight at the time of purchase. The weight of each additional accessory must be added to this weight
13	Shut-off speed	Speed reached by the pedelec at the moment when the current has dropped to zero or to the no load current value.

Table 3: Nameplate details

## 2 Safety

### 2.1 General warnings

#### WARNING

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

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

- ▶ If the battery becomes deformed or begins to smoke, keep at a safe distance and disconnect the power supply at the socket. Contact the fire service immediately.
- ▶ Never extinguish a damaged battery with water or allow it to come into contact with water.
- ▶ If the battery is dropped or struck but shows no signs of external damage, remove it from service and observe it for at least 24 hours.
- ▶ Batteries with external damage must be removed from service immediately.
- ▶ Faulty batteries are hazardous goods. Dispose of faulty batteries properly and as quickly as possible.
- ▶ Store battery in a dry place until disposal. Never store in the vicinity of flammable substances.
- ▶ Never open or repair the battery.
- ▶ Only use and charge the battery and accessories if they are in perfect condition.

#### CAUTION

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

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

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

#### CAUTION

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

Small metal objects may connect the battery's electrical terminals. The battery may self-ignite and explode.

- ▶ Keep paper clips, keys and other small item away from the battery. Do not insert into the battery.

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

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

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

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

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.
- ▶ If there is reason to believe that water may have entered into the battery, the battery must be removed from service.

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

Temperatures over 60 °C can also cause liquid to leak from the battery and the battery will become damaged. 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.

 **CAUTION**
**Fire caused by overheated charger**

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

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

Never leave the battery unattended during charging.

**Electric shock caused by penetration by water**

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

- ▶ Never charge the battery outdoors.

**Notice**

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

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

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

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

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

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

The rear frame damper contains toxic and environmentally harmful oils and lubricants. Such fluids

will contaminate if they enter the sewers or groundwater.

- ▶ Dispose of oils and lubricants which have leaked from the rear frame damper in an environmentally responsible way in accordance with statutory regulations. Contact your specialist dealer.

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

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

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

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

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

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

## 2.3 Requirements for the rider

If there are no legal requirements for pedelec riders, we recommend that the rider should be a minimum 14 years of age and have experience with muscle-powered bicycles.

The rider must demonstrate adequate physical and mental abilities to ride on public roads.

According to national regulations, children up to the age of 10 are allowed to ride on footpaths at an appropriate speed with the pedelec switched off.

Children under the age of 14 may use the pedelec under the supervision of a parent or guardian only.

If minors are to use the pedelec, comprehensive instruction should be provided by or in the presence of the legal guardians. Supervised use should also be scheduled until it is certain that the pedelec is being used as per these operating instructions. Legal guardians hold sole responsibility for determining whether minors are capable of using the pedelec.

Children may only inspect, care for and maintain the pedelec under the instruction of a parent or guardian.

## 2.4 Vulnerable groups

You must keep batteries and charger away from children and people with reduced physical, sensory or mental capabilities or lacking in experience and knowledge. Only adults may install, remove and charge the battery.

The parent or guardian must check that the vehicle is in a ready-to-ride condition before setting off.

The pedelec is very heavy for children. Children must not carry the pedelec (e.g. up or down stairs). Children must get used to the heavy weight of the pedelec.

Before a child or adolescent can ride a pedelec, they must be able to ride a bicycle safely in traffic. The child's individual learning development must be taken into account.

The attention span of children 8 years and older is about 30 minutes. The driving distance and duration should therefore be adapted to the child's abilities.

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

The size of the pedelec must be checked regularly for orthopaedic reasons. A check must be made at least every three months to make sure that the permitted total weight is being observed.

## 2.5 Data privacy

During maintenance, the pedelec is connected to the diagnosis tool and data is transferred to Bosch Pedelec Systems (Robert Bosch GmbH) regarding the use of electric drive components to help improve the product. You will find more information on the Bosch Pedelec website <https://www.bosch-ebike.com/en/>.

## 2.6 Personal protective equipment

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

## 2.7 Safety markings and safety instructions

The [Nameplate](#) contains the following safety markings instructions:

Symbol	Explanation
	General warning
	Adhere to the instructions for use

Table 4: Meaning of safety markings

The nameplate may also contain the safety markings in addition to safety instructions.

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

Table 5: Meaning of safety instructions on the nameplate

## 2.8 Emergency

### 2.8.1 What to do in an emergency

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

### 2.8.2 First aid treatment

- ▶ Consult a doctor immediately in the event of any pain or discomfort caused by combustion gas or leaking fluids.

#### After inhalation

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

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

#### After contact with eyes

- ▶ 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.

#### After swallowing

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

### 2.8.3 Fighting fire

 **WARNING****Intoxication**

Inhaling vapours can cause intoxication.

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

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.

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

### 2.8.4 Leaking fluids

#### 2.8.4.1 Oils and lubricants 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.

#### 2.8.4.2 Oils and lubricants from the rear frame damper

- ▶ Dispose of oils and lubricants which have leaked from the rear frame damper in an environmentally responsible way in accordance with statutory regulations. Contact your specialist dealer.

### 3 Overview



Figure 2: Pedelec viewed from the right: Bulls Twenty 6 used as example

1	<i>Front wheel</i>	7	Saddle
2	<i>Fork</i>	8	Rear wheel
3	<i>Handlebars</i>	9	Chain
4	<i>Stem</i>	10	Damper
5	Frame	11	<i>Battery and nameplate</i>
6	Seat post		

## 3.1 Description

### 3.1.1 Wheel

The pedelec has two wheels: a front wheel and a rear wheel.

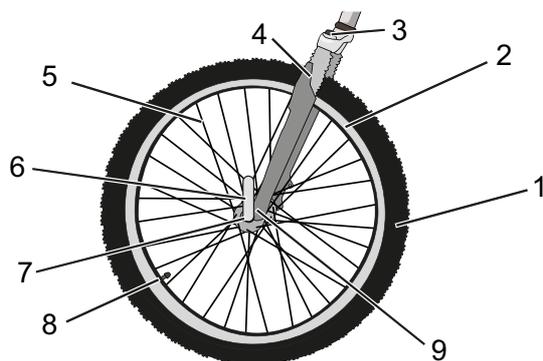


Figure 3: Visible components of the wheel: using front wheel as example

- |   |                      |
|---|----------------------|
| 1 | Tyre                 |
| 2 | Rim                  |
| 3 | Fork head            |
| 4 | Fork leg             |
| 5 | Spoke                |
| 6 | Quick release        |
| 7 | Hub                  |
| 8 | Valve                |
| 9 | Fork end of fork leg |

#### 3.1.1.1 Valve

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

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

## 3.1.2 Suspension

Both forks and suspension forks are fitted in this model series.

### 3.1.2.1 Rigid fork

Rigid forks do not feature suspension. They transfer the used muscle and motor power to the road to optimum effect. Pedelecs with rigid forks consume less energy on steep roads and have a greater range than pedelecs with adjusted suspension.

### 3.1.2.2 Suspension fork

A suspension fork is based either on a steel spring or air suspension.

Unlike a rigid fork, a suspension fork has two functions which improve floor contact and comfort: suspension and damping. 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.

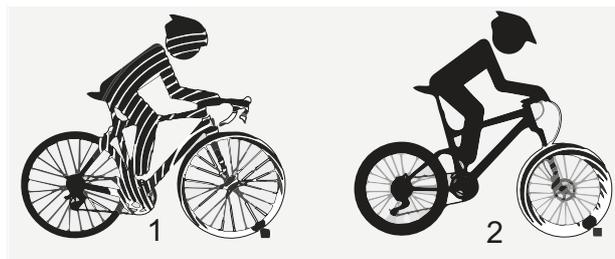


Figure 4: Pedelec without suspension (1) and with suspension (2)

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.

### 3.1.2.3 Steel suspension fork

The stem and handlebars are fastened to the fork steerer (1). The wheel is fastened to the quick release axle (6).

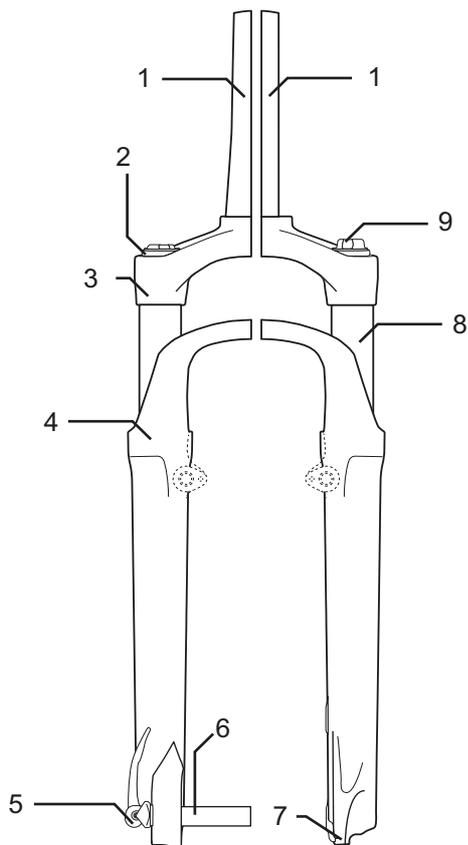


Figure 5: Example showing Suntour fork

Other elements: the setting wheel for negative deflection (9), crown (3), Q-Loc (5), dust seal (4), fork end (7) and stanchion (8).

### 3.1.2.4 Air suspension fork

The air suspension fork features air suspension and a compression damper plus a rebound damper in some cases.

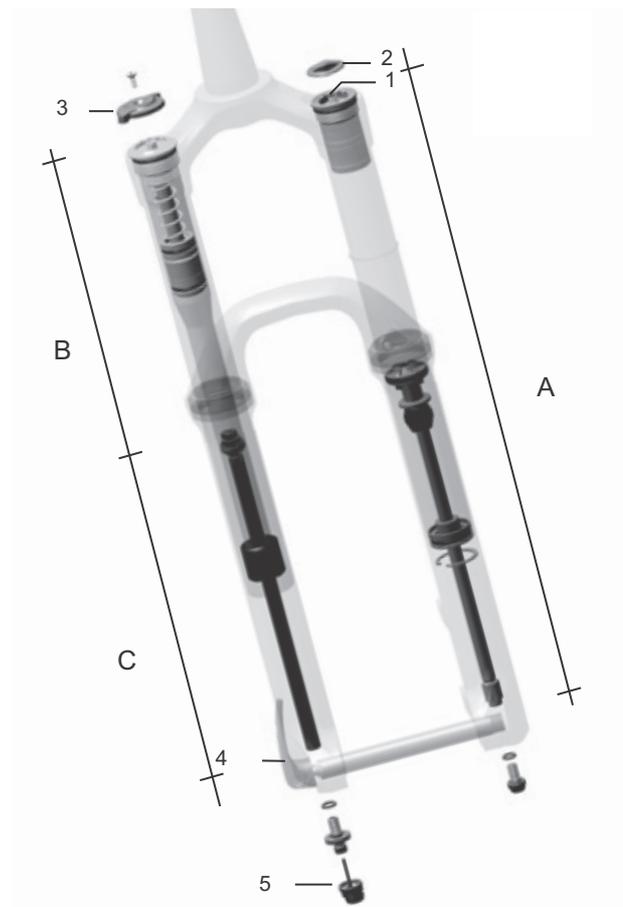


Figure 6: Example showing Yari fork

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

### 3.1.2.5 Suntour rear frame damper

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

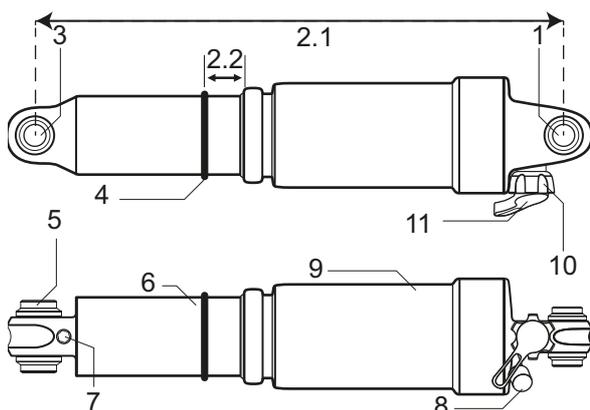


Figure 7: Example showing Suntour rear frame damper

- 1 Upper eye
- 2.1 Total damper length
- 2.2 Negative deflection in the rear frame damper
- 3 Lower eye
- 4 O-ring
- 5 Sleeve
- 6 Damper unit
- 7 IFP (internal floating piston)
- 8 Air valve
- 9 Air chamber
- 10 Lockout lever
- 11 Rebound lever (rebound setting)

### 3.1.2.6 FOX rear frame damper

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

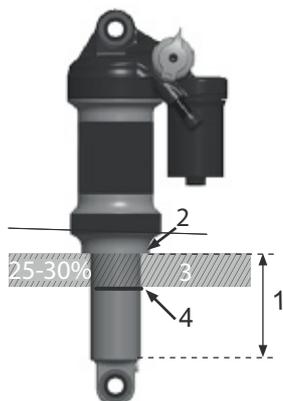


Figure 8: Example showing FOX rear frame damper

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

### 3.1.3 Brake system

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

The pedelec has either:

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

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

#### 3.1.3.1 Rim brake

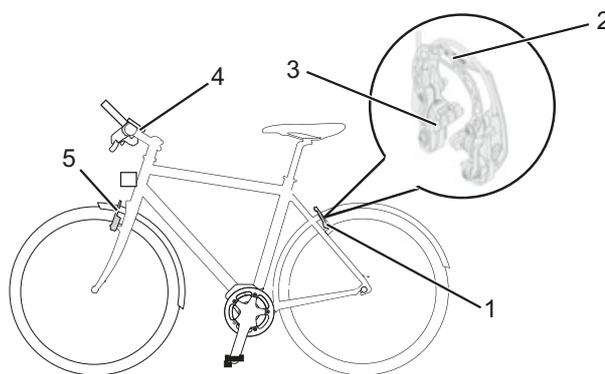


Figure 9: Brake system with rim brake in detail; Magura HS22 used as an example

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

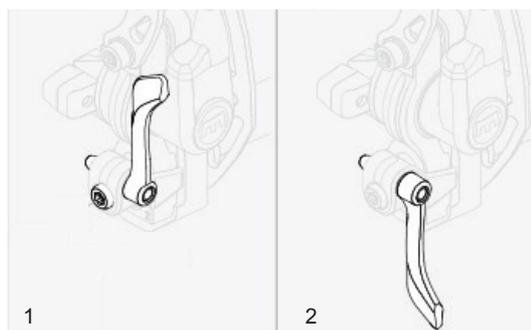


Figure 10: Rim brake locking lever, closed (1) and open (2)

The rim brake stops the wheel moving when the rider pulls the *brake lever*, causing two brake linings, positioned opposite one another, to be pressed onto the *rims*. The hydraulic rim brake features a locking lever. The rim brake locking lever is not marked with any lettering. Only a specialist dealer may set the rim brake locking lever.



### 3.1.3.2 Disc brake

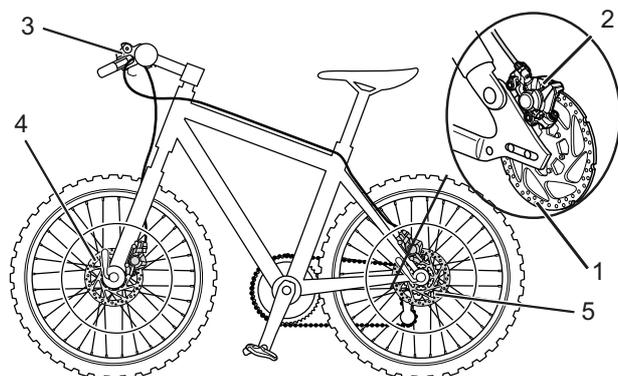


Figure 11: Brake system with disc brake – example

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

### 3.1.3.3 Back-pedal brake



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

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

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

### 3.1.3.4 ABS

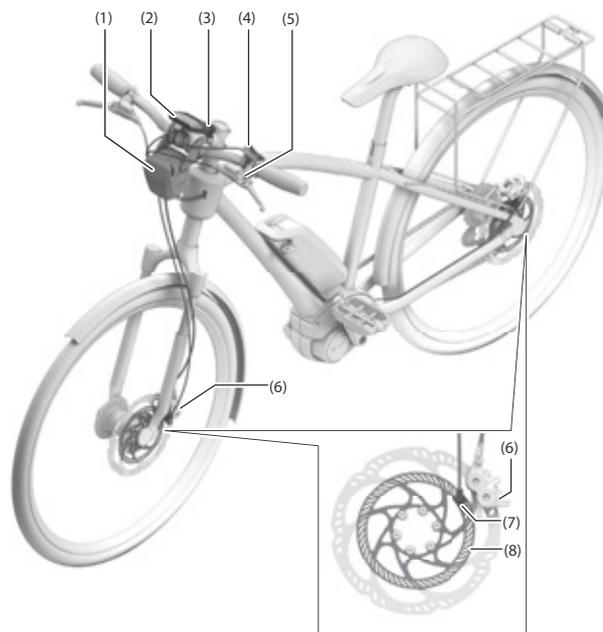


Figure 13: BOSCH ABS

- 1 ABS control unit with housing
- 2 Display screen
- 3 ABS indicator lamp
- 4 Control panel
- 5 Front wheel brake lever
- 6 Brake calliper
- 7 Bike speed sensor
- 8 Sensor disc

ABS is an added function in some pedelecs.

### BOSCH ABS

The rear wheel brake function does not depend on the *anti-blocking system (ABS)* functioning correctly.

When the brakes are applied, the ABS function detects critical *slippage* thanks to the wheel speed sensors on the front and rear wheels. *The ABS* limits slippage on the front wheel by reducing brake pressure there, thus stabilising the wheel. Once the wheel has been stabilised, the wheel is brought to the blocking limit by building up pressure selectively.

If the wheel blocks again, the pressure is reduced again. This process is repeated to keep the wheel at its limit of traction, thus making optimum use of the coefficient of friction between the tyres and the road surface.

The ABS stops when one of the following events occurs:

- The buffer chamber in the ABS control unit is filled completely.
- The pedelec is stationary.
- The rider releases the brake.

Besides slippage, the ABS also detects when the rear wheel is raised during full braking. The ABS thus counteracts a flip-over during extremely hard braking manoeuvres.

If the battery is low, the ABS deactivates the power assistance first. However, the electric drive system, including the display, lighting and ABS, will remain active until the battery is empty. The electric drive system the ABS will not switch off until the battery has almost fully discharged. The brake system itself remains functional. The ABS is not active if there is no battery on the pedelec or the battery is empty.

The indicator lamp lights up for about 5 seconds before the system switches off completely. The ABS indicator lamp will go out if the ABS is unavailable.

### 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.

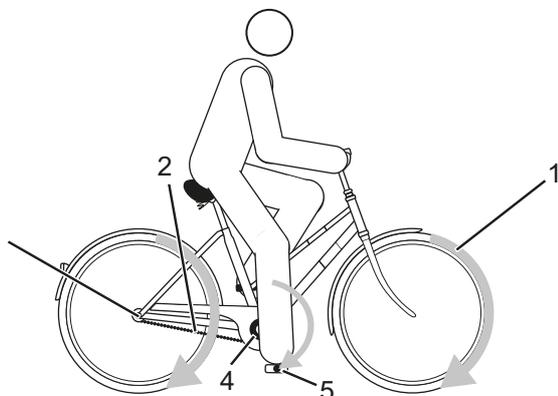


Figure 14: Diagram of mechanical drive system

- 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 8 components:

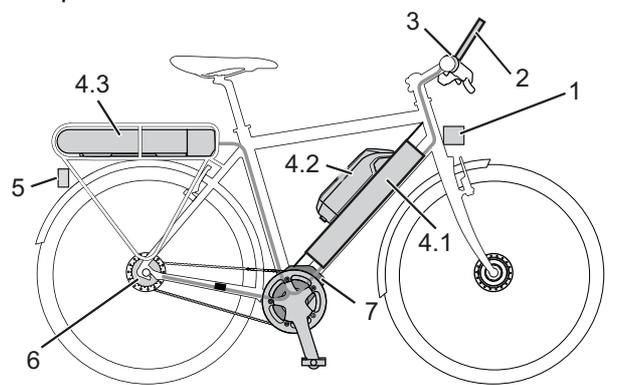


Figure 15: Diagram of electric drive system

- 1 *Headlight*
- 2 *Display*
- 3 *Control panel*
- 4.1 *Integrated battery*
- 4.2 *Frame battery and/or*
- 4.3 *Pannier rack battery*

- 5 *Rear light*
- 6 *Electric gear shift (alternative)*
- 7 *Motor*
- 8 *A charger which is designed for the battery.*

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

The pedelec does not have a separate emergency shut-off button. The drive system can be stopped in case of emergency by removing the *display*. The mechanical brakes are used as an emergency stop system and bring the pedelec to a halt quickly and safely in the event of an emergency.

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

A push assist system can be activated. The speed depends on the selected gear. The push assist continues to drive the pedelec as long as the rider presses the **push assist button**. The speed can be a maximum of 6 km/h in this case. The drive stops when the **plus button** is released.

### 3.1.5 Rechargeable battery

Bosch batteries are lithium ion batteries which are developed and manufactured to the latest technical standards. Each individual cell is protected by a steel cup and encased in a plastic battery housing. These batteries meet and exceed applicable industrial safety standards. The battery has an internal electronic protection circuit, which is specifically designed for the charger and the pedelec. The battery temperature is monitored at all times. The battery is protected against deep discharge, overcharging, overheating and short circuit. In the event of a hazard, a protective circuit switches the battery off automatically.

The battery has a high energy content when charged. You will find codes of practice for their safe handling in Section 2 Safety and Section 6.9 Rechargeable battery in the operating instructions.

If the electric drive system is not used for about 10 minutes and no button has been pressed on the display or the control panel, the electric drive system and the battery are automatically switched off to save energy.

The type and duration of operating conditions have a significant effect on the battery life. Just like any other lithium-ion battery, the battery will age naturally if it is not being used. The battery's service life can be extended if the battery is well maintained and stored at the correct temperature. 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.

Battery performance is reduced when the temperature drops since this increases electrical resistance. As a result, you can expect the range to be shorter than normal in winter. We recommend using thermal protection sleeves when riding longer distances in the cold.

The pedelec features either an integrated battery, a pannier rack battery or a frame battery. Each battery has its own lock.

### 3.1.5.1 Frame battery

Three different types of frame batteries can be fitted:



Table 6: Overview of frame batteries

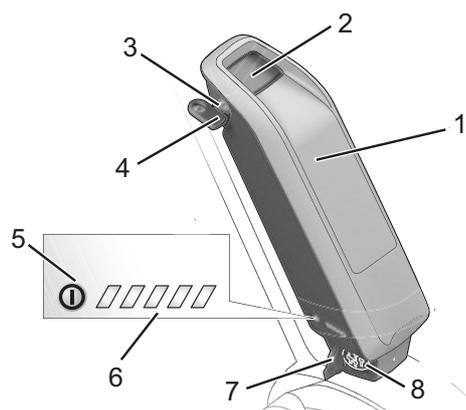


Figure 16: Details of frame battery

- 1 Battery housing
- 2 Battery lock
- 3 Battery key
- 4 On-Off button (battery)
- 5 Battery level indicator
- 6 Charging port cover
- 7 Charging port

### 3.1.5.2 Pannier rack battery

Three different types of pannier rack batteries can be fitted:

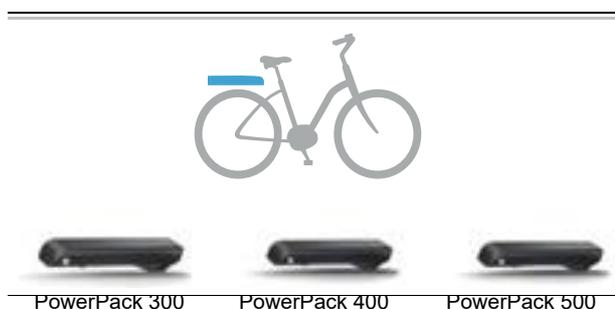


Table 7: Overview of pannier rack batteries

Figure 17: Overview of pannier rack battery

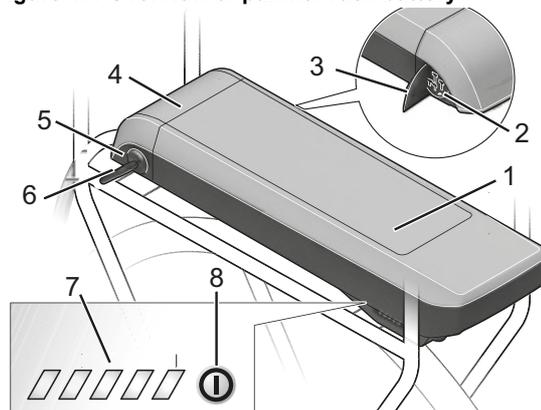


Figure 18: Details of pannier rack battery

- 1 Battery housing
- 2 Charging port
- 3 Charging port cover
- 4 Battery lock
- 5 Battery key
- 6 Battery level indicator
- 7 On-Off button (battery)

### 3.1.5.3 Integrated battery

Two different types of pannier rack batteries can be fitted:



Table 8: Overview of frame batteries

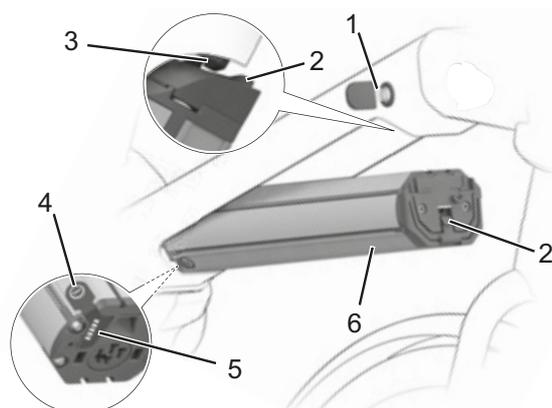


Figure 19: Integrated battery in detail

- 1 Battery key
- 2 Retainer guard
- 3 Securing hook
- 4 On-Off button (battery)
- 5 Battery level indicator
- 6 Battery housing

### 3.1.6 Display

The display controls the drive system with four operating elements and shows the journey data.

The battery powers the display. The display also has two internal non-rechargeable button cell batteries. This ensures that the electric drive system can be switched on using the display.

Internal button cell batteries, type CR2016	3 V, 90 mAh
Type	CR2016
Storage temperature	-10 °C to +60 °C

Table 9: Battery of the control panel with display technical data

The pane of glass on the display may steam up from the inside if there are abrupt fluctuations in temperature. This is not a malfunction.

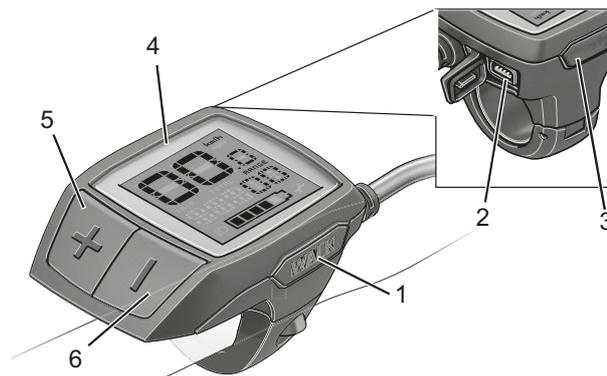


Figure 20: Display overview

Symbol	Designation
1	<b>WALK</b> Push assist button
2	USB port
3	On-Off button (display)
4	Screen display
5	<b>+</b> Plus button
6	<b>-</b> Minus button

Table 10: Overview of the control panel with display

### 3.1.7 Riding light

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

### 3.1.8 Charger

Each pedelec is supplied with a charger. As a general rule, any BOSCH charger may be used:

- The 2A compact charger
- The 4A standard charger
- The 6A fast charger

Observe the operating instructions in the section on Documents.

### 3.2 Proper use

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

The general laws and the regulations for the prevention of accidents and environmental

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

Each pedelec is assigned a pedelec type, which determines its proper use, 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 as well as physical fitness. Use requires the appropriate training; in particular riding in bends and braking should be practised.</p> <p>The strain on the rider, in particular the hands and wrists, arms, shoulders, neck and back, is accordingly high. Inexperienced riders tend to brake excessively and lose control as a result.</p>	<p>A racing bicycle is designed for fast rides on roads and paths with a good, undamaged road surface.</p> <p>A racing bicycle is a piece of sporting equipment and not a means of transport. A racing bicycle is characterised by its 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 rider 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 adapt 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 11: Proper use for each pedelec type

### 3.3 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
- lending the pedelec to untrained riders
- carrying other people
- riding with excessive baggage
- riding with no hands
- riding on ice and snow
- improper servicing
- improper repair
- tough areas of use, such as professional competitions
- stunt riding or acrobatics.

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

Table 12: Information on improper use

### 3.4 Technical data

#### 3.4.1 Pedelec

Transportation temperature	5 °C - 25 °C
Ideal transportation temperature	10 °C - 15 °C
Storage temperature	10 °C - 30 °C
Ideal storage temperature	10 °C - 15 °C
<b>Operating temperature</b>	5 °C - 35 °C
<i>Work environment</i> temperature	15 °C - 25 °C
Charging temperature	0 °C - 40 °C
Power output/system	250 W (0.25 kW)
Shut-off speed	25 km/h

**Table 13: Pedelec technical data**

#### 3.4.2 ActiveLine motor

Continuous power rating	250 W
Max. torque	40 Nm
Nominal voltage	36 V DC
Protection class	IP54
Weight about	3 kg
<b>Operating temperature</b>	-5 °C - +40 °C
<b>Storage temperature</b>	-10 °C - +50 °C

**Table 14: ActiveLine motor technical data**

#### 3.4.3 ActiveLine Plus motor

Continuous power rating	250 W
Max. torque	50 Nm
Nominal voltage	36 V DC
Protection class	IP54
Weight about	3.3 kg
<b>Operating temperature</b>	-5 °C - +40 °C
<b>Storage temperature</b>	-10 °C - +50 °C

**Table 15: ActiveLine Plus motor technical data**

#### 3.4.4 Performance Line Cruise motor

Continuous power rating	250 W
Max. torque	63 Nm
Nominal voltage	36 V DC
Protection class	IP54
Weight	4 kg
<b>Operating temperature</b>	-5 - +40 °C
<b>Storage temperature</b>	-10 - +50 °C

**Table 16: Performance Line Cruise motor technical data**

#### 3.4.5 Performance Line Speed motor

Continuous power rating	250 W
Max. torque	63 Nm
Nominal voltage	36 V DC
Protection class	IP54
Weight	4 kg
<b>Operating temperature</b>	-5 °C - +40 °C
<b>Storage temperature</b>	-10 °C - +50 °C

**Table 17: Performance Line Speed motor technical data**

#### 3.4.6 Performance Line CX motor

Continuous power rating	250 W
Max. torque	75 Nm
Nominal voltage	36 V DC
Protection class	IP54
Weight	4 kg
<b>Operating temperature</b>	-5 °C - +40 °C
<b>Storage temperature</b>	-10 °C - +50 °C

**Table 18: Performance Line CX motor technical data**

### 3.4.7 Pedelec lighting

**Applicable to motors: Performance Line Cruise, Performance Line Speed and Performance Line CX**

Voltage about	6/12 V
<b>Maximum output</b>	
Front light	8.4/17.4 W
Rear light	0.6/ 0.6 W

**Applicable to motors: ActiveLine and ActiveLine Plus**

Voltage about	12 V
<b>Maximum output</b>	
Front light	17.4 W
Rear light	0.6 W

Table 19: PowerTube battery technical data

### 3.4.8 PowerPack 300 battery

Nominal voltage	36 V
Nominal capacity	8.2 Ah
Energy	300 Wh
Weight	2.5/ 2.6 kg
Protection class	IP54
Operating temperature	-5 °C - +40 °C
Storage temperature	-10 °C - +60 °C
Permitted charging temperature range	0 °C - + 40 °C

Table 20: PowerPack 300 battery technical data

### 3.4.9 PowerPack 400 battery

Nominal voltage	36 V
Nominal capacity	11 Ah
Energy	400 Wh
Weight	2.5/ 2.6 kg
Protection class	IP54
Operating temperature	-5 °C - +40 °C
Storage temperature	-10 °C - +60 °C
Permitted charging temperature range	0 °C - + 40 °C

Table 21: PowerPack 400 battery technical data

### 3.4.10 PowerPack 500 battery

Nominal voltage	36 V
Nominal capacity	13.4 Ah
Energy	500 Wh
Weight	2.6/ 2.7 kg
Protection class	IP54
Operating temperature	-5 °C - +40 °C
Storage temperature	-10 °C - +60 °C
Permitted charging temperature range	0 °C - + 40 °C

Table 22: PowerPack 500 battery technical data

### 3.4.11 PowerTube battery

Nominal voltage	36 V
Nominal capacity	13.54 Ah
Energy	500 Wh
Weight	2.8 kg
Protection class	IP54
Operating temperature	-5 °C - +40 °C
Storage temperature	-10 °C - +60 °C
Permitted charging temperature range	0 °C - + 40 °C

Table 23: PowerTube battery technical data

### 3.4.12 Purion display

Internal lithium ion battery	2 × 3 V CR2016
Operating temperature	-5 °C - +40 °C
Storage temperature	-10 °C - +50 °C
Charging temperature	0 °C - + 40 °C
Protection rating (with USB cover closed)	IP54
Weight about	0.1 kg

Table 24: Purion display technical data

### 3.4.13 USB port

Charge voltage	5 V
Charging current	Max. 500 mA

Table 25: USB port technical data

### 3.4.14 BOSCH pedelec ABS BAS100

Operating temperature	-5 °C - +40 °C
Storage temperature	-10 °C - +60 °C
Protection class	IPx7
Weight about	1 kg

**Table 26: BOSCH pedelec ABS BAS100 technical data**

### 3.4.15 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 27: Emissions from the pedelec\***

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

### 3.4.16 Tightening torque

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

**Table 28: Tightening torque values**

\*if there is no other data on the component

### 3.5 Environmental requirements

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

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

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

Temperatures under -10 °C and over +60 °C must be avoided.

You must also keep within the following temperature ranges:

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

**Table 29: Pedelec technical data**

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

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

**Table 30: Area of use**

The pedelec is unsuitable for the following areas of use:

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

### 3.6 Description of controls and screens

#### 3.6.1 Handlebars



Figure 21: Detailed view of pedelec from rider position, example

- 1 Rear brake lever
- 2 Bell
- 3 Headlight
- 4 Display
- 5 Front brake lever
- 6 Control panel
- 8 Fork lock on the suspension fork
- 9 Shifter

#### 3.6.2 Battery level indicator

Each battery has its own level indicator:

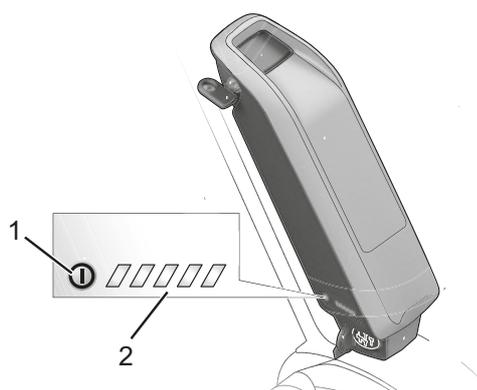


Figure 22: Example of a battery level indicator

- 1 On-off button (battery)
- 2 Battery level indicator

The five green LEDs on the battery level indicator show the charge level when the battery is switched on. Each LED represents about 20% of battery capacity. All five LEDs will light up when the battery is fully charged. The charge level for the activated battery is also shown on the *display screen*.

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

#### 3.6.3 Control panel on-screen indicators

The *control panel with display* has seven on-screen indicators:

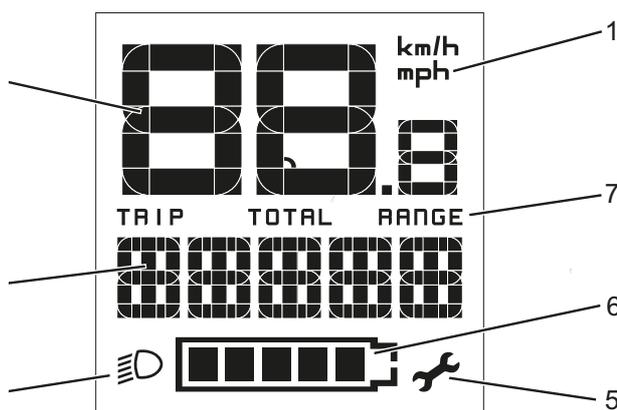


Figure 23: On-screen indicators overview

Use	
1	Unit of measure for speed
2	Tachometer screen
3	Function display
4	Riding light symbol
5	Service symbol
6	Battery level indicator
7	Level of assistance

Table 31: On-screen indicators overview

##### 3.6.3.1 Unit of measure for speed

The speed can be displayed in km/h or mph. You can select whether the speed is displayed in kilometres or miles in the system settings.

##### 3.6.3.2 Tachometer screen

The tachometer shows the current speed at all times.

### 3.6.3.3 Function display

The last setting is always displayed on the function display screen by default.

The *control panel with display* shows one of three items of journey information. The displayed item of journey information can be switched

Screen display	Function
TRIP	Distance travelled since the last RESET
TOTAL	Display of the total distance travelled (cannot be changed)
RANGE	Estimated range for the available battery charge, calculated based on the most recent riding mode.

Table 32: Journey information

### System data

To view all the information on the system being used and the software, the rider has to call up the *system data*.

Screen display	Function
SERIAL NUMBER DU	Drive system serial number
SERIAL NUMBER HMI	Serial number for control panel with display
SW VERSION HMI	Software version of the control panel with display
SW VERSION DU	Drive system software version
SW VERSION PP	Battery software version

Table 33: System data, not changeable

### System message

The drive system monitors itself continuously and if an error is detected, it is indicated by a system message. The system may switch off automatically depending on the type of error. There is a table of system messages in the appendix

### 3.6.3.4 Gear recommendation

Peddalling frequencies higher than 50 revolutions per minute optimise drive unit efficiency. However, very slow pedalling uses up a great deal of energy. You can increase the speed and range while applying the same force by selecting the right gear. It is therefore best to follow gear recommendations.

The gear recommendation function reacts to excessively slow or excessively quick pedalling and recommends a change of gear.

- ✓ The gear recommendation function has to be switched on in the system settings.

Symbol	Use
▲	Peddalling frequency is too high, a higher gear is recommended
▼	Peddalling frequency is too low, a lower gear is recommended

Table 34: Symbols of the gear recommendation function

### 3.6.3.5 Tachometer screen

The tachometer shows the current speed at all times.

You can select whether the speed is displayed in kilometres or miles in the system settings.

### 3.6.3.6 Function display

The function display shows texts and readings. Three different types of information are shown:

- Journey information
- System settings and data, and
- System messages.

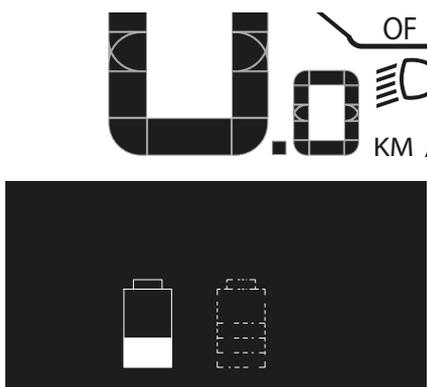


Figure 24: The left battery is currently being charged

## Journey information

Depending on the type of pedelec, the function display may show up to seven journey information items. The displayed journey information can be switched.

Screen display	Function
CLOCK	Current time
MAX. SPEED	Maximum speed reached since the last RESET
AVG. SPEED	Average speed reached since the last RESET
TRIP TIME	Journey time since last RESET
RANGE	Estimated range of the available battery charge
RANGE	Display of the total distance travelled (cannot be changed)
TRIP DISTANCE	Distance travelled since the last RESET

Table 35: Journey information

## Additional journey information

### Applies only to Pedelecs with eShift with Shimano DI2 automatic hub gears

The following additional functions are available on the function display:

Screen display	Change
AUTO: ON/AUTO: OFF	This menu option indicates whether the automatic mode is switched on or off.

Table 36: Additional journey information

### Applies only to Pedelecs with eShift with manual Shimano DI2 automatic hub gears

The following additional functions are available on the function display:

Screen display	Change
GEAR	The current gear shift is shown on the display screen. The new gear is shown briefly on the screen each time it is changed.

Table 37: Additional journey information

### Applies only to Pedelecs with eShift with Shimano DI2 automatic hub gears

The following additional functions are available on the function display:

Screen display	Change
GEAR	The current gear shift is shown on the display screen. The new gear is shown briefly on the screen each time it is changed.

Table 38: Additional journey information

### Applies only to Pedelecs with eShift with NuVinci H|Sync/ envoio with Optimized H|Sync

The following additional functions are available on the function display:

Screen display	Change
± NUVINCI CADENCE / ± NUVINCI GEAR	The current gear shift is shown on the display screen. The new gear is shown briefly on the screen each time it is changed.  The standard setting is ± NuVinci cadence.

Table 39: Changing the system settings

### Applies only to Pedelecs with eShift with Rohloff E-14 Speedhub 500/14

The following additional functions are available on the function display:

Screen display	Change
GEAR	The current gear shift is shown on the display screen. The new gear is shown briefly on the screen each time it is changed.

Table 40: Changing the system settings

## System settings and data

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

Screen display	Function
- CLOCK +	Changing the time
- WHEEL CIRCUM +	Value of the wheel circumference in mm
- ENGLISH +	Changes the language
- UNIT KM/MI +	Selects whether the speed and distance are displayed in kilometres or miles
- TIME FORMAT +	Select whether the time is displayed in 12-hour clock or 24-hour clock format
- SHIFT RECOM. OFF +	Switches the gear recommendation on and off

Table 41: Changeable system settings

Screen display	Function
POWER ON HOURS	Display of the total journey duration
DISPL. VX.X.X.X	Display software version
DU VX.X.X.X	Drive system software version
DU# XXXX XXXXX	Drive system serial number
SERVICE MM/YYYY	(Alternative) defined inspection date
SERV. XX KM/MI	(Alternative) defined inspection
BAT. VX.X.X.X	Software version
1. BAT VX.X.X.X	Software version
2. BAT VX.X.X.X	Software version

Table 42: System data, not changeable

## Additional system settings

### Applies only to Pedelecs with eShift with Shimano DI2 automatic hub gears

Screen display	Change
– Start gear +	This is where you can set the start gear. The automatic gear switch function is switched off in Position – –. This menu option is only shown when the on-board computer is positioned in its mount.
Gear adjustment	You can use this menu option to make a fine adjustment to the Shimano DI2. You'll find the specified setting range in the gear manufacturer's operating instructions. Make the fine adjustment as soon as you hear any unusual noises from the gear shift. This menu option is only shown when the on-board computer is positioned in its mount.
Gear vx.x.x.x:	this is the gear software version. This menu option is only shown when the on-board computer is positioned in its mount. This menu option is only shown if you have an electronic control gear.

Table 43: Changing the system settings

### Applies only to Pedelecs with eShift with manual Shimano DI2 automatic hub gears

Screen display	Change
– Start gear +	This is where you can set the start gear. The automatic gear switch function is switched off in Position – –. This menu option is only shown when the on-board computer is positioned in its mount.
Gear adjustment	You can use this menu option to make a fine adjustment to the Shimano DI2. You'll find the specified setting range in the gear manufacturer's operating instructions. Make the fine adjustment as soon as you hear any unusual noises from the gear shift. This menu option is only shown when the on-board computer is positioned in its mount.
Gear vx.x.x.x:	this is the gear software version. This menu option is only shown when the on-board computer is positioned in its mount. This menu option is only shown if you have an electronic control gear.

Table 44: Changing the system settings

### Applies only to Pedelecs with eShift with Shimano DI2 automatic hub gears

Screen display	Change
Gear adjustment	You can use this menu option to make a fine adjustment to the Shimano DI2. You'll find the specified setting range in the gear manufacturer's operating instructions. Make the fine adjustment as soon as you hear any unusual noises from the gear shift. This menu option is only shown when the on-board computer is positioned in its mount.
Gear recovery	You can use this menu option to reset the rear derailleur if it has been detached – due to a crash or impact against the derailleur. You will find a description of how to reset the gear shift in the gear shift manufacturer's operating instructions. This menu option is only shown when the on-board computer is positioned in its mount.
Gear vx.x.x.x:	this is the gear software version. This menu option is only shown when the on-board computer is positioned in its mount. This menu option is only shown if you have an electronic control gear.

Table 45: Changing the system settings

### Applies only to Pedelecs with eShift with NuVinci H|Sync/ envoiolo with Optimized H|Sync

Screen display	Change
Gear calibration	This is where you can perform a calibration on the stepless gear. Press on the Lighting button to confirm calibration. Then follow the instructions. You also might need to perform a calibration while riding in the event of a fault. In such cases, you also press on the Lighting button to confirm calibration and then follow the instructions on the display. This menu option is only shown when the on-board computer is positioned in its mount
Gear vx.x.x.x:	this is the gear software version. This menu option is only shown when the on-board computer is positioned in its mount. This menu option is only shown if you have an electronic control gear.

Table 46: Changing the system settings

## Applies only to Pedelecs with eShift with Rohloff E-14 Speedhub 500/14

Screen display	Change
Start gear	This is where you can set the start gear. The automatic gear switch function is switched off in Position --. This menu option is only shown when the on-board computer is positioned in its mount.
Gear vx.x.x.x:	this is the gear software version. This menu option is only shown when the on-board computer is positioned in its mount. This menu option is only shown if you have an electronic control gear.

Table 47: Changing the system settings

### 3.6.4 System message

The drive system monitors itself continuously and if an error is detected, it is indicated by a system message. The system may switch off automatically depending on the type of error. You will find assistance for system messages in *8.5 Initial help*. There is a table of system messages in the Appendix.

### 3.6.5 ABS indicator lamp

The anti-blocking system indicator lamp must light up after the system has started up and must go out once speed has reached about 5 km/h. If the ABS indicator lamp does not light up when the electric drive system starts, the ABS is defective. An error code on the display also tells the rider that it is defective.

If the indicator lamp does not go out after you set off or it lights up while you are riding, this means there is an error in the anti-blocking system. The anti-blocking system is then no longer active. The brake system itself remains functional. It is only the anti-blocking system control which no longer operates.

If the ABS indicator lamp is lit, the ABS function is not active.

#### Notice

The anti-blocking system indicator lamp may light up if the front and rear wheels are rotating at widely different speeds from one another – for example, if the rider cycles on the rear wheel only or if a wheel is rotating for an unusually long time without making contact with the ground (fitting stand). The anti-blocking system switches off in such cases.

Note: You need to stop and restart the pedelec (switch off and on again) to reactivate the anti-blocking system.

## 4 Transporting and storing



### 4.1 Physical transport characteristics

#### 4.1.1 Dimensions during transportation

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

#### 4.1.2 Transport weight

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

#### 4.1.3 Designated handles/lifting points

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

#### Notice

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

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

- ▶ Transport the pedelec in an upright position only.

### 4.2 Transporting

#### CAUTION

#### Crash caused by unintentional activation

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

- ▶ Remove the battery.

#### CAUTION

#### Oil leak if no transport securing device

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

- ▶ Never push the brake lever when the wheel has been dismantled.

Always use the transport securing system when transporting dismantled wheels.

#### Notice

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.

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

- ▶ Take into account the weight of the ready-to-use pedelec when transporting it.
- ▶ Remove the display screen and the batteries before transporting the pedelec.
- ▶ Protect the electrical components and connections on the pedelec from the weather conditions with suitable protective covers.
- ▶ Remove accessories such as drinking bottles before transporting the pedelec.
- ▶ When transporting by car, you must use a suitable bicycle rack system.

### 4.2.1 Transporting the battery

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

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

### 4.2.2 Shipping the battery

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

### 4.2.3 Using the brake transport securing system

- ▶ 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.

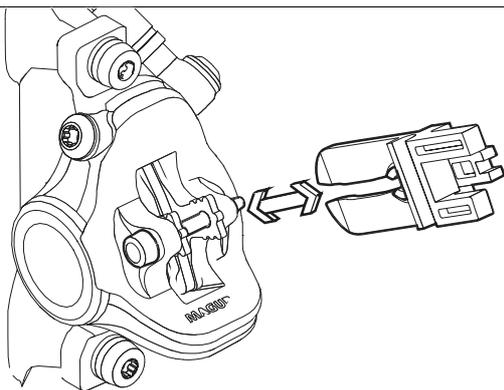


Figure 25: Fastening the transport securing device

## 4.3 Storing

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

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

Table 48: Storage temperature for batteries and the pedelec

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

### 4.3.1 Break in operation

#### Notice

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

- ▶ The battery must be recharged every 6 months.

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

- ▶ Never connect the battery to the charger permanently.

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

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

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

#### 4.3.1.2 Taking out of operation

- 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 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

#### Injury to the eyes

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

#### Crushing caused by unintentional activation

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

- ▶ Remove the battery if it is not needed for assembly.

- ✓ 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
- Twelve-point square socket T25
- Ring spanner (8 mm, 9 mm, 10 mm), 13 mm, 14 mm and 15 mm) and
- Cross, flat head and ordinary screwdriver.

## 5.2 Unpacking

### CAUTION

#### Hand injuries caused by cardboard packaging

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

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

The packaging material consists mainly of cardboard and plastic film.

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

### 5.2.1 Scope of delivery

Pedelecs 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 Commissioning

### CAUTION

#### Burns from hot drive

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

- ▶ Leave the drive unit to cool before 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 pedelec 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.

### 5.3.1 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 is lit up.
- 2 Insert charged battery into the pedelec.

### 5.3.2 Installing the wheel in the Suntour fork

#### 5.3.2.1 Screw-on axle (15 mm)

Only applies to Suntour forks with 15 mm screw-on axle

- 1 Insert the axle completely on the drive side.

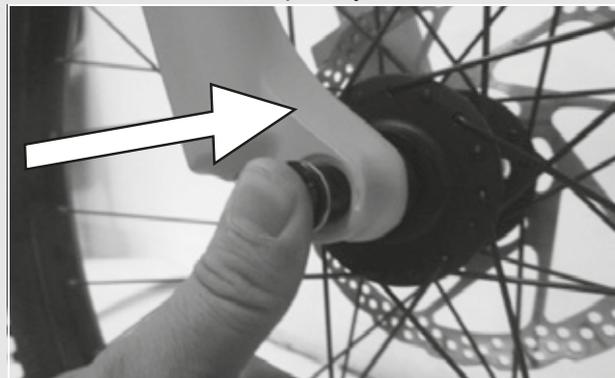


Figure 26: Fully inserting the axle

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

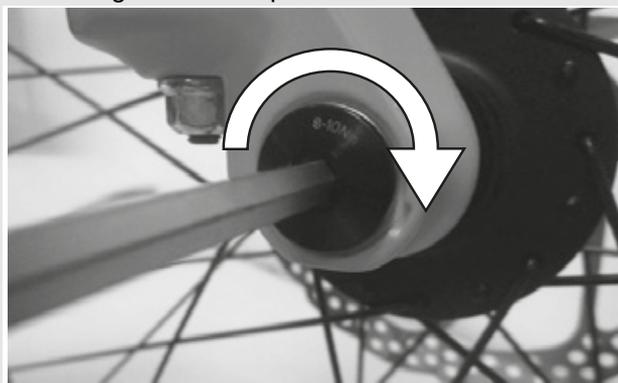


Figure 27: Tightening the axle

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



Figure 28: Pushing the quick release lever into the axle

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

⇒ The lever is mounted.



Figure 29: Tightening the securing screw

### 5.3.2.2 Screw-on axle (20 mm)

Only applies to Suntour forks with 20 mm screw-on axle

- 1 Insert the axle completely on the drive side.

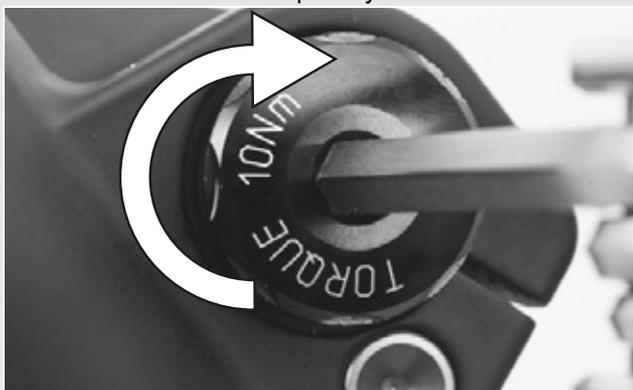


Figure 30: Tightening the inserted axle

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



Figure 31: Tightening the securing clip

### 5.3.2.3 Quick release axle

Only applies to Suntour forks with screw-on axle

#### CAUTION

##### Crash caused by loose quick release axle

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

- ▶ Never fit a defective quick release axle.

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

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

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

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

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

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

- 1 Insert the axle into the hub on the drive side.

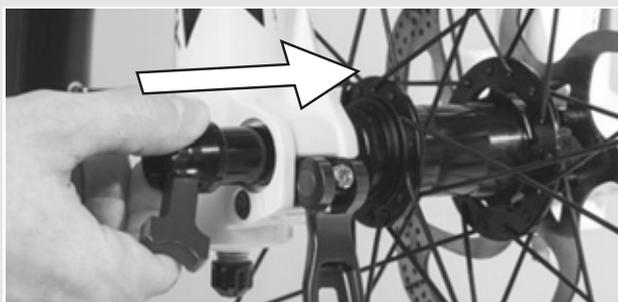


Figure 32: Pushing the axle into the hub

- 2 Tighten the axle with the red handle.

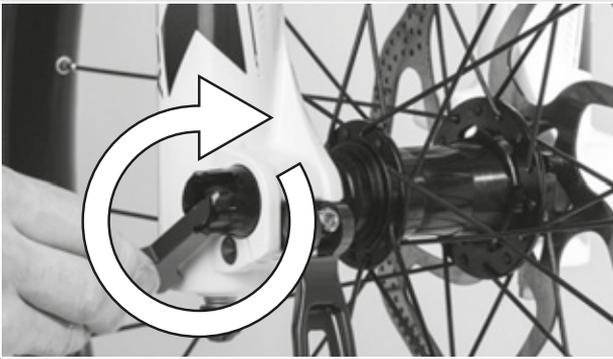


Figure 33: Tightening the axle

- 3 Push the quick release lever into the axle.

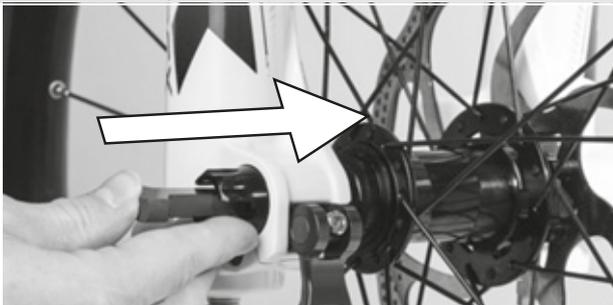


Figure 34: Pushing the quick release lever into the axle

- 4 Turn the quick release lever.

⇒ The lever is secured.



Figure 35: Securing the lever

- 5 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 36: Perfect position for the clamping lever

- 6 Use 4 mm hexagon socket spanner to adjust the clamping lever clamping force if required.

- 7 Check the quick release lever position and clamping force.

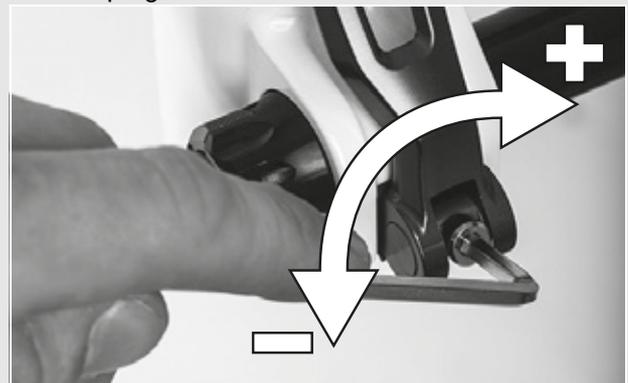


Figure 37: Adjusting the quick release clamping force

### 5.3.2.4 Quick release

Only applies to Suntour forks with quick release

**CAUTION**

#### Crash caused by unfastened quick release

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

- ▶ Never fit a defective quick release.

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

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

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

#### Crash caused by incorrectly set clamping force

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

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

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

- 1 Before installing, ensure that the quick release flange is extended. Open the lever fully.

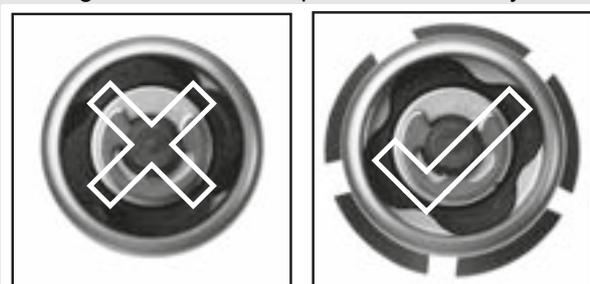


Figure 38: Open and closed flange

- 2 Push in the quick release until you can hear a click. Make sure that the flange is extended.



Figure 39: Pushing the quick release in

- 3 Adjust tensioning with half-open clamping lever until the flange reaches the fork end.

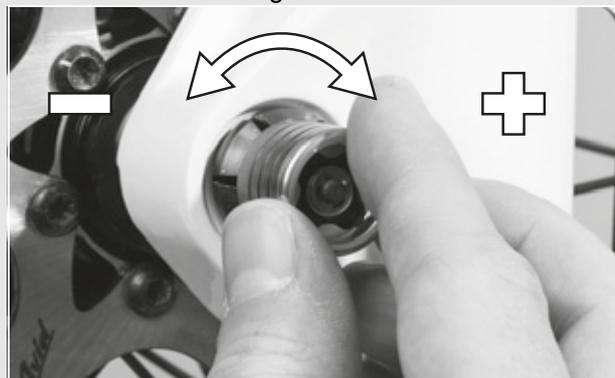


Figure 40: Adjusting the clamping

- 4 Fully close the quick release. Check that the quick release is firmly in place and adjust it on the flange if necessary.

⇒ The lever is secured.



Figure 41: Closing the quick release

### 5.3.3 Installing the wheel in the FOX fork

#### 5.3.3.1 Quick release (15 mm)

Only applies to FOX forks with 15 mm screw-on axle

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

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

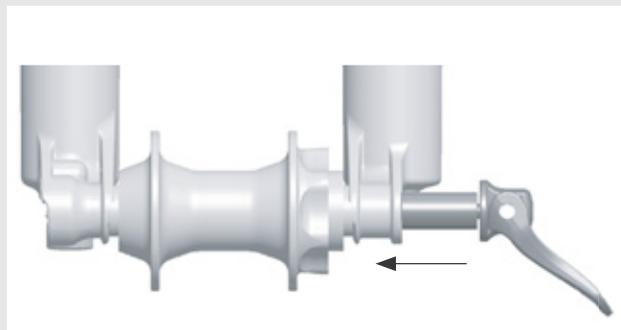


Figure 42: Pushing the quick release in

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

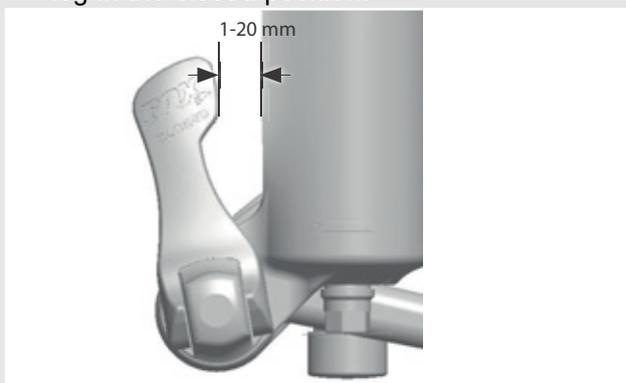


Figure 43: Spacing between lever and fork leg

- ⇒ The quick release must be adjusted if the lever is tensioned inadequately or too strongly when closed in the recommended position (1 to 20 mm in front of the fork).

### Setting the quick releases

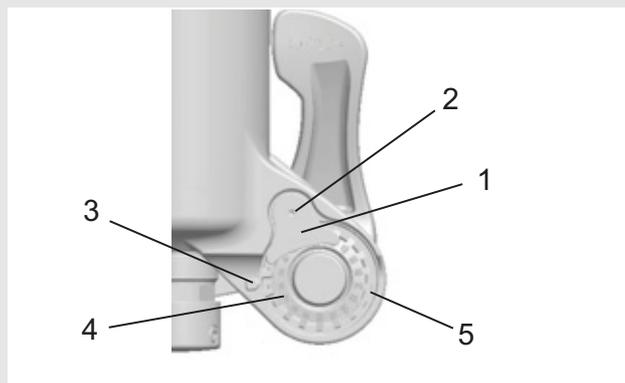


Figure 44: Structure of quick release from rear with (1) axle nut lock and (5) axle nut

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

### 5.3.3.2 Kabolt axle

Only applies to FOX forks with Kabolt axles

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

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

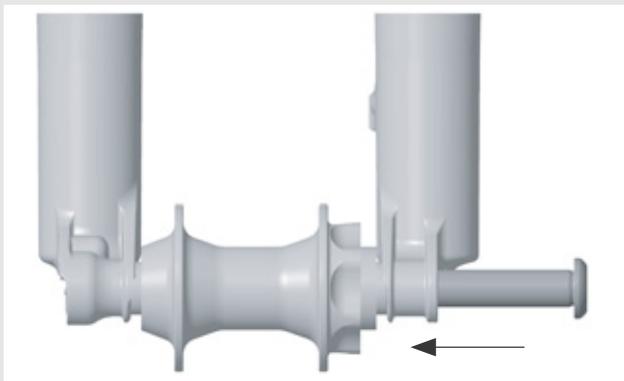


Figure 45: Pushing the Kabolt axle in

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

### 5.3.4 Checking the stem and handlebars

#### 5.3.4.1 Checking 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.

#### 5.3.4.2 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 in a clockwise direction with the quick release lever open.
- 3 Close the lever and check the stem is firmly in position.

### 5.3.4.3 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.

### 5.4 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 [6.5](#).
- ▶ Set 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 level of assistance gradually.
- ▶ Practice braking hard on a regular basis.
- ▶ Take and complete a riding safety course.



#### CAUTION

#### Crash caused by loose clothing

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

- ▶ Wear sturdy footwear and close-fitting clothing.



#### CAUTION

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

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

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

#### Crash caused by soiling

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

- ▶ Remove coarse soiling before riding.

#### Crash caused by poor road conditions

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

- ▶ Be aware of the road conditions.
- ▶ Ride slowly and brake in good time.

#### Notice

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

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

When riding downhill, high speeds may be reached. The pedelec is only designed to exceed a speed of 25 km/h for short 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

#### 6.1.1 Personal protective equipment

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

#### 6.2 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.

##### 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 & starting

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

##### Gear shift

- ▶ Use a low gear when setting off and on hills.
- ▶ Switch up a gear depending on the speed and terrain.
- ▶ Follow the gear recommendations on the display screen.

##### Tyre pressure

- ▶ Always use the maximum permitted tyre pressure.

##### Motor power indicator

- ▶ Adjust your riding to the displayed motor power. A long bar indicates high power consumption.

##### Battery & 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 thermal protection sleeves on the battery in winter.

## 6.3 Error message

### 6.3.1 Display

The drive system monitors itself continuously and displays a number as an error message if a known error is detected. The system may switch off automatically depending on the type of error.

Code	Description	Method of resolution
410	One or more display buttons are blocked	► Check whether buttons are jammed because dirt has accumulated between them, for example. Clean the buttons if they need cleaning.
414	Control panel connection problem	► Have ports and connections checked. Contact your specialist dealer.
418	One or more buttons on the control panel are blocked	► Check whether buttons are jammed because dirt has accumulated between them, for example. Clean the buttons if they need cleaning.
419	Configuration error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
422	Connection problem with the drive unit	► Have ports and connections checked.
423	Connection problem with the drive unit	► Have ports and connections checked.
424	Communication error with components communicating with one another	► Have ports and connections checked.
426	Internal time-out error	It is not possible to display or adjust the tyre size in the basic settings menu in this error status. 1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
430	Display battery flat	► Recharge display battery (while in its mount or using USB port).
431	Software version error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
440	Internal drive unit error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
450	Internal software error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.

Table 49: List of display screen error messages

Code	Description	Method of resolution
460	Error in USB port	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
490	Internal display error	► Have display checked.
500	Internal drive unit error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
502	Fault in the lighting	1 Check the light and its cabling. 2 Re-start the system. 3 Contact your specialist dealer if the problem persists.
504	System responds to detected tuning. Pedelec switches to emergency ride mode and logs the error	► Can be reset for 90 minutes by riding in emergency mode (possible 3 times). ► If the error reoccurs, the specialist dealer will need to set up the system again.
503	Speed sensor error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
510	Internal sensor error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
511	Internal drive unit error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
530	Battery error	1 Switch off system. 2 Remove the battery. 3 Re-insert battery. 4 Re-start electric drive system. 5 Contact your specialist dealer if the problem persists.
531	Configuration error	1 Re-start the system. 2 Contact your specialist dealer if the problem persists.
540	Temperature error The pedelec is outside the permitted temperature range	1 Switch off the system to cool the drive unit down or warm to the permitted temperature range. 2 Re-start the system. 3 Contact your specialist dealer if the problem persists.

Table 49: List of display screen error messages

Code	Description	Method of resolution
550	An inadmissible electrical load has been detected	<ol style="list-style-type: none"> <li>1 Remove consumer.</li> <li>2 Re-start the system.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
580	Software version error	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
591	Authentication error	<ol style="list-style-type: none"> <li>1 Switch off system.</li> <li>2 Remove the battery.</li> <li>3 Re-insert battery.</li> <li>4 Re-start the system.</li> <li>5 Contact your specialist dealer if the problem persists.</li> </ol>
592	Incompatible component	<ol style="list-style-type: none"> <li>1 Insert a compatible display.</li> <li>2 Re-start the system.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
593	Configuration error	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
595, 596	Communication error	<ol style="list-style-type: none"> <li>1 Check cabling to the gears.</li> <li>2 Re-start the system.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
602	Internal error during charging	<ol style="list-style-type: none"> <li>1 Disconnect charger from battery.</li> <li>2 Re-start the system.</li> <li>3 Connect charger to the battery.</li> <li>4 Contact your specialist dealer if the problem persists.</li> </ol>
602	Internal fault	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
603	Internal fault	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
605	Temperature error The pedelec is outside the permitted temperature range	<ol style="list-style-type: none"> <li>1 Switch off the system to cool the drive unit down or warm to the permitted temperature range.</li> <li>2 Re-start the system.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>

Table 49: List of display screen error messages

Code	Description	Method of resolution
605	Temperature error during the charging process	<ol style="list-style-type: none"> <li>1 Disconnect charger from battery.</li> <li>2 Leave battery to cool down.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
606	External fault	<ol style="list-style-type: none"> <li>1 Check the cabling.</li> <li>2 Re-start the system.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
610	Voltage error	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
620	Charger error	<ol style="list-style-type: none"> <li>1 Replace charger.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
640	Internal fault	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
655	Multiple battery error	<ol style="list-style-type: none"> <li>1 Switch off system.</li> <li>2 Remove the battery.</li> <li>3 Re-insert battery.</li> <li>4 Re-start the system.</li> <li>5 Contact your specialist dealer if the problem persists.</li> </ol>
656	Software version error	▶ Contact your specialist dealer to install a software update.
7xx	Gear error	▶ Please observe the manufacturer's operating instructions.
800	Internal ABS error	▶ Contact your specialist dealer.
810	Implausible signals from the wheel speed sensor	▶ Contact your specialist dealer.
820	Error in the line to the front wheel speed sensor	▶ Contact your specialist dealer.
821 ... 826	Implausible signals from the front wheel speed sensor. Sensor disc may be missing. It is defective or incorrectly installed; significantly different tyre diameter between the front wheel and rear wheel; extreme riding, such as riding on the rear wheel only	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Take a test ride of at least two minutes. The ABS indicator lamp must go out.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
830	Error in the line to the rear wheel speed sensor	▶ Contact your specialist dealer.

Table 49: List of display screen error messages

Code	Description	Method of resolution
831 833 ... 835	Implausible signals from the rear wheel speed sensor. Sensor disc may be missing. It is defective or incorrectly installed; significantly different tyre diameter between the front wheel and rear wheel; extreme riding, such as riding on the rear wheel only	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Take a test ride of at least two minutes. The ABS indicator lamp must go out.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
840	Internal ABS error	► Contact your specialist dealer.
850	Internal ABS error	► Contact your specialist dealer.
860, 861	Error in the power supply	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
870, 871, 880 883 ... 885	Communication error	<ol style="list-style-type: none"> <li>1 Re-start the system.</li> <li>2 Contact your specialist dealer if the problem persists.</li> </ol>
889	Internal ABS error	► Contact your specialist dealer.
890	ABS indicator lamp is defective or missing; ABS may not be functioning	► Contact your specialist dealer.
No screen display	Internal display error	► Re-start the drive system by switching it on and off.

**Table 49: List of display screen error messages**

### 6.3.2 Rechargeable battery

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

If a fault is detected in the battery, the LEDs flash on the battery level indicator.

Code	Description	Method of resolution
		
	If the battery is outside its charging temperature range, three LEDs will flash on the battery level indicator	<ol style="list-style-type: none"> <li>1 Disconnect charger from battery.</li> <li>2 Leave battery to cool down.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>
		
	If a fault is detected in the battery, two LEDs flash on the battery level indicator	► Contact your specialist dealer.
		
	No LEDs will flash if the charger is defective and will not charge. One or more LEDs will light up permanently, depending on the battery level	► Contact your specialist dealer.
		
	No LEDs will light up if there is no power	<ol style="list-style-type: none"> <li>1 Check all plug connections.</li> <li>2 Check contacts on the battery for dirt. Clean the contacts carefully if needed.</li> <li>3 Contact your specialist dealer if the problem persists.</li> </ol>

**Table 50: List of battery error messages**

## 6.4 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. If you are unable to contact your specialist dealer, you will find other specialist dealers online at [www.bulls.de/service/downloads](http://www.bulls.de/service/downloads). 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.

## 6.5 Adjusting the pedelec



### 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.

### 6.5.1 Adjusting the saddle

#### 6.5.1.1 Adjusting the saddle tilt

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

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

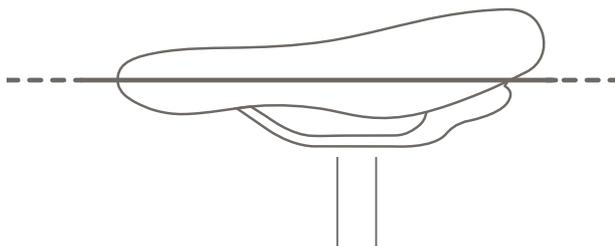


Figure 46: Horizontal saddle tilt

#### 6.5.1.2 Determining the seat height

- ✓ To determine the seat height safely, either push the pedelec near to a wall, so that you can lean on the wall to support yourself or ask another person to hold the pedelec for you.

- 1 Climb onto the bicycle.
  - 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, you can adjust the length of the seat post to your needs.

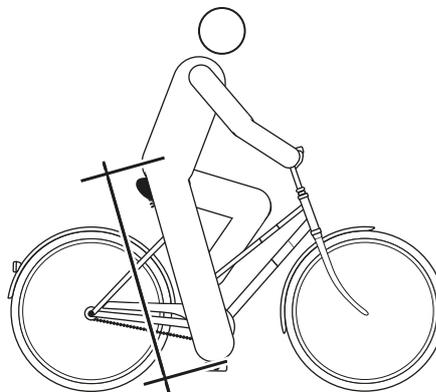


Figure 47: Optimal saddle height

### 6.5.1.3 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).

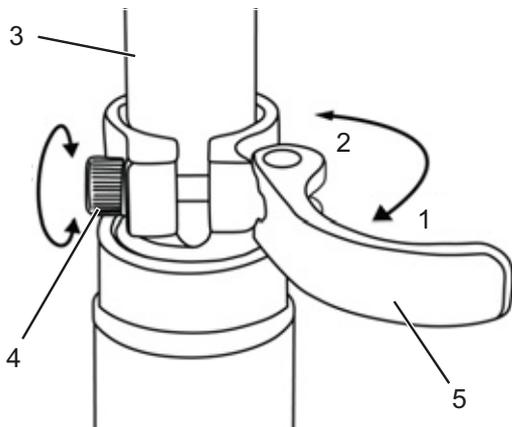


Figure 48: Opening the seat post quick release

- 2 Set the seat post at the required height.



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

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

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

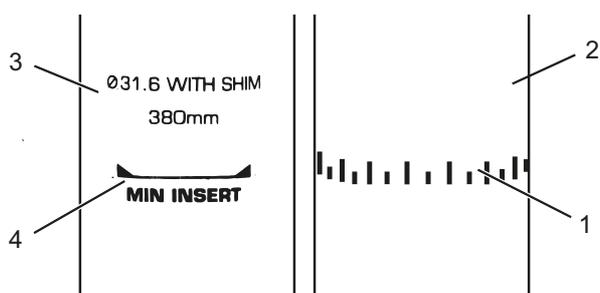


Figure 49: Detailed view of the seat post – examples of the minimum insertion depth marking

- 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.

### 6.5.1.4 Height-adjustable seat post

Only applies to pedelecs with this equipment

#### Preparing

- 1 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

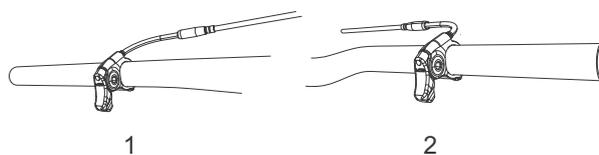


Figure 50: The seat post lever can be installed either on the left (1) or right (2) side of the handlebars

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

### 6.5.1.5 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 bicycle.
- 2 Place the pedals into the vertical position with your feet.

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

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

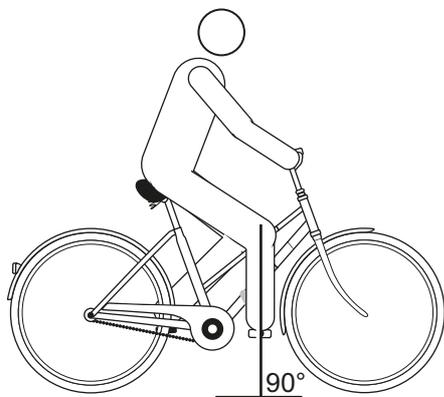


Figure 51: Knee cap perpendicular line

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

### 6.5.2 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.

### 6.5.3 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.

#### 6.5.3.1 Adjusting the height of the handlebars

- 1 Open the **stem clamping lever**.



Figure 52: Open (2) and closed (1) stem clamping lever; by.schulz speedlifter used as an example

- 2 Pull the **stem clamping lever** upwards while swivelling the handlebars into the required position.
- ⇒ You feel the locking lever click into place.

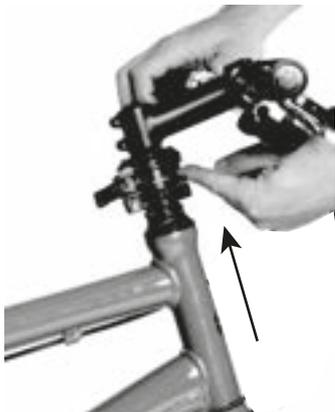


Figure 53: Pulling the locking lever upwards; by.schulz speedlifter used as an example

- 3 Pull out the handlebars to the required height.
- 4 Close the **stem clamping lever**.

#### 6.5.3.2 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.

#### 6.5.4 Setting 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 there is no description of your brake below.

#### 6.5.4.1 Setting the grip distance on a Magura HS33 brake lever

Only applies to pedelecs with this equipment

You can adjust the brake lever position (grip distance) to your requirements. Such adjustment does not affect the pressure point or the position of the brake linings.

- ✓ Use a T25 TORX® wrench to turn the setting screw (1) to adjust the grip distance.

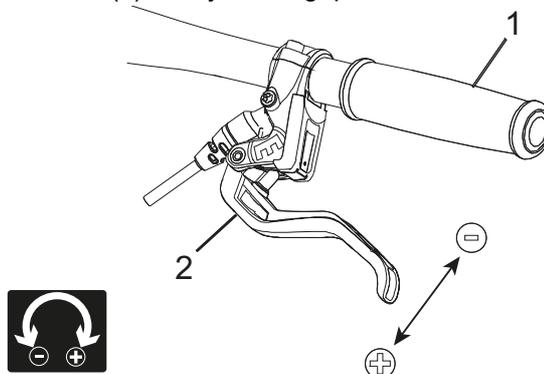


Figure 54: Setting the grip distance on a Magura HS 33 brake lever

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

### 6.5.4.2 Setting the grip distance on a Magura HS22 brake lever

Only applies to pedelecs with this equipment

You can adjust the brake lever position (grip distance) to your requirements.

- ✓ Use a T25 TORX® wrench to turn the setting screw (1) to adjust the grip distance.

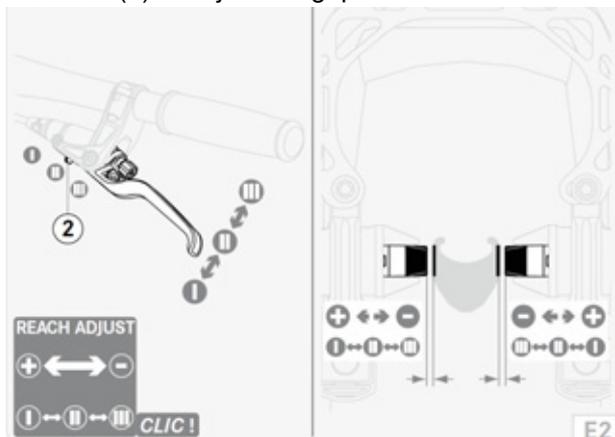


Figure 55: Setting the grip distance on a Magura HS 33 brake lever

- ✓ Pull the brake lever gently and hold.
- ▶ Move the slider (2) outwards (–) to Position II or III.
  - ⇒ The brake handle moves closer to the handlebars.
  - ⇒ The brake linings move closer to the rim.
  - ⇒ The pressure point activates sooner.
- ▶ Move the slider inwards (+) to Position II or I.
  - ⇒ The brake lever moves away from the handlebars.
  - ⇒ The brake linings move away from the rim.
  - ⇒ The pressure point activates later.

### ! WARNING

#### Crash caused by incorrectly set grip distance

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

- ▶ Once the grip distance has been set, check the position of the brake cylinder. Correct if necessary.

### 6.5.4.3 Setting the grip distance on a Magura disc brake lever

Only applies to pedelecs with this equipment

### ! WARNING

#### Crash caused by incorrectly set grip distance

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

- ▶ Ensure that the fully applied brake lever is at a minimum distance of 20 mm from the handlebars (4).

You can adjust the brake lever position (grip distance) to your requirements. Such adjustment does not affect the pressure point or the position of the brake linings.

- ✓ Use a T25 TORX® wrench to turn the setting screw (1) to adjust the grip distance.



Figure 56: Setting the grip distance on a Magura disc brake lever

- ▶ Turn the setting screw/twist knob (5) anti-clockwise towards minus (–).
  - ⇒ The brake lever moves closer to the handlebar grip.
- ▶ Turn the setting screw clockwise towards plus (+).
  - ⇒ The brake lever moves away from the handlebar grip.

#### 6.5.4.4 Setting the pressure point on a Magura brake lever



**WARNING**

##### Brake failure due to incorrect setting

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

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

The pressure point setting is adjusted using the twist knob.

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

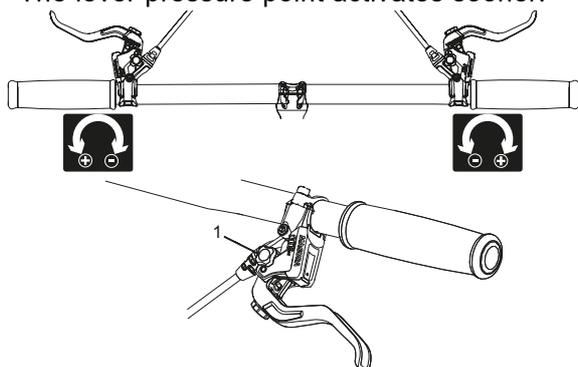


Figure 57: Using the twist knob (1) to adjust the pressure point

#### 6.5.5 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 brake disk is retracted and provides optimal braking power.

#### 6.5.6 Adjusting Suntour fork

Only applies to pedelecs with this equipment



**CAUTION**

##### Crash caused by incorrectly set suspension

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

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

##### Notice

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

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

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

##### 6.5.6.1 Adjusting the negative deflection

*Negative deflection* depends on the rider's weight and sitting position. The recommended negative deflection is between 15% (hard) and 30% (soft) of the *total fork deflection*.

### 6.5.6.2 Adjusting the steel suspension fork negative deflection

Only applies to pedelecs with this equipment

You can adjust the tensioning in the fork spring to the rider's weight and their preferred riding style. This reduces the negative deflection in the fork.



Figure 58: Negative deflection setting wheel on the suspension fork crown

- 1 You will find the **negative deflection setting wheel** beneath the plastic cover on the **crown**. Remove the plastic cover. Turn the **negative deflection setting wheel** in a clockwise direction to increase the spring pre-tensioning. Turn the **negative deflection setting wheel** in an anti-clockwise direction to decrease the spring pre-tensioning.
- ⇒ You will have made the ideal setting when the shock absorber deflects 3 mm when subject to the rider's weight.
- 3 Replace the plastic cover on the **crown** after making the setting.

### 6.5.6.3 Adjusting the air suspension fork negative deflection

Only applies to pedelecs with this equipment

- ▶ The **air valve** is located beneath the **valve cap** on the **crown** of the left-hand shock absorber. Unscrew the **valve cap**.



Figure 59: Screw caps in different designs

- 1 Attach a high-pressure damper pump to the **air valve**.
- 2 Pump air suspension fork to the required pressure. Observe the levels in the **Suntour filling pressure table**. Never exceed the recommended **maximum air pressure**.

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

Table 51: Suntour filling pressure table for air forks

- 3 Detach high-pressure damper pump.
- 4 Measure the distance between the **crown** and the **dust seal**. This distance is *total deflection* of the fork.
- 5 Push a temporarily attached cable tie downward against the **dust seal**.
- 6 Put on your normal cycling clothing, including luggage.

- 7 Sit on the pedelec in your usual riding position and support yourself against an object, such as a wall or tree.
- 8 Get off the pedelec without allowing it to deflect.
- 9 Measure distance between the **dust seal** and the cable tie.
  - ⇒ This measurement is the negative deflection. The recommended value is between 15% (hard) and 30% (soft) of the total fork deflection.
- 10 Increase or reduce air pressure until you have reached the desired negative deflection.
  - ⇒ If the negative deflection is correct, turn the **valve cap** in a clockwise direction.
  - ⇒ If you are unable to achieve the desired negative deflection, an internal adjustment may be needed. Contact your specialist dealer.

#### 6.5.6.4 Adjusting the air suspension fork rebound

Only applies to pedelecs with this equipment

The *rebound* setting depends on the *negative deflection* setting: A higher negative deflection requires a lower rebound setting.

- 1 Turn the **Suntour rebound screw** in a clockwise direction to the closed position until it stops.

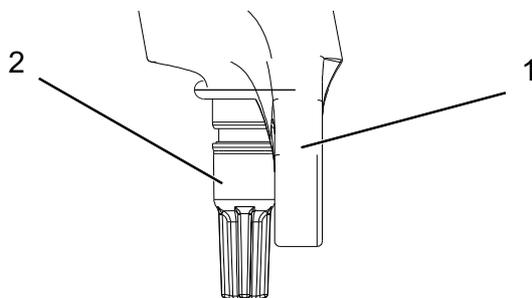


Figure 60: Suntour rebound screw (2), fork (1)

- 2 Turn the **Suntour rebound screw** slightly in an anti-clockwise direction.
- 3 Adjust the rebound in such a way that the fork rebounds quickly, but without bottoming out upward. Bottoming out refers to when the fork rebounds too quickly and stops moving abruptly once it has reached the full rebound distance. You can hear and feel a slight impact when this happens.

#### 6.5.7 Adjusting the FOX fork

Only applies to pedelecs with this equipment



##### Crash caused by incorrectly set suspension

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

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

##### Notice

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

It is recommended to note down the determined negative deflection and rebound levels. This way, the levels can be used as a starting point for subsequent, optimised settings and as a safeguard against unintentional changes.

The adjustment shown here represents a basic setting. The basic setting can be adjusted to the riding surface and personal preferences.

##### 6.5.7.1 Adjusting the negative deflection

*Negative deflection* depends on the rider's weight and sitting position. The recommended negative deflection is between 15% (hard) and 20% (soft) of the *total fork deflection* depending on preferences and pedelec use.

- ✓ When adjusting the negative deflection, ensure that each pressure level adjuster is in an open position, i.e. each pressure level adjuster has been turned in an anti-clockwise direction until it goes no further.
- ✓ The pressure is to be measured at an ambient temperature of 21 to 24 °C.

- 1 The **air valve** is located beneath a blue **valve cap** on the **crown** of the left-hand shock absorber. Unscrew the **valve cap** in an anti-clockwise direction.
- 2 Attach a high-pressure damper pump to the **air valve**.
- 3 Pump the suspension fork to the required pressure. Observe the levels in the **FOX filling pressure table**. Never exceed the **maximum air pressure** or fall below the **minimum air pressure** recommended in the table.

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



- 10 Measure the distance between the dust wiper and the O-ring or cable tie.
  - ⇒ This measurement is the negative deflection. The recommended value is between 15% (hard) and 20% (soft) of the *total fork deflection*.
- 11 Increase or reduce the air pressure until you have reached the desired negative deflection.
  - ⇒ If the negative deflection is correct, turn the blue **valve cap** in a clockwise direction.

If you are unable to achieve the desired negative deflection, internal settings may need to be changed. Contact your specialist dealer.

### 6.5.7.2 Adjusting the rebound

The rebound defines the speed at which the fork rebounds after being loaded. The rebound setting depends on the air pressure setting. A higher *negative deflection* requires a lower rebound setting.

- 1 Turn the **FOX rebound adjuster** in a clockwise direction to the closed position until it stops.



Figure 61: FOX rebound adjuster (1) on the fork end

- 4 Detach high-pressure damper pump.
- 5 Measure the distance between the crown and the fork's dust wiper. This distance is *total deflection* of the fork.
- 6 Push the O-ring downwards against the fork's dust wiper. If there is no O-ring, attach a cable tie to the stanchion temporarily.
- 7 Put on your normal cycling clothing, including luggage.
- 8 Sit on the pedelec in your usual riding position and support yourself against an object, such as a wall or tree.
- 9 Get off the pedelec without the suspension fork deflecting.

- 2 Turn the **FOX rebound adjuster** slightly in an anti-clockwise direction.
- 3 Adjust the rebound in such a way that the fork rebounds quickly, but without bottoming out upward. Bottoming out refers to when the fork rebounds too quickly and stops moving abruptly once it has reached the full rebound distance. You can hear and feel a slight impact when this happens.

## 6.5.8 Setting the Suntour rear frame damper

Only applies to pedelecs with this equipment

### 6.5.8.1 Adjusting the negative deflection

#### Notice

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

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

*Negative deflection* depends on the rider's weight and sitting position. The recommended negative deflection should be between 25% and 30% of the *total rear frame damper deflection*, depending on preferences and pedelec use.

- ✓ When adjusting the negative deflection, ensure that the pressure level adjuster is in an open position, i.e. the **lockout lever** is in the OPEN position.
- 1 Remove the valve cap from the **air valve**.
- 2 Attach a high-pressure damper pump.
- 3 Adjust the rear frame damper air pressure to the rider's weight.
- 4 Detach high-pressure damper pump.
- 5 Measure the distance between the air chamber seal and the end of the rear frame damper. This gap is the *total rear frame damper deflection*.
- 6 Put on your normal cycling clothing, including luggage.
- 7 Sit on the pedelec in your usual riding position and support yourself against an object, such as a wall or tree.
- 8 Push the O-ring downwards against the air chamber seal.
- 9 Get off the pedelec without the suspension fork deflecting.
- ⇒ Measure the distance between the air chamber seal and the O-ring. This measurement is the negative deflection. The recommended value is between 25% (hard) and 30% (soft) of the *total rear frame damper deflection*.
- 10 Increase or reduce the air pressure until you have reached the desired negative deflection.
- ▶ If the negative deflection is correct, fasten the **valve cap** onto the valve.

### 6.5.8.2 Adjusting the rebound

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



Figure 62: Suntour rebound adjuster wheel (1) on the rear frame damper

- ▶ Turn the rebound adjuster wheel in the – direction to increase rebounding.
- ▶ Turn the rebound adjuster wheel in the + direction to reduce compressive deflection movements.

### 6.5.8.3 Setting the compression

You can use the pressure damper setting to adjust the rear frame damper to the ground conditions. The pressure damper setting defines the speed at which the rear frame damper rebounds after being subjected to load or impact.

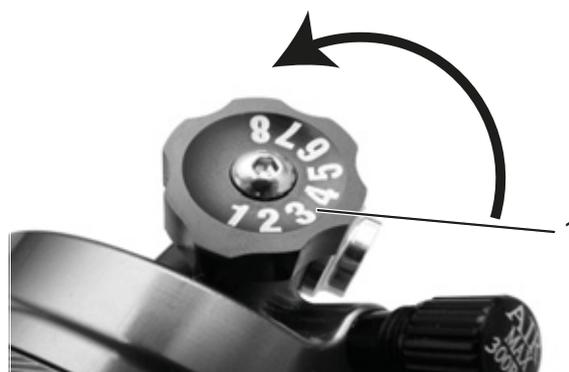


Figure 63: Suntour pressure level adjuster on the rear frame damper

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

## 6.5.9 Setting the FOX rear frame damper

Only applies to pedelecs with this equipment

### 6.5.9.1 Adjusting the negative deflection

#### Notice

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

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

⇒ *Negative deflection* depends on the rider's weight and sitting position. The recommended value is between 25% (hard) and 30% (soft) of the *total rear frame damper deflection*.

- 1 Turn the pressure level adjuster to the OPEN position.
  - 2 Attach a high-pressure damper pump to the air valve.
  - 3 Adjust the rear frame damper air pressure to the rider's weight.
  - 4 Slowly compress the damper to over 25 % of the deflection 10 times until you have reached the desired pressure.
- ⇒ This equalises the air pressure between the positive and negative air chambers. The high-pressure damper pump pressure gauge changes.
- 5 Remove the high-pressure damper pump.

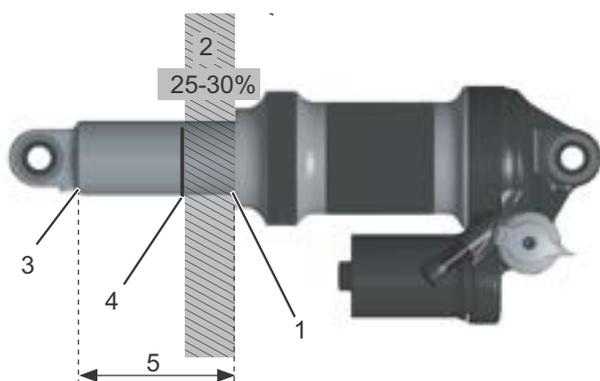


Figure 64: FOX rear frame damper

- 6 Measure the distance between the air chamber seal (1) and the end of rear frame damper (3). This gap is the *total deflection* for the rear frame damper (5).
  - 7 Sit on the pedelec in your usual riding position and support yourself against an object, such as a wall or tree.
  - 8 Push the O-ring (4) downwards against the air chamber seal (1).
  - 9 Get off the pedelec without the suspension fork deflecting.
- ⇒ Measure the distance between the air chamber seal (1) and the O-ring (4). This measurement is the *negative deflection* (2). The recommended value is between 25% (hard) and 30% (soft) of the *total deflection* for the rear frame damper (5).
- 10 Increase or reduce the air pressure until you have reached the desired negative deflection.

### 6.5.9.2 Adjusting the rebound

The rebound adjuster defines the speed at which the rear frame damper rebounds after being subjected to load or impact. The rebound setting depends on the air pressure setting. A higher negative deflection requires a lower rebound setting.

- 1 Attach a high-pressure damper pump to the air valve.
- 2 Read the air pressure.
- 3 Remove the high-pressure damper pump.

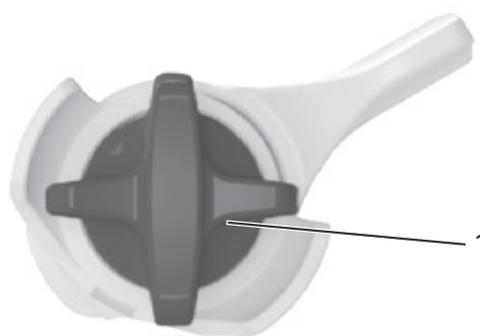


Figure 65: FOX rebound adjuster wheel (1) on the rear frame damper

- 4 Turn the rebound adjuster clockwise to the closed position until it stops.
- 5 Adjust the rebound setting based on the air pressure reading. Turn the rebound adjuster back anti-clockwise by the number of clicks specified in the table below.

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

**Table 53: Filling pressure table for the FOX air fork**

## 6.6 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:

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

**Table 54: 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.

### 6.6.1 Child seat

#### WARNING

##### Crash caused by incorrect child seat

The pannier rack and down tube are unsuitable for mounting child seats and may break. Such an incorrect position may cause a crash with serious injuries for the rider and the child.

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

#### CAUTION

##### Crash caused by improper handling

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

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

#### CAUTION

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

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

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

#### Notice

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

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

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

When installing a child seat, the specialist dealer makes sure that the seat and the fastening mechanism for the seat are suitable for the pedelec and that all components are installed and firmly fastened. They will also ensure that shift cables, brake cables, hydraulic and electrical cables are adjusted as necessary, the rider has optimum freedom of movement and the pedelec's maximum permitted total weight is adjusted.

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

## 6.6.2 Bicycle trailers



### Crash caused by brake failure

The brake will be weaker if the trailer load is excessive. The long braking distance can cause a crash or an accident and injuries.

- ▶ Never exceed the specified trailer load.

### Notice

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

A pedelec which is approved for towing a trailer will bear an appropriate adhesive label. You may only use bicycle trailers with a support load and weight which do not exceed the permitted values.

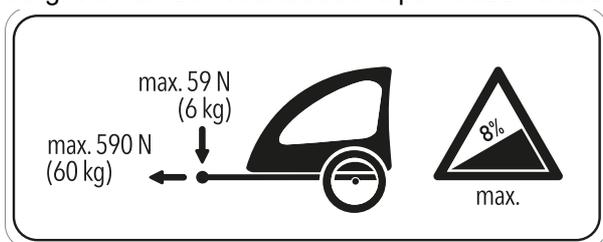


Figure 66: Trailer sign

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

## 6.6.3 Pannier rack

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

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

When installing a pannier rack, the specialist dealer makes sure that the fastening mechanism is suitable for the pedelec and that all components are installed and firmly fastened. They will also ensure that shift cables, brake cables, hydraulic cables and electrical cables are adjusted as necessary, the rider has optimum freedom of movement and the pedelec's maximum permitted total weight is adjusted.

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

## 6.7 Before each ride



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

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

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

### Crash caused by material fatigue

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

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

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

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

## 6.8 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 pedelec has a hydraulic rim brake, check whether the locking levers are fully closed in their final positions.
<input type="checkbox"/>	Check the front and rear wheel brakes to make sure that they are working properly. To do so, push the brake levers while stationary to check whether resistance is generated in the usual brake lever position. The brake must not lose any brake fluid.
<input type="checkbox"/>	Check that the riding light is working.
<input type="checkbox"/>	Check for unusual noises, vibrations, smells, staining, deformation, cracks, scores, abrasion and wear. This indicates material fatigue.
<input type="checkbox"/>	Inspect suspension system for cracks, dents, bumps, parts or leaking oil. Look at concealed sections on the pedelec's lower surface.
<input type="checkbox"/>	Use body weight to compress suspension system. Adjust to the optimum sag value if suspension is too soft.
<input type="checkbox"/>	If quick releases are used check them to make sure that they are fully closed in their end position. If quick release axle systems are used, make sure that all attachment screws are tightened to the correct torque.
<input type="checkbox"/>	Be alert to any unusual operating sensations when braking, pedalling or steering.
<input type="checkbox"/>	Check that the ABS indicator lamp lights up correctly on pedelecs with an ABS system.

## 6.9 Using the kickstand

### CAUTION

#### Crash caused by a lowered kickstand

There is a risk of crashing if riding with the kickstand lowered.

- ▶ Raise the kickstand completely before setting off.

### Notice

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

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

### 6.9.1 Raising the kickstand

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

#### 6.9.1.1 Parking the pedelec

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

## 6.10 Using the pannier rack

### CAUTION

#### Crash caused by loaded pannier rack

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

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

### CAUTION

#### Crash caused by unsecured baggage

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

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

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

#### Crushing the fingers in the spring flap

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

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

### Notice

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

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

## 6.11 Rechargeable battery

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

### 6.11.1 Frame battery

Only applies to pedelecs with this equipment

#### 6.11.1.1 Removing the frame battery

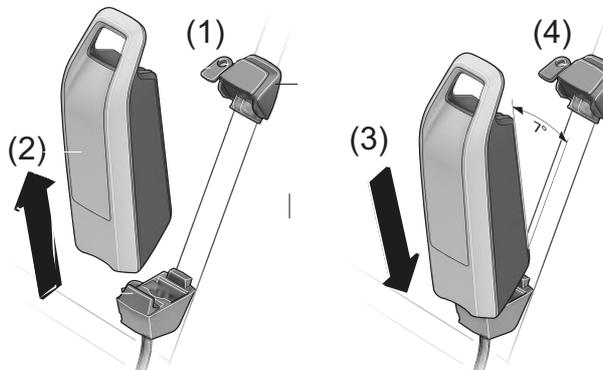


Figure 67: Removing and inserting the frame battery

- 1 Open battery lock with battery key (see [1]).
- 2 Tip the battery out of the top section of the **frame battery mount**.
- 3 Pull battery from the **frame battery mount** (see [2]).

#### 6.11.1.2 Inserting the frame battery

- 1 Place the battery on the contacts in the lower section of the **frame battery mount** (see [3]).
- 2 Remove the battery key from the battery lock (see [4]).
- 3 Tip the battery into the top section of the **frame battery mount** until it will go no further.
  - ⇒ There is an audible clicking noise.
- 4 Check the battery to make sure it is firmly in place.

### 6.11.2 Pannier rack battery

Only applies to pedelecs with this equipment

#### 6.11.2.1 Removing the pannier rack battery

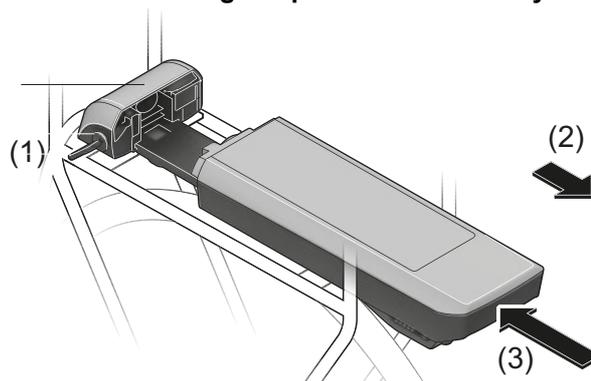


Figure 68: Removing (2) and inserting (3) the pannier rack battery

- 1 Open battery lock with battery key (see [1]).
- 2 Pull the pannier rack battery backwards and out of its **mount** (see [2]).
- 3 Remove the battery key from the battery lock (see [1]).

#### 6.11.2.2 Inserting the pannier rack battery

- 1 Insert the pannier rack battery into its **mount** with the contacts facing the front until it clicks into place (see [3]).
- 2 Check the battery to make sure it is firmly in place.

### 6.11.3 Integrated battery

Only applies to pedelecs with this equipment

#### 6.11.3.1 Removing the integrated battery

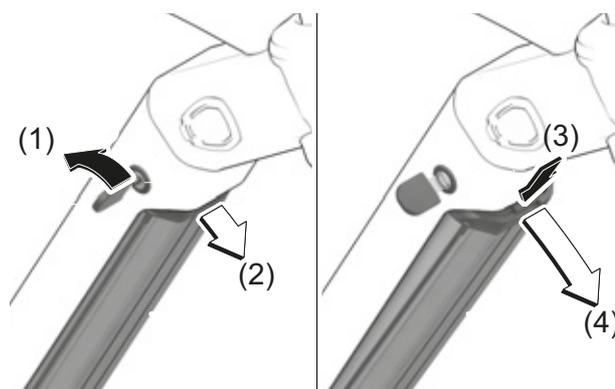


Figure 69: Removing the integrated battery

- 1 Open battery lock with battery key (see [1]).
  - ⇒ The battery is released and falls into the retainer guard (see [2]).
- 2 Hold the battery in your hand from below. Use the other hand to push on the retainer guard from above (see [3]).
  - ⇒ The battery is released and falls into the hand (see [4]).
- 3 Remove the battery from the frame.
- 4 Remove the battery key from the battery lock.

### 6.11.3.2 Inserting the integrated battery

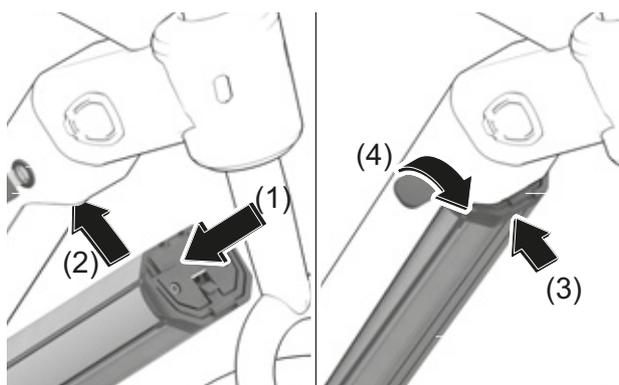


Figure 70: Inserting the integrated battery

- 1 Place the battery into the lower mount with the contacts facing the front (see [1]).
- 2 Flip the battery up so that the battery is held by the retainer guard (see [2]).
- 3 Push the battery upwards (see [3]).
  - ⇒ There is an audible clicking noise.
- 4 Check battery to ensure it is firmly in place.
- 5 Lock the battery with the battery key; otherwise, the battery may fall out of the mount when you open the lock (see [4]).
- 6 Remove the battery key from the battery lock.
- 7 Check the battery to ensure it is firmly in place.

### 6.11.4 Charging the battery

#### CAUTION

#### Fire caused by overheated charger

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

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

#### Electric shock caused by penetration by water

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

- ▶ Never charge the battery outdoors.

#### Electric shock in case of damage

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

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

#### Notice

If an error occurs during the charging process, a system message is displayed.

- ▶ Remove the charger and battery from operation immediately and follow the instructions.

- ✓ The ambient temperature during the charging process must be within the range from 0 °C to 40 °C.
- ✓ The battery can remain on the pedelec or can be removed for charging.
- ✓ Interrupting the charging process does not damage the battery.

- 1 Remove the cable connection cover if necessary.
- 2 Connect the mains plug of the charger to a normal domestic, grounded socket.

Connection data	230 V, 50 Hz
-----------------	--------------

### Notice

- ▶ Check that mains voltage! The power source voltage must match the voltage indicated on the charger nameplate. Chargers labelled 230 V may be operated at 220 V.

3 Connect the charging cable to the battery's charging port.

⇒ The charging process starts automatically.

⇒ The battery level indicator shows the charge level during charging. When the drive system is switched on, the *display screen* shows the charging process.

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

4 Once charging is complete, disconnect the battery from the charger.

5 Disconnect the charger from the mains.

### 6.11.5 Charging the dual battery

Only applies to pedelecs with this equipment.

### Notice

- ▶ Charge the battery via the accessible charging socket only.
- ▶ Never open a sealed charging socket. Charging via a pre-closed charging socket can cause irreparable damage

#### 6.11.5.1 Charging process when two batteries are used

- ▶ If two batteries are attached to a pedelec, charge both batteries via the non-sealed socket.

⇒ The two batteries are charged alternately during charging. Charging switches automatically between the two batteries several times. The charging time is twice as long.

⇒ The two batteries are discharged alternately during use.

#### 6.11.5.2 Charging process when one battery is used

- ▶ Remove the batteries from their mounts to charge each one individually.
- ▶ If only one battery is inserted, only charge the battery with an accessible charging socket. The battery with the sealed charging socket can only be charged outside its mount.

#### 6.11.6 Using double battery model with a single battery only

One of the charging sockets is not accessible or is sealed with an end cap on pedelecs with two batteries

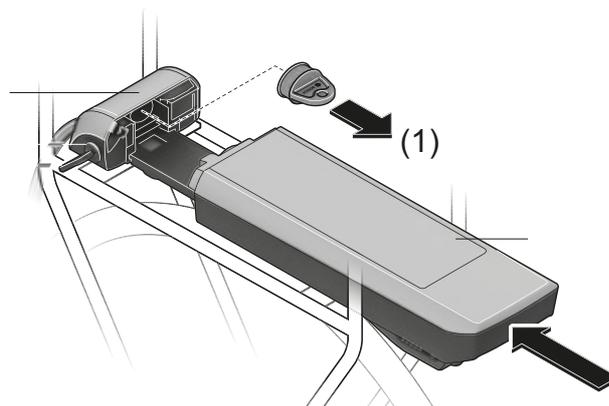


Figure 71: Covering open contacts with cover cap – example: pannier rack battery

- ▶ If you wish to use just one battery on a pedelec which is designed for two batteries, cover the contacts in the free slot with the supplied cover cap (see [1]); otherwise, there is a risk of a short circuit caused by the open contacts.

#### 6.11.7 Waking the battery

- ✓ The battery switches to sleep mode to protect itself when not used for a longer period. The LEDs on the operating status and battery level indicator do not light up.
- ▶ Press the **On-Off button (battery)**.
- ⇒ The operating status and battery level indicator shows the battery level.

## 6.12 Electric drive system

### 6.12.1 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 battery key has been removed.

There are three options for switching on the drive system.

#### On-Off button (battery)

- ▶ Press the **On-Off button (battery)** briefly.

#### On-Off button (display)

- ▶ Press the **On-Off button (display)** once.

#### Switched-on display

- ▶ If the display is already switched on when it is inserted into its mount, the electric drive system is switched on automatically.
- ⇒ After switching on, a speed of 0 KM/H is displayed on the *display*. If it is not, check whether the *display screen* is fully engaged into position.
- ⇒ If the drive system is switched on, the drive is activated as soon as the pedals are moved with sufficient force (except if in push assist mode or the level of assistance is "OFF").
- ⇒ The motor power is determined by the level of assistance set on the display.
- ⇒ As soon as the system has been activated, ACTIVE LINE/PERFORMANCE LINE appears briefly on the *display*.

### 6.12.2 Switching off the drive system

As soon as you stop pushing the pedals in normal mode or reach a speed of 25 km/h, the drive system switches off the assistance system. The assistance system starts up again if you push the pedals and your speed is less than 25 km/h.

The system switches off automatically ten minutes after the last command. There are three options for switching off the drive system manually.

#### On-Off button (display)

- ▶ Press the **On-Off button (display)** once.

#### On-Off button (battery)

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

#### Removing the display

- ▶ Remove the *display* from the mount.
- ⇒ The LEDs on the operating status and battery level indicator go out.

## 6.13 Display



### CAUTION

#### Crash caused by distraction

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

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

### Notice

- ▶ Never use the display as a handle. The display may become irreparably damaged if you use it to lift the pedelec.
- ▶ If you do not use your pedelec for several weeks, remove the display from its mount. Store the display safely at room temperature in a dry environment.

The internal display battery discharges when it is not in use. This can cause damage to the internal display battery.

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

The system is switched off by removing the display.

### 6.13.1 Overview of actions on the display screen

Action	Button	Duration
Switching on the display		Any
Switching off the display		Any
Using the push assist system	WALK +	1. < 1 second 2. Any
Switch on riding light	+	1–2.5 seconds
Switch off riding light	+	> 2.5 seconds
Increase assistance	+	< 1 second
Reduce assistance	–	< 1 second
TRIP/TOTAL/RANGE screen, assistance modes	–	1–2.5 seconds
Reset journey distance and range	– +	> 2.5 seconds
Switch from kilometres to miles	–	1. Hold 2. < 1 second
Get versions	– +	1. Hold 2. < 1 second

Table 55: Overview of actions on the display screen

#### 6.13.2 Switching on the display

- ▶ Press the **On-Off button (display)** *briefly*.
- ⇒ The electric drive system is switched on.

#### 6.13.3 Switching off the display

- ▶ Press the **On-Off button (display)** *briefly*.
- ⇒ The electric drive system is switched off.

## 6.14 Using the push assist system



### CAUTION

#### 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.

### Notice

The push assist cannot be activated at the OFF assistance level.

The push assist helps the rider to push the pedelec. The speed can be a maximum of 6 km/h in this case.

- ✓ The tractive power of the push assist and its speed can be influenced by the selection of gear. To spare the drive, first gear is recommended for travelling uphill.
  - ✓ The level of assistance OFF must not be selected.
- 1 Press the **push assist button** to activate push assist.
  - 2 Press and hold down the **plus button** within 3 seconds to switch on push assist.
  - 3 Release the **plus button** to switch off push assist.
- ⇒ The push assist system switches off automatically as soon as the pedelec wheels are blocked or the speed exceeds 6 km.

### 6.14.1 Using the riding light

- ✓ The drive system needs to be already switched on to turn on the *riding light*.
- ▶ Push the **plus button** for 1 to 2.5 seconds.
  - ⇒ The *riding light* is switched on (the *riding light symbol* is displayed).
- ▶ Push the **minus button** for longer than 2.5 seconds.
  - ⇒ The riding light is switched off (the *riding light symbol* is not displayed).

### 6.14.2 Selecting the level of assistance

- ▶ Press the **plus button** for less than one second to increase the level of assistance.
- ▶ Press the **minus button** for less than one second to decrease the level of assistance.

### 6.14.3 Journey information

The displayed *journey information* can be changed and partially reset.

#### 6.14.3.1 Switching the journey information

- ▶ Press the **minus button** for 1 to 2.5 seconds to change the displayed journey information.
  - ⇒ The journey information trip distance (TRIP), total distance travelled (TOTAL), range (RANGE), and support modes used are shown on the display screen.

#### 6.14.3.2 Resetting the trip distance

- 1 Select the journey information TRIP to reset the trip distance.
- 2 Push both the **plus button** and the **minus button** at the same time for longer than 2.5 seconds.
  - ⇒ RESET is shown on the display screen.
- 3 If you continue to jiggle the **plus** and **minus buttons** at the same time, the trip distance will be reset to 0.

### 6.14.3.3 Resetting the range

- 1 Select the journey information **RANGE** to reset the range.
  - 2 Push both the **plus button** and the **minus button** at the same time for longer than 2.5 seconds.
- ⇒ RESET will appear on the display screen.
- 3 If you continue to jiggle the **plus** and **minus buttons** at the same time, the range will be reset to 0.

### 6.14.3.4 Changing the tachometer unit

You can change the displayed values from kilometres to miles.

- 1 Keep the **minus button** pressed down.
  - 2 Press the **On-Off button (display)** briefly.
- ⇒ The value is changed from kilometres to miles.

### 6.14.3.5 Displaying versions and type numbers

You can retrieve the sub-system versions and their type part numbers for maintenance purposes if the sub-systems provide this type of information (depends on the sub-system).

- ✓ The drive system must be switched off.
- 1 Keep the **plus** and **minus buttons** pressed down at the same time.
  - 2 Press the **On-Off button (display)** briefly.
- ⇒ The version or type number will be displayed.

### 6.14.4 Using the USB port

#### Notice

The USB port is reserved to connect diagnostics systems. The USB port must be kept completely closed with the protective cap at all times.

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

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

### 6.14.5 Replacing the battery

- ✓ When the on-board computer indicates **LOW BAT** on the screen, the battery is flat and must be replaced.

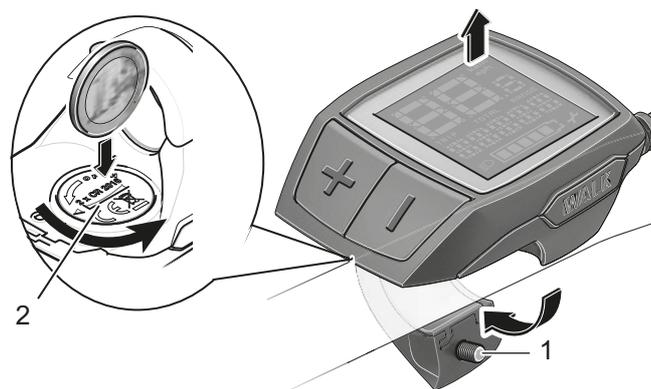


Figure 72: Display with attachment screw (1) and battery compartment cover (2)

- 1 Remove the display from the handlebars by unfastening the display attachment screw (1).
- 2 Use a suitable coin to open the battery compartment cover (2).
- 3 Remove the used battery.
- 4 Insert a new CR 2016 display battery. You can obtain the batteries recommended by Bosch from your specialist dealer. Ensure correct polarity when inserting the display battery.
- 5 Close the battery compartment again and fasten the on-board computer to the handlebars with the attachment screw (1).

## 6.15 Brake

### WARNING

#### Crash caused by brake failure

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

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

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

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

#### Amputation due to rotating brake disc

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

- ▶ Always keep fingers well away from the rotating brake discs.

### CAUTION

#### Burns caused by heated brake

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

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

### CAUTION

#### Crash caused by wet conditions

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

- ▶ Ride slowly and brake in good time.

#### Crash caused by incorrect use

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

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

#### Crash after cleaning or storage

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

- ▶ If the pedelec is placed on its side or turned upside down, apply the brake a couple of times before setting off to ensure that it works as normal.
- ▶ Never use the pedelec if the brake does not work properly. Consult a specialist dealer.

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

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

### 6.15.1 Using the brake lever

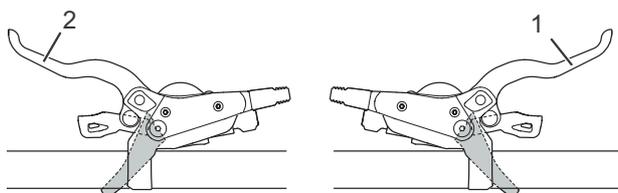


Figure 73: Front (2) and rear (1) brake lever; Shimano brake used as an example

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

### 6.15.2 Using the back-pedal brake

Only applies to pedelecs with this equipment

- 1 Move pedals a little beyond the 3 o'clock and 9 o'clock position.
- 2 Pedal in the opposite direction to the *direction of travel* until the desired speed has been reached.

### 6.15.3 Using ABS

Only applies to pedelecs with this equipment



#### Accidents on bends and slippery ground

You are at greater risk of falling off if you use ABS braking on bends. Tyres are more likely to skid on slippery ground. This poses an increased risk of a crash with serious injuries.

- ▶ Adjust your riding to the current ambient conditions and your personal riding skills

#### Accidents due to extended braking distance

The ABS suppresses blocking on the front wheel. This can sometimes cause the braking distance to be longer. This may cause an accident with serious injuries.

- ▶ Adjust your riding to the current ambient conditions and your personal riding skills
- ▶ Never fool about when riding.



#### Accident due to ABS failure

If the ABS indicator lamp is lit, the ABS function is not active.

- ▶ Adapt riding to the circumstances.
- In extreme riding situations, the ABS may not be able to regulate until the pedelec comes to a halt. This may cause a crash with serious injuries.
- ▶ Release the front wheel brake briefly. This allows you to brake with the ABS function again.
  - ▶ Adjust your riding to the current ambient conditions and your personal riding skills.

An ABS malfunction cannot be displayed if the ABS indicator lamp is defective.

- ▶ Check that the ABS indicator lamp lights up when you start up the electric drive system; if it doesn't, the indicator lamp is faulty.

#### Accidents due to air in the hydraulic system

Air in the brake system can mean less brake pressure builds up, particularly when the ABS has activated causing the brake lever to move closer to the handlebars. This may cause an accident with serious injuries.

- ▶ Pull on the brake before each ride to check if you can reach a clearly noticeable pressure point and ensure that the gap between the brake lever and handlebar grip is sufficient. The pressure point must rise about third of the way through the brake lever path.
- ▶ If in doubt, place the lever path adjuster in the maximum position possible.
- ▶ If any air has entered the brake system, contact your specialist dealer.

## WARNING

### Accidents due to manipulation

Modified or manipulated ABS components or use of non-authorized replacement components will have an adverse effect on the ABS function. This may cause a crash with serious injuries.

- ▶ Replace defective components with original parts only.
- ▶ Contact your specialist dealer if you require maintenance work or repairs.

## CAUTION

### Damage to components or risk of crushing

There is a gap between the ABS control unit and the frame. Components or body parts can become trapped when the handlebars are turned completely, for example. This can cause injuries or damage to components.

- ▶ Ensure you do not pinch any components such as brake cables, wiring or parts of your body between the frame and the ABS control unit.
- ▶ If you attach accessories to the handlebars, ensure that handlebars can move freely to each side by at least 60° from their central position. You can prevent fingers becoming trapped with a clearance of 25 mm. Steering limiters should be used if necessary.

#### 6.15.3.1 While riding

The anti-blocking system indicator lamp must light up after the system has started up and must go out once speed has reached about 5 km/h. If the ABS indicator lamp does not light up when the electric drive system starts, the ABS is defective. An error code on the display screen also tells the rider that it is defective. If the indicator lamp does not go out after you set off or it lights up while you are riding, this means there is an error in the anti-blocking system. The anti-blocking system is then no longer active.

The brake system itself remains functional. It is only the anti-blocking system control which no longer operates. If the ABS indicator lamp is lit, the ABS function is not active.

- ▶ Adjust your riding to the current ambient conditions and your personal riding skills

- ▶ Always remember that the anti-blocking system can make the braking distance longer.
- ▶ Reduce your speed on slippery ground. Brake in bursts and in good time.

## Notice

The anti-blocking system indicator lamp may light up if the front and rear wheels are rotating at widely different speeds from one another – for example, if the rider cycles on the rear wheel only or if a wheel is rotating for an unusually long time without making contact with the ground (fitting stand). The anti-blocking system switches off in such cases.

- ▶ You need to stop and restart the pedelec (switch off and on again) to reactivate the anti-blocking system.

## 6.16 Suspension and damping

### 6.16.1 Adjusting the compression in the Suntour fork

*Only applies to pedelecs with this equipment*

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



Figure 74: Suntour compression damping adjustment with OPEN (1) and LOCK (2) positions

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

We recommend setting the compression adjuster to the OPEN position first.

### 6.16.2 Adjusting the compression in the Suntour rear frame damper

Only applies to pedelecs with this equipment

The compression adjuster enables you to make quick adjustments to the suspension behaviour in the rear frame damper to suit changes in terrain. It must never be used while riding on rough terrain.



Figure 75: Suntour compression adjuster open (1)

- Use the OPEN position for rough descents and the LOCK position for efficient climbing. Set the compression adjuster to OPEN first.



Figure 76: Suntour compression adjuster closed (2)

### 6.16.3 Adjusting the compression in the Fox fork

Only applies to pedelecs with this equipment

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

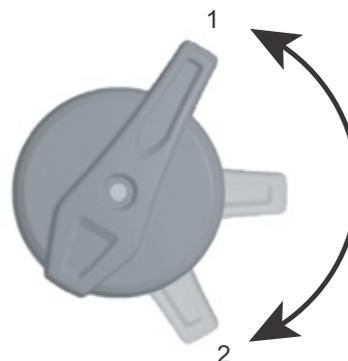


Figure 77: FOX compression adjuster with OPEN (1) and HARD (2) positions

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

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

### 6.16.4 Adjusting the compression in the Fox rear frame damper

Only applies to pedelecs with this equipment

The compression adjuster enables you to make quick adjustments to the suspension behaviour in the rear frame damper to suit changes in terrain. It is intended for adjustments made during the ride.



Figure 78: FOX compression damping adjustment on the rear frame damper with OPEN (1), MEDIUM (2) and HARD (3) positions

- ▶ Use the OPEN position for rough descents.
- ▶ Use the MEDIUM position for rough terrain.
- ▶ Use the HARD position for efficient climbing.
- ▶ First turn the pressure level adjuster to the OPEN position.

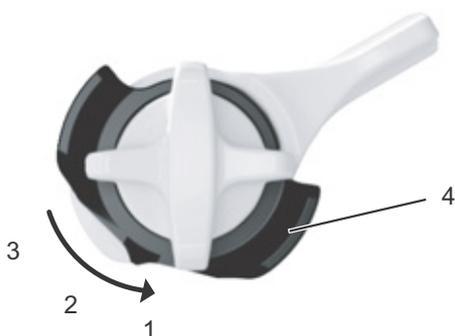


Figure 79: The fine adjuster (4) is used to make fine adjustment to the OPEN position

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

- ✓ We recommend that fine adjustments be made when the compression adjuster is in the MEDIUM or HARD position.

- 1 Pull out the fine adjuster.
- 2 Turn the fine adjuster to position 1, 2 or 3. Setting 1 is for the softest riding performance whereas 3 is for the hardest.
- 3 Press the fine adjuster to lock.

### 6.16.5 Adjusting the rebound in the RockShox rear frame damper

Only applies to pedelecs with this equipment

The rebound damper determines the speed at which the fork rebounds to full length after deflection. This speed affects the wheel's contact with the ground and thus has an influence on control and efficiency. The rear frame damper should rebound fast enough to sustain traction without producing an erratic or bumpy sensation. If rebound damping is too tight, the rear frame damper is unable to rebound fast enough before the next impact. The rebound damper for the rear wheel is located in the rear frame damper.



Figure 80: Setting the rebound damper strength on the rear frame damper setting wheel (1)

- 1 Turn the setting wheel to the middle position.
- 2 Ride the pedelec over a small obstacle.
  - ⇒ The ideal setting for the rebound damper has been achieved when the rebound movement of the rear wheel feels comparable to that of the front wheel.
- 3 If the rear wheel bounces back much more quickly or slowly than the front wheel, change the setting by turning the setting wheel.
  - ▶ Turn the setting wheel in an anti-clockwise direction to increase the rebound speed.
  - ▶ Turn the setting wheel in a clockwise direction to decrease the rebound speed.

### 6.16.6 Adjusting the compression in a RockShox damper

Only applies to pedelecs with this equipment

The compression damper controls the speed at which the rear frame damper deflects during slow impact, such as smaller impacts or when the rider goes round a corner or shifts their weight. The compression damper improves control and efficiency.

If the compression damper is set too high, suspension is too hard when exposed to impacts. The damper lever is used to set the compression damper.

- ▶ Turn the setting wheel in a clockwise direction (+) to decrease the deflection speed.
- ▶ Turn the damper lever in an anti-clockwise direction (-) to increase the deflection speed.

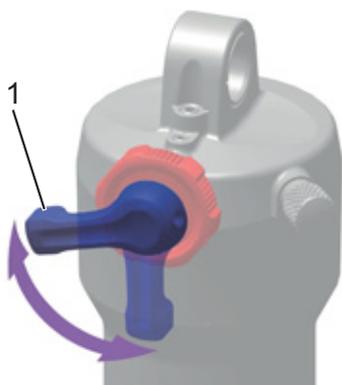


Figure 81: Setting the compression damper hardness using the damper lever (1) for the rear frame damper

## 6.17 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.

### 6.17.1 Using the derailleur gears

Only applies to pedelecs with this equipment

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

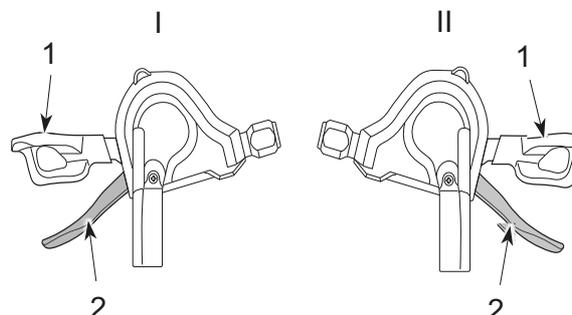


Figure 82: Down shifter (1) and up shifter (2) on the left (I) and right (II) gear shift

- ▶ 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 the gear change blocks.

### 6.17.2 Using the hub gear

Only applies to pedelecs with this equipment



#### Crash caused by incorrect use

If the rider applies too much pressure on the pedals during a gear change and activates the shifter or changes several gears at a time, their feet may slip from the pedals. This may cause a crash or flip-over with injuries.

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

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

### Notice

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

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

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

- ▶ Never detach the hub yourself. Contact your specialist dealer.

Use of the hub gear is described in Figure 83:.

- ▶ Turn the twist grip (1) backwards to switch up a gear (4).
  - ▶ Turn the twist grip (1) forwards to switch down a gear (3).
- ⇒ The gear shift switches the gear.
- ⇒ The screen display (2) shows the changed gear.

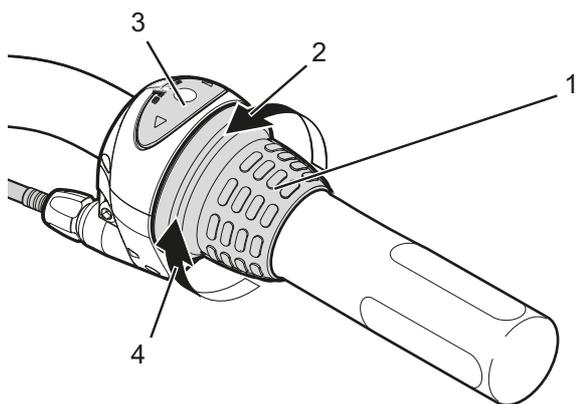


Figure 83: Example: use of Shimano Nexus gear shift

## 6.17.3 Using eShift

**Only applies to pedelecs with this equipment**

eShift refers to the integration of electronic gear shift systems into the electric drive system.

### 6.17.3.1 eShift with Shimano DI2 automatic hub gears

**Only applies to pedelecs with this equipment**

The automatic Shimano DI2 hub gear can be used in manual or automatic mode. Use the shifter to change gears in manual mode. In automatic mode, the shift system changes gear automatically depending on the speed, pedalling power and pedalling frequency. You will find how to switch from automatic to manual mode, depending on the shifter used, described in your operating instructions on the display screen. If you use the shifter when in automatic mode, the gear system will change to the next gear and it will remain in automatic mode. Manual gear changes in automatic mode influence shift behaviour in the gear system and adjust gear changes to riding performance. If the system is switched on for the first time when a new, unused wheel is used, the system will learn the gears first. To do so, the automatic system changes to the highest/most difficult gear and then switches through all gears during the first ride. The new gear is shown briefly on the display screen each time it is changed.

Since the drive unit detects the gear shift and consequently reduces motor assistance briefly, it is possible to switch gears under load or on hills. If the pedelec is brought to a halt from a speed greater than 10 km/h, the system can automatically switch back to a pre-set START GEAR.

- ▶ Set the START GEAR in the system settings if necessary.

### 6.17.3.2 eShift with manual Shimano DI2 hub gears

Only applies to pedelecs with this equipment

The new gear is shown briefly on the display screen each time it is changed.

Since the drive unit detects the gear shift and consequently reduces motor assistance briefly, it is possible to switch gears under load or on hills.

If the pedelec is brought to a halt from a speed greater than 10 km, the system can automatically switch back to a pre-set START GEAR.

- ▶ Set the START GEAR in the system settings if necessary.

### 6.17.3.3 eShift with Shimano DI2 automatic hub gears

Only applies to pedelecs with this equipment

Since the drive unit detects the gear shift and consequently reduces motor assistance briefly, it is possible to switch gears under load or on hills.

- ⇒ The new gear is shown briefly on the display screen each time it is changed.

### 6.17.3.4 eShift with NuVinci H|Sync/enviolo with Optimized H|Sync

Only applies to pedelecs with this equipment

#### Setting the desired pedalling frequency

- 1 Open NUVINCI CADENCE operating mode.
- 2 Keep the **plus** or **minus button** pressed to increase or reduce the pedalling frequency in increments of five.

- ⇒ The desired pedalling frequency will be shown on the display screen.

#### Changing transmission

- 1 Select the NUVINCI GEAR operating mode
- 2 Use the **plus** or **minus button** on the control panel to switch between different specified transmissions.

- ⇒ The selected transmission (gear) will be shown on the display screen.

### 6.17.3.5 eShift with Rohloff E-14 Speedhub 500/14

Only applies to pedelecs with this equipment

- ⇒ The new gear is shown briefly on the display screen each time it is changed.

Since the drive unit detects the gear shift and consequently reduces motor assistance briefly, it is possible to switch gears under load or on hills.

If the pedelec is brought to a halt from a speed greater than 10 km/h, the system can automatically switch back to a pre-set START GEAR.

- ▶ Set the START GEAR in the system settings if necessary.

## 7 Cleaning and servicing

### Cleaning check list

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

### Maintenance check list

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



### Crash and falling caused by unintentional activation

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

- ▶ Remove the battery before cleaning.

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.
- ▶ Check the air pressure.
- ▶ Lubricate the dust seals and stanchions.

### 7.1.2 Cleaning the rear frame damper

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

### 7.1.3 Cleaning the pedals

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

## 7.2 Basic cleaning



### CAUTION

#### Crash caused by brake failure

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

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

### Notice

Water may enter 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.

#### Required tools and cleaning agents:

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

- ✓ Remove battery and display before basic cleaning.

### 7.2.1 Cleaning the frame

- 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 when 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 rear frame damper

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

### 7.2.6 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.

### 7.2.7 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.

### 7.2.8 Cleaning the display

#### Notice

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

- ▶ Never immerse the display in water.
- ▶ Never clean with a 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 damp, soft cloth.

### 7.2.9 Cleaning the drive unit



#### CAUTION

#### Burns from hot drive

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

- ▶ Leave the drive unit to cool before cleaning.

### Notice

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

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

#### 7.2.10 Cleaning the brake



### WARNING

#### Brake failure due to water penetration

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

- ▶ Never clean the pedelec with 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.

### 7.3 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

- 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.

#### 7.3.5 Servicing the pedals

- ▶ Treat pedals with spray oil.

#### 7.3.6 Servicing the chain

- ▶ Grease the chain thoroughly with chain oil.

#### 7.3.7 Servicing the drive elements

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

## 7.4 Maintenance



### Crash and falling caused by unintentional activation

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

- ▶ Remove the battery before maintenance.

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

### 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.

#### Notice

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

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

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

- 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 – 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.

#### 7.4.1.4 Checking and adjusting the tyre pressure – 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.

#### 7.4.1.5 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 are worn.

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

#### 7.4.3 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 are worn.

#### 7.4.4 Checking the pressure point

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

### 7.4.5 Checking the brake discs for wear

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

### 7.4.6 Electrical cables and brake cables

- ▶ Check all visible electrical cables and 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 Gear shift

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

### 7.4.8 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 USB port

#### Notice

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

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

### 7.4.10 Checking the belt and chain tension

#### Notice

Excessive chain tension increases wear.

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

- ▶ Check the chain tension once a month.

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

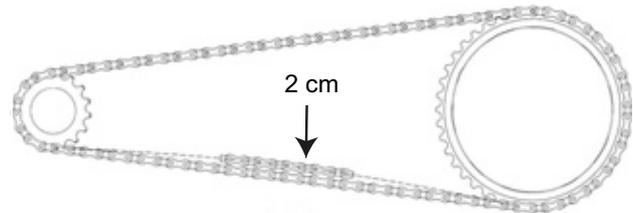


Figure 84: Checking the chain tension

- 2 If the *chain* can be pushed more than 2 cm, the *chain* or *drive belt* will need to be tensioned again by the specialist dealer.
- 3 If the *chain* or the *drive belt* can only be pushed up and down less than 1 cm, you will need to slacken the *chain* or the *drive belt*.
- ⇒ The optimum chain tension is achieved if the *chain* or the *drive belt* can be pushed a maximum of 2 cm in the middle between the pinion and the toothed wheel. The crank must also turn without resistance.
- 4 If a hub gear is featured, 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 to protect your eyes when carrying out maintenance work such as replacing components.

### CAUTION

#### Crash and falling caused by unintentional activation

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

- ▶ Remove the battery before inspection.

#### Crash caused by material fatigue

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

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

### CAUTION

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

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

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

#### Notice

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

- ▶ Never open the motor.

You must have the specialist dealer perform maintenance every six months as a minimum. This is the only way to ensure that the pedelec remains safe and fully functional. 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 11.3.
- ▶ The specialist dealer will inspect the pedelec for any signs of material fatigue during basic cleaning.
- ▶ The specialist dealer will check the software version of the drive system and update it. The electrical connections are checked, cleaned and preservative agent is applied. The electrical cables are inspected for damage.
- ▶ The specialist dealer will dismantle and clean the entire suspension fork interior and exterior. They will clean and lubricate the dust seals and slide bushings, check the torques and adjust the fork to the rider's preferred position. They will also replace the sliding collar if the clearance is too great (more than 1 mm on the fork bridge).

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

## 8.1 Axle with quick release



### Crash caused by unfastened quick release

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

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

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

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

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

### Crash caused by incorrectly set clamping force

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

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

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

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

## 8.1.1 Checking the quick release

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



Figure 85: Adjusting the quick release clamping force

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

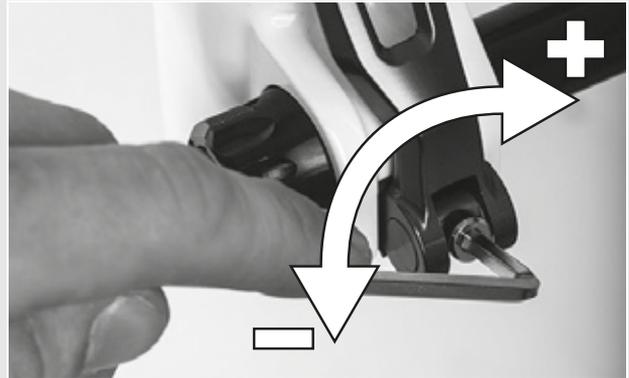


Figure 86: Adjusting the quick release clamping force

## 8.2 Adjusting the gear shift

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

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

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

#### Only applies to pedelecs with this equipment

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

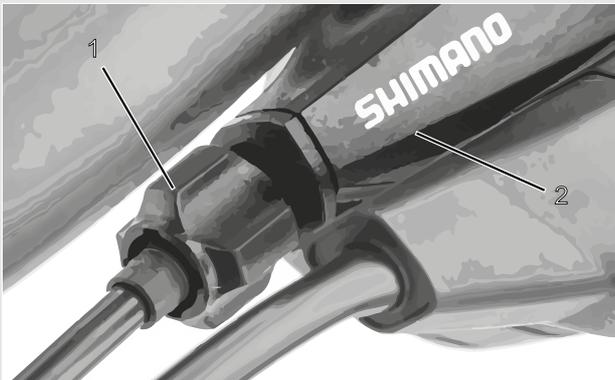


Figure 87: Adjusting sleeve (1) for the single-cable, cable-operated gear shift with shifter housing (2), example

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

#### Only applies to pedelecs with this equipment

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

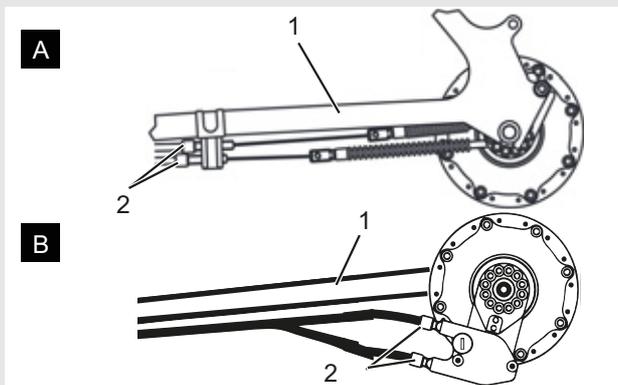


Figure 88: Adjusting sleeves (2) on two alternative versions (A and B) of a dual-cable, cable-operated gear shift on the chain stay (1)

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

#### Only applies to pedelecs with this equipment

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

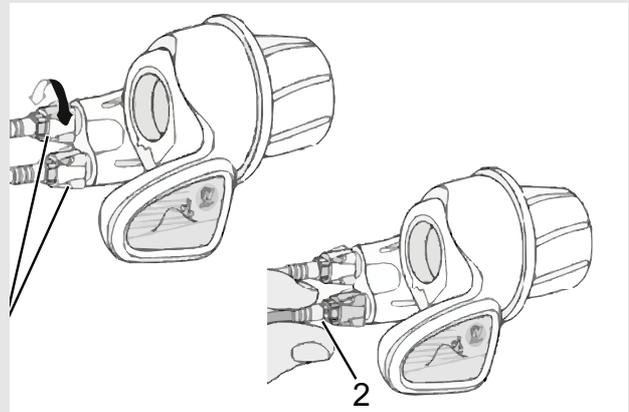


Figure 89: Twist grip with adjusting sleeves (1) and play of the gear shift (2)

## 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 Error message

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

- 1 Make a note of the system message. There is a table containing all system messages in Section [6.3.1](#).
- 2 Shut off and re-start the drive system.
- 3 If the system message is still displayed, remove the battery and then re-insert.
- 4 Re-start the drive system.
- 5 If the system message is still displayed, contact your specialist dealer.

### 9.1.3 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 drive unit (DU-E8000), the bicycle computer (SC-E8000/SC-E6010) or the assistance switch (SW-E8000-L/SW-E6000/SW-E6010) 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 you pedalling?	▶ The pedelec is not a motorbike. You also need to pedal.
	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 pedelec does not supply assistance.</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 the battery level.</li> <li>2 If the battery is almost flat, recharge it.</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 the tyres.
	Is the assistance mode set to OFF?	<ol style="list-style-type: none"> <li>1 Select the level of assistance [BOOST].</li> <li>2 Contact your specialist dealer if you still feel that the pedelec does not supply assistance.</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 pedelec does not supply assistance.
	Have you switched on the system with your foot on the pedal?	1 Switch the system on again without applying pressure to the pedal. Contact your specialist dealer if you still feel that the pedelec does not supply assistance.

Table 56: Level of assistance error solution

### 9.1.4 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 connected to 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 or the charger adapter 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 connected to 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.

**Table 57: Error solution for battery**

Symptom	Cause	Remedy
Fluid is leaking from the battery.		 <b>WARNING</b>
		<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>
There is an unusual smell.		 <b>WARNING</b>
		<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.		 <b>WARNING</b>
		<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 57: Error solution for battery

### 9.1.5 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 whether the power cable connector connecting the motor unit to the drive unit has not disconnected. If you are not sure, contact your specialist dealer.
	A component may be connected which the system is unable to recognise.	▶ Contact your specialist dealer.
The gear level is not shown on the display 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 58: Display error solution

### 9.1.6 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 59: Error solution for battery

### 9.1.7 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.
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 60: 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 brake pads and brake linings
- 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 list are 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. Sorted waste collection and recycling saves on raw material reserves and ensures that all the regulations for health and environmental protection are met when the product and/or the battery are recycled.

- ▶ Never dismantle the pedelec, batteries or charger for disposal.
- ▶ The pedelec, display screen, the unopened and undamaged battery and the charger can be returned to any specialist dealer free of charge. Depending on the region, further disposal options may be available.
- ▶ Store the individual parts of the decommissioned pedelec in a dry place, free from frost, where they are protected from direct sunlight.

## 11 Documents

### 11.1 Parts list

There was no information relating to a parts list yet at the time of going to press. You'll find the information in the latest *operating instructions*.

## 11.2 Assembly report

Date:

Frame number:

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

Components	Description		Criteria		Measures if rejected
<b>Drive/gear shift</b>					
<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 display, defective screen display	Restart, test battery, new software, or new display; <i>take out of service</i> ,
<b>Electric drive control panel</b>	Check 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	Shut off pedelec until source of fault 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 log

### Diagnosis and documentation of current status

Date:

Frame number:

Components	Frequency	Description			Criteria		Measures if rejected
		Inspection	Tests	Maintenance	Acceptance	Rejection	
Front wheel	6 months	Assembly			O.K.	Loose	Adjust quick release
Kickstand	6 months	Check mount fastening	Functional check		O.K.	Loose	Retighten screws
Tyres	6 months		Tyre pressure check		O.K.	Tyre pressure too low/too high	Adjust tyre pressure
Frame	6 months	Check for damage – fracture, scratches			O.K.	Damage detected	Shut off pedelec; new frame
Handles, coverings	6 months	Wear; check if fastened securely			O.K.	Not provided	Retighten screws, new handles or coverings as specified in parts list
Handlebars, stem	6 months	Check mount fastening			O.K.	Loose	Retighten screws; new stem as specified in parts list if necessary
Steering headset	6 months	Check for damage	Functional check	Lubricating and adjustment	O.K.	Loose	Retighten screws
Saddle	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Seat post	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Protective plate	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Pannier rack	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Attachments	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Bell	6 months		Functional check		O.K.	No ring, too quiet, missing	New bell as specified in the parts list
<b>Suspension elements</b>							
Fork, suspension fork	To manufacturer's specifications	Check for damage – corrosion, fracture		Maintenance as specified by manufacturer Lubrication, oil change as specified by manufacturer	O.K.	Damage detected	New fork as specified in the parts list
Rear frame damper	To manufacturer's specifications	Check for damage – corrosion, fracture		Maintenance as specified by manufacturer Lubrication, oil change as specified by manufacturer	O.K.	Damage detected	New fork as specified in the parts list
Suspension seat post	To manufacturer's specifications	Check for damage		Maintenance as specified by manufacturer	O.K.	Damage detected	New fork as specified in the parts list
<b>Brake system</b>							
Brake lever	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Brake fluid	6 months	Check fluid level		Depending on time of year	O.K.	Too little	Top up brake fluid; <i>take out of service</i> if damaged; new brake hoses
Brake linings	6 months	Check brake linings, brake discs or rims for damage			O.K.	Damage detected	New brake linings, brake discs or rims
Back-pedal brake braking armature	6 months	Check mount fastening			O.K.	Loose	Retighten screws
Brake system	6 months	Check mount fastening		Functional check	O.K.	Loose	Retighten screws

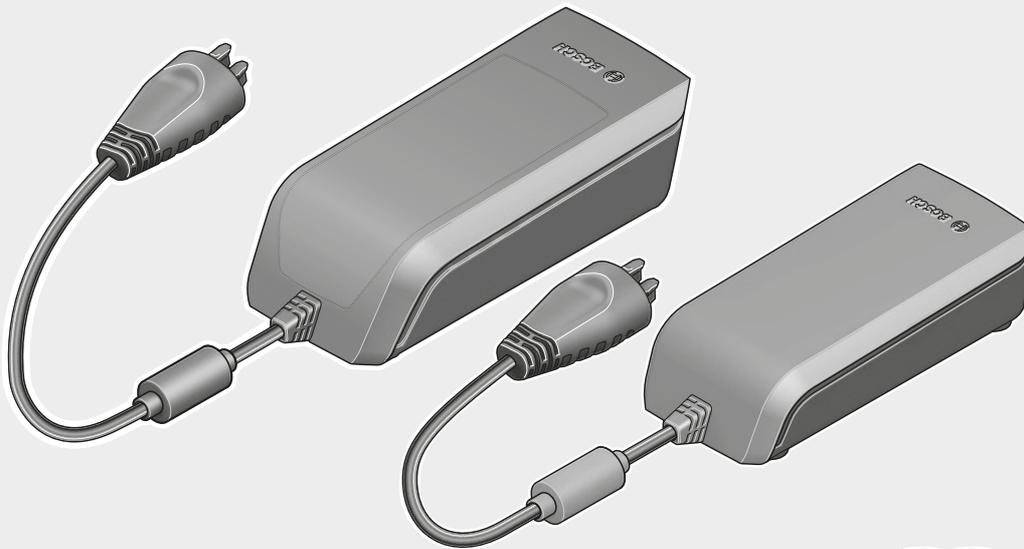
Components	Frequency	Description			Criteria		Measures if rejected
		Inspection	Tests	Maintenance	Acceptance	Rejection	
Light system							
Rechargeable battery		First examination			O.K.	Error message	Contact battery manufacturer; <i>take out of service</i> , new battery
Light cabling		Connections, correct wiring			O.K.	Cable defective, no light	New cabling
Rear light		Side light	Functional check		O.K.	No constant light	New rear light as specified in parts list; replace battery if necessary
Front light		Side light, daytime riding light	Functional check		O.K.	No constant light	New front light as specified in parts list; replace battery if necessary
Reflectors		All complete, state, fastening			O.K.	Damaged or not all complete	New reflectors
Drive/gear shift							
Chain/cassette/pinion/chainring		Check for damage			O.K.	Damage	Refasten if necessary or replace as specified in parts list
Chain guard/spoke guard		Check for damage			O.K.	Damage	Replace as specified in parts list
Bottom bracket axle/crank		Check mount fastening			O.K.	Loose	Retighten screws
Pedals		Check mount fastening			O.K.	Loose	Retighten screws
Shifter		Check mount fastening	Functional check		O.K.	Loose	Retighten screws
Shift cables		Check for damage	Functional check		O.K.	Loose or defective	Adjust shift cables; new shift cables if necessary
Front derailleur		Check for damage	Functional check		O.K.	Gear shift difficult or not possible	Adjust
Rear derailleur		Check for damage	Functional check		O.K.	Gear shift difficult or not possible	Adjust
Electric drive							
Display		Check for damage	Functional check		O.K.	No screen display, defective screen display	Restart, test battery, new software, or new display; <i>take out of service</i> ,
Electric drive control panel		Check drive for damage	Functional check		O.K.	No response	Restart; contact control panel manufacturer, new control panel
Tachometer			Speed measurement		O.K.	Pedelec travelling 10% too fast/slow	Shut off pedelec until source of fault is found
Cabling		Visual inspection			O.K.	Failure in system, damage, kinked cables	New cabling
Battery mount		Firmly in position, lock, contacts	Functional check		O.K.	Loose; lock doesn't close, no contacts	New battery mount
Motor		Visual inspection and mount			O.K.	Damage, loose	Refasten motor, contact motor manufacturer, new motor; <i>take out of service</i>
Software		Check version			In latest version	Not latest version	Import update

### Technical inspection, checking safety, test ride

Components	Description	Criteria		Measures if rejected
Assembly/inspection	Tests	Accept- ance	Rejection	
Brake system	Functional check	O.K.	No full braking; braking distance too long	Locate defective part in brake system and correct
Gear shift under operating load	Functional check	O.K.	Problems when shifting gear	Readjust gear shift
Suspension components (fork, shock absorber, seat post)	Functional check	O.K.	Suspension too deep or no longer exists	Locate defective component and correct
Electric drive	Functional check	O.K.	Loose connection, problems when riding, accelerate	Locate defective part in electric drive and correct
Light system	Functional check	O.K.	No continuous light, too bright	Locate defective part in light system and correct
Test ride		No strange noises.	Strange noises.	Locate source of noise and correct

Date	
Fitter's name:	
Final inspection by workshop manager	

## 11.4 Charger operating instructions

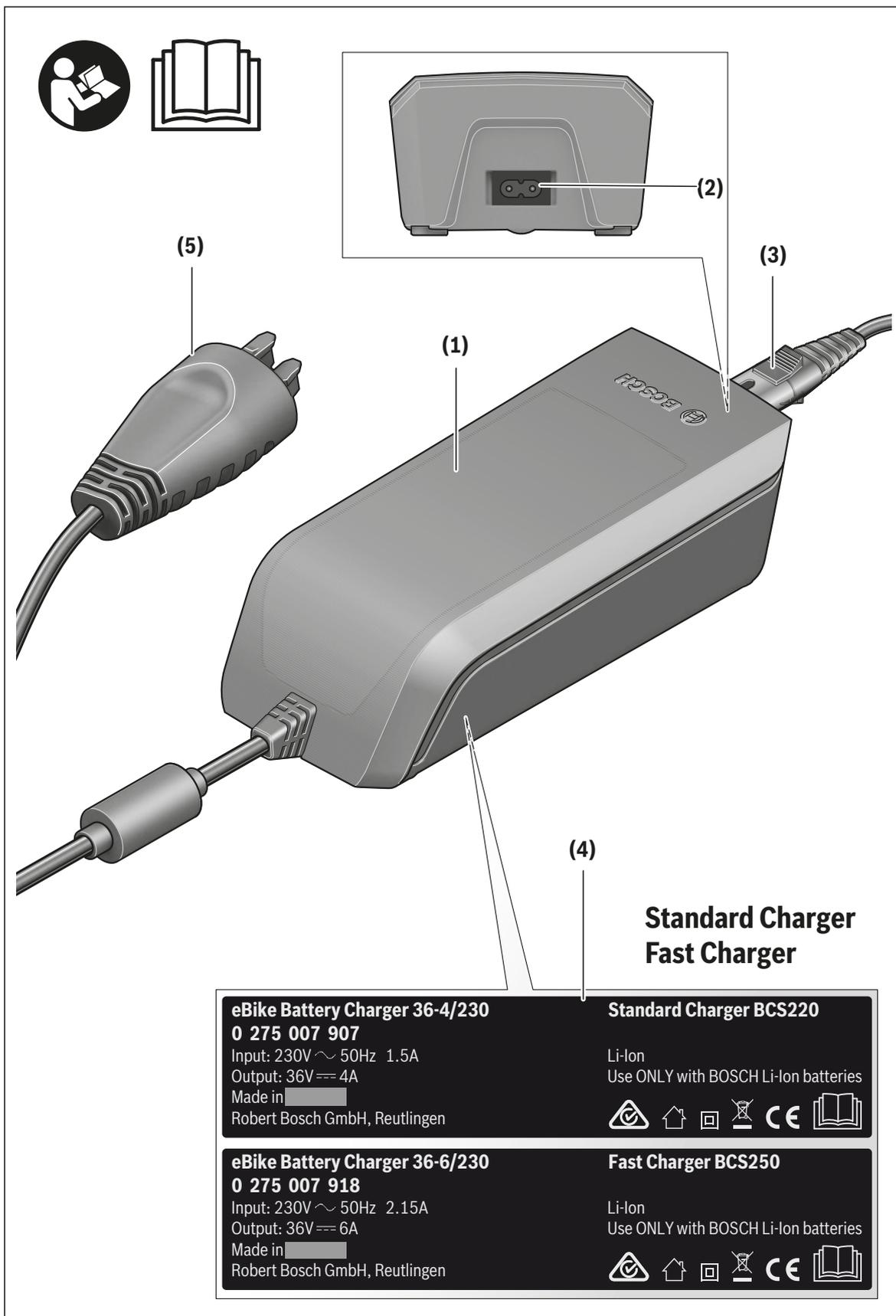


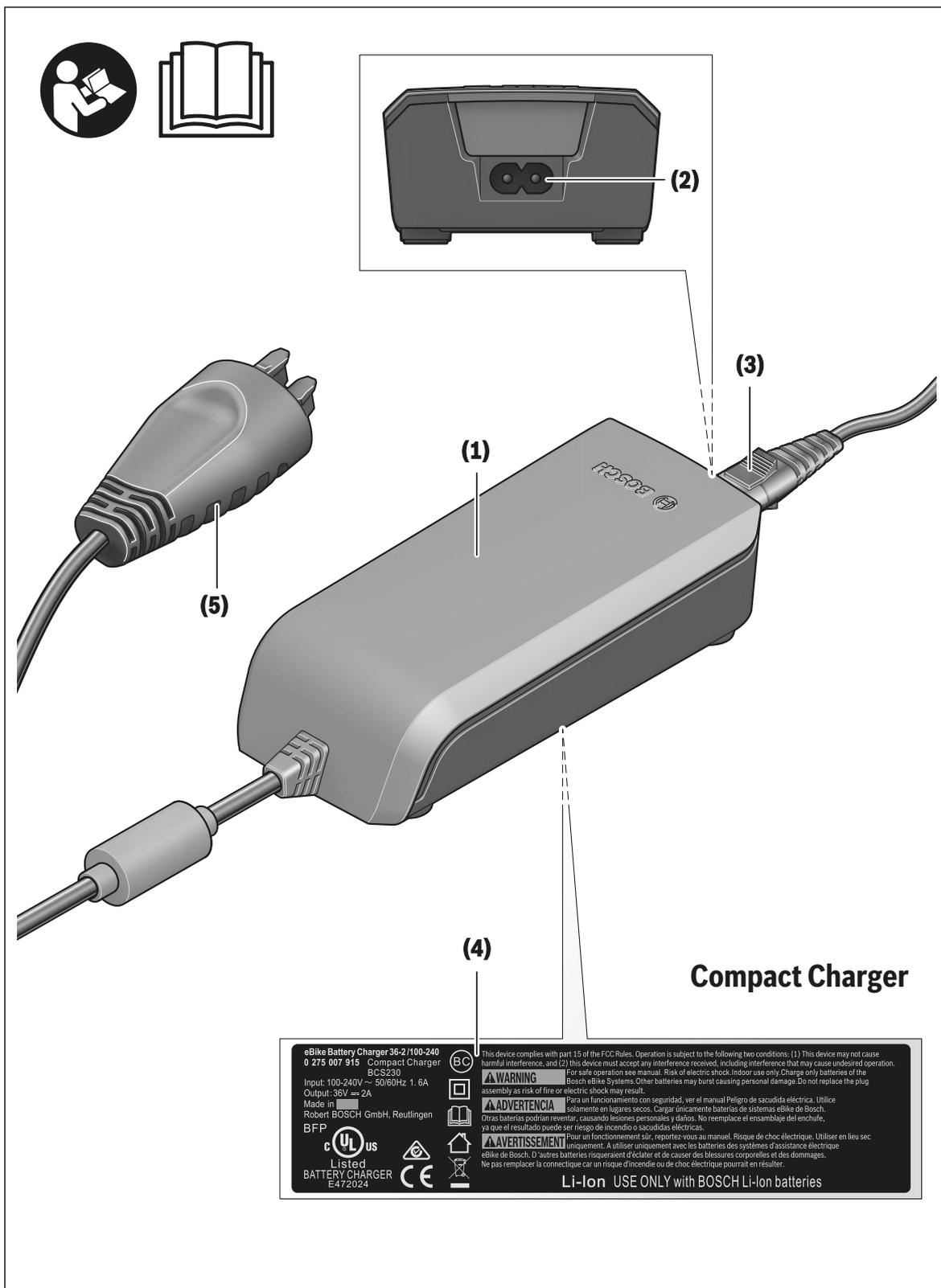
# Charger

BCS220 | BCS230 | BCS250



**BOSCH**





eBike Battery Charger 36-2 100-240  
 0 275 007 915 Compact Charger  
 BCS230  
 Input: 100-240V ~ 50/60Hz 1.6A  
 Output: 36V = 2A  
 Made in [Germany]  
 Robert BOSCH GmbH, Reutlingen  
 BFP

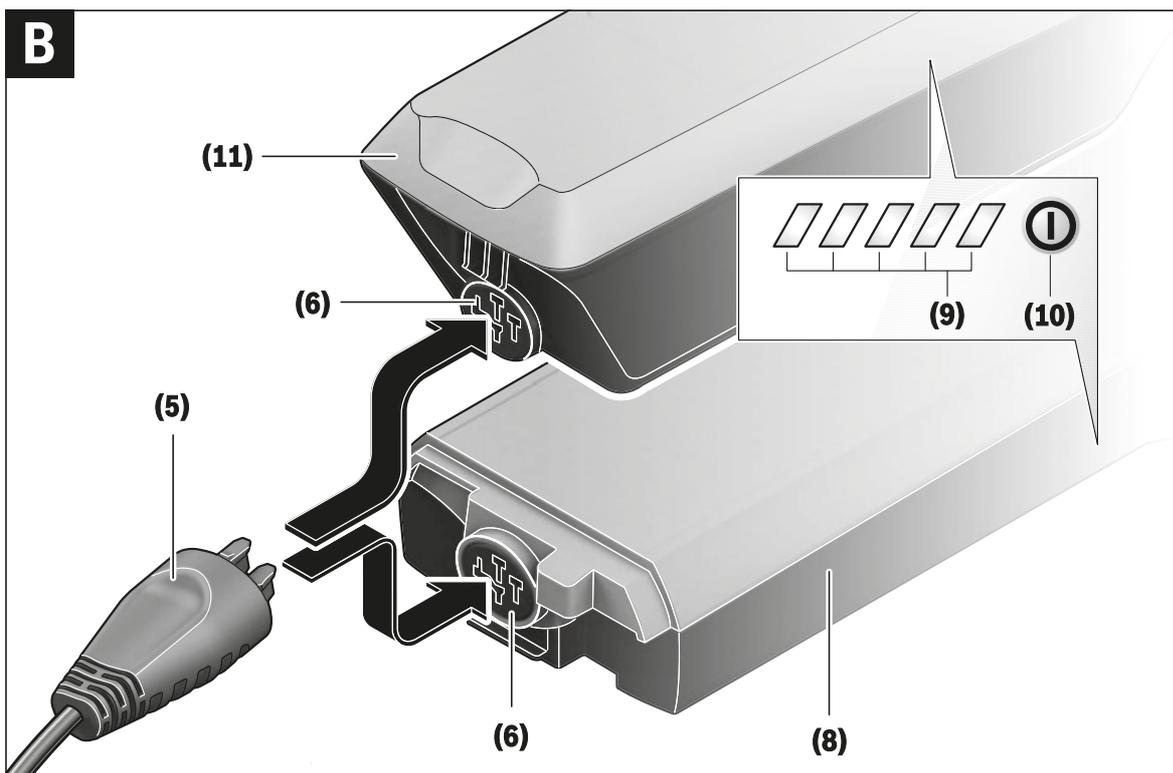
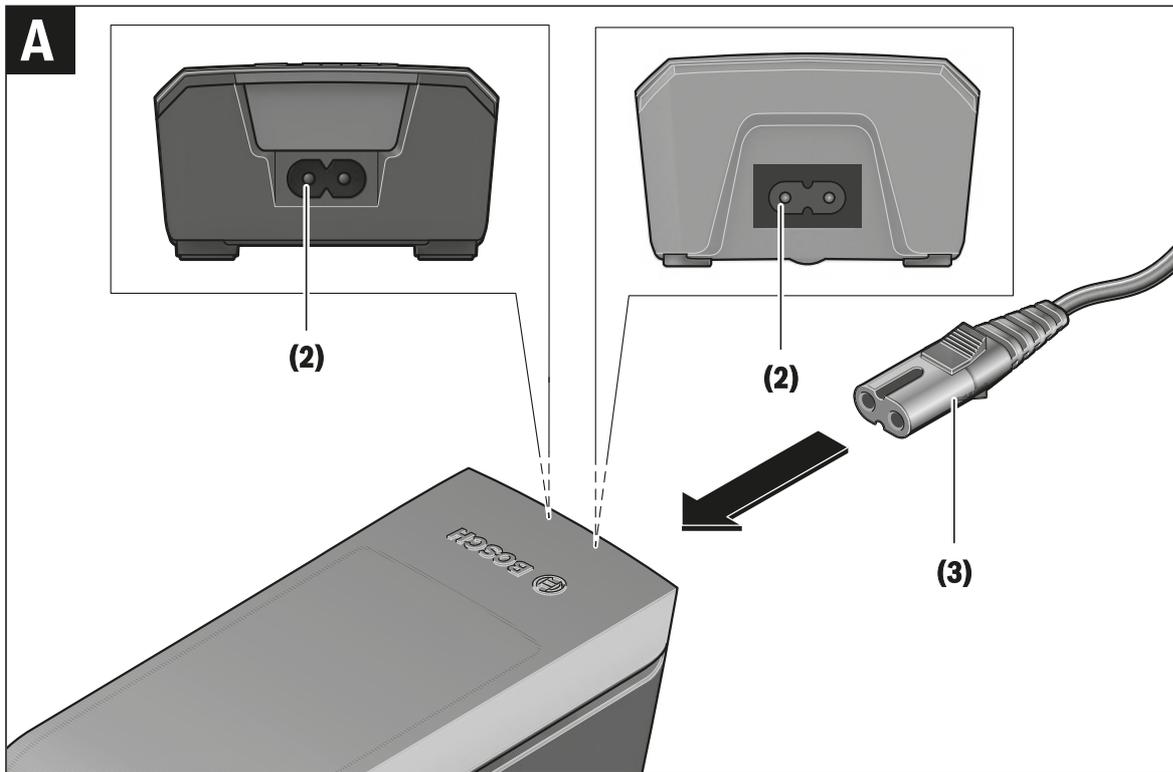
Listed  
 BATTERY CHARGER  
 E472024

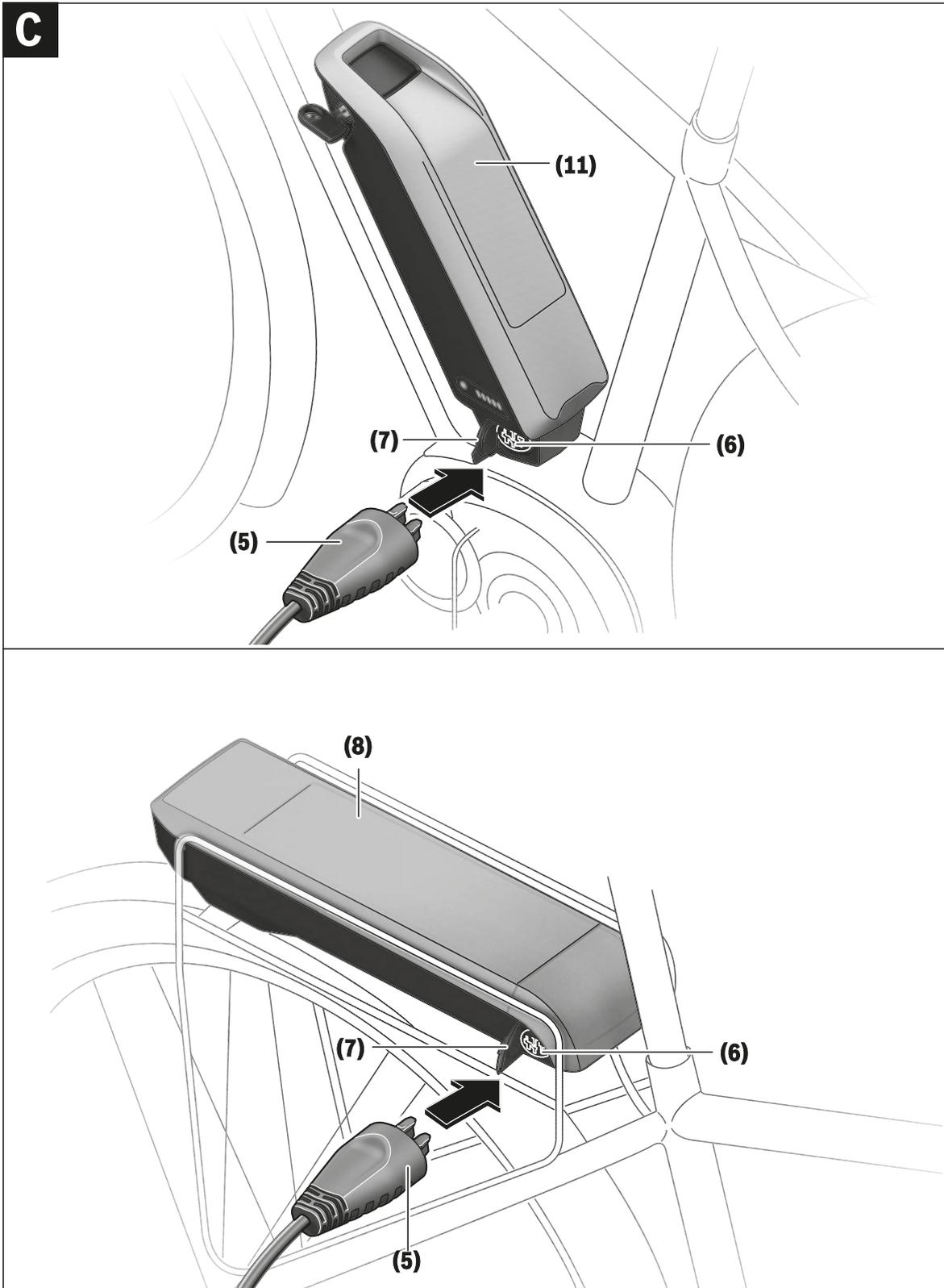
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For safe operation see manual. Risk of electric shock. Indoor use only. Charge only batteries of the Bosch eBike Systems. Other batteries may burst causing personal damage. Do not replace the plug assembly as risk of fire or electric shock may result.

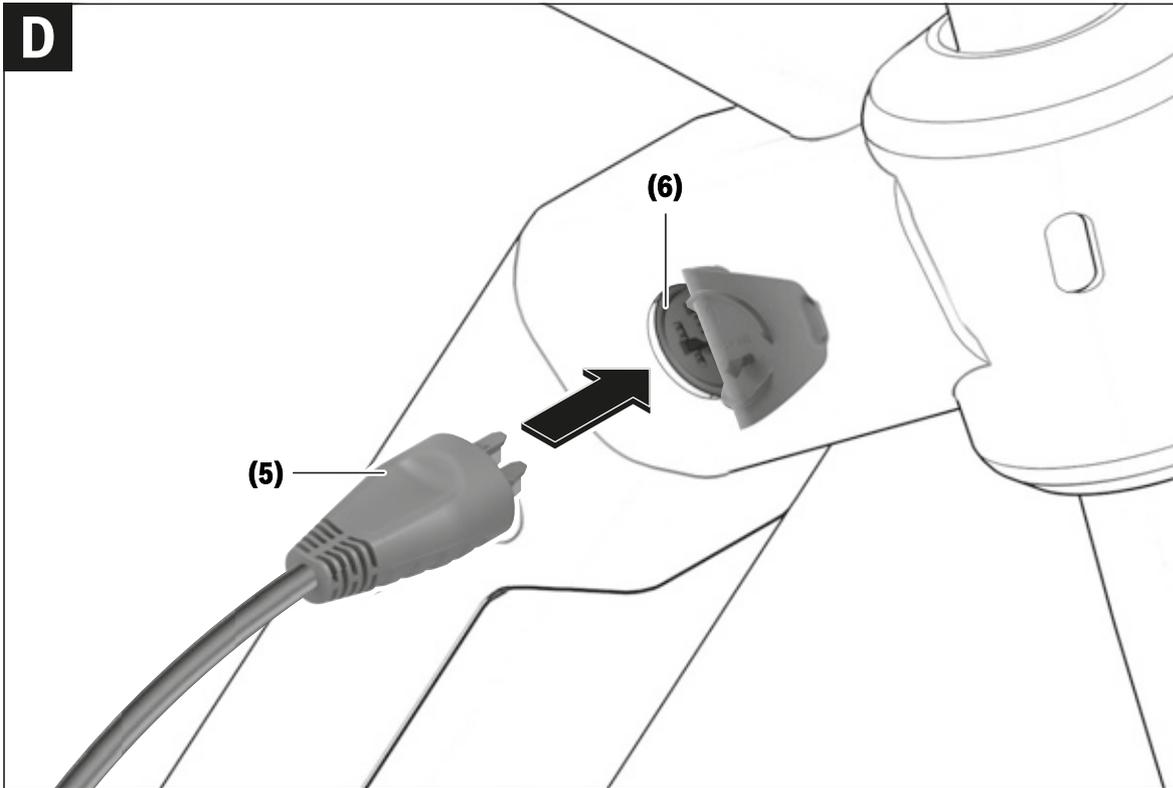
**ADVERTENCIA** Para un funcionamiento con seguridad, ver el manual Peligro de sacudida eléctrica. Utilice solamente en lugares secos. Cargar únicamente baterías de sistemas eBike de Bosch. Otras baterías podrían reventar, causando lesiones personales y daños. No reemplace el ensamblaje del enchufe, ya que el resultado puede ser riesgo de incendio o sacudidas eléctricas.

**AVERTISSEMENT** Pour un fonctionnement sûr, reportez-vous au manuel. Risque de choc électrique. Utiliser en lieu sec uniquement. À utiliser uniquement avec les batteries des systèmes d'assistance électrique eBike de Bosch. D'autres batteries risquent de éclater et de causer des blessures corporelles et des dommages. Ne pas remplacer la connectique car un risque d'incendie ou de choc électrique pourrait en résulter.

Li-Ion USE ONLY with BOSCH Li-Ion batteries







## Safety instructions



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

fire and/or serious injury.

**Save all safety warnings and instructions for future reference.**

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



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

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

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

## Product description and specifications

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

### Product features

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

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

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

## Technical data

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

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

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

## Operation

### Start-up

#### Connecting the charger to the mains (see figure A)

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

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

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

#### Charging the removed battery (see figure B)

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

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

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

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

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

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

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

#### Charging process for two batteries

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

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

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

#### Charging process

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

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

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

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

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

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

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

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

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

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

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

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

### Errors – causes and corrective measures

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

### Charging not possible (no indicator on battery)

Connector not attached properly	Check all connections.
Battery contacts dirty	Carefully clean the battery contacts.

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

## Maintenance and servicing

### Maintenance and cleaning

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

### After-sales service and advice on using products

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

For contact details of authorised bike dealerships, please visit [www.bosch-ebike.com](http://www.bosch-ebike.com)

### Disposal

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

Do not dispose of chargers along with household waste.

#### Only for EU countries:



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

**Subject to change without notice.**

# Keyword index

- A**  
 Air chamber, 17  
 Air valve  
   Fork, 16  
   Rear frame damper, 17  
 Alternative equipment, 115
- B**  
 Back-pedal brake,  
   -braking, 73  
 Battery level indicator, 30  
 Battery, 21  
   - charging, 66, 67  
   - checking, 38  
   - disposing of, 96  
   - inserting, 65  
   - removing, 65  
   - waking, 67  
 Belt tension, 86  
 Brake arm, 17  
 Brake calliper, 18  
 Brake disc, 18  
 Brake lever, 30  
   - adjusting the pressure point 54  
 Brake lining, 17  
   - maintaining, 85  
 Brake,  
   - using the transport securing system, 36  
 Break in operation, 36  
   - carrying out, 36  
   - preparing, 36  
 Button,  
   Minus, 22  
   On-Off (battery), 21, 22  
   On-Off (display), 22  
   Plus, 22  
   Push assist, 22
- C**  
 Chain drive, 20  
 Chain guard,  
   - checking, 63  
 Chain tension, 86  
 Chain wheel, 20  
 Chain, 14, 20  
   - maintaining, 86  
 Charger,  
   - disposing of, 96  
 Clamping force,  
   - Checking the quick releases, 39  
   - Setting the quick releases, 39
- D**  
 Direction of travel, 20  
 Display,  
   - charging the battery, 69, 70  
 Drive system, 20  
   - switching off, 68  
   - switching on, 68
- F**  
 Fork, 15  
   - setting the compression damper, 77  
 Fork end, 15  
 Setting the rebound damper, 76
- Frame battery,  
   - inserting, 65  
   - removing, 65  
 Frame, 14  
 Front wheel brake, 17, 18  
   - braking, 73  
 Front wheel, see Wheel
- G**  
 Gear recommendation, 31  
 Gear shift twist grip,  
   - checking, 86  
 Gear shift,  
   - maintaining, 86  
   - switching, 77
- H**  
 Handlebars, 14, 30  
   - checking, 43  
 Headlight, 20  
 Hub, 15
- I**  
 Initial commissioning 38  
 Integrated battery,  
   - removing, 65
- J**  
 Journey information, 31, 32  
   - switching, 70  
 Avg. speed, 32  
 Clock, 32  
 Maximum, 32  
 Range, 32  
 Trip distance, 32  
 Trip Time, 32
- L**  
 Level of assistance,  
   - selecting, 70  
 Lever, 17
- M**  
 Minimum insertion depth marking, 50  
 Minus button, 22  
 Model year, 8  
 Motor, 20  
 Mudguards,  
   - checking, 63
- O**  
 On-Off button,  
   Battery, 21, 22  
   Display, 22  
 On-screen indicator, 30, 62  
 Operating status indicator, 30  
 O-ring, 17
- P**  
 Packaging, 37  
 Pannier rack battery,  
   - removing, 65  
 Pannier rack, 14  
   - changing, 64  
   - checking, 63  
   - using, 64  
 Pedal, 18, 20  
 Plus button, 22  
 Push assist button, 22  
 Push assist,  
   - using, 70
- Q**  
 Quick release, 15
- R**  
 Range, 31  
 Rear frame damper,  
   structure, 17  
 Rear light, 20  
 Rear wheel brake, 18  
 Retainer guard, 22  
 Riding light, 22  
   - checking function, 63  
 Rim brake locking lever 17  
 Rim, 15  
   - checking, 84  
 Roller brake,  
   -braking, 73
- S**  
 Saddle, 14  
   - changing the saddle tilt, 49  
   - changing the seat length, 51  
   - determining the saddle height, 49, 51  
 Seat post, 14  
 Securing hook, 22  
 Setting wheel, 17  
 Shifter,  
   - checking, 86  
   - setting, 88  
 Spoke, 15  
 Stem,  
   - checking, 43  
 Storage, 36  
 Storing, see Storage  
 Suspension head, 15  
 System message, 31, 34, 46  
 System setting, 31, 32  
   changeable, 32, 33, 34  
   System data, 31, 32
- T**  
 Total journey duration, 32  
 Total, 31  
 Transportation, 35  
 Transporting, see Transportation  
 Trip, 31  
 Type number, 8  
 Tyres, 15  
   - checking, 84
- U**  
 USB port, 22  
 Using 77
- V**  
 Valve, 15  
   Dunlop valve, 15
- W**  
 Weight,  
   permitted total weight, 8  
 Wheel,  
   - installing, 38, 39, 41, 42, 43  
   - maintaining, 84  
 Winter break, see Break in operation

## 13 Glossary

### Brake lever

*Source: EN 15194:2017:* lever used to apply the brake.

### Braking distance

*Source: EN 15194:2017:* distance travelled by a pedelec between the commencement of braking and the point at which the pedelec comes to rest.

### Cargo bike

*Source: DIN 79010:* bicycle mainly designed to carry goods.

### CE marking

*Source: Directive 2006/42/EC on Machinery:* the manufacturer uses the CE marking to declare that the Pedelec complies with the applicable requirements.

### City and trekking bicycles

*Source: EN-ISO 4210 - 2:* pedelec designed for use on public roads primarily for means of transportation or leisure.

### Consumables

*Source: EN 82079-1:* any part or material that is necessary for continued use or maintenance of the product.

### Decommissioning

*Source: DIN 31051:* intentional, unlimited interruption in an object's functional capability.

### Disc brake

*Source: EN 15194:2017:* brake in which brake pads are used to grip the lateral faces of a thin disc attached to or incorporated in the wheel hub.

### Drive belt

*Source: EN 15194:2017:* seamless ring belt which is used as a means of transmitting motive force.

### Electrical control system

*Source: EN 15194:2017:* electronic and/or electrical component, or an assembly of components provided for installation into a vehicle, together with all electrical connections

and associated wiring for the motor electrical power assistance.

### Electrically power assisted cycle, pedelec

*Source: EN 15194:2017:* electrically power assisted cycle, equipped with pedals and an auxiliary electric motor, which cannot be propelled exclusively by means of the auxiliary electric motor, except in start-up assistance mode.

### Fault

*Source: EN 13306:2018-02, 6.1:* state of an item (4.2.1) characterized by inability to perform a required function (4.5.1), excluding the inability during preventive maintenance or other planned actions, or due to lack of external resources.

### Folding bicycle

*Source: EN-ISO 4210-2:* bicycle designed to fold into a compact form, facilitating transport and storage.

### Fork steerer

*Source: EN 15194:2017:* part of a fork that rotates about the steering axis of a bicycle frame head tube. It is normally connected to the fork crown or directly to the fork legs, and is normally the point of connection between the fork and the handlebar stem.

### Fracture

*Source: EN 15194:2017:* unintentional separation into two or more parts.

### Instruction handbook

*Source: ISO/FDIS 20607:2018:* part of the user information that machine manufacturers provide to machine operators; it contains guidance, instructions and tips related to the use of the machine in all its life cycle phases.

### Maintenance

*Source: DIN 31051:* maintenance is generally performed at regular intervals and often carried out by trained technical staff. This ensures a maximum service life and low wear and tear for the maintained items. Proper maintenance is often also a pre-requisite for providing a warranty.

**Maximum continuous power**

*Source: ZEG:* the maximum continuous power is the maximum power for the electric motor output shaft during 30 minutes.

**Maximum saddle height**

*Source: EN 15194:2017:* vertical distance from the ground to the point where the top of the seat surface is intersected by the seat-post axis, measured with the saddle in a horizontal position and with the seat-post set to the minimum insertion-depth mark.

**Maximum tyre pressure**

*Source: EN 15194:2017:* maximum tyre pressure recommended by the tyre or rim manufacturer for a safe and efficient performance. If the rim and tyre both indicate a maximum tyre pressure, the maximum inflation pressure is the lower of the two pressures indicated.

**Minimum insertion depth mark**

*Source: EN 15194:2017:* mark indicating the minimum insertion-depth of handlebar stem into fork steerer (fork stem) or seat post into frame.

**Model year**

*Source: ZEG:* the model year refers to the first production year that the series-manufactured pedelec was manufactured in the version in question and is not always identical with the year of manufacture. The year of manufacture may be before the model year in some cases. If no technical modifications are introduced to the series, production may continue of pedelecs from a previous model year.

**Mountain bike**

*Source: EN-ISO 4210-2:* bicycle designed for use off-road on rough terrain, on public roads, and on public pathways, equipped with a suitably strengthened frame and other components, and, typically, with wide-section tyres with coarse tread patterns and a wide range of transmission gears.

**Off-road rough terrain**

*Source: EN 15194:2017:* coarse pebble tracks, forest trails, and other general off-road tracks where tree roots and rocks are likely to be encountered.

**Permitted total weight**

*Source: EN 15194:2017:* weight of the fully assembled pedelec plus the rider and baggage, as specified by the manufacturer.

**Quick-release device, quick release**

*Source: EN 15194:2017:* lever actuated mechanism that connects, retains or secures a wheel or any other component.

**Racing bicycle**

*Source: EN-ISO 4210-2:* bicycle intended for high-speed amateur use on public roads having a steering assembly with multiple grip positions allowing for an aerodynamic posture, a multi-speed transmission system, tyre width not greater than 28 mm and a maximum mass of 12 kg for the fully assembled bicycle.

**Seat post**

*Source: EN 15194:2017:* component that clamps the saddle (with a bolt or assembly) and connects it with the frame.

**Shut-off speed**

*Source: EN 15194:2017:* speed reached, by the pedelec, at the moment the current has dropped to zero or to the no load current value.

**Spare part**

*Source: EN 13306:2018-02, 3.5:* item intended to replace a corresponding item in order to retain or maintain the original required function of the item.

**Suspension fork**

*Source: EN 15194:2017:* front fork incorporating controlled, axial flexibility to reduce the transmission of road-shocks to the rider.

**Suspension frame**

*Source: EN 15194:2017:* frame incorporating controlled, vertical flexibility to reduce the transmission of road-shocks to the rider.

**Type number**

*Source: ZEG:* all pedelec models have an eight-digit type number which is used to specify the design model year, the type of pedelec and the version.

**Wear**

*Source: DIN 31051:* reduction in useful life (4.3.4), caused by chemical and/or physical processes.

**Weight of ready-to-ride bicycle**

*Source: ZEG:* the indicated weight for a ready-to-ride bicycle refers to the weight of a pedelec at the time of sale. The weight of each additional accessory must be added to this weight.

**Wheel**

*Source: EN 15194:2017:* assembly or combination of hub, spokes or disc, and rim, but excluding tyre assembly.

**Work environment**

*Source: EN ISO 9000:2015:* set of conditions under which work is performed

**Year of manufacture**

*Source: ZEG:* the year of manufacture is the year in which the Pedelec was manufactured. The production period is always from August to July of the following year

**Young adult bicycle**

*Source: EN-ISO 4210-2:* bicycle designed for use on public roads by a young adult whose weight is less than 40 kg, with maximum saddle height of 635 mm or more and less than 750 mm. (see ISO 4210).

**13.1 Abbreviations**

ABS anti-blocking system

ECP electronic cell protection

**13.2 Simplified terms**

The following terms are used for better legibility:

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

**Table 61: Simplified terms**

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

### Manufacturer

ZEG Zweirad-Einkaufs-Genossenschaft eG  
 Longericher Str. 2  
 50739 Köln Germany

### Authorised representative for documentation

Janine Otto  
 c/o ZEG Zweirad-Einkaufs-Genossenschaft eG  
 Longericher Str. 2  
 50739 Köln

The machine, pedelec types:

20-26-4001	Twenty 6 Evo 26"	Bicycle for young adults
20-26-3001	Twenty 6 Evo Team 26	Bicycle for young adults

Year of manufacture 2019 and year of manufacture 2020, complies with the following applicable EU provisions:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/EU.

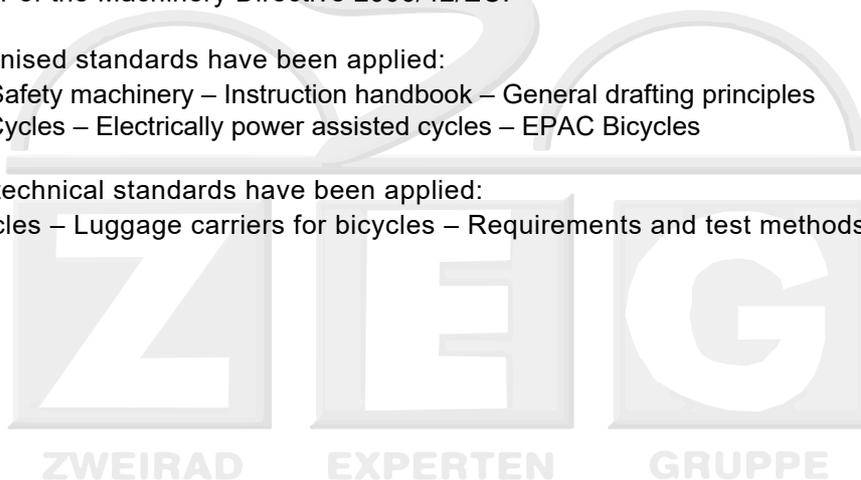
The safety objectives in the Low Voltage Directive 2014/35/EU have been met in compliance with Appendix I, No. 1.5.1 of the Machinery Directive 2006/42/EC.

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 – Luggage carriers for bicycles – Requirements and test methods



Cologne, 02/09/2019

.....

Egbert Hageböck, Chairman, ZEG Zweirad-Einkaufs-Genossenschaft eG