

# ORIGINAL OPERATING INSTRUCTIONS – GENERAL

BICYCLE | PEDELEC (25 KM/H) EPAC: ELECTRICALLY POWER ASSISTED CYCLE | S-PEDELEC (45 KM/H)

EN | ORIGINAL OPERATING INSTRUCTIONS – GENERAL

## My bicycle

Brand:

---

Model:

---

Colour:

---

Bicycle weight:

---

Serial number (S/N)<sup>1</sup>:

---

Frame number<sup>2</sup>:

---

Purchase date:

---

## My dealer

Company:

---

Contact person:

---

Street:

---

Postal code, town:

---

Telephone:

---

E-mail:

---

## My contact information

### First owner

Customer no.:

---

Family name:

---

First name:

---

Street:

---

Postal code, town:

---

Telephone:

---

E-mail:

---

Purchase date:

---

Date, signature

---

### Second owner

Customer no.:

---

Family name:

---

First name:

---

Street:

---

Postal code, town:

---

Telephone:

---

E-mail:

---

Purchase date:

---

Date, signature

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<sup>1</sup> See ⇒ 10.3 Bicycle (motorless)/S-Pedelec: serial and product number Page EN-16 and ⇒ 10.4 Pedelec: type plate Page EN-16

<sup>2</sup> See ⇒ 10.1 Frame number Page EN-16

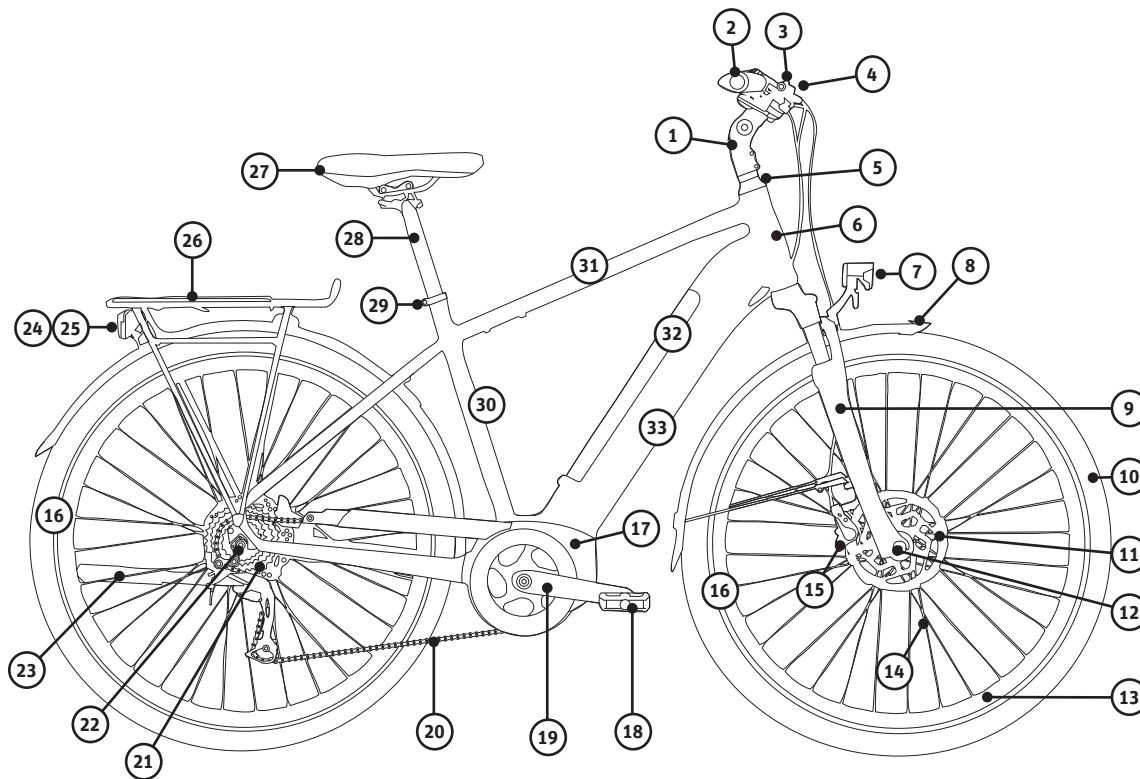
# Table of Contents

<b>1.</b>	<b>These operating instructions and all further documentation</b>	<b>EN-9</b>	<b>14.</b>	<b>Before your first ride</b>	<b>EN-20</b>	<b>19.2</b>	<b>Adjusting the angle of the handlebars</b>	<b>EN-28</b>
<b>2.</b>	<b>Websites</b>	<b>EN-9</b>	<b>14.1</b>	<b>Attaching the pedals</b>	<b>EN-20</b>	<b>19.3</b>	<b>Adjusting the height of the handlebars</b>	<b>EN-29</b>
<b>3.</b>	<b>Your dealer</b>	<b>EN-9</b>	<b>14.1.1</b>	<b>Clipless pedals</b>	<b>EN-21</b>	<b>19.3.1</b>	<b>Straight front stems: adjusting the height of the handlebars</b>	<b>EN-29</b>
<b>4.</b>	<b>Standard scope of supply</b>	<b>EN-9</b>	<b>14.2</b>	<b>Lights</b>	<b>EN-21</b>	<b>19.3.2</b>	<b>Ahead front stems: adjusting the height of the handlebars</b>	<b>EN-29</b>
<b>4.1</b>	<b>Original operating instructions – General</b>	<b>EN-10</b>	<b>14.2.1</b>	<b>Fitting lighting</b>	<b>EN-21</b>	<b>19.4</b>	<b>Cleaning and care</b>	<b>EN-29</b>
<b>4.2</b>	<b>Pedelec/S-Pedelec: Original operating instructions – System</b>	<b>EN-10</b>	<b>14.2.2</b>	<b>Bicycles: switching the lights on and off</b>	<b>EN-21</b>	<b>20.</b>	<b>Adjusting the position of the position of the handlebar grips</b>	<b>EN-29</b>
<b>4.3</b>	<b>Pedelec: declarations of conformity</b>	<b>EN-10</b>	<b>14.2.3</b>	<b>Pedelecs/S-Pedelecs: switching the lights on and off and/or continuous lighting requirement</b>	<b>EN-21</b>	<b>20.1</b>	<b>Adjusting a screw handlebar grip</b>	<b>EN-30</b>
<b>4.4</b>	<b>S-Pedelec: EU Certificate of Conformity</b>	<b>EN-10</b>	<b>14.3</b>	<b>Replacement bulbs</b>	<b>EN-21</b>	<b>20.2</b>	<b>Cleaning and care</b>	<b>EN-30</b>
<b>5.</b>	<b>Component guides</b>	<b>EN-10</b>	<b>14.4</b>	<b>Configuring the individual settings</b>	<b>EN-21</b>	<b>21.</b>	<b>Checking and adjusting bearing play</b>	<b>EN-30</b>
<b>6.</b>	<b>Safety</b>	<b>EN-11</b>	<b>14.5</b>	<b>Practising braking</b>	<b>EN-22</b>	<b>21.1</b>	<b>Checking the bearing play</b>	<b>EN-31</b>
<b>6.1</b>	<b>Warning notices, safety instructions and notices</b>	<b>EN-11</b>	<b>15.</b>	<b>Before every trip</b>	<b>EN-22</b>	<b>21.2</b>	<b>Adjusting a screw headset</b>	<b>EN-31</b>
<b>6.2</b>	<b>General safety information</b>	<b>EN-11</b>	<b>15.1</b>	<b>Checklist</b>	<b>EN-22</b>	<b>21.3</b>	<b>Adjusting Ahead headsets</b>	<b>EN-31</b>
<b>6.3</b>	<b>Carbon: general safety information</b>	<b>EN-13</b>	<b>16.</b>	<b>Bicycle frame</b>	<b>EN-23</b>	<b>21.3.1</b>	<b>Ahead headset I</b>	<b>EN-31</b>
<b>7.</b>	<b>Legal requirements for use on public roads</b>	<b>EN-13</b>	<b>16.1</b>	<b>Aluminium and steel frames: rollers</b>	<b>EN-23</b>	<b>21.3.2</b>	<b>Ahead headset II</b>	<b>EN-31</b>
<b>7.1</b>	<b>Bicycle (motorless)/Pedelec</b>	<b>EN-13</b>	<b>16.2</b>	<b>Carbon frame: rollers</b>	<b>EN-23</b>	<b>22.</b>	<b>Bicycle fork</b>	<b>EN-31</b>
<b>7.1.1</b>	<b>Operating regulations</b>	<b>EN-13</b>	<b>16.3</b>	<b>Carbon frame: assembly stand</b>	<b>EN-23</b>	<b>22.1</b>	<b>Suspension fork</b>	<b>EN-32</b>
<b>7.1.2</b>	<b>Rules of conduct</b>	<b>EN-13</b>	<b>16.4</b>	<b>Frame with rear suspension</b>	<b>EN-23</b>	<b>22.1.1</b>	<b>Adjusting the compression rate</b>	<b>EN-32</b>
<b>7.2</b>	<b>S-Pedelec</b>	<b>EN-13</b>	<b>16.5</b>	<b>Cleaning and care</b>	<b>EN-23</b>	<b>22.1.2</b>	<b>Adjusting the rebound rate</b>	<b>EN-32</b>
<b>7.2.1</b>	<b>Operating regulations</b>	<b>EN-13</b>	<b>17.</b>	<b>Seat height</b>	<b>EN-24</b>	<b>22.1.3</b>	<b>Locking the suspension</b>	<b>EN-32</b>
<b>7.2.2</b>	<b>Rules of conduct</b>	<b>EN-14</b>	<b>17.1</b>	<b>Setting the height of the seat</b>	<b>EN-24</b>	<b>22.1.4</b>	<b>Adjusting the air pressure</b>	<b>EN-32</b>
<b>7.3</b>	<b>Operating regulations on the Internet</b>	<b>EN-14</b>	<b>17.1.1</b>	<b>Securing with seat post clamp screw(s)</b>	<b>EN-24</b>	<b>22.2</b>	<b>Care and maintenance</b>	<b>EN-32</b>
<b>7.4</b>	<b>Rules of conduct on the Internet</b>	<b>EN-14</b>	<b>17.1.2</b>	<b>Fastening with quick-release skewer</b>	<b>EN-24</b>	<b>23.</b>	<b>Brakes</b>	<b>EN-32</b>
<b>8.</b>	<b>Pedelec/S-Pedelec: range</b>	<b>EN-15</b>	<b>17.2</b>	<b>Lowerable seat post</b>	<b>EN-25</b>	<b>23.1</b>	<b>Coaster brakes</b>	<b>EN-33</b>
<b>9.</b>	<b>Description of your bicycle</b>	<b>EN-16</b>	<b>17.2.1</b>	<b>Positioning the control element</b>	<b>EN-25</b>	<b>23.2</b>	<b>Rim brakes</b>	<b>EN-33</b>
<b>9.1</b>	<b>Bicycle (motorless)</b>	<b>EN-16</b>	<b>17.2.2</b>	<b>Changing the lever pressure</b>	<b>EN-25</b>	<b>23.3</b>	<b>Disc brakes</b>	<b>EN-34</b>
<b>9.2</b>	<b>Pedelec</b>	<b>EN-16</b>	<b>17.3</b>	<b>Suspension seat post</b>	<b>EN-25</b>	<b>23.4</b>	<b>Brake lever(s)</b>	<b>EN-34</b>
<b>9.3</b>	<b>S-Pedelec</b>	<b>EN-16</b>	<b>17.3.1</b>	<b>Suspension adjustment screw</b>	<b>EN-26</b>	<b>23.4.1</b>	<b>Adjusting the position of the brake levers</b>	<b>EN-35</b>
<b>10.</b>	<b>Frame marking</b>	<b>EN-16</b>	<b>17.4</b>	<b>Cleaning and care</b>	<b>EN-26</b>	<b>23.4.2</b>	<b>Adjusting the lever width</b>	<b>EN-35</b>
<b>10.1</b>	<b>Frame number</b>	<b>EN-16</b>	<b>18.</b>	<b>Adjusting the position and angle of the saddle</b>	<b>EN-26</b>	<b>23.4.3</b>	<b>Changing the pressure point</b>	<b>EN-35</b>
<b>10.2</b>	<b>S-Pedelec: VIN</b>	<b>EN-16</b>	<b>18.1</b>	<b>Single-screw seat post: adjusting the seating position</b>	<b>EN-26</b>	<b>23.5</b>	<b>Cable brakes: adjusting the brake cable tension</b>	<b>EN-36</b>
<b>10.3</b>	<b>Bicycle (motorless)/S-Pedelec: serial and product number</b>	<b>EN-16</b>	<b>18.2</b>	<b>Dual-screw seat post I: adjusting the seating position</b>	<b>EN-27</b>	<b>23.6</b>	<b>Replacing the brake pads</b>	<b>EN-36</b>
<b>10.4</b>	<b>Pedelec: type plate</b>	<b>EN-16</b>	<b>18.3</b>	<b>Dual-screw seat post II: adjusting the seating position</b>	<b>EN-27</b>	<b>23.7</b>	<b>Cleaning and care</b>	<b>EN-37</b>
<b>10.5</b>	<b>S-Pedelec: manufacturer's type plate</b>	<b>EN-17</b>	<b>18.4</b>	<b>Cleaning and care</b>	<b>EN-28</b>	<b>24.</b>	<b>Bicycle shifter</b>	<b>EN-37</b>
<b>10.6</b>	<b>Bicycle (without motor)/Pedelec: intended use</b>	<b>EN-17</b>	<b>19.</b>	<b>Adjusting the handlebars and front stems</b>	<b>EN-28</b>	<b>24.1</b>	<b>Adjusting the position of the control elements</b>	<b>EN-37</b>
<b>11.</b>	<b>Bicycle weight</b>	<b>EN-19</b>	<b>19.1</b>	<b>Adjusting the position of the handlebars</b>	<b>EN-28</b>	<b>24.2</b>	<b>Adjust the shift cable tension</b>	<b>EN-38</b>
<b>12.</b>	<b>Permissible total weight</b>	<b>EN-19</b>				<b>24.3</b>	<b>Derailleur</b>	<b>EN-38</b>
<b>13.</b>	<b>Tightening torques for threaded connections</b>	<b>EN-19</b>				<b>24.3.1</b>	<b>Mechanical derailleur: control elements</b>	<b>EN-39</b>

## Table of Contents

24.3.1.1	Shimano standard gear lever: version 1	EN-39	27.3	Rims	EN-53	32.2	Transport by bus, rail & air	EN-61
24.3.1.2	Shimano standard gear lever: version 2	EN-39	27.3.1	Checking for rim wear/fatigue on rim brakes	EN-53	<b>33.</b>	<b>Protection from theft, manipulation and loss</b>	<b>EN-61</b>
24.3.1.3	Shimano dual control lever	EN-40	27.3.2	Cleaning and care	EN-53	33.1	Ordering another key	EN-62
24.3.2	Electronic derailleur: control elements	EN-41	<b>28.</b>	<b>Tyres and tubes</b>	<b>EN-53</b>	<b>34.</b>	<b>Cleaning the bicycle and its components</b>	<b>EN-62</b>
24.3.2.1	Shimano Ultegra Di2 gear lever	EN-41	28.1	Checking tyre pressure	EN-54	<b>35.</b>	<b>Pedelec/S-Pedelec: storage</b>	<b>EN-62</b>
24.3.2.2	Shimano Ultegra Di2: charger and USB cable	EN-41	28.2	Tubeless tyres	EN-54	<b>36.</b>	<b>Disposal</b>	<b>EN-62</b>
24.3.2.3	Sram Eagle AXS gear lever	EN-42	28.3	Tubes	EN-54	<b>37.</b>	<b>Warranty conditions</b>	<b>EN-63</b>
24.3.2.4	Sram eTap AXS gear lever	EN-42	28.3.1	Valves	EN-54	37.1	Warranty conditions	EN-63
24.3.2.5	Sram AXS: charging station and USB cable	EN-43	28.3.1.1	Scavlerand or racing valves	EN-54	37.1.1	Requirements for a warranty claim	EN-63
24.3.3	Adjusting the rear and front derailleurs	EN-43	28.3.1.2	Dunlop or Blitz valves and Schrader or car valves	EN-55	37.1.2	Caveat emptor	EN-63
24.3.3.1	Mechanical derailleur	EN-43	<b>29.</b>	<b>Fixing a flat tyre</b>	<b>EN-55</b>	37.1.3	Wear parts	EN-63
24.3.3.2	Shimano Ultegra Di2 electronic derailleur	EN-44	29.1	Opening the brakes	EN-55	<b>38.</b>	<b>Handover</b>	<b>EN-64</b>
24.3.3.3	Sram Eagle AXS electronic derailleur	EN-45	29.1.1	Removing a rear wheel with a coaster brake	EN-55	38.1	Handover inspection and settings	EN-64
24.3.3.4	Sram eTap AXS electronic derailleur	EN-46	29.1.2	Opening side-pull brakes	EN-55	38.2	Handover talk	EN-65
24.4	Hub gear	EN-47	29.1.3	Opening V-brakes	EN-55	<b>39.</b>	<b>Maintenance intervals</b>	<b>EN-65</b>
24.4.1	Control elements	EN-47	29.1.4	Removing hydraulic rim brakes	EN-55			
24.4.1.1	Shimano standard gear lever	EN-47	29.2	Removing the wheel	EN-55			
24.4.1.2	Shimano standard twist grip	EN-47	29.2.1	Removing a front wheel	EN-55			
24.4.1.3	Enviolo twist grip	EN-47	29.2.2	Removing a rear wheel	EN-55			
24.4.2	Adjusting gears	EN-48	29.2.2.1	Derailleur: removing a rear wheel	EN-55			
24.4.2.1	Shimano control elements	EN-48	29.2.2.2	Hub gear: removing a rear wheel	EN-55			
24.4.2.2	Enviolo twist grip	EN-48	29.3	Dismantling the tyre and tube	EN-56			
24.5	Cleaning and care	EN-48	29.4	Repairing the tube	EN-56			
<b>25.</b>	<b>Chain</b>	<b>EN-48</b>	29.5	Mounting the tyre and tube	EN-57			
25.1	Measuring and adjusting the chain tension	EN-49	29.6	Installing the wheel	EN-57			
25.1.1	Derailleur: measuring the chain tension	EN-49	29.6.1	Inserting the front wheel	EN-57			
25.1.2	Hub gear: measuring the chain tension	EN-49	29.6.1.1	Axle nut: inserting the front wheel	EN-57			
25.1.3	Hub gear: adjusting the chain tension	EN-49	29.6.1.2	Quick-release skewer: inserting the front wheel	EN-57			
25.2	Checking for chain wear	EN-49	29.6.1.3	Inserting the front wheel through-axle	EN-57			
25.3	Cleaning and care	EN-49	29.6.2	Inserting the rear wheel	EN-57			
<b>26.</b>	<b>Belt</b>	<b>EN-49</b>	29.6.2.1	Derailleur: inserting the rear wheel	EN-57			
26.1	Measuring the belt tension	EN-49	29.6.2.2	Hub gear: inserting the rear wheel	EN-57			
26.2	Adjusting the belt tension	EN-50	<b>30.</b>	<b>Luggage rack</b>	<b>EN-59</b>			
26.2.1	Drop-out I: adjusting the belt tension	EN-50	<b>31.</b>	<b>Luggage</b>	<b>EN-59</b>			
26.2.2	Drop-out II: adjusting the belt tension	EN-51	31.1	Bicycle baskets	EN-59			
26.3	Checking the belt for wear	EN-51	31.2	Child seats and trailers	EN-60			
26.4	Cleaning and care	EN-51	31.2.1	Child seats	EN-60			
<b>27.</b>	<b>Wheels</b>	<b>EN-51</b>	31.2.2	Trailers	EN-60			
27.1	Fastening wheels with quick-release skewers	EN-51	<b>32.</b>	<b>Transporting the bicycle</b>	<b>EN-61</b>			
27.2	Attaching wheels with through-axles	EN-52	32.1	Transport by car or mobile home	EN-61			
27.2.1	Mounting a R.A.T. through-axle	EN-52	32.1.1	Carbon frame or parts	EN-61			

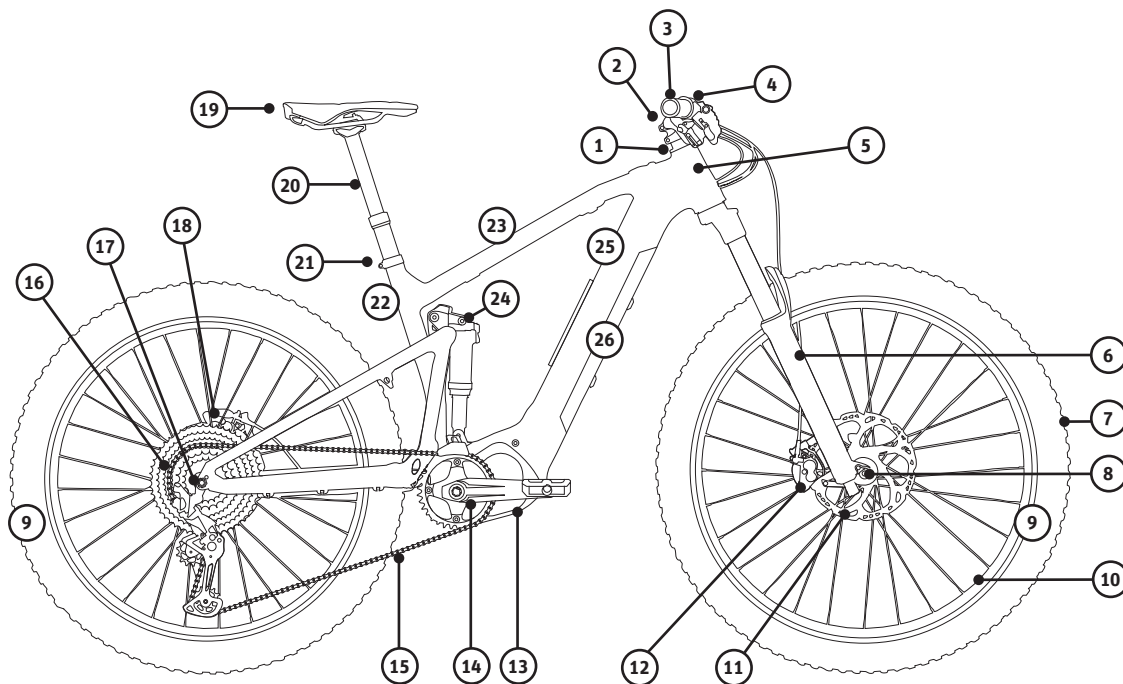
# Trekking E-Bike



- 1 Front stem
- 2 Handlebar grip
- 3 Bell
- 4 Handlebars
- 5 Headset
- 6 Head tube
- 7 Spotlight
- 8 Mudguard
- 9 Fork
- 10 Tyre
- 11 Brake disc
- 12 Front wheel hub
- 13 Rims
- 14 Spokes
- 15 Front brake
- 16 Wheels
- 17 Motor
- 18 Pedals
- 19 Crank
- 20 Chain
- 21 Sprocket
- 22 Rear wheel hub
- 23 Stand
- 24 Rear light
- 25 Reflector
- 26 Luggage rack
- 27 Saddle
- 28 Seat post
- 29 Saddle clamp
- 30 Seat tube
- 31 Crossbar
- 32 Battery
- 33 Down tube

This is a sample illustration of our bicycles.

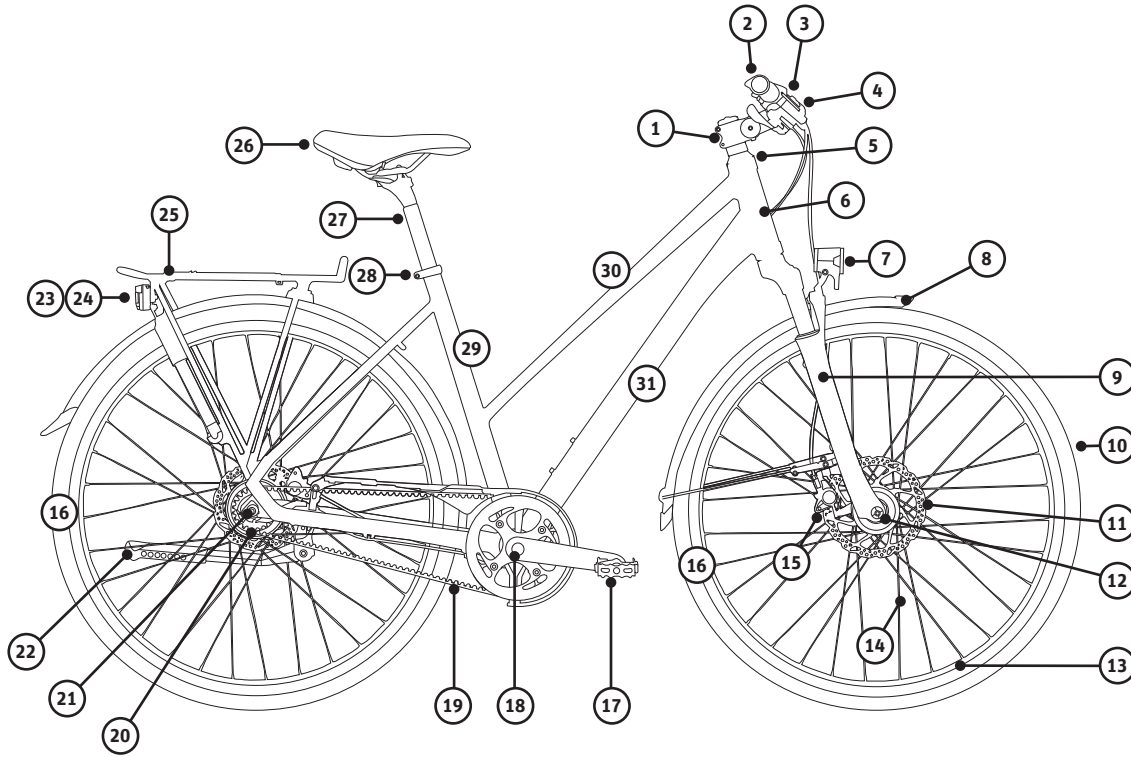
## E-Mountain Bike



- 1 Headset
- 2 Front stem
- 3 Handlebar grip
- 4 Handlebars
- 5 Head tube
- 6 Fork
- 7 Tyre
- 8 Front wheel hub
- 9 Wheels
- 10 Rims
- 11 Brake disc
- 12 Front brake
- 13 Motor
- 14 Crank
- 15 Chain
- 16 Sprocket
- 17 Rear wheel hub
- 18 Rear brake
- 19 Saddle
- 20 Seat post
- 21 Saddle clamp
- 22 Seat tube
- 23 Crossbar
- 24 Dampers
- 25 Down tube
- 26 Battery

This is a sample illustration of our bicycles.

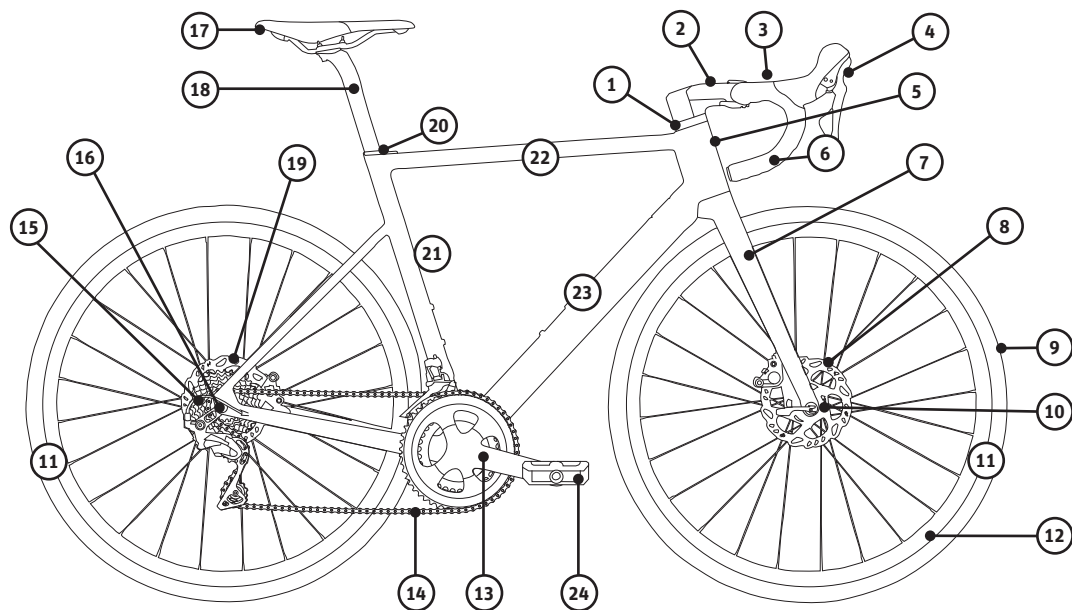
# Trekking Bike



- 1 Front stem
- 2 Handlebar grip
- 3 Bell
- 4 Handlebars
- 5 Headset
- 6 Head tube
- 7 Spotlight
- 8 Mudguard
- 9 Fork
- 10 Tyre
- 11 Brake disc
- 12 Front wheel hub
- 13 Rims
- 14 Spokes
- 15 Front brake
- 16 Wheels
- 17 Pedals
- 18 Crank
- 19 Belt
- 20 Sprocket
- 21 Rear wheel hub
- 22 Stand
- 23 Rear light
- 24 Reflector
- 25 Luggage rack
- 26 Saddle
- 27 Seat post
- 28 Saddle clamp
- 29 Seat tube
- 30 Crossbar
- 31 Down tube

This is a sample illustration of our bicycles.

## Racing bike



- 1 Headset
- 2 Front stem
- 3 Handlebars
- 4 Brake lever
- 5 Head tube
- 6 Handlebar grip
- 7 Fork
- 8 Front brake
- 9 Tyre
- 10 Front wheel hub
- 11 Wheels
- 12 Rims
- 13 Crank
- 14 Chain
- 15 Sprocket
- 16 Rear wheel hub
- 17 Saddle
- 18 Seat post
- 19 Rear brake
- 20 Saddle clamp
- 21 Seat tube
- 22 Crossbar
- 23 Down tube
- 24 Pedals

This is a sample illustration of our bicycles.



## Dear customer,

These operating instructions will help you to use your bicycle properly and safely, so that you can get many years of enjoyment out of it.

If your bicycle has not been handed over to you completely assembled and adjusted, please contact your dealer for any adjustments.

### **⚠ Warning**

#### **Serious injury and/or equipment damage caused by incomplete assembly.**

- This bicycle may only be used if all of its components have been assembled in accordance with the operating instructions  
⇒ 4. *Standard scope of supply Page EN-9* and all screws/nuts have been tightened with the specified tightening torque and the appropriate torque wrench  
⇒ 13. *Tightening torques for threaded connections Page EN-19.*



Fig. 1 Torque wrench

## 1. These operating instructions and all further documentation

### **⚠ Warnings**

#### **Serious injury and/or equipment damage caused by a failure to observe the operating instructions.**

- Read these operating instructions carefully before using your bike for the first time. Also read and observe all additional documentation provided  
⇒ 4. *Standard scope of supply Page EN-9.*
- Familiarise yourself with the appearance and meaning of the safety information symbols  
⇒ 6. *Safety Page EN-11.* In case of doubt, please contact your dealer.
- Ensure that your dealer has provided you with all the documents included with the bike upon delivery.
- Retain these operating instructions and all additional documentation for future reference. Pass these operating instructions and all additional documentation to anyone who uses, maintains, repairs or disposes of this bicycle.
- The manufacturer's liability and any warranty are deemed null and void for any damage or injury caused by a failure to adhere to safety symbols and instructions. ⇒ 37.1 *Warranty conditions Page EN-63.*

We assume that you have basic, sufficient knowledge of dealing with bicycles. You should however read these operating instructions in their entirety, and refer to the component operating instructions for special settings.

## 2. Websites

You can also get further information about your bicycle on the brand website.

## 3. Your dealer

If you have any questions, ask our cycle dealers for advice. All dealers in your region are listed on the brand website.

## 4. Standard scope of supply

Bicycle (motorless)	Pedelec	S-Pedelec
Original operating instructions – General	Original operating instructions – General	Original operating instructions – General
	Original operating instructions – System EU Declaration of Conformity/ UK Declaration of Conformity	Original operating instructions – System EU Certificate of Conformity

## 4.1 Original operating instructions – General

### Information

In these operating instructions, both bicycles which are not fitted with a motor and motorised bicycles are referred to as bicycles. Where a text section only applies to one of the three bicycle types, this refers either to a bicycle (motorless), a Pedelec or an S-Pedelec. If no differentiation is made, all three types of bicycle are meant.

The *Original Operating Instructions – General* describe the operation, care, maintenance and disposal of bicycles (motorless), Pedelecs and S-Pedelecs.

## 4.2 Pedelec/S-Pedelec: Original operating instructions – System

The system operating instructions describe the major components of your Pedelec/S-Pedelec. This usually means the motor, display, control element, battery and charger. If a hard copy of the operating instructions is not included, you can download them from the system manufacturer's website.

System manufacturer	Website
Bosch	bosch-ebike.com
Fazua	fazua.com
Shimano	shimano-steps.com

## 4.3 Pedelec: declarations of conformity
























We confirm with the declarations of conformity that all safety requirements in the directives applicable to the Pedelec and charger are satisfied.




































## 4.4 S-Pedelec: EU Certificate of Conformity




























The EU Certificate of Conformity confirms that the S-Pedelec complies with the standards. It contains the technical details and features of the S-Pedelec.

## 5. Component guides

The component guides contain important information on the use and maintenance of the parts of your bike. Often they also provide information on any warranties. An overview of the manufacturers that we work with is given below.

Manufacturer	Components	Website
3T	 Fork,  handlebars,  front stem	3tccycling.com
Abus	 Lock	abus.de
Acros	 Headset	acros.de
Axa	 Lights,  lock	axasecurity.com
BBB Cycling	 Handlebars	bbbicycling.com
Brooks	 Saddle	brooksengland.com
Büchel	 Lights	buechel-online.com
Busch & Müller	 Lights	bumm.de
byschulz	 Seat post,  Speedlifter	byschulz.com
Campagnolo	 Chain	campagnolo.com
Continental	 Tyres	conti-online.com
Crankbrothers	 Wheels	crankbrothers.com
Curana	 Mudguard	curana.com
Dt-Swiss	 Tyres,  forks,  dampers	dtswiss.com
Easton	 Tyres,  handlebars	eastonicycling.com
Ergon	 Grips,  saddle	ergon-bike.com

Manufacturer	Components	Website
Fizik	 Saddle	fizik.it
Fox	 Dampers,  forks,  seat post	foxracingshox.de
Fsa	 Crank set	fullspeedahead.com
Fulcrum	 Wheels	fulcrumwheels.com
Gates	 Belt	gatescarbdrive.com
Hayes	 Brakes	hayesdiscbrake.com
Hebie	 Chain guard,  mudguard,  stand	hebie.de
Hermans	 Grips,  spotlight	herrmans.eu
JD	 Seat post	tranzx.com
Kindshock	 Dampers,  seat post	kindshock.com
KMC	 Chain	kmcchain.de
KS	 Seat post	kssuspension.com
Magura	 Brakes,  dampers,  fork	magura.com
Manitou	 Dampers,  fork	manitoumtb.com
Marzocchi	 Fork	marzocchi.com
Mavic	 Wheels	mavic.de
Maxxis	 Tyres	maxxis.de
Mooncruiser	 Handlebars	ergotec.de
Novatec	 Hub	novatecusa.net
Pinion	 Crank set,  shifter	pinion.eu
Prologo	 Saddle	prologotouch.com
Promax	 Brakes	promaxcomponents.com
Prowheel	 Crank set	pro-wheel.com
Raceface	 Rims  Handlebars	raceface.com

Manufacturer	Components	Website
Racktime	 Luggage rack	racktime.com
RockShox	 Fork	sram.com
Rodi	 Rims	cycling.rodi.pt
RST	 Fork	rstsuspension.com
Samox	 Crank set	chainway.com
Schürmann	 Rims	schuermann-rims.com
Schwalbe	 Tyres	schwalbe.com
Selle	 Saddle	selleroyal.com
Shimano	 Brakes  Chain ⇌ Hub  Gear lever  Shifter  Sprocket	shimano.com
Spanninga	 Rear light	spanninga.com
Speedlifter	 Front stem	byschulz.com
Sr Suntour	 Fork	srsuntour-cycling.com
Sram	 Shifter	sram.com
Supernova	 Lights	supernova-lights.com
Tektro	 Brakes	tektro.com
Trelock	 Lights  Lock	trelock.de
Truvativ	 Crank set	sram.com
Tubus	 Luggage rack  Mudguard	tubus.com
Ursus	/ Stand	ursus.it
Velo	 Saddle	velo-de-ville.com
Westphal Ergo	 Grips	westphal-gmbh.de
Wittkop	 Saddle	wittkop.eu

## 6. Safety

### 6.1 Warning notices, safety instructions and notices

The warning notices, safety instructions and notices are structured according to the following scheme:

#### Warning sign and signal word

##### Possible consequence and the cause of the hazard.

- Measure that must be taken in order to avoid this hazard.

Various warning signs and signal words may be used, depending on the situation.

#### Warning

Indicates a potentially hazardous situation. Fatality or serious injury may result if the situation is not avoided.

#### Caution

Indicates a potentially hazardous situation. Minor or negligible injury may result if the situation is not avoided.

#### Notice

Indicates a potentially harmful situation. The product or something in its immediate vicinity may be damaged if the situation is not avoided.

#### Information

This symbol indicates helpful tips, useful or important information about the product or its additional uses. It does not indicate a dangerous or harmful situation.

## 6.2 General safety information

### Warnings

#### Serious head injuries from falling without a bicycle helmet.

- Always wear a bicycle helmet while riding. Make sure that the helmet fits properly.
- **S-Pedelec:** You are legally required to wear a helmet when riding an S-Pedelec ⇒ 7.2.2 *Rules of conduct Page EN-14.*

#### Serious falls, accidents and/or fines for non-compliance with the respective national traffic regulations and standards.

- Find out about applicable local legislation before using your bike abroad ⇒ 7. *Legal requirements for use on public roads Page EN-13.*
- Your bike must satisfy the requirements laid down in the relevant national operating regulations and all applicable standards. Take these requirements into account if you make any technical modifications ⇒ 7. *Legal requirements for use on public roads Page EN-13.*

#### Pedelec: Violations of criminal law and serious violations of insurance law due to Pedelec tuning

- Do not attempt any modifications to the drive system of the Pedelec. If the cut-off speed exceeds 25 km/h and/or the speed of the push assistance exceeds 6 km/h, a Pedelec will become liable to mandatory registration and insurance ⇒ 7. *Legal requirements for use on public roads Page EN-13.*

## ⚠ Warnings

- It is possible to change the size of the wheels on the frame of your Pedelec if necessary. This will affect the shutdown speed. Changes in wheel size should only be performed in a specialist workshop using the procedure provided, which has been approved by us.

### Serious falls and accidents due to insufficient bicycle control.

- Ask your cycle dealer to show you how to use your bike and explain its special features and components. Please also follow the component guides ⇒ 5. *Component guides Page EN-10.*
- Adjust the bicycle to your height ⇒ 14.4 *Configuring the individual settings Page EN-21.*
- Pedelec:** We recommend that only youngsters aged 14 and above be allowed to ride a Pedelec.
- Pedelec/S-Pedelec:** Practice riding with the assist function in a safe place before venturing into traffic. Ride in the lowest assist mode until you feel confident enough to try the higher modes. Dismount if you ever feel unsafe.
- Practise braking in a safe place before venturing into road traffic ⇒ 23. *Brakes Page EN-32.*
- Adapt your riding style to the prevailing traffic conditions. Bear in mind that longer braking distances are needed on wet or icy roads. Think ahead in such circumstances, anticipating the actions of other road users, and reduce your speed.
- Avoid sudden jerky movements of the handlebars and braking actions. Dismount if you ever feel unsafe.

- Be ready to brake, particularly in situations with poor visibility, and when riding downhill.
- Never ride "hands free". You may suffer a serious fall, and will also be committing a misdemeanour, as you are required by law to always have at least one hand on the handlebars ⇒ 7.4 *Rules of conduct on the Internet Page EN-14.*
- Concentrate on the traffic. Do not let yourself become distracted by the display or your smartphone. We do not recommend listening to music on headphones while riding.
- Only use original replacement parts when replacing components and consumer parts. In addition to original replacement parts, you may also use compatible components that have been expressly approved by us.
- Replace any damaged or bent components before using the bike again. Not doing so can lead to the failure of essential parts.

### Serious falls and accidents caused by detached or broken components.

- Have all assembly and adjustment work done in a specialist workshop. If you must attach anything yourself, use an appropriate torque wrench and be sure to comply with the specified tightening torques ⇒ 13. *Tightening torques for threaded connections Page EN-19.* Insufficiently tightened screws/nuts can loosen, tear off or break. Excessively tightened screws/nuts can damage the components. The tightening torques are marked on the components and in the operating instructions. Tightening torques provided by a component manufacturer shall take precedence over torque values given in these operating instructions ⇒ 5. *Component guides Page EN-10.*



Fig. 2 Torque wrench

## ⚠ Warnings

### Serious falls and accidents caused by insufficient lighting.

- Do not ride in unfavourable lighting conditions (fog, rain, dusk, darkness) without adequate lights ⇒ 7. *Legal requirements for use on public roads Page EN-13.*
- Pedelec/S-Pedelec:** If your Pedelec/S-Pedelec is fitted with a backup light, we recommend keeping this switched on at all times.

### Serious injury caused by an exploding battery.

- Pedelec/S-Pedelec:** Do not open up the battery.

## Notices ⓘ

### Faulty components and lapsed warranty due to improper repair.

- Contact your specialist workshop in the event of any problems with components.
- Pedelec/S-Pedelec:** Do not open up the motor, display, control element or charger.

### Damaged components because the bicycle was not parked securely, and fell over.

- Always park your bicycle so that it cannot tip over. If your bike is not equipped with a kick stand, one can be fitted if required. Please contact your cycle dealer.

## Information ⓘ

**Pedelec/S-Pedelec:** The A-weighted emission sound pressure level is lower than 70 dB(A) at the cyclist's ears. This means that the noise emitted by the Pedelec/S-Pedelec while in use does not exceed 70 dB(A).

### 6.3 Carbon: general safety information

Carbon is a material which is rust-free, very light and stable, but which does however require special care. Typical components made from carbon fibre can for example include handlebars, front stems, seat posts and saddle rails, cranks, frames and forks. Let your dealer show you how to deal with this material.

#### ⚠ Warnings

##### Serious falls and accidents caused by broken components.

- Carbon components must no longer be used if they are cracked or broken.
- Never expose carbon components to high temperatures! Temperatures which are detrimental to the safety of components can be reached even in a vehicle left in strong sunlight. If you are not absolutely sure about the intact condition of a carbon component, have the affected part checked at a specialist workshop, and replaced if necessary.

#### ⚠ Caution

##### Slight injury caused by carbon splinters.

- Carbon fibres are very thin and hard. Damaged carbon parts should therefore be handled with great care. Individual fibres can peel off and protrude. You run the risk of injury from small splinters, should these come into contact with your skin.

## 7. Legal requirements for use on public roads

If you use your bicycle on public roads, you must satisfy legal requirements. Violations are classed as misdemeanours, and are punishable by fines. The following regulations, inter alia, were applicable at the time that these operating instructions were prepared (06/2021):

### 7.1 Bicycle (motorless)/Pedelec

In Europe, Pedelects are legally classified as bicycles with no motor if the motor has a rated continuous output of 250 Watt, supporting pedalling up to approximately 25 km/h before switching off support at speeds in excess of this. Therefore, Pedelects and their riders on public roads are subject to the same requirements as motorless bicycles. So, you don't need a driving licence, or insurance for your Pedelec. While there is no legal obligation to wear a helmet, you should always wear a suitable helmet for your own safety when underway.

#### 7.1.1 Operating regulations

If you want to ride on a public road, your bicycle (motorless) or Pedelec must at least be fitted with the following components:

- Brake system
- Bell
- Lighting device

In Germany, for example, the following lighting devices are required (StVZO §67): One white spotlight, one red rear light, two yellow reflectors on each of the pedals and two yellow reflectors per wheel (alternatively, white reflecting rings on the tyres or rims).

In addition, further requirements are covered in national legislation governing operating regulations ⇒ 7.3 *Operating regulations on the Internet Page EN-14*. If components which are required by law in your country are not fitted to your bicycle, you must retrofit these before travelling on public roads.

#### 7.1.2 Rules of conduct

If you travel on public roads with your bicycle (motorless)/Pedelec, you must also comply with certain rules as a rider. In addition to specific national requirements, ⇒ 7.4 *Rules of conduct on the Internet Page EN-14* these normally include:

- Due consideration for other road users.
- Do not ride under the influence of alcohol or drugs.
- Do not ride "hands free".
- Stop when the traffic light is red.
- Use cycle paths.
- Always ride on the proper side of the road. However, if a cycle path is only available on the other side of the street and this is marked with a traffic sign with a bicycle, you must use this.



Fig. 3 Special routes for cyclists

### 7.2 S-Pedelec

In Europe, S-Pedelects are legally classified as Class L1e mopeds. The operating and behavioural regulations applicable on public roads differ from those for motorless bicycles and Pedelects:

#### 7.2.1 Operating regulations

If you want to use your S-Pedelec on public roads, you must satisfy the following, inter alia:

- You require an EU Certificate of Conformity ⇒ 4.4 *S-Pedelec: EU Certificate of Conformity Page EN-10*.
- Riders must have insurance. An illuminated (insurance) number plate is also required.
- You need a Class AM driving licence at least.
- A horn, mirror and side stand must be fitted to the S-Pedelec.
- The S-Pedelec must be fitted with a white spotlight and red rear light. The spotlight and rear light must always be lit while riding. Two yellow reflectors must also be fitted to each of the pedals and two yellow reflectors per wheel (alternatively, white reflecting rings on the tyres or rims). In addition, S-Pedelects also require yellow side reflectors, which are normally fitted to the fork.

In addition, further requirements are covered in national legislation governing operating regulations ⇒ *7.3 Operating regulations on the Internet Page EN-14*. If components which are required by law in your country are not fitted to your bicycle, you must retrofit these before travelling on public roads.

### 7.2.2 Rules of conduct

If you travel on public roads with your S-Pedelec, you must also comply with certain rules as a rider. In addition to specific national requirements, ⇒ *7.4 Rules of conduct on the Internet Page EN-14* these normally include:

- A helmet must be worn. We recommend an NTA 8776 standard-compliant helmet.
- Due consideration for other road users.
- Do not ride under the influence of alcohol or drugs.
- Stop when the traffic light is red.
- Only use cycle paths in built-up areas when riding without motor support, or a *Mopeds allowed* sign allows this. Otherwise, you must ride on the road. Outside of town, you must use the cycle paths with your S-Pedelec. A *No mopeds* sign will indicate when this is not allowed.



Fig. 4 Moped-free

## 7.3 Operating regulations on the Internet

You can scan the QR code using the camera app on your smartphone. To do this, point the camera at the QR code for a couple of seconds. Then, simply follow the instructions.



### Germany

Straßenverkehrszulassungsordnung (StVZO)



### France

Code de la Route



### Great Britain

The Highway Code, road safety and vehicle rules



### Austria

Fahrradordnung



### Italy

Codice della strada



### Switzerland

Verordnung über die technischen Anforderungen an Strassenfahrzeuge (VTS)



### Spain

Reglamento de Tráfico

## 7.4 Rules of conduct on the Internet

You can scan the QR code using the camera app on your smartphone. To do this, point the camera at the QR code for a couple of seconds. Then, simply follow the instructions.



### Germany

Straßenverkehrs-Ordnung (StVO)



### Great Britain

The Highway Code, road safety and vehicle rules



### France

Code de la Route



### Italy

Codice della strada



### Austria

Straßenverkehrsordnung 1960 (StVO 1960)



### Switzerland

Strassenverkehrsgesetz (SVG)



### Spain

La ley del Tráfico

## 8. Pedelec/S-Pedelec: range

Because a variety of factors affect range, no exact prediction is possible. The following generally applies: The greater the power consumption, the shorter the range. If you want to go on a longer trip, it is worth taking a spare battery or charger with you. The following factors may have a powerful impact on range:

- **The selected assist mode:** The highest assist mode uses the most power, which reduces range. Vary the assist modes you use. If there is a tailwind when going downhill or on flat surfaces, you can still go fast with a lower assist mode.
  - **Switching behaviour:** A low pedalling speed combined with high gears results in a high power consumption. Switch smoothly to a low gear in good time to maintain constant cadence, especially when starting ⇒ 24. *Bicycle shifter Page EN-37.*
  - **Riding behaviour and the associated number of starts:** If you accelerate, you will use more power. So, travel at a constant speed, and change gears smoothly. Constant stopping and starting also reduces range. Think ahead when riding!
  - **Road profile and conditions:** You will need to pedal harder when cycling uphill or when the road is uneven. This is registered by the power sensor, which in turn requires the motor to work harder.
  - **Headwind and ambient temperature:** A headwind will also require you to pedal harder. The motor must therefore provide greater assistance. Range also decreases with the outdoor temperature. Therefore, (e.g., in winter) you should insert the battery just before starting off with your Pedelec.
  - **Total weight:** The lower the overall weight on the cycle ⇒ 12. *Permissible total weight Page EN-19*, the "easier" it is to ride it.
- **Seating position:** Make sure that you are seated in a comfortable position that is suitable for you, so that you can cover longer distances with minimum effort. In this way, you will be able to increase your range, as the e-system will need to provide less assistance ⇒ 14.4 *Configuring the individual settings Page EN-21.*
  - **The rolling resistance of the tyres:** The condition of your tyres will affect rolling resistance. This arises when the tyres deform as they roll. Power is lost in the process. Tyre pressure has the greatest impact on rolling resistance. If the pressure is too high or too low, resistance increases when underway, and the motor must provide greater assistance ⇒ 28.1 *Checking tyre pressure Page EN-54.* Diameter, width and profile also influence rolling resistance, however.
  - **The condition of the bicycle:** The better the condition of your bicycle, the better it will be to ride. Therefore, observe the maintenance intervals ⇒ 39. *Maintenance intervals Page EN-65.*
  - **The bicycle model:** Even if the drive system is the same, different bicycle models can have different ranges. This can for example depend on the components installed. Even on identical bicycles, the tolerances of system components can lead to small differences in power consumption.
  - **Charging a smartphone:** If you connect a smartphone to your display to charge it, this will use additional power.
  - **Age and condition of the battery:** A much shorter service life after the charging process indicates that the battery has lost considerable (storage) capacity. You may require a new battery. Contact your specialist workshop about this. Also observe the notices on battery use in the system operating instructions ⇒ 4.2 *Pedelec/S-Pedelec: Original operating instructions – System Page EN-10.*

## 9. Description of your bicycle

### 9.1 Bicycle (motorless)

A bicycle is a vehicle with a minimum of two wheels, usually one behind the other. It is powered exclusively by stepping on pedals, i.e., by the muscle strength of the person riding it.

### 9.2 Pedelec

A Pedelec is an electrically powered assisted bicycle, or EPAC (electrically power assisted cycle). When the assist mode is switched on, the electric drive provides assistance as long as you are pedalling. You can control the degree of assistance, which is adjusted using various assist modes ⇒ 4.2 *Pedelec/S-Pedelec: Original operating instructions – System Page EN-10*. The drive assistance is dependent on the force and speed of your pedalling and the speed you are travelling. Drive assistance stops as soon as you stop pedalling and when the battery is discharged or if you reach a speed of 25 km/h. Thus pedalling harder is required if you want to travel faster than 25 km/h.

### 9.3 S-Pedelec

From a legal standpoint, the S-Pedelec is a Class L1e moped. It may not travel at over 20 km/h using motor assistance only. You can only reach speeds in excess of this by combining the power of the motor with your own physical strength. As soon as you reach close to 45 km/h, the motor assistance switches off.

## 10. Frame marking

There are various markings on the bicycle frame which are either stamped or glued on. You will find out more about this below. Please do not remove these markings.

### 10.1 Frame number

The frame number is a specific code which is stamped into the frame. This helps to identify the bicycle in the event that it is stolen. It is best to write down the frame number immediately after buying the bicycle. If you cannot find the frame number, ask your specialist workshop or take a look at the brand website.

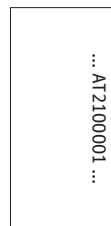


Fig. 5  
Frame number

### 10.2 S-Pedelec: VIN

The Vehicle Identification Number (VIN) allows every S-Pedelec to be uniquely identified. You will find the VIN on the right side of the seat tube in the direction of travel, as well as on the manufacturer's plate ⇒ 10.5 *S-Pedelec: manufacturer's type plate Page EN-17* and the EU Certificate of Conformity ⇒ 4.4 *S-Pedelec: EU Certificate of Conformity Page EN-10*.

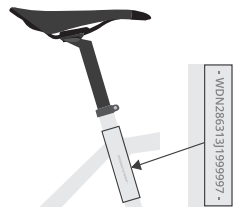


Fig. 6 Vehicle identification number (VIN)

### 10.3 Bicycle (motorless)/S-Pedelec: serial and product number

The serial number (S/N) and product number (P/N) identify the bicycle (motorless)/S-Pedelec and provide information on the production conditions and the components used.

**S/N: 376784 082**  
**P/N: 628568224**

Fig. 3 S/N and P/N stickers

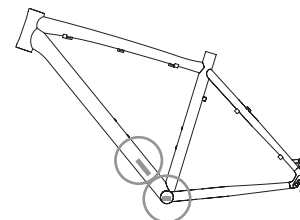


Fig. 7 Possible position of the labels

### 10.4 Pedelec: type plate

The type plate contains various information which describes and identifies the Pedelec.



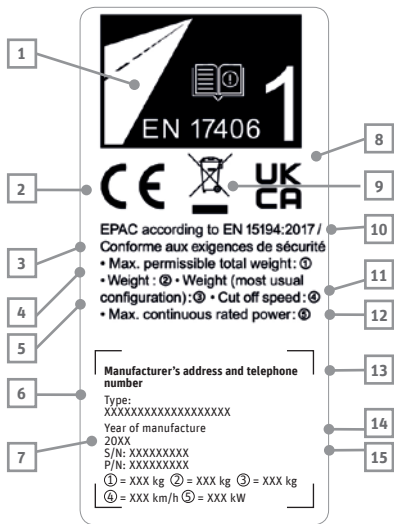


Fig. 8 Type plate

- |   |  |
|---|--|
| 1 Intended use  | 10 European standard compliant with            |
| 2 CE marking  | 11 Shutdown speed                              |
| 3 Electrically Power Assisted Cycle                                   | 12 Maximum rated continuous output             |
| 4 Permissible total weight  | 13 Manufacturer's address and telephone number |
| 5 Pedelec weight  | 14 Year of manufacture                         |
| 6 Model   | 15 Product number                              |
| 7 Serial number   |  |
| 8 UKCA marking  |  |
| 9 Do not dispose of the Pedelec and its components in household waste |  |

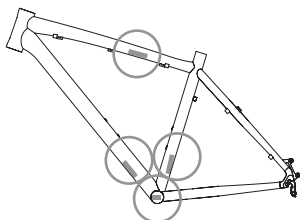


Fig. 9 Possible position of the type plate

### 10.5 S-Pedelec: manufacturer's type plate

The manufacturer's type plate contains various information which describes and identifies the S-Pedelec.

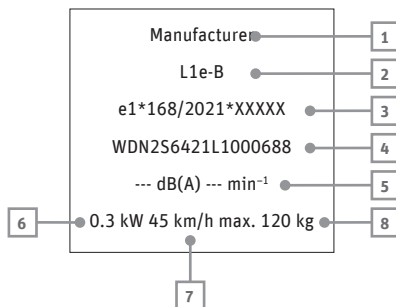


Fig. 10 Manufacturer's type plate

- 1 Manufacturer
- 2 Vehicle class
- 3 EU type approval number
- 4 Vehicle identification number
- 5 Standard noise at motor running speed
- 6 Maximum rated continuous output
- 7 Shutdown speed
- 8 Permissible total weight

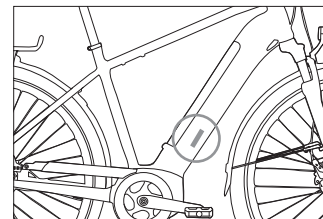


Fig. 11 Position of the manufacturer's type plate

### 10.6 Bicycle (without motor)/Pedelec: intended use

The image for intended use is close to the serial and product number







⇒ 10.3 Bicycle (motorless)/S-Pedelec: serial and product number Page EN-16 and/or the type plate

⇒ 10.4 Pedelec: type plate Page EN-16. It describes the use for which your bicycle (motorless)/Pedelec is technically and structurally designed.

The manufacturer and dealer accept no liability for damage resulting from any use extending beyond this definition and/or failure to comply with the safety instructions in the operating instructions. Intended use is also understood to include adherence to the conditions for operation, maintenance and repair.

#### Information

The marking does not exempt you from ensuring that your bicycle (motorless)/Pedelec complies with the relevant national road traffic regulations, e.g., regarding lighting, when used on public roads ⇒ 7.1 Bicycle (motorless)/Pedelec Page EN-13.

Condition	Image	Bicycle type (example)	Intended use	Recommended driving skills	Intended height of drops/jumps	Intended average speed range	Description
1		City and urban bikes	Commuting and leisure rides involving moderate exertion	No particular driving skills required.	< 15 cm	15 to 25 km/h	Bicycles and Pedelecs that are used on normal, paved surfaces, on which the tyres are intended to maintain ground contact at average speeds. Drops (a descent from a step) are limited to a maximum height of 15 cm.
2		Trekking and touring bikes	Commuting and leisure rides involving moderate exertion	No particular driving skills required.	< 15 cm	15 to 25 km/h	Bicycles and Pedelecs, for which Condition 1 applies and which are also used on unpaved roads and gravel paths with moderate inclines and slopes. Under such conditions, interaction with uneven surfaces, and loss of tyre contact with the ground may occur. Drops (a descent from a step) are limited to a maximum height of 15 cm.
3		Cross-country and marathon bikes	Sports and competitive rides with routes which are moderately technically challenging.	Requires driving skills and practice.	< 60 cm	Not applicable	Bicycles and Pedelecs, for which Conditions 1 and 2 apply and which are also used on rough tracks, uneven, and paved roads as well as in difficult terrain and on non-accessible routes, and for the use of which technical skills are required. Jumps and drops (a descent from a step) are limited to a maximum height of 60 cm
4		Mountain bikes, trail bikes	Sports and competitive rides with routes which pose challenging technical demands.	Requires technical skills, practice and good bike control.	< 120 cm	Not applicable	Bicycles and Pedelecs, for which Conditions 1, 2 and 3 apply and which are used for descents on unpaved roads at speeds of less than 40 km/h. Jumps are limited to a maximum height of 120 cm.
5		Downhill, dirtjump and freeride bikes	Extreme sports	Requires extreme technical skills, practice and riding control	> 120 cm	Not applicable	Bicycles and Pedelecs for which Conditions 1, 2, 3 and 4 apply, and which are used for extreme jumps or descents on unpaved roads at speeds exceeding 40 km/h or a combination thereof.
6		Racing, time trial and triathlon bikes	Sports and competitive rides with high levels of exertion	Requires extreme technical skills, practice and riding control	< 15 cm	30 to 55 km/h	Bicycles and Pedelecs for which Condition 1 applies and which are used in competitions or on other occasions at high speeds in excess of 50 km/h, for example descents and sprints.

## 11. Bicycle weight

### Information

If you want to know the precise weight of your bicycle, we recommend having it weighed by your specialist workshop. Most bicycle dealers have a professional and accurate cycle weighing scale.

**Pedelec:** The maximum weight of your Pedelec is given on the type plate ⇒ 10.4 *Pedelec: type plate Page EN-16.*

## 12. Permissible total weight

### Warning

**Serious falls and accidents caused by component failure.**

- Do not exceed the total permissible weight of the bicycle, as this can lead to the breakage or failure of important safety components. In addition, the braking system is only designed for the permitted total weight of the bicycle.

**Total weight** = weight of the bicycle + weight of the rider + weight of the trailer + weight of the child seat + weight of luggage and/or child.

Bicycle types	Permitted total weight
Bicycle	130 kg
Bicycle XXL/PLUS+	170 kg
<b>Pedelec</b>	130 kg <sup>1</sup>
<b>Pedelec XXL/PLUS+</b>	170 kg <sup>1</sup>
Mountain bikes	110 kg
<b>Pedelec:</b> E-mountain bikes	120 kg <sup>1</sup>
<b>Pedelec:</b> E-mountain bikes	135 kg <sup>1</sup>
<b>Pedelec:</b> E-mountain bikes	150 kg <sup>1</sup>
Racing bikes	110 kg
<b>Pedelec:</b> E-racing bikes	120 kg <sup>1</sup>
<b>S-Pedelec:</b> All bicycle types	120 or 130 kg <sup>2</sup>

1 Pedelec: The permitted total weight of your Pedelec is given on the type plate ⇒ 10.4 *Pedelec: type plate Page EN-16.*

2 S-Pedelec: The permitted total weight of your S-Pedelec is also given in the EU Certificate of Conformity ⇒ 4.4 *S-Pedelec: EU Certificate of Conformity Page EN-10* and on the manufacturer's type plate ⇒ 10.5 *S-Pedelec: manufacturer's type plate Page EN-17.*

## 13. Tightening torques for threaded connections

### Warnings

**Serious falls and accidents caused by detached or broken components.**

- Have all assembly and adjustment work done in a specialist workshop. If you must attach anything yourself, use an appropriate torque wrench and be sure to comply with the specified tightening torques.

Insufficiently tightened screws/nuts can loosen, tear off or break. Excessively tightened screws/nuts can damage the components. The tightening torques are marked on the components and in the operating instructions. Tightening torques provided by a component manufacturer shall take precedence over torque values given in these operating instructions ⇒ 5. *Component guides Page EN-10.*

- Observe the minimum screw-in depth. For hard aluminium alloys, this is at least 1.4 times the diameter of the screw.
- Carbon:** Some carbon components require lower tightening torques than metal components for secure fastening. Excessive torques can lead to hidden damage which may not be visible from the outside.
- Carbon:** Carbon parts must be assembled using a special assembly paste. You should also note any other, differing information or markings for recommended torques for carbon components.



Fig. 12  
Torque wrench

## Information

- Screws and nuts are tightened or locked clockwise (so, by rotating them to the right). Rotating them counterclockwise (to the left) loosens the screws and/or nuts.
- Adjustment screws can be rotated to the left (counterclockwise) and to the right (clockwise).

Threaded connection	Thread	Tightening torque
Front axle nut	General	25 Nm
Rear axle nut	General	30 Nm
Ahead front stem, fork shaft	M5   M6   M7	5 Nm   10 Nm   14 Nm
Ahead front stem, handlebar clamp	M5   M6   M7	5 Nm   10 Nm   14 Nm
Ahead front stem, angle setting	M6	10 Nm
Bar end, external clamp	M5   M6	5 Nm   10 Nm
Brakes, lining	M6	10 Nm
Brakes, cable clamp	M6	10 Nm
Brake lever	M5	5 Nm
<b>Carbon frame</b> , saddle fastening clamp	M5   M6	5 Nm
<b>Carbon frame</b> , water bottle holder	M5	5 Nm
<b>Carbon frame</b> , derailleur clamp	M5	4 Nm
<b>Carbon</b> handlebars, gear lever clamp	M5	3 Nm
<b>Carbon</b> handlebars, brake lever clamp	M5	3 Nm
<b>Carbon</b> handlebars, handlebar clamp	M5	5 Nm
<b>Carbon</b> handlebars, shaft clamp	M5   M6	5 Nm

Threaded connection	Thread	Tightening torque
Handlebar grip, screw-on	M4   M5	3 Nm   5 Nm
Freewheel fastening screw	n/a	40 Nm
Cassette, fixing ring	n/a	30 Nm
Pedal	9/16"	30 Nm
Racing bike brakes (side-pull)	M6	10 Nm
Seat post, saddle clamp	M6   M8	10 Nm   20 Nm
Seat post, saddle bracket	M7   M8	14 Nm   20 Nm
Derailleur hanger	M10x1	16 Nm
Disc brake calliper, Shimano, IS and PM	M6	6 - 8 Nm
Disc brake calliper, AVID, IS and PM	M6	8 - 10 Nm
Disc brake calliper, Magura, IS and PM	M6	6 Nm
Gear lever	M5	5 Nm
Pedal crank arm, steel	M8x1	30 Nm
Pedal crank arm, aluminium	M8x1	30 Nm
Bottom bracket	BSA	Ref. manufacturer's spec.
Derailleur clamp	M5	5 Nm
V-brakes, fastening screw	M6	10 Nm
Stem, wedge	M8	23 Nm

## 14. Before your first ride

### 14.1 Attaching the pedals

You can install loose pedals as follows:

#### Warning

**Serious falls due to damaged threads on the pedal crank.**

- Screw the pedals in straight.

1. Coat both pedal threads with lubricant (grease).
2. Screw the right-hand pedal (marked 'R') into the right-hand pedal crank in a clockwise direction.
3. Screw the left-hand pedal (marked 'L') anticlockwise into the left-hand pedal crank.
4. Tighten both pedals towards the front wheel.

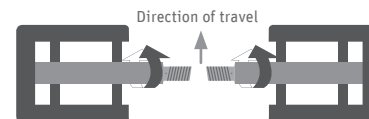


Fig. 13 Attaching the pedals

### 14.1.1 Clipless pedals

#### ⚠ Warnings

##### **Serious falls and accidents caused by insufficient bicycle control.**

- Use clipless pedals only with the designated cleats and shoes. Using other shoes may cause you to slip off the pedals.
- First practice clicking into the pedal and releasing the shoe from the pedal while standing.
- Read the pedal and shoe manufacturer's operating instructions ⇒ 5. Component guides Page EN-10.

Clipless pedals enable a firm connection between the foot and pedal. Clipless pedal systems are primarily used in the racing bike and MTB field.

### 14.2 Lights

#### ⚠ Warning

##### **Serious accidents caused by lack of lighting.**

- A failure or malfunction of the lighting device can lead to serious accidents when riding in the dark. Have any faults rectified at a specialist workshop before riding again.

### 14.2.1 Fitting lighting

Equip your bicycle in accordance with the provisions in the country in which you want to ride ⇒ 7. Legal requirements for use on public roads Page EN-13. If the reflectors are supplied unassembled, you can fit these by holding them from the outside between two spokes and then moving them inwards until they click onto both spokes.

### 14.2.2 Bicycles: switching the lights on and off

Our motorless bicycles are usually fitted with a hub dynamo. These are located on the hub of the front wheel, and generate electricity while you ride. On certain models, you can operate the lighting using an on/off switch on the spotlight. This also switches the rear light on or off at the same time.

### 14.2.3 Pedelects/S-Pedelects: switching the lights on and off and/or continuous lighting requirement

Pedelects and S-Pedelects get the power for their lighting from the e-system. This is usually switched on and off using the display and control element. On S-Pedelects, however, the lighting cannot be switched off. These are subject to a continuous lighting requirement. Please also note the explanations in ⇒ 4.2 Pedelect/S-Pedelect: Original operating instructions – System Page EN-10.

Certain models also come with a button on the handlebars with which to switch high beam on and off. Even when motor assistance is no longer possible, a certain amount of residual current will still be available for the lighting. You should, however, ensure that you do not suddenly find yourself in the dark without a light, e.g., by always having a spare battery or planning your trip in such a way that the battery can be recharged on the way.

### 14.3 Replacement bulbs

The replacement bulbs you will need depend on the lighting device fitted on your bike. The table below tells you what type of light you will need:

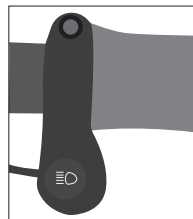


Fig. 14 High beam

Lighting type	Power supply	
Spotlight (bulb)	6 V	2.4 W
Halogen spotlight	6 V	2.4 W
Rear light	6 V	0.6 W
Rear light with parking light	6 V	0.6 W
Lighting with LED lamps	LED lamps are not replaceable	
Hub dynamo	6 V	3 W

### 14.4 Configuring the individual settings

Before riding your bicycle for the first time, your bicycle dealer or you should adjust it to your height. To sit comfortably and safely on the bicycle, you can:

- Adjust the height of the seat  
⇒ 17.1 Setting the height of the seat Page EN-24
- Adjust the position and angle of the saddle  
⇒ 18. Adjusting the position and angle of the saddle Page EN-26
- Change the position and height of the handlebars  
⇒ 19. Adjusting the handlebars and front stems Page EN-28
- Change the position of the handlebar grips  
⇒ 20. Adjusting the position of the position of the handlebar grips Page EN-29
- Change the position of the brake lever  
⇒ 23.4 Brake lever(s) Page EN-34
- Change the position of the gear levers ⇒ 24.1 Adjusting the position of the control elements Page EN-37

Once your bicycle has been adjusted to suit you, please use section ⇒ 15. Before every trip Page EN-22 to check whether your bicycle is ready for use.

## 14.5 Practising braking

As every bicycle can react differently depending on its braking system, you should familiarise yourself with the right braking technique. Practise braking in a safe place before venturing into road traffic. Practise until you feel safe ⇒ 23. *Brakes Page EN-32.*

## 15. Before every trip

### Warning

#### Serious falls and accidents caused by insufficient bicycle control.

- Do not ride the bicycle if it is not fully assembled. If you need help with assembly, get in touch with a specialist workshop.
- Do not use the bike if it is not in perfect technical condition. If you are unsure, ask your dealer to check it over. Have inoperable or damaged parts replaced.
- **Pedelec/S-Pedelec:** If your Pedelec/S-Pedelec switches off while you are riding, stop the ride and visit a specialist workshop.

Inspect your bicycle before every trip, and after each time it has been transported anywhere or left unattended. Use the following checklist to help you.

## 15.1 Checklist

Components	Inspection
Frame / forks	Check the frame ⇒ 16. <i>Bicycle frame Page EN-23</i> and forks ⇒ 22. <i>Bicycle fork Page EN-31</i> for visible warping, cracks and damage.
Elastic mounts	Check function, setting and secure fastening.
Handlebars / front stem	Check the right position and a correct, firm fit ⇒ 19. <i>Adjusting the handlebars and front stems Page EN-28.</i>
	Check that the bell is working and attached correctly and securely.
Saddle / seat post	Check the quick-release skewer for firm seating. The quick-release skewers must be locked ⇒ 17.1.2 <i>Fastening with quick-release skewer Page EN-24.</i>
	Check the right position and correct, secure fastening ⇒ 17. <i>Seat height Page EN-24,</i> ⇒ 18. <i>Adjusting the position and angle of the saddle Page EN-26.</i>
Wheels	Check the condition (damage, foreign bodies, profile depth), concentricity and pressures of the tyres ⇒ 28. <i>Tyres and tubes Page EN-53.</i>
	Check the valves are seated securely ⇒ 28.3.1 <i>Valves Page EN-54.</i>
	Visually inspect the spokes and rims for damage and wear ⇒ 27.3 <i>Rims Page EN-53.</i>
	Check that the quick-release skewers/through-axles are correctly and securely seated ⇒ 27.1 <i>Fastening wheels with quick-release skewers Page EN-51,</i> ⇒ 27.2 <i>Attaching wheels with through-axles Page EN-52.</i>

Components	Inspection
Chain or belt	Check the chain, belt, pinions and sprockets for wear and damage ⇒ 25. <i>Chain Page EN-48,</i> ⇒ 26. <i>Belt Page EN-49.</i>
Brakes	Check that the brake system ⇒ 23.4 <i>Brake lever(s) Page EN-34</i> (including brake levers) is working and attached correctly and securely.
	Visual inspection of the brake pads/discs ⇒ 23.6 <i>Replacing the brake pads Page EN-36.</i>
	Check the lines and connections (hydraulic brakes) for leaks.
Cables, brake cables and lines, switching cables and lines	Check that all cables, lines and wires are intact and not kinked.
Lights	Check that the light system is adjusted and in working order ⇒ 14.2 <i>Lights Page EN-21.</i>
	Check that reflectors are affixed in accordance with applicable national traffic regulations ⇒ 7. <i>Legal requirements for use on public roads Page EN-13.</i>
Threaded joints	Check that all threaded joints are tightened as specified ⇒ 13. <i>Tightening torques for threaded connections Page EN-19.</i>

Components	Inspection
Luggage	Check it is attached securely.
	Observe the maximum loading and total weight ⇒ 12. Permissible total weight Page EN-19, ⇒ 30. Luggage rack Page EN-59.
	Distribute the luggage so that the weight is evenly distributed to ensure safer riding characteristics.
Carbon frame and parts ⇒ 6.3 Carbon: general safety information Page EN-13	Examine surfaces for changes (chipping, deep scratches, holes).
	Check the strength of the frame and components.
	Pay attention to unusual noises, such as creaking or cracking.

## 16. Bicycle frame

### ⚠ Warnings

#### Serious falls and accidents caused by broken components.

- Never ride with a bent or cracked frame.
- After any accident or fall, you should have your bicycle checked by a specialist workshop before riding it again. Undetected faults can lead to accidents.

The shape of the frame depends on the type and function of the bicycle. Frames are made from a variety of materials, such as steel or aluminium alloys, or carbon (carbon fibre). If you own a carbon frame, be sure to read ⇒ 6.3 Carbon: general safety information Page EN-13.

### 16.1 Aluminium and steel frames: rollers

Use with Pedelects and S-Pedelects is not approved. Rollers with rear-wheel axle clamping can be used with motorless bicycles with an aluminium or steel frame. If the rear wheel of the bicycle is fitted with an R.A.T. through-axle, this can only be secured to the roller using an adapter. You can get the correct axle nut from your specialist workshop.

### 16.2 Carbon frame: rollers

#### Notice ⓘ

Do not clamp a carbon frame in a roller using rear wheel axle clamping. Carbon frames are normally not designed to withstand this kind of force, and can be damaged by the roller. There are exceptions, however. Ask at your specialist workshop or consult the brand website to find out whether it is possible to use a roller with your bicycle.

### 16.3 Carbon frame: assembly stand

If you want to fix your carbon frame in an assembly stand, only clamp it to the seat post, as the clamping mechanism may otherwise cause visible or hidden damage to the frame ⇒ 6.3 Carbon: general safety information Page EN-13.

If your bicycle is fitted with a carbon seat post, we recommend fitting an aluminium or steel post for this work.

### 16.4 Frame with rear suspension

Here, the rear of the main frame is not rigid, but is mounted so that it can move, and is sprung and dampened with a shock absorber. Ask your specialist workshop to adjust the elastic mounts.

### Information ⓘ

The dealer should have adjusted the suspension for you during delivery. It is possible that your bicycle and the seating position may look and feel different when riding than what you are used to. The shock absorber must be tuned so that it responds gently but does not bottom out when you ride over an obstacle. To do this, it should sink a little when you sit on your bicycle.

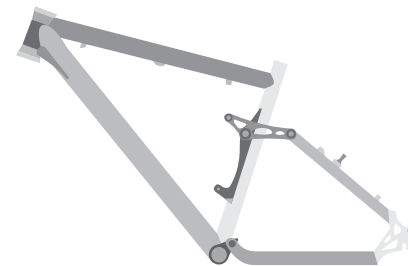


Fig. 15 Frame with suspension

### 16.5 Cleaning and care

Use a soft brush to clean debris off your bicycle. Be careful not to scratch the frame. Stubborn dirt can be removed with a sponge and water or bicycle cleaner. Under no circumstances should you use a high-pressure cleaner for cleaning. This could damage the electronic components. If your frame is fitted with elastic mounts, you can clean these regularly with a slightly damp cloth. Paint damage and rust spots should be repaired in your specialist workshop.

## 17. Seat height

### ⚠ Warnings

#### Serious falls due to incorrect adjustments.

- We recommend having your cycle dealer perform all assembly and adjustment work. If you want to screw something on by yourself, be sure to observe ⇒ 13. *Tightening torques for threaded connections* Page EN-19.

How to determine the optimal seat height for your body size:

1. Sit on the saddle and at the same time, lean against a wall.
2. Turn the foot pedal on the opposite side to the wall to its lowest point.
3. Place your heel on the pedal. Your leg should be fully extended.
4. If your leg is not fully extended when your heel is on the pedal, raise the saddle. Lower the saddle if you cannot reach the pedal.



Fig. 16  
Push leg through

### 17.1 Setting the height of the seat

#### ⚠ Warning

##### Serious falls due to a bent or broken seat post.

- The seat post must be inserted into the seat tube to a depth of at least 10 cm. The 10 cm minimum insertion depth also applies if a lower minimum insertion depth is given in the component operating instructions or on the seat post itself.

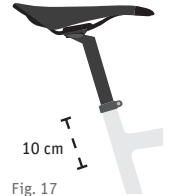


Fig. 17  
Minimum insertion depth

You can adjust the height of the seat using the seat post. The seat post is inserted into the seat tube of the bicycle and is secured there with an external or built-in seat post clamp. The seat post clamp is then tensioned either with one or two seat post clamp screws or with a quick-release skewer with tensioning lever.

#### 17.1.1 Securing with seat post clamp screw(s)

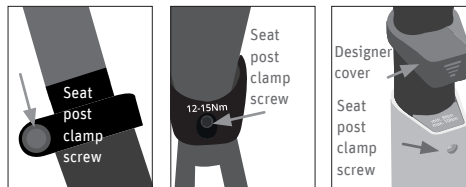


Fig. 18 Seat post clamping variations

1. If the seat post clamp screw(s) is (are) covered with a designer cover, you will need to first lift this up slightly before starting with the adjustment.
2. Undo the saddle clamp screw(s) by turning it/them anticlockwise with an Allen key. Be careful not to turn the screw(s) beyond their resistance.
3. Move the seat post into the right position.
4. Tighten the seat post clamp screw(s) by rotating them clockwise with the specified torque and a torque wrench ⇒ 13. *Tightening torques for threaded connections* Page EN-19.
5. If a designer cover is provided to protect the seat post clamp screw(s), this can now be lowered again.
6. Try to twist the saddle to check that it is firmly fixed.

#### 17.1.2 Fastening with quick-release skewer

#### ⚠ Warning

##### Serious falls due to loose or broken seat post.

- The tensioning lever must be correctly closed before you set off.

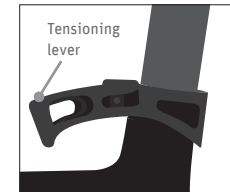


Fig. 19a Tensioning lever open



Fig. 19b Tensioning lever closed



1. Open the tensioning lever by folding it by 180°. **OPEN** must now be visible.
2. Move the seat post into the right position.
3. Close the tensioning lever by swinging the lever by 180°. **CLOSE** should now be visible. The lever should be very easy to move from the beginning of the closing movement up to halfway. Then, the force required to move the lever must significantly increase until the lever is very difficult to move at the end.
4. **a)** If the quick-release skewer closes too easily, the pre-tension must be increased: To do this, open the tensioning lever and slide the seat post into the desired position. Then, hold the tensioning lever and turn the clamping nut on the opposite side clockwise. Check whether the correct pre-tensioning has been achieved by closing the tensioning lever.  
**b)** If the quick-release skewer is too difficult to close, the pre-tension must be reduced: To do this, open the tensioning lever and slide the seat post into the desired position. Then, hold the tensioning lever and turn the clamping nut on the opposite side counterclockwise. Check whether the correct pre-tensioning has been achieved by closing the tensioning lever.
5. Close the tensioning lever. The lever must be positioned in such a way that it cannot be opened accidentally.
6. Try to twist the saddle to check that it is firmly fixed.

## 17.2 Lowerable seat post

### ⚠ Warning

#### Serious falls due to locked rear wheel.

- Before your first ride, check whether the rear wheel is locked by the lowering of the seat post. If the saddle comes into contact with the rear wheel in its lowest position, the insertion depth of the seat post must be reduced. Make sure, however, that the seat post is inserted at least 10 cm into the seat tube.

### Information

If you want to retrofit a lowerable seat post to your bicycle at a later stage, it is possible that the tightening torques for the seat post clamping screw(s) are lower than the values given on the seat post clamp or in the component operating instructions.

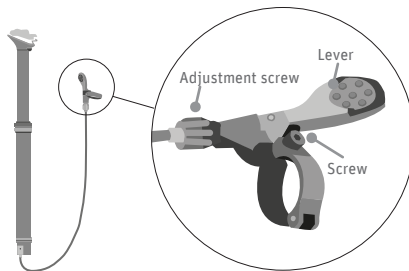


Fig. 20 Lowerable seat post

Fig. 21 Control element

If your bicycle is fitted with a lowerable seat post, you can adjust the height of the seat post while riding. This is done using the control element on the handlebars. Pressing the lever either raises or lowers the seat post. Releasing the lever locks the seat post in the corresponding position.

### 17.2.1 Positioning the control element

1. Loosen the screw on the control element by turning it two to three turns anticlockwise.
2. Position the control element in the desired position.
3. Tighten the screw again by rotating it clockwise to the specified torque using a torque wrench ⇒ 13.

*Tightening torques for threaded connections Page EN-19.*

### 17.2.2 Changing the lever pressure

If the lever is very difficult to press, it can make sense to decrease the cable tension:

1. Turn the adjustment screw one or two turns counterclockwise to decrease the tension.

If the lever is too easy to push and it is actuated too easily, it can make sense to increase the tensile stress:

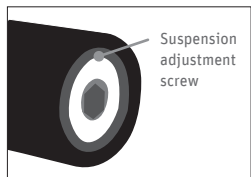
2. Turn the adjustment screw clockwise to increase the tension.

## 17.3 Suspension seat post

Ask your cycle dealer to adjust the suspension elements of the seat post.

### 17.3.1 Suspension adjustment screw

If the suspension adjustment screw protrudes from the seat post, it is important to correct this:



**The adjustment screw must not protrude from the seat post**

Fig. 22  
Suspension seat post

1. Remove the seat post  
⇒ 17.1 Setting the height of the seat Page EN-24.
2. If the suspension adjustment screw protrudes from the seat post, this can be corrected by turning it clockwise using an Allen key.
3. Reinstall the seat post  
⇒ 17.1 Setting the height of the seat Page EN-24.

### 17.4 Cleaning and care

Dirt often collects on the seat post and the upper area of the seat tube. Clean both with a slightly damp cloth. You may need to remove the seat post to do this. If you own a bicycle with an aluminium frame and aluminium seat post, you can coat the interior of the seat tube with a thin coat of suitable grease. Please use an appropriate carbon paste on carbon or aluminium frames with a carbon or aluminium seat post. Ask your specialist workshop if you are unsure what grease or carbon paste to use.

## 18. Adjusting the position and angle of the saddle

### ⚠ Warnings

**Serious falls due to incorrect adjustments.**

- We recommend leaving all assembly and adjustment work to a specialist workshop. If you want to screw something on by yourself, be sure to observe ⇒ 13. Tightening torques for threaded connections Page EN-19.

**Serious falls due to breaking seat stays.**

- Never clamp the saddle in the curve of the saddle rail; always do it in the straight section. Only shift the saddle within the straight section and within the marking.

**Serious falls because the clamping screws are torn from the nuts.**

- Screw the clamping screws **fully** in a straight position in the nuts.

A bicycle saddle consists of a rear main seat surface and a front saddle nose. The saddle is usually secured to the seat post using one or two clamping screws. You can adjust the position and angle of the saddle by loosening and tightening the clamping screw(s).

### 18.1 Single-screw seat post: adjusting the seating position

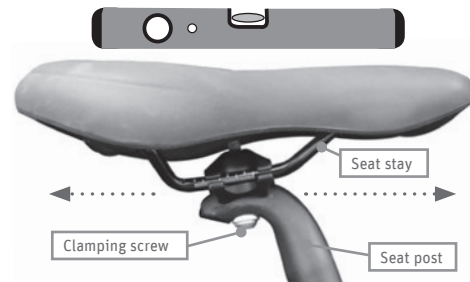


Fig. 23 Setting the seating position

1. **Moving the saddle:** Loosen the clamping screw by turning it anticlockwise. Turn the screw completely two to three times at most or the whole mechanism could fall apart.
2. Move the saddle horizontally. Stay within the marking and ensure (e.g., using a spirit level) that the saddle is horizontal.
3. **Tilting the saddle:** Most riders prefer a horizontal saddle. Should you prefer your saddle to be slightly inclined, skip the horizontal alignment in item 2 and adjust as required.
4. Secure the clamping screw by tightening it clockwise to the specified torque using a torque wrench ⇒ 13. Tightening torques for threaded connections Page EN-19. Ensure that the clamping screw is straight and completely screwed into the nut.
5. Ensure that the newly-tightened saddle does not tip; test it by pressing down on the front and back alternately. After approximately 50 km, tighten the saddle clamping screw again ⇒ 13. Tightening torques for threaded connections Page EN-19.

## 18.2 Dual-screw seat post I: adjusting the seating position

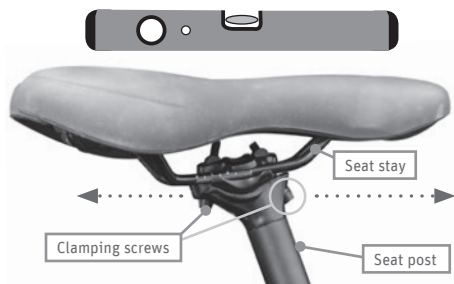


Fig. 24a Setting the seating position

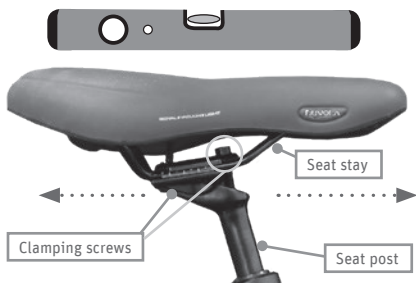


Fig. 24b Setting the seating position

1. **Moving the saddle:** Loosen the rear clamping screw by turning it anticlockwise. Turn the rear clamping screw completely two to three times at most, otherwise the whole mechanism could fall apart.
2. Move the saddle horizontally. Stay within the marking and ensure (e.g., using a spirit level) that the saddle is horizontal.

3. Tighten the front and rear clamping screws clockwise to the specified torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.* Use approximately the same tightening torque for both screws.
4. **Tilting the saddle:** Most riders prefer a horizontal saddle. If you prefer the saddle to be slightly inclined, however, loosen both clamping screws alternately by turning these counterclockwise. Turn the clamping screws completely two to three times at most, otherwise the whole mechanism could fall apart. The angle of the saddle will change as soon as you turn the clamping screws.
5. Tighten both clamping screws equally clockwise so that the saddle stays at the same angle.
6. Now, use a torque wrench to tighten the screws to the specified torque ⇒ 13. *Tightening torques for threaded connections Page EN-19.*
7. Ensure that the newly-tightened saddle does not tip; test it by pressing down on the front and back alternately. After approximately 50 km, tighten the saddle clamping screws again ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

## 18.3 Dual-screw seat post II: adjusting the seating position

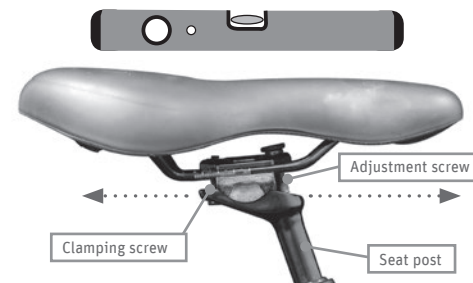


Fig. 25 Setting the seating position

1. **Moving the saddle:** Loosen the clamping screw by turning it anticlockwise. Turn the screw completely two to three times at most or the whole mechanism could fall apart.
2. Move the saddle horizontally. Stay within the marking and ensure (e.g., using a spirit level) that the saddle is horizontal.
3. Secure the clamping screw by tightening it clockwise to the specified torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.* Ensure that the clamping screw is straight and completely screwed into the nut.
4. **Tilting the saddle:** Most riders prefer a horizontal saddle. If you prefer the saddle to be slightly inclined, however, turn the adjustment screw clockwise slightly to move the saddle nose downward. To move the saddle nose upward, turn it counterclockwise slightly. The adjustment screw must be screwed in to a depth of at least 9 mm.

5. Ensure that the newly-tightened saddle does not tip; test it by pressing down on the front and back alternately. After approximately 50 km, tighten the saddle clamping screw again ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

## 18.4 Cleaning and care

Plastic saddles can be cleaned quickly and easily using a slightly damp cloth. You should treat leather saddles with a special grease approximately every 12 months. Protect the leather seat from rain with a cover and prevent extended exposure to sunlight. Please also follow the saddle manufacturer's operating instructions ⇒ 5. *Component guides Page EN-10.*

## 19. Adjusting the handlebars and front stems

### ⚠ Warning

#### Serious falls due to incorrect adjustments.

- We recommend leaving all assembly and adjustment work to a specialist workshop. If you want to screw something on by yourself, be sure to observe ⇒ 13. *Tightening torques for threaded connections Page EN-19*

Front stems connect the handlebars of the bicycle to the fork. They can be rigid, but they can also be angle- and height-adjustable. Straight front stems clamp into the fork steerer, while Ahead front stems are positioned together with spacers on the fork steerer. Depending on the front stem that is installed, you can adjust the position, angle and height of the handlebars.

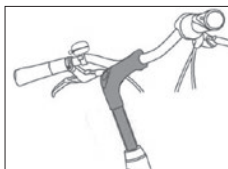


Fig. 26 Straight front stem

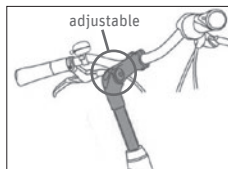


Fig. 27 Angle-adjustable straight front stem

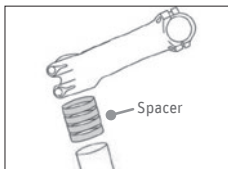


Fig. 28 Ahead front stem

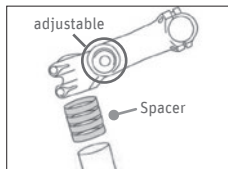


Fig. 29 Angle-adjustable Ahead front stem

### 19.1 Adjusting the position of the handlebars

Your arms should be slightly bent when cycling in order not to overstretch your wrists when holding the handlebars. Make adjustments as required if you notice after a while that the position of the handlebars does not suit your riding style.

### ⚠ Warning

#### Impaired function due to damaged and/or clamped cables.

- If control elements, brake and gear levers are not adjusted to the new handlebar position, rotating the handlebars can cause damage to cables that are routed through the inside of the front stem.

You can adjust the position of the handlebar by turning the handlebars. The procedure is almost identical for all front stem systems:

1. Loosen the screws on the front/top of the front stem by turning these counterclockwise with an Allen key.

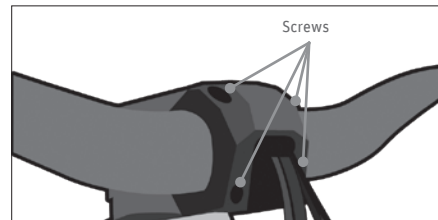


Fig. 30 Possible screw arrangement

2. Turn the handlebars until these reach a position that you find comfortable. Ensure that the handlebars are clamped exactly centrally in the front stem.
3. Now, tighten the screws again clockwise alternately and crosswise using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.* Once you have adjusted the position of the handlebar, you will need to adjust the control elements, brake and gear levers as required ⇒ 23.4 *Brake lever(s) Page EN-34,* ⇒ 24.1 *Adjusting the position of the control elements Page EN-37.*

### 19.2 Adjusting the angle of the handlebars

On angle-adjustable front stems, the angle of the handlebars can be adjusted using a screw in the front stem. The value of the selected angle is often indicated on the component. When adjusting the angle of the handlebars, you should also ensure that holding the handlebars does not overstretch your wrists.

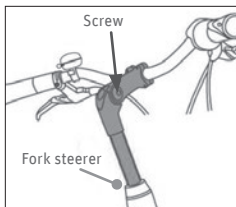


Fig. 31 Straight front stem, angle-adjustable

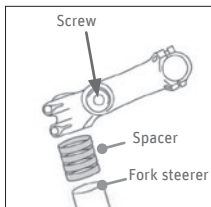


Fig. 32 Ahead front stem, angle-adjustable

1. Loosen the screw by two or three turns using an Allen key until you can adjust the angle of the front stem.
2. Tilt the front stem to the desired angle.
3. To secure the front stem, tighten the screw clockwise to the specified torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

## 19.3 Adjusting the height of the handlebars

How to determine the optimal handlebar height for your body size:

1. Sit on the saddle and at the same time, lean against a wall.
2. Lean your upper body towards the handlebars until you find a position that is comfortable for your back.
3. Extend your arms towards the handlebars.
4. Make a note of the approximate position of your hands so that you can adjust the handlebars to this height.

### 19.3.1 Straight front stems: adjusting the height of the handlebars

#### ⚠ Warning

**Serious falls due to a detaching, bending or breaking front stem.**

- The front stem is marked with the maximum distance that it can be drawn out of the fork steerer. Never pull the seat post further out of the fork steerer than the marking. If you cannot find any marking, insert the front stem to a depth of at least 6.5 cm in the fork steerer.

1. Loosen the front stem spindle by turning it two or three turns counterclockwise with an Allen key. To prevent the bicycle fork from moving when loosening the front stem spindle, grip the front wheel with your knees.

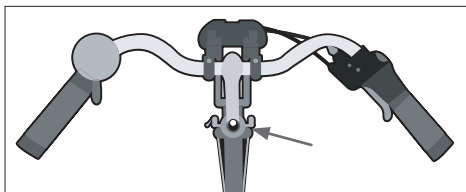


Fig. 33 Front stem spindle

2. Take hold of the handlebars by the grips and turn them alternately to the left and right. If this is not possible, strike the front stem spindle gently from above with a plastic hammer until the clamping device inside the front stem releases.
3. Draw the front stem out of the fork steerer tube to the desired height, but not higher than permitted.
4. Align the front stem with the front wheel so that they form a right angle.

5. To secure the front stem again, tighten the front stem spindle clockwise to the specified torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

### 19.3.2 Ahead front stems: adjusting the height of the handlebars

For Ahead front stems, any adjustment to the height of the handlebars must be made by a specialist workshop.

## 19.4 Cleaning and care

The handlebars and front stem can be easily cleaned with a slightly damp cloth.

## 20. Adjusting the position of the position of the handlebar grips

The handlebar grips are fitted to the ends of the bicycle handlebars. They affect riding comfort and your health. If your hands or wrists hurt after longer rides, it makes sense to change the position of, or replace, the handlebar grips. To replace the grips, contact your specialist workshop. Models are available with and without threaded connections. Grips with no threaded connection cannot be easily adjusted, as they usually clamp very firmly onto the ends of the handlebars. You should also contact a specialist workshop about this, as attempting to change the position of the grips can damage them. Screw grips are secured to the handlebar with screws on the inside and outside, which can be used to adjust the grips.



Fig. 34a Internal clamping



Fig. 34b External clamping

## 20.1 Adjusting a screw handlebar grip

1. Loosen the screw(s) on the bicycle grip by turning these counterclockwise one or two turns.
2. Turn the bicycle grip to the desired position. Ensure that it fits completely onto the end of the handlebar.
3. Tighten the screw(s) clockwise to the specified torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

## 20.2 Cleaning and care

Rubber and cork grips can be easily cleaned with soapy water.

## 21. Checking and adjusting bearing play

### ⚠ Warning

#### ▪ Serious falls due to lack of bicycle control.

Riding with a loose headset can damage the ball sockets or fork. If the headset is too tight, the bicycle will be difficult to steer, and the ball sockets will wear out more quickly. A normally adjusted headset can be turned easily. There must not be any loose movement, however. Contact a specialist workshop if you feel that the headset is not set correctly.

The headset connects the fork to the frame. It holds the fork steerer in the head tube in such a way that it can be steered. It consists of an upper and lower ball socket and bearings, and other associated parts.

There are two different types of headset: The first is the screw-in headset, where the upper ball socket is screwed onto the fork steerer and secured using a lock nut. The other is the Ahead headset. Ahead headsets are available in different versions. For example, one version has an adjustment screw located in the cover cap, which is countered with a star fangled nut. Or with an adjustment screw in the threaded ring.

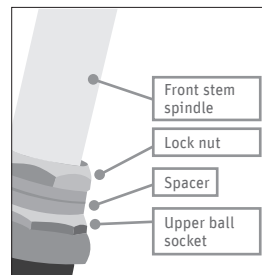


Fig. 35 Screw-in headset

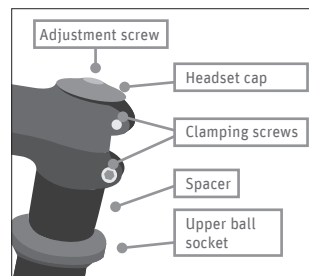


Fig. 36 Ahead headset I

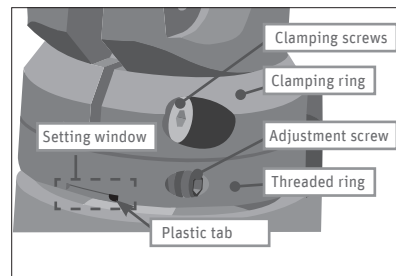


Fig. 37 Ahead headset II

## 21.1 Checking the bearing play

Proceed as follows to check whether the headset is too loose:

1. Grip the upper ball socket with your thumb and forefinger.
2. Actuate the front brake with your left hand and move the bicycle gently forwards and backwards.
3. If the headset is too loose, there will be significant jerking on the upper ball socket.
4. If you feel jerking in the upper ball socket, the bearing play must be reduced.

A headset that is too tight will be stiff:

1. Lift the bicycle by its frame so that the front wheel is off the ground.
2. If the handlebars only move sluggishly and unequally from one side to the other, the bearing play must be increased.

## 21.2 Adjusting a screw headset

1. Loosen the lock nut by turning this counterclockwise using a wrench.
2. To reduce the bearing play, turn the upper ball socket clockwise using a wrench. To increase the bearing play, turn the upper ball socket counterclockwise using a wrench.
3. Hold the upper ball socket with a wrench so that the bearing play does not change again.
4. Now, tighten the lock nut again by turning this clockwise using a wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.*
5. Check the bearing play again ⇒ 21.1 *Checking the bearing play Page EN-31* and adjust as required.

## 21.3 Adjusting Ahead headsets

### 21.3.1 Ahead headset I

To adjust the bearing play on this type of headset, the front stem must be readjusted. You should therefore contact your specialist workshop for this adjustment work.

1. Loosen the clamping screws counterclockwise.
2. Turn the adjustment screw clockwise to reduce the bearing play.
3. Once the bearing play is set correctly, centre and secure the front stem by tightening the clamping screws clockwise to the specified tightening torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

### 21.3.2 Ahead headset II

To adjust the bearing play for this type of headset, there is no need to readjust the front stem, which means that you can perform this adjustment yourself, if you think you can.

#### Reducing the bearing play:

1. To reduce the bearing play, turn the adjustment screw clockwise. The plastic tab in the setting window will move to the left.
2. If the bearing play is still too high and the plastic tab has already reached the end of the setting window, turn the adjustment screw counterclockwise until the plastic tab once again reaches the start of the setting window.
3. Loosen the clamping screw on the clamping ring by turning it counterclockwise a few turns.

4. Then, push the clamping ring towards the head tube. Align the clamping and threaded rings on the front stem.
5. Tighten the clamping screw clockwise to the specified tightening torque using a torque wrench.
6. Turn the adjustment screw clockwise until the desired bearing play is reached.
7. The clamping ring should fit flush beneath the front stem. If the front stem must be readjusted in order to achieve this, please contact your specialist workshop about this.

#### Increasing bearing play:

1. To increase the bearing play, turn the adjustment screw counterclockwise. The plastic tab will move to the right at the same time.

## 22. Bicycle fork

The front wheel is held in place by the bicycle fork. The bicycle fork consists of two fork blades, a fork bridge and a fork steerer tube. If you own a carbon fork, be sure to read ⇒ 6.3 *Carbon: general safety information Page EN-13*. The majority of bicycles are fitted with suspension forks. Suspension forks are often adjustable, and offer greater riding comfort.



Fig. 38  
Suspension fork

## 22.1 Suspension fork

### Warning

#### Serious falls due to lack of control.

- Only make adjustments while riding if you have a remote switch on the handlebars.

Compression and rebound rates cannot be adjusted on all suspension forks.

### 22.1.1 Adjusting the compression rate

The compression rate refers to the speed at which a spring is compressed. To adjust the compression rate, move the control dial to increase (e.g., -) or decrease compression speed (e.g., +).

### 22.1.2 Adjusting the rebound rate

Rebound describes the speed at which a spring expands. To adjust the rebound, turn the adjustment wheel on the underside of the fork to the **open** position (= higher rebound speed) or **closed** position (= lower rebound speed).


### 22.1.3 Locking the suspension

### Warning

#### Serious falls due to a broken fork.

- Do not lock the suspension when riding off-road. This can damage the suspension forks.

It is possible to lock the suspension on some suspension forks. There are some riding situations where that can be useful. For example, if you are riding up a hill or if you are standing up from the saddle when accelerating. To switch the suspension to a fixed position, simply move the control dial or remote switch on the handlebars on the fork in the

appropriate direction (e.g. marked 'Lock', ). To activate the suspension again, move the control/remote switch to OPEN.

### 22.1.4 Adjusting the air pressure

On some suspension forks it is possible to alter the air pressure. You will need assistance from your cycle dealer to do this, or if you feel confident of doing it yourself, a suspension fork pump with a pressure gauge and the suspension fork manufacturer's installation manual. The valve with cap (e.g. marked 'AIR') is usually located on the left-hand side of the fork.

### 22.2 Care and maintenance

Clean the outside of the fork and suspension elements regularly with a slightly damp cloth.

## 23. Brakes

### Warnings

#### Serious falls and accidents caused by insufficient bicycle control.

- Only ride the bicycle if you can safely reach the brake levers. Your dealer can change the position, angle and lever width of the brake levers. On many models, the position of the pressure point can also be adjusted.
- Before taking your first ride, check which brake grip actuates which brake. If you are used to a different arrangement, have your dealer rearrange the brake levers before you set off.
- As every bicycle can react differently depending on its model, you should familiarise yourself with the right braking technique. Practise braking in a safe place before venturing into road traffic. Practise until you feel safe. Dismount if you ever feel unsafe.

### Warnings

#### Serious falls and accidents caused by insufficient bicycle control.

- If you notice that the braking force is too high or too low, stop using the bicycle and contact a specialist workshop.
- In wet conditions, braking distances with rim brakes increase by up to 40%. Braking values are almost identical for disc and hub brakes. Be careful, because tyres have less grip on the road in wet conditions. Adapt your riding style to outdoor conditions.
- Luggage alters the handling characteristics of the bike. The braking distance becomes longer, thus, you should start braking earlier, and the steering response becomes more sluggish. Adapt your riding style accordingly ⇒ 30. *Luggage rack Page EN-59.*

#### Serious falls and accidents caused by an incorrect assessment of braking behaviour.

- Do not apply the front brake too hard, as the front wheel can lock up and cause a fall.

#### Serious falls and accidents caused by faulty brakes.

- Be careful not to get oil or grease on the brake pads and brake surfaces. This can affect the functionality of the brakes. Have components which have come into contact with oil or grease replaced.
- **Hydraulic brakes:** Do not use the hydraulic brakes in the event of fluid leaks. Go to a specialist workshop to have the problem sorted out.
- Have all work on brake systems done in a specialist workshop.



## Information

**Pedelec/S-Pedelec:** Your Pedelec/S-Pedelec does not have an emergency stop button. You must activate the brakes to stop the cycle quickly in a dangerous situation. The maximum brake force is greater than the propulsion force possible. This means stopping is guaranteed at all times by pressing the brakes. Note that the drive system does not disable automatically after braking. Once you have finished your ride, switch the drive system to standstill.

You can use the bicycle brakes to slow down and/or bring your bicycle to a stop. In Germany, bicycles must have two independent brakes: front and rear wheel brakes. These can be actuated either by pedalling backwards (coaster brakes) or by hand (handbrakes). If there are two brake levers on the bicycle, the left-hand brake lever is usually for the front brake, and the right-hand brake lever for the rear brake. This is exactly the reverse in Australia and Great Britain, where the brake lever for the front brake is on the right, and that for the rear brake on the left. There are basically three types of braking systems: hub brakes, rim brakes and disc brakes. Each braking system can in turn be broken down into different types. Rim and disc brakes can work either mechanically – the braking force is transmitted via a Bowden cable – or hydraulically – the braking force is transmitted via a liquid. Hydraulic brakes usually work using pistons which actuate the brake discs symmetrically from both sides.

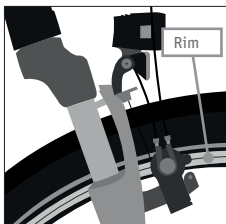


Fig. 39 Rim brakes

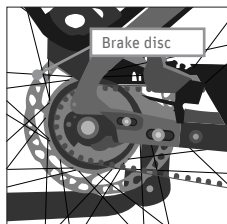


Fig. 40 Disc brakes

## 23.1 Coaster brakes

### Warning

**Serious falls and accidents caused by reduced braking power.**

- Avoid using the coaster brake continuously on long downhill stretches, as the internal brake parts can become very hot, leading to a reduction in braking power. On long, steep descents, mainly use the front brake and the manually activated rear brake if available, to allow the coaster brake to cool. An extremely overheated coaster brake (discolouration and grease leaks) must be checked in a specialist workshop.

### Caution

**Burns from touching the brake drum.**

- As the brake drum can become very hot during extended braking, you should wait for at least 30 minutes after your ride before touching it.

Coaster brakes are a kind of hub brake. If your bicycle is fitted with a coaster brake, you will need to step backwards on the pedals to brake. Coaster brakes are activated to a varying degree depending on the position of your feet and/or the pedal arms. If the crank arms are vertical, i.e. one of your feet is directly above the other on the pedals, you will not be able to brake hard. Position the crank arms horizontally if you want or have to be ready to brake. The braking power is transferred from your foot over the chain to the braking system. If you feel that the power of the coaster brake is decreasing, please contact your dealer.

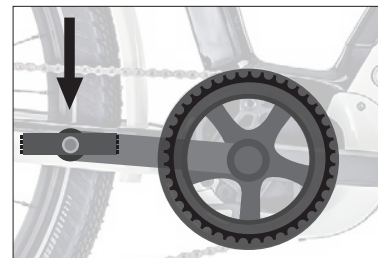


Fig. 41 Actuating the coaster brake

## 23.2 Rim brakes

Rim brakes are positioned on the fork and/or the rear frame. When braking, the brake lining is pressed directly onto the side of the wheel rim. The brake pads are usually made of a rubber compound. There are mechanical side-pull brakes, centre-pull brakes and hydraulic rim brakes, inter alia. Front mechanical rim brakes can be fitted with a braking power modulator. This prevents the front wheel from locking if braking too hard.

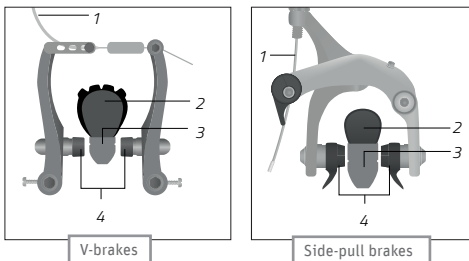


Fig. 42 Mechanical rim brakes (example)

- 1 Cable      3 Rim  
2 Tyre      4 Brake disc

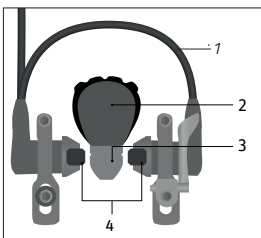


Fig. 43 Hydraulic rim brakes (example)

- 1 Brake cable or line      3 Rim  
2 Tyres      4 Brake lining

## 23.3 Disc brakes

### ⚠ Warnings

**Serious falls and accidents caused by reduced braking power.**

- Avoid using disc brakes continuously on long downhill stretches. It is better to brake in interrupted cycles.
- Have the brake disc replaced immediately if it is cracked or deformed, and do not use the bicycle.

### ⚠ Caution

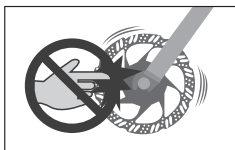


Fig. 44 Do not touch the brake discs

**Burns from touching the brake discs.**

- As the brake disc can become very hot during extended braking, you should wait for at least 30 minutes after your ride before touching it.

**Injury from touching the rotating brake discs.**

- Please keep your fingers away from rotating brake discs. The brake disc is so sharp that it will cause severe injuries to your fingers if you get them caught in the brake disc openings.

When braking, the brake pads mounted on the brake calliper press on a brake disc which is mounted on the axle and which rotates with the wheel.

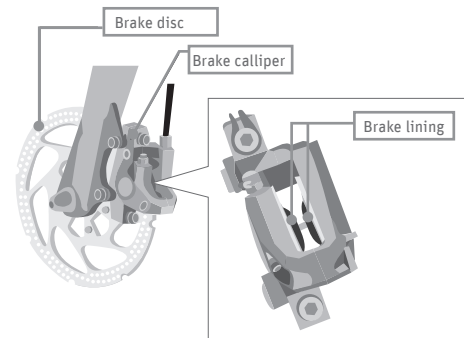


Fig. 45 Disc brakes ©Shimano

### Breaking in new disc brakes

Full braking power will not yet be available with new disc brakes! Braking performance will improve as you use the brakes until the pads on the brake disc are fully broken in. A few hard stops will accelerate this process.

## 23.4 Brake lever(s)

Your bicycle is fitted with either one or two brake levers. Pulling the brake levers can slow down and/or bring your bicycle to a stop. If your bicycle is fitted with a coaster brake and a brake lever, you can actuate the front brake by pulling the brake lever mounted on the right-hand side of the handlebars. If two brake levers are fitted, you can actuate the front brake with the left-hand brake lever and the rear brake with the right-hand brake lever. This is exactly the reverse in Australia and Great Britain, where the brake lever for the front brake is on the right, and that for the rear brake on the left. If you are used to a different arrangement, have your specialist workshop rearrange the brake levers before you set off. There are brake levers for one to four fingers. The fewer the fingers used to actuate the lever, the shorter the lever is.

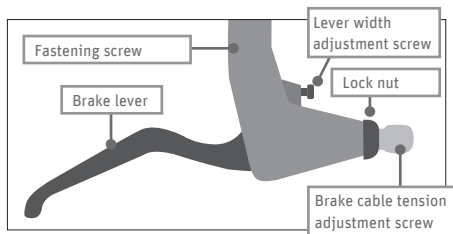


Fig. 46 Brake grip

A special feature are grips with which you can both brake as well as change gear (e.g., Dual Control levers from Shimano ⇒ 24.3.1.3 Shimano dual control lever Page EN-40). Ask your specialist workshop to show you exactly how these brake levers work.

### 23.4.1 Adjusting the position of the brake levers

Proceed as follows to adjust the position of the brake levers on the handlebars:

1. Loosen the fastening screw by turning it one or two turns counterclockwise.
2. To move the brake grip, move it to the left or right into the desired position. You may need to move the gear lever slightly inward ⇒ 24.3.1.1 Shimano standard gear lever: version 1 Page EN-39.
3. To adjust the angle of the brake lever, place one or two fingers on the brake lever. Now turn the grip downward until your finger, wrist and forearm are in a line.
4. Then, tighten the fastening screw clockwise to the specified torque using a torque wrench ⇒ 13. Tightening torques for threaded connections Page EN-19.

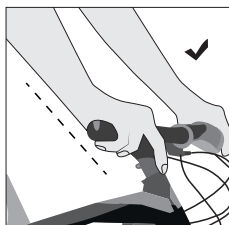


Fig. 47 Correct brake lever position

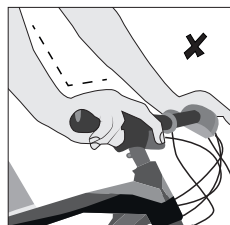


Fig. 48 Incorrect brake lever position

### 23.4.2 Adjusting the lever width

On most brake levers, the grip width, i.e. the distance between the lever and the handlebars, can be adjusted using an adjustment screw. This screw is usually located on the inside or outside of the brake grip. The distance from the lever to the handlebars should be large enough that the lever can accommodate the first joint of your finger.

1. To reduce the lever width, turn the adjustment screw clockwise. To increase the lever with, turn the adjustment screw counterclockwise.

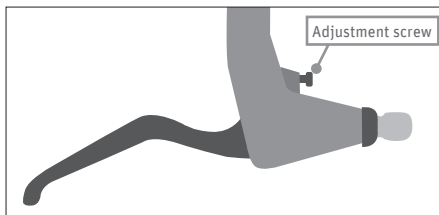


Fig. 49 Lever width adjustment screw

### 23.4.3 Changing the pressure point

The pressure point marks the moment at which the lever locks when the manual brake is actuated, i.e., when the brake pads contact the rim (rim brakes) or the brake disc (disc brakes) and the bicycle brakes. We recommend setting the pressure point as short as possible, so that you can use the full braking power before the brake lever rests on the handlebar grip. Make sure that you are familiar with the braking effect! The pressure point is too low if you can pull the brake lever more than half of the lever stroke to the handlebars before the brakes are applied. We recommend setting a pressure point at approx. 30% of the lever stroke. A low pressure point may also be caused by worn brake pads. Check for wear on the brake pads before adjusting the brake cable tension for cable brakes ⇒ 14.5 Practising braking Page EN-22. To adjust the brake line on hydraulic rim or disc brakes, get in touch with your specialist workshop.

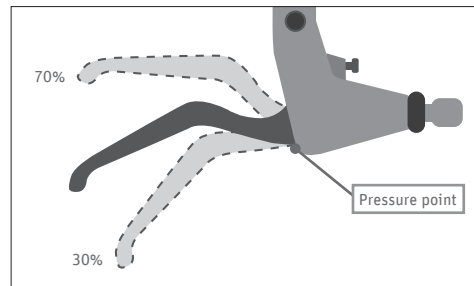


Fig. 50 Recommended pressure point setting

## 23.5 Cable brakes: adjusting the brake cable tension

### ⚠ Warnings

**Serious falls and accidents caused by reduced braking power.**

- Brake cables are wear parts. Check these for wear and tear regularly, and replace the brake cables if necessary.

The brake cable connects the brake lever to the brakes. It is made of steel or aluminium, and is located in a brake sleeve. If you have completely applied the hand brake but do not have full braking force, all you need to do is to tighten the brake cable, assuming there is little wear on the brake pads. This reduces the distance between the brake shoes and rim (rim brakes) or between the brake lining and brake disc (disc brakes) and compensates for slight wear on the brake pads. However, if the brake pads are severely worn, these must be replaced ⇒ [23.6 Replacing the brake pads Page EN-36](#).

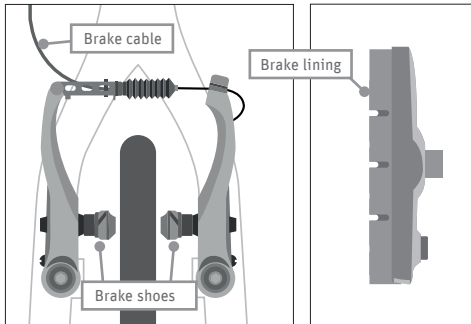


Fig. 51 Rim brakes

Fig. 52 Brake shoe

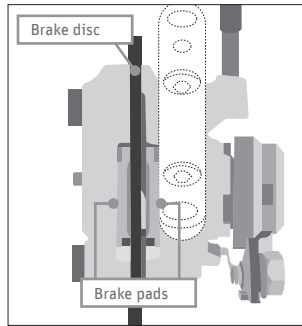


Fig. 53 Disc brakes

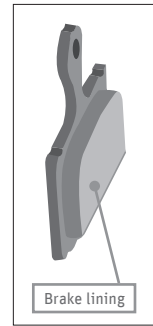


Fig. 54 Brake lining

Most brake levers have screws to adjust the length and tension of the brake cables. To adjust the tension, proceed as follows:

1. Unscrew the lock nut a few turns counterclockwise.
2. **Rim brake:** To increase the tension, you must now unscrew the adjustment screw counterclockwise step by step until the distance between the brake shoes and rim is 1-2 mm on each side. Make sure that the brake shoes contact the two sides of the rim or brake disc at the same time. To reduce the tension, turn the adjustment screw clockwise.
2. **Disc brake:** To increase the tension, you must now unscrew the adjustment screw counterclockwise step by step until the desired pressure point is reached on the brakes  
⇒ [23.4.3 Changing the pressure point Page EN-35](#).  
To reduce the tension, turn the adjustment screw clockwise.
3. Finally, retighten the lock nut clockwise.

If there is still no braking effect, the brake pads probably need to be replaced

⇒ [23.6 Replacing the brake pads Page EN-36](#).

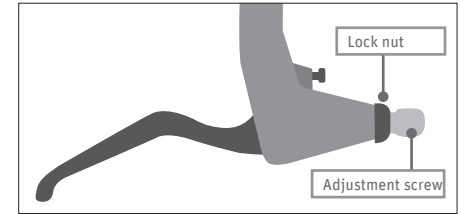


Fig. 55 Brake cable tension adjustment screw

## 23.6 Replacing the brake pads

### ⚠ Warnings

**Serious falls due to lack of bicycle control.**

- The appropriate brake pads must be used in order to obtain the right friction pairing.  
**Carbon:** Particularly on carbon rims, only pads that are expressly intended for this purpose may be used.
- Brake pads may not come into contact with oil or grease. Otherwise, this will impair braking performance.  
Have the brake pads replaced if they have come into contact with oil or grease.
- Do not ride your bicycle if the brake pads are worn out. Have these replaced in a specialist workshop.

Brake pads are friction agents on brake shoes (rim brakes) or carrier plates (disc brakes), and are therefore wear parts. If they are worn out, they must be replaced, as the braking force decreases as a result of wear. On rim brakes, you can notice wear as the brake lever must be drawn further and further towards the handlebars when braking in order to achieve a braking effect. Brake pad wear on disc brakes produces a metallic scratching sound, which only appears when the brake lining is already completely worn

away. It therefore makes sense to perform regular visual checks of the state of wear. You can recognise the state of wear with a marking, e.g., grooves in the brake lining. On Shimano brake shoes, a wear line is visible on the brake pads. This must not be shorter than a certain minimum length. With Magura, the grooves in the lining must still be visible from the outside. If the wear line or grooves are no longer visible, the brake pads must be replaced. Have this done in a specialist workshop.

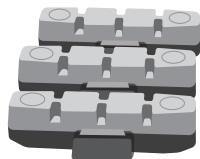


Fig. 56 Magura brake shoe

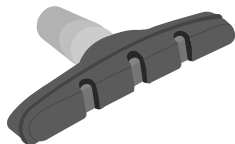


Fig. 57 Shimano brake shoe

## 23.7 Cleaning and care

The brake grips can be cleaned with a slightly damp cloth.

**Rim brake:** The rims can be cleaned with a sponge and soapy water.

**Disc brakes:** Clean the disc brakes with a sponge and soapy water. If they are very dirty, we recommend using a little brake cleaner on a rag.

## 24. Bicycle shifter

### ▲ Warning

**Serious falls and accidents caused by insufficient bicycle control.**

- If the shifter parts are loose, worn, damaged, incorrectly adjusted, make unusual noises, the gearchange does not work properly or other problems occur, have the shifter checked and if necessary repaired in a specialist workshop.

You can use the gear shift to change the transmission ratio of the drive, so that you can ride at a comfortable pace with less effort. You can change gears by moving the control elements (gear levers, twist grips, buttons, ...) on the handlebars. The lower the number shown on the control element, the easier it is to pedal. The higher the number shown on the control element, the greater the pedalling resistance. Low gears are useful for riding up a mountain, so that you can reach the peak with little effort. On a straight level stretch, medium gears are the right choice to achieve and maintain a higher speed without having to pedal too much. High gears are recommended for downhill stretches.



Fig. 58a Uphill:  
low gears



Fig. 58b Level:  
medium gears



Fig. 58c Downhill:  
high gears

## 24.1 Adjusting the position of the control elements

### Information

The gear levers should be positioned at the same angle as the brake levers.

1. Loosen the fastening screw by turning it one or two turns counterclockwise.
2. To move the control element, move it to the left or right into the desired position.
3. To adjust the angle of the control element, place one or two fingers on the gear lever. Now turn the grip downward until your finger, wrist and forearm are in a line.
4. Then tighten the fastening screw clockwise to the specified torque using a torque wrench  
⇒ 13. Tightening torques for threaded connections  
Page EN-19.

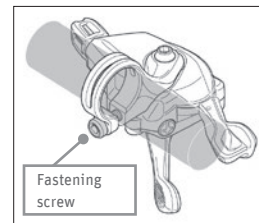


Fig. 59 Shimano control element ©Shimano

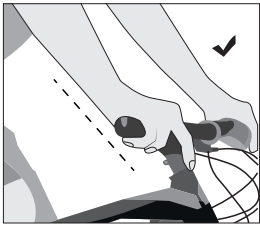


Fig. 60 Correct gear lever position

## 24.2 Adjust the shift cable tension

If a noise can be heard after shifting gears while you ride, this can be due to a poorly adjusted shift cable tension. To remedy this problem, you can do the following:

1. Turn the cable adjustment screw on the gear lever half a turn counterclockwise.
2. If the noise decreases, turn the cable adjustment screw further in the counterclockwise direction. If the noise increases, you will need to turn the cable adjustment screw in the other direction, i.e. clockwise. Keep turning until the sound can no longer be heard.

If you can still hear noises after making this adjustment, get in touch with your specialist workshop.

Cable adjustment screw

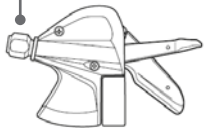


Fig. 61 Adjusting the cable tension ©Shimano

## 24.3 Derailler

### ⚠ Warnings

**Serious falls and accidents caused by insufficient bicycle control.**

- Avoid continuously riding using the smallest chainring at the front in combination with the smallest sprocket at the rear. Similarly, avoid riding with the largest chainring at the front with the largest sprocket at the rear. The high levels of skew will cause increased wear.
- Shift gears carefully and in small steps while pedalling, but never do so while pedalling backwards. This may damage the shifter.
- Do not use your bicycle without a spoke protector. If no spoke protector is fitted, you will need to retrofit one. Otherwise, the bicycle chain can become caught between the sprocket and spokes.

### Information ℹ

Even with an optimally adjusted shifter, you may hear noise when the chain is running at an extreme angle. This is not a defect, and will not damage the drive. The noise will abate once the angle of the chain reduces.

A derailler consists of between 6 and 12 sprockets on the rear wheel and between 1 and 3 chainrings on the crank drive. The number of sprockets and chainrings gives you the number of gears. The left-hand control element on the handlebars controls the front derailler. This directs the chain to another chainring. The right-hand control element controls the rear derailler and hence guides the chain over the various sprockets on the rear wheel. With mechanical deraillers, the control elements control the front derailler and rear derailler with cables, whereas with electronic deraillers, this is done with cables and motors. Electronic deraillers are battery-operated. You can use the left-hand

control element to make a rough preselection, e.g., the smallest chainring for an uphill climb, and then use the right-hand control element – depending on the incline – to select the appropriate sprocket. Use the smallest chainring for climbs, and the largest for level and downhill rides.

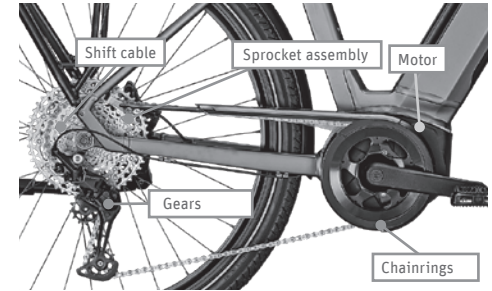


Fig. 62 Mechanical derailler

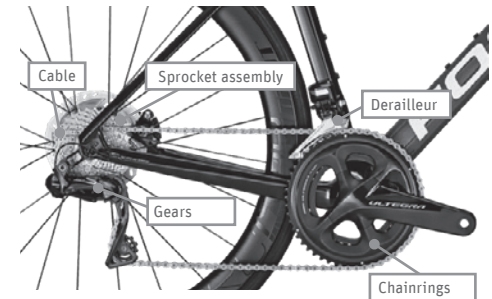


Fig. 63 Electronic derailler

## 24.3.1 Mechanical derailleur: control elements

### 24.3.1.1 Shimano standard gear lever: version 1

#### Information

Do not move levers A and B at the same time. If the levers are moved at the same time, you will not be able to shift gears.

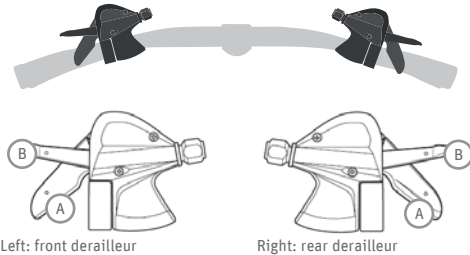


Fig. 64 Shimano standard gear lever ©Shimano

#### Shifting to a higher gear

1. Step on the pedals as you shift gears.
2. **Lever A on the left:** Move lever A upward. The chain is moved to a larger chainring. Lever A then returns to its original position.
3. **Lever B on the right:** Move lever B upward. The chain is moved to a smaller sprocket. Lever B then returns to its original position.

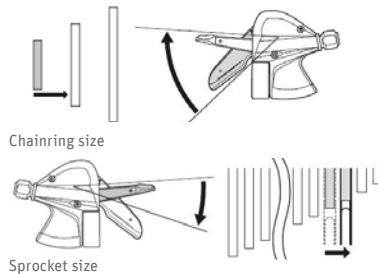


Fig. 65 Shifting to a higher gear ©Shimano

#### Shifting to a lower gear

4. Step on the pedals as you shift gears.
5. **Lever A on the right:** To shift from a high gear to the next lower gear, push lever A to Click position 1. To shift two gears down, move lever A to Click position 2. When shifting, the chain will be lifted to a larger sprocket. Lever A then returns to its original position.
6. **Lever B on the left:** Push lever B downward. The chain is moved to a larger sprocket. Lever B then returns to its original position.

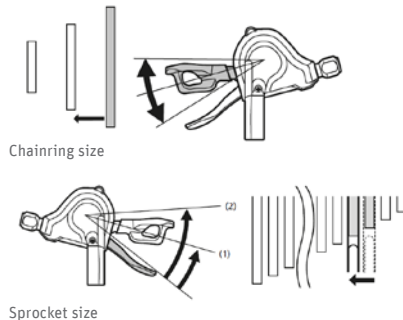
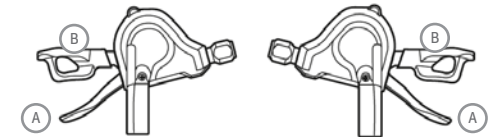


Fig. 66 Shifting to a lower gear ©Shimano

### 24.3.1.2 Shimano standard gear lever: version 2



Left: front derailleur

Right: rear derailleur

Fig. 67 Shimano standard gear lever ©Shimano

#### Shifting to a higher gear

7. Step on the pedals as you shift gears.
8. **Lever A on the left:** Move lever A upward. The chain is moved to a larger chainring. Lever A then returns to its original position.
9. **Lever B on the right:** Push or pull lever B. The chain is moved to a smaller sprocket. Lever B then returns to its original position. On certain models, shifting is done in two stages.

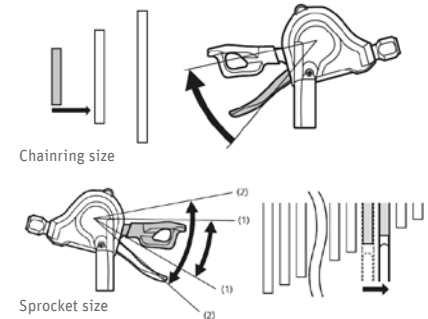


Fig. 68 Shifting to a higher gear ©Shimano

### Shifting to a lower gear

10. Step on the pedals as you shift gears.
11. **Lever A on the right:** To shift from a high gear to the next lower gear, push lever A to Click position 1. To shift two gears down, move lever A to Click position 2. When shifting, the chain will be lifted to a larger sprocket. Lever A then returns to its original position.
12. **Lever B on the left:** Push or pull lever B. The chain is moved to a larger sprocket. Lever B then returns to its original position.

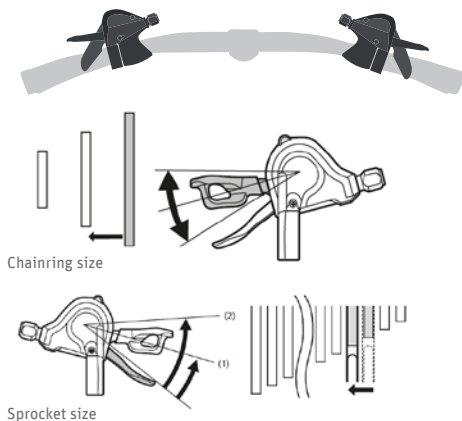


Fig. 69 Shifting to a lower gear ©Shimano

### 24.3.1.3 Shimano dual control lever

#### Information

Do not push levers A and B at the same time. If the levers are pushed at the same time, you will not be able to shift gears.

With Shimano dual control levers, you can both brake  
⇒ 23. Brakes Page EN-32 and shift gears.

#### Shifting to a higher gear

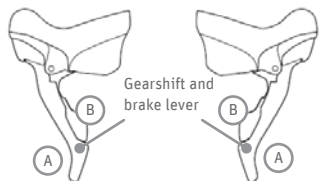


Fig. 70 Shimano Dual Control ©Shimano

1. Step on the pedals as you shift gears.
2. **Lever A on the left:** To shift from a low gear to the next higher gear, push lever A as far as it will go and then release it. If the gear is not fully engaged, push the lever again as far as it will go. When shifting, the chain will slip onto a larger chainring. Lever A then returns to its original position.

3. **Lever B on the right:** To shift from a low gear to the next higher gear, push lever B once. When shifting, the chain will be lifted to a smaller sprocket. Lever B then returns to its original position.

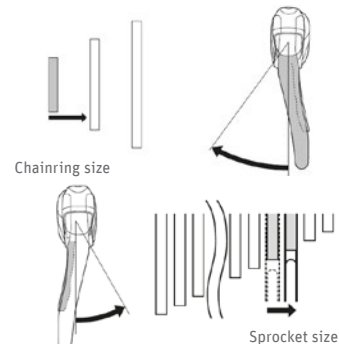


Fig. 71 Shifting to a higher gear ©Shimano

#### Shifting to a lower gear

1. Step on the pedals as you shift gears.
2. **Lever B on the left:** To shift from a high gear to the next lower gear, push lever B far as it will go and then release it. When shifting, the chain will slip onto a smaller chainring. Lever B then returns to its original position.
3. **Lever A on the right:** To shift from a high gear to the next lower gear, push lever A to Click position 1. To shift two gears down, move lever A to Click position 2. When shifting, the chain will be lifted to a larger sprocket. Lever A then returns to its original position.



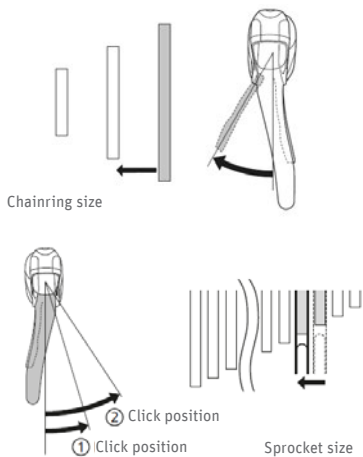
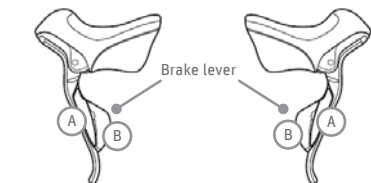


Fig. 72 Shifting to a lower gear ©Shimano

## 24.3.2 Electronic derailleur: control elements

### 24.3.2.1 Shimano Ultegra Di2 gear lever



Left: front derailleur

Right: rear derailleur

Fig. 73 Shimano Ultegra Di2 ©Shimano

#### Shifting to a higher gear

1. Step on the pedals as you shift gears.
2. **Button A on the left:** To shift from a low gear to the next higher gear, push button A briefly. When shifting, the chain will slip onto a larger chainring.
3. **Button B on the right:** To shift from a low gear to the next higher gear, push button B briefly. When shifting, the chain will be lifted to a smaller sprocket.

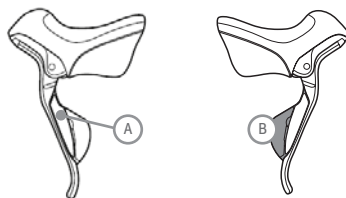


Fig. 74 Shifting to a higher gear ©Shimano

#### Shifting to a lower gear

1. Step on the pedals as you shift gears.
2. **Button B on the left:** To shift from a high gear to the next lower gear, push button B briefly. When shifting, the chain will slip onto a smaller chainring.

3. **Button A on the right:** To shift from a high gear to the next lower gear, push button A. When shifting, the chain will be lifted to a larger sprocket.

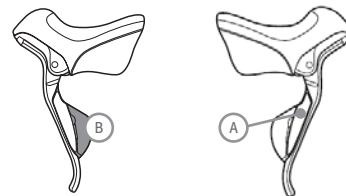


Fig. 75 Shifting to a lower gear ©Shimano

### 24.3.2.2 Shimano Ultegra Di2: charger and USB cable

**Charging the battery:** To charge the shifter battery, proceed as follows:

1. Plug the system connector of the charger into the charge socket of the display module.
2. Connect the Micro USB plug to the Micro USB socket of the charger.
3. Connect the USB plug to a USB mains charger or the USB port of a computer. The CHARGE indicator lights up orange. Charging is complete when the CHARGE indicator goes out. The charging time for an empty battery is approximately 1.5 hours using a USB mains charger. On the USB port of a computer, charging can take up to 3 hours.

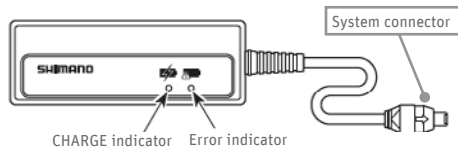


Fig. 74 Charger ©Shimano



Fig. 76 USB cable ©Shimano

**CHARGE indicator:** When the battery is charging, the CHARGE indicator lights up orange. Once charging is complete, the indicator goes out. If the indicator flashes, there is a charging error. In this event, proceed as follows:

- Re-connect the charging cable or USB cable and try to charge once again.
- Use a charging device with a USB connector and a power capacity of 1.0 A DC or higher.
- The battery or electrical connection are faulty. In this case, get in touch with your specialist workshop.

**ERROR display:** If the ERROR display flashes, there is a fault. In this event, proceed as follows:

- Re-connect the charging cable or USB cable and try to charge once again.
- Check the ambient temperature.
- The battery or electrical connection are faulty. In this case, get in touch with your specialist workshop.

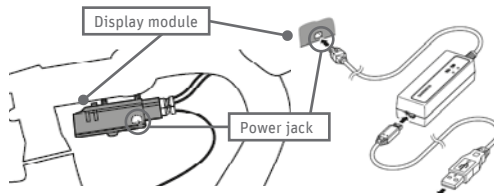


Fig. 77 Charging the battery ©Shimano

### 24.3.2.3 Sram Eagle AXS gear lever

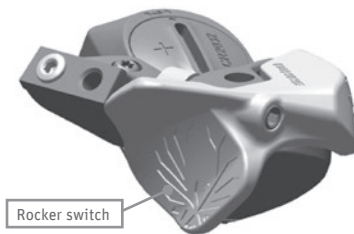


Fig. 78 Sram Eagle AXS gear lever ©Sram

#### Shifting to a higher gear

1. Step on the pedals as you shift gears.
2. Push the rocker switch upward, or the front part of the rocker switch downward. Hold the rocker switch in the pressed position to shift multiple gears.

#### Shifting to a lower gear

1. Step on the pedals as you shift gears.
2. Push the rocker switch downward. Hold the rocker switch in the pressed position to shift multiple gears.

### 24.3.2.4 Sram eTap AXS gear lever



Fig. 79 Sram eTap AXS gear lever ©Sram

#### Shifting to a higher gear

1. Step on the pedals as you shift gears.
2. Push the right-hand gear lever to move the rear derailleur outward to a smaller sprocket. Hold the gear lever in the pressed position to shift multiple gears.

#### Shifting to a lower gear

1. Step on the pedals as you shift gears.
2. Push the left-hand gear lever to move the rear derailleur inward to a larger sprocket. Hold the gear lever in the pressed position to shift multiple gears.

**For 2-derailleur systems:** Push both gear levers at the same time to move the front derailleur inward or outward.

### 24.3.2.5 Sram AXS: charging station and USB cable



Fig. 80 Charging station and battery ©Sram

**Charging the battery:** To charge the shifter battery, proceed as follows:

1. Connect the Micro USB plug to the Micro USB socket of the charging station.
2. Connect the USB plug to the USB port of a computer.
3. Remove the battery cover from the battery. Keep the battery cover for later use.
4. Insert the battery into the charging station. It can take up to 5 seconds until the LED on the charging station lights up. It will take approximately one hour for the battery to charge completely.

#### Notice

If none of the LEDs light after 5 seconds, make sure that the plug is completely inserted into the charge socket, and that you are using a standard USB charging connector (1 A and 5 V). If the LEDs still do not light up, get in touch with your specialist workshop.

5. Push the button on the charging station to release the battery.

6. Insert the completely charged battery into the rear/front derailleur and close the battery holder. If the battery is properly inserted, the latch will click into place.

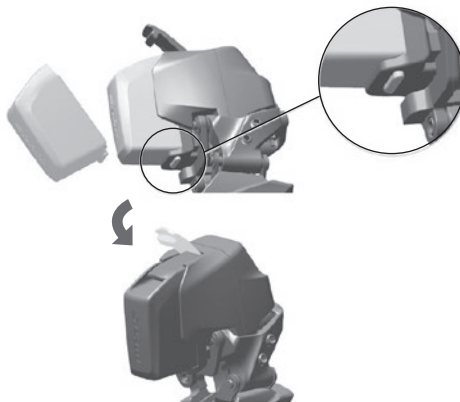


Fig. 81 Inserting the battery ©Sram

**CHARGE indicator:** A continuously lit blue LED indicates that the charger is receiving sufficient power. A flashing blue LED indicates that the charger is not receiving optimal amounts of power. The battery will still charge, but the charging process will take longer. A yellow LED indicates that the battery is charging. A green LED indicates that the charging process is complete.

**ERROR display:** A red LED indicates that an error has occurred. Proceed as follows:

- Remove the battery from the charging station and reinsert it, and remove and reinsert the charging plug. If the LED still lights up red, the battery or charging station may be faulty. Get in touch with your specialist workshop.

### 24.3.3 Adjusting the rear and front derailleurs

#### 24.3.3.1 Mechanical derailleur

If the chain rattles and no longer runs smoothly, it makes sense to adjust the rear and front derailleurs. We will show you how to do that below. Get in touch with your dealer if you are unsure about any of these tasks.

##### Rear derailleur: setting the upper stop

7. Shift the chain to the smallest chainring and the smallest sprocket using the control elements on the handlebars.
8. The idler pulley must now be positioned exactly beneath the smallest cog. The chain should therefore be in a straight line. If this isn't the case, its position must be adjusted using the adjustment screw.
9. Turn the cable adjustment screw clockwise if the rear derailleur needs to be moved inward, or anticlockwise if it needs to be moved outward. Count the turns, so that you can reverse this action if you have turned the wrong screw and the rear derailleur has not moved.

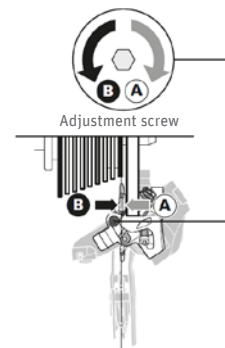


Fig. 82 Turning the upper adjustment screw ©Shimano

10. To check whether the tensile stress is set correctly, shift a couple of gears up and down again using the control element. The pedal crank must be moving when you do this.

11. If the chain can only be moved with difficulty to the next larger cog, you will need to increase the tensile stress. If the chain can only be moved with difficulty to the next smaller cog, the tensile stress must be decreased.
12. The tensile stress can be adjusted using the cable adjustment screw on the control elements. Turn the cable adjustment screw clockwise to increase the tension. Turn the cable adjustment screw counterclockwise to decrease the tension. The tensile stress should only be high enough to prevent the chain from rubbing on the next higher cog.

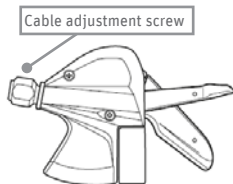


Fig. 83 Adjusting the tensile stress ©Shimano

#### Rear derailleur: setting the lower stop

13. Shift the chain to the largest chainring and the smallest sprocket using the control elements on the handlebars.
14. Now, turn the lower adjustment screw until the idler pulley is positioned exactly beneath the largest chainring.

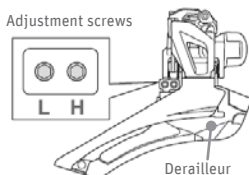


Fig. 84 Adjustment screws ©Shimano

#### Front derailleur: setting the upper stop

1. Shift the chain to the smallest chainring and the largest sprocket using the control elements on the handlebars.
2. The distance between the chain and the inner guide plate should now be minimal. The chain should not touch the guide plate.
3. This distance can be reduced using the lower screw (L). Turning this clockwise moves the front derailleur outward towards the crank, provided that the tensile stress on the cable is already high enough. Turning this counterclockwise moves the front derailleur towards the frame.
4. To set the correct tensile stress, shift to the large chainring at the front and the smallest sprocket at the rear using the control elements on the handlebars. The chain should not touch the outer plate of the front derailleur.
5. The tensile stress can be adjusted using the cable adjustment screw. Turn the cable adjustment screw clockwise to increase the tension. Turn the cable adjustment screw counterclockwise to decrease the tension. The tensile stress should only be high enough to prevent the chain from rubbing on the next higher cog, and the guide plates of the front derailleur from touching the chain.

#### Front derailleur: setting the upper stop

6. To set the upper limit, turn the upper screw (H). Turning this clockwise moves the front derailleur closer to the frame. Turning this counterclockwise moves the front derailleur away from the frame.
7. The outer guide plate of the front derailleur should now run parallel to the chainring. The distance between the outer guide plate and the largest teeth of the chainring should be between 1 and 3 mm.

### 24.3.3.2 Shimano Ultegra Di2 electronic derailleur

#### Setting the rear derailleur

1. Shift the chain to the smallest chainring and the largest sprocket using the control elements on the handlebars, and turn the crank arm to the rear.
2. Then, turn the adjustment screw to bring the idler pulley as close as possible to the sprocket without them touching.
3. Now, shift the chain to the smallest sprocket and repeat these steps to ensure that the pulley does not touch the sprocket.
4. Shift the rear derailleur using the buttons on the right-hand gear lever to sprocket 5.

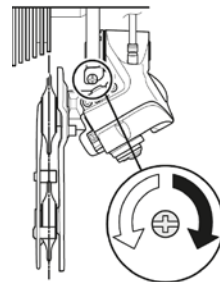


Fig. 85 Adjustment screw ©Shimano

5. Push the button on the display module until the LED lights up to switch from Gearshift mode to Setting mode.

6. Press button A on the right-hand gear lever while turning the front chainring to move the idler pulley inward until the chain brushes against sprocket 4 and makes a noise.

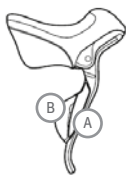


Fig. 86 Right-hand gear lever ©Shimano

7. Next, press button B on the right-hand gear lever 4 times to move the idler pulley 4 steps outward to the target position.
8. Push the button on the display module until the red LED goes out to switch the rear derailleur from Setting mode to Gearshift mode.

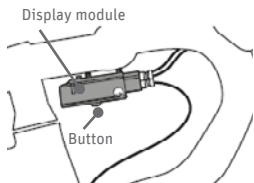


Fig. 87 Pressing the button ©Shimano

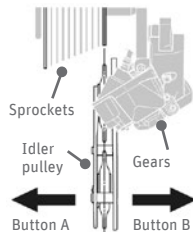


Fig. 88 Setting the rear derailleur ©Shimano

9. Shift to the individual gears and check that there is no noise in any gear position.

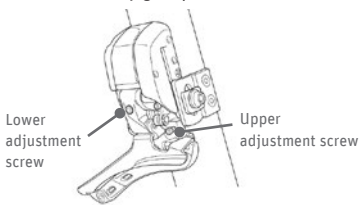


Fig. 89 Adjustment screws @Shimano

10. If any adjustment is necessary, switch back to Setting mode and fine-tune the rear derailleur.

#### Setting the front derailleur

1. Shift the derailleur to the largest sprocket.
2. Push the button on the display module until the LED lights up to switch from Gearshift mode to Setting mode.
3. Press buttons A or B on the right-hand gear lever. Set the distance between the chain and the front derailleur to between 0 and 0.5 mm.
4. Move the front derailleur and the rear derailleur to all gear positions. Ensure that the chain guide does not touch the chain.
5. Push the button on the display module until the red LED goes out to switch the rear derailleur from Setting mode to Gearshift mode.

### 24.3.3.3 Sram Eagle AXS electronic derailleur

#### Setting the front derailleur

1. Shift the chain to the second largest sprocket. Align the pulley with the middle of the second largest sprocket by adjusting the rear derailleur.
2. Hold the AXS button of the control unit in the pressed position while pushing the rocker switch. Push the rocker switch downward to adjust the rear derailleur inward, and push the rocker switch upward to adjust the rear derailleur outward.

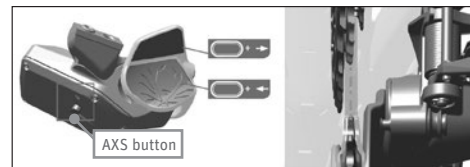


Fig. 90 Adjusting the rear derailleur ©Sram

3. Shift the rear derailleur inward to the largest sprocket.
4. Set the lower stop screw (L) so that it lightly touches the stop of the outer parallelogram body, then turn the screw back 1/4 turn.
5. Shift the rear derailleur outward to the smallest sprocket.
6. Set the upper stop screw (H) so that it lightly touches the stop of the inner parallelogram body, then turn the screw back 1/4 turn.

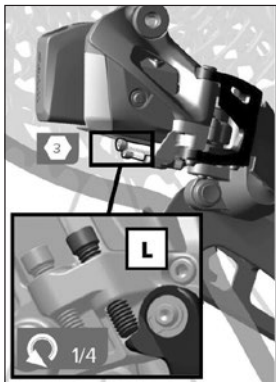


Fig. 91 Stop screw L ©Sram

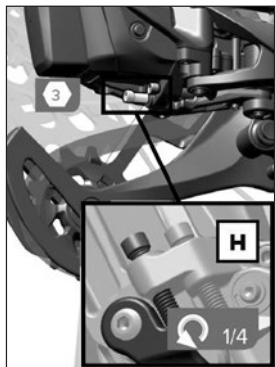


Fig. 92 Stop screw H ©Sram

### 24.3.3.4 Sram eTap AXS electronic derailleur

#### Setting the rear derailleur

1. Align the upper shift pulley with the middle of the second largest sprocket by holding the AXS button on the rear derailleur in the pressed position while pushing the gear lever inward. The left-hand gear lever adjusts the rear derailleur inward, and the right-hand gear lever outward.

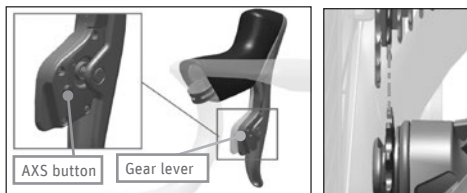


Fig. 93 Aligning the shift pulley ©Sram

2. Shift the rear derailleur inward to the largest sprocket. The rear derailleur cage may come into contact with the rear wheel before the chain is installed. This is normal.
3. Set the lower stop screw (L) so that it lightly touches the stop of the inner parallelogram body.
4. Shift the rear derailleur outward to the smallest sprocket.
5. Set the upper stop screw (H) so that it lightly touches the stop of the inner parallelogram body.

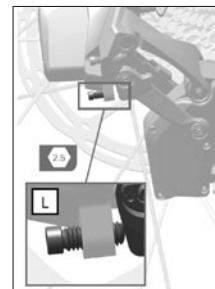


Fig. 94 Stop screw L ©Sram

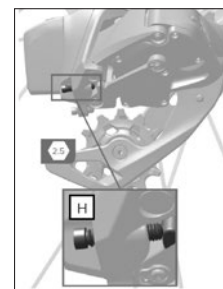


Fig. 95 Stop screw H ©Sram

#### Setting the front derailleur

The front derailleur only needs to be set for 2-derailleur systems. To set the upper stop screw, the front derailleur must be in its outer position. Setting the upper stop screw of the front derailleur while the front derailleur is in the inner position can cause permanent damage to the front derailleur. The upper stop screw has a left-handed thread.

1. Shift the rear derailleur outward to the smallest sprocket. Ensure that the front derailleur is in the outer position and that the chain is on the large chaining and the smallest sprocket.
2. Turn the upper stop screw until the distance between the inside of the outer front derailleur cage plate and the chain is between 0.5 and 1 mm.

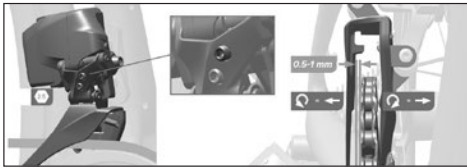


Fig. 96 Setting the upper stop ©Sram

- Shift the chain to the small chainring and the largest sprocket.
- Turn the lower stop screw until the distance between the inside of the inner front derailleur cage plate and the chain is between 0.5 and 1 mm.



Fig. 97 Setting the upper stop ©Sram

## 24.4 Hub gear

### ⚠ Warnings

**Serious falls and accidents caused by insufficient bicycle control.**

- Make sure that you always only shift one gear upward or downward using the twist grip. Do not step on the pedals when shifting gears.
- If the wheel is difficult to turn, the brake shoes must be replaced, or the hub lubricated. This should be done in a specialist workshop.

### Information ①

In rare cases, the internal gears and the pawls in the hub can make a noise when shifting. These noises are normally harmless.

With hub gears, gear changes take place on the rear wheel hub and use the planetary gear principle. Hub gears can be cable (mechanical) or motor (electric) driven. On both variants, this is done using the control element on the handlebars.

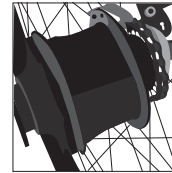


Fig. 98 Hub gear

## 24.4.1 Control elements

### 24.4.1.1 Shimano standard gear lever

- Do not step on the pedals as you shift gears.
- To shift to a lower gear, move lever A up. The number on the display will become smaller. Lever A will return to its original position after shifting.
- To shift to a higher gear, move lever B up or down. The number on the display will become larger. Lever B will return to its original position after shifting.

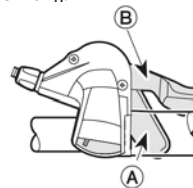


Fig. 99 Shimano standard gear lever ©Shimano

### 24.4.1.2 Shimano standard twist grip

- Do not step on the pedals as you shift gears.
- To shift to a higher gear, turn the twist grip step by step towards you. The number on the display will become larger.

- To shift to a lower gear, turn the twist grip step by step away from you. The number on the display will become smaller.

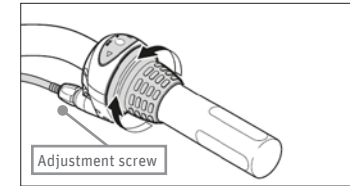


Fig. 100 Shimano standard twist grip ©Shimano

## 24.4.1.3 Enviolo twist grip

- Do not step on the pedals as you shift gears.
- Shift to a low gear when starting off or going uphill. To do this, move the twist grip in the direction of the "mountain" symbol.
- To ride faster on flat stretches or downhill, move the twist grip in the direction of the "level" symbol.

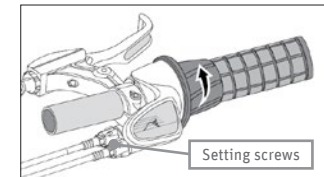


Fig. 101 Shifting to a lower gear ©Shimano

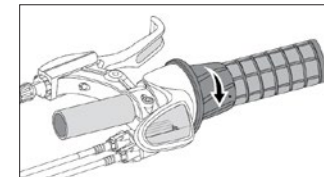


Fig. 102 Shifting to a higher gear ©Shimano

## 24.4.2 Adjusting gears

If you cannot shift gears correctly while riding, this may be due to an incorrectly adjusted shift cable. Find out how to resolve this issue below. Should you have any questions, consult your specialist workshop, or have the work done directly there.

### 24.4.2.1 Shimano control elements

Regardless of whether you operate the gear shifter on your bicycle with a gear lever or a twist grip, checking and adjusting the shift cable is almost identical for both control elements:

1. **Gear lever:** Shift the gear lever from 8<sup>th</sup> to 4<sup>th</sup> gear.
2. **Twist grip:** Turn the grip:
  - If you have 7/8 gears, shift from 1<sup>st</sup> to 4<sup>th</sup> gear
  - If you have 5 gears, shift from 1<sup>st</sup> to 3<sup>rd</sup> gear.
3. Check whether the yellow marking lines on the bracket and the ratchet wheel are aligned. There are yellow marking lines in two places on the gearshift unit. Use the lines that are easiest to see.

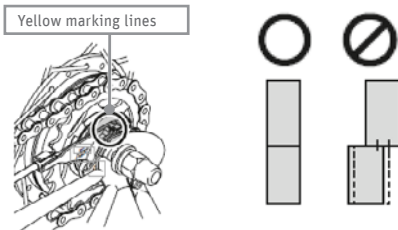


Fig. 103 Checking the alignment of the marking lines ©Shimano

4. Turn the setting screw on the control element until the marking lines are aligned.

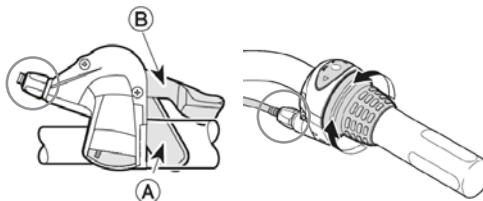


Fig. 104 Turning the setting screw ©Shimano

5. On a 7/8-gear bicycle, shift from 4<sup>th</sup> gear to 1<sup>st</sup> and then back to 4<sup>th</sup>. On a 5-gear bicycle, shift from 3<sup>rd</sup> gear to 1<sup>st</sup> and then back to 3<sup>rd</sup>.
6. Check whether the yellow marking lines are still aligned.

### 24.4.2.2 Enviolo twist grip

If there is more than 1.5 mm of play in the shift cable, you should reduce this. Play in excess of 1.5 mm can negatively influence the shifting quality, as well as the lifespan of the shift cables.

1. Turn the setting screws to adjust the shift cable play.
2. Then, pull gently on the shift cables to check the play. A shift cable play of 0.5 mm is ideal.

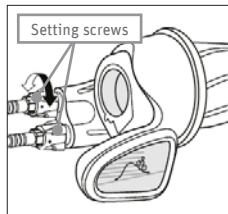


Fig. 105 Turning the setting screws ©Shimano

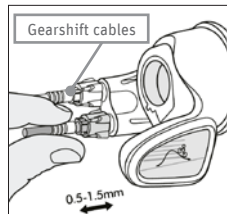


Fig. 106 Pulling the gearshift cables gently ©Shimano

## 24.5 Cleaning and care

You can clean the control elements with a damp cloth. Coarse dirt can be removed from the gearshift unit and front derailleur with a soft brush. Use a small, finer brush and cloth to clean the small components of the shifter more carefully. Solvents or brake cleaners are not recommended here, as these also remove grease from points where it is still needed. It is then advisable to lubricate the individual components of the gearshift unit with oil.

## 25. Chain

The bicycle chain is part of the drive. It transfers the torque which is generated when you step on the pedals to the rear wheel. The individual chain links are usually made of steel. There are two basic types of bicycle chain, namely broad chains for hub gears and narrower chains for derailleurs. These come in different widths, depending on how many sprockets the cassette used has.

### ⚠ Warnings

**Pedelec/S-Pedelec: serious bruising due to accidental actuation of the On button.**

- Remove the battery before taking measurements, setting or cleaning your Pedelec/S-Pedelec.

**Serious injury and accidents caused by cracked or incorrectly tensioned bicycle chains.**

- Check the chain for signs of wear and correct tensioning before every trip. Do not ride the bicycle if the chain is worn, damaged or incorrectly tensioned. In this case, consult a specialist workshop.



## 25.1 Measuring and adjusting the chain tension

### Information

If the bicycle chain is too tight, pedalling will require greater effort. The constant tension on the chain links will also increase wear on the chain. You can tell if your bicycle chain is not tensioned enough because the chain will visibly sag, or jump off when riding over uneven ground. If this is the case, the chain should be tightened as soon as possible.

### 25.1.1 Derailleur: measuring the chain tension

On derailleurs, a spring in the rear derailleur keeps the chain at the correct tension. If the chain still sags, this can be due to a dirty chain tensioner. If the chain is still too loose after you have cleaned the chain tensioner, the spring in the rear derailleur may be faulty. If this is the case, the rear derailleur must be replaced. Please contact your cycle dealer.

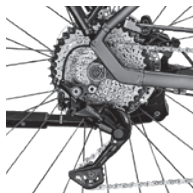


Fig. 107 Chain tensioner

### 25.1.2 Hub gear: measuring the chain tension

1. **Pedelec:** Remove the battery.
2. Press the chain up or down at its tautest point. The correct tension is reached when the chain sags.
3. Check the chain at four or five points over a complete revolution of the chain.

### 25.1.3 Hub gear: adjusting the chain tension

1. **Pedelec/S-Pedelec:** Remove the battery.
2. Undo the rear wheel nuts.
3. Remove the brake anchor as required.
4. Pull the rear wheel back in the drop-outs until the chain just has the permissible amount of play.
5. Carefully tighten all bolts in a clockwise direction to a torque setting of 35 - 40 Nm. Make sure the wheel is refitted straight.

### 25.2 Checking for chain wear

1. **Pedelec/S-Pedelec:** Remove the battery.
2. Check chain wear using a chain wear gauge.
3. Have the chain replaced by your dealer if it is worn.

### 25.3 Cleaning and care

#### Notice

##### **Damage to the electronics due to water ingress.**

- Do not spray the bicycle or its components, either with a water hose or with a high-pressure cleaning device. Although the components are sealed, damage to the cycle may still result. Clean the bike with a soft damp cloth.

Remove the battery before cleaning the chain on an S-Pedelec or Pedelec. Then, roughly brush the bicycle chain and chain tensioner with a soft brush. You can then remove the old chain oil with a dry cloth. Now you can oil the chain. We recommend high-quality chain oils, used sparingly. Apply the oil to the lower chain from above, turning the crank as you do so. Then, turn the crank further and shift through all gears in the derailleurs.

## 26. Belt

### **Warnings**

#### **Pedelec/S-Pedelec: serious bruising due to accidental actuation of the On button.**

- Remove the battery before taking measurements, setting or cleaning your Pedelec/S-Pedelec.

#### **Serious injury caused by worn or damaged belts.**

- Check the belt for signs of wear before every trip ⇒ 26.3 *Checking the belt for wear* Page EN-51. A worn or damaged drive belt can break.

### Notice

#### **Destroyed belt due to incorrect use.**

- Do not kink, twist, bend backwards, turn over, knot or bind together the belt.

### 26.1 Measuring the belt tension

There are various ways to measure the tension of the drive belt. One of these is the Carbon Drive app, which measures the tension based on the natural frequency (Hz) of the belt length. You can download the app from [gatescarbondrive.com/products/tools](https://gatescarbondrive.com/products/tools).

## Information

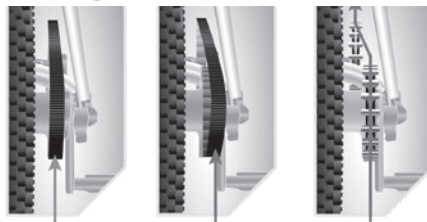
The Carbon Drive app works best in a quiet environment.

1. Pedelec/S-Pedelec: Remove the battery.
2. Load the app on to your smartphone.
3. Start the app.
4. Select the tension icon.
5. Switch on the microphone, click “Measure” and hold the phone over the middle of the belt making sure that the microphone is pointing towards the belt.
6. Pluck the belt so that it vibrates like a guitar string. The app converts the sound into the natural frequency of the belt.
7. Turn the pedal crank a quarter of a revolution and repeat the measurement.
8. Compare the frequency of the belt with the reference value to see if the tension needs adjusting.

Specified tension values	Small, light rider	Large, heavy rider
Hub gear	50 Hz	60 Hz

## 26.2 Adjusting the belt tension

### Notice



Correct alignment

Sprockets are not aligned correctly

Sprockets are not aligned correctly

Fig. 108 Aligning the belt ©Gates

When adjusting the tension, the correct alignment of the belt must be maintained. Otherwise it can cause noise, premature wear of the belt or sprocket, and the belt to come off the drive.

### 26.2.1 Drop-out I: adjusting the belt tension

1. **Pedelec/S-Pedelec:** Remove the battery.
2. Undo the bolts from the drop-out by turning these anticlockwise. Do not remove the bolts completely.
3. Increase or reduce the tension with the set screw.
4. Tighten the drop-out screws clockwise to a torque setting of 16 - 20 Nm .



Fig. 109 Loosening the screws

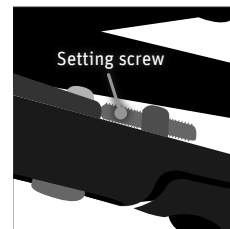


Fig. 110 Turning the setting screw

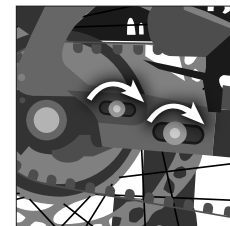


Fig. 111 Tightening the screws

## 26.2.2 Drop-out II: adjusting the belt tension

1. **Pedelec/S-Pedelec:** Remove the battery.
2. Loosen the four screws on both sides of the rear stays by turning these counterclockwise. There are two screws behind the plastic cover, and one of the screws on the other side holds the side stand plate in position. Do not remove the bolts completely.
3. You can increase or decrease the belt tension by turning both setting screws.

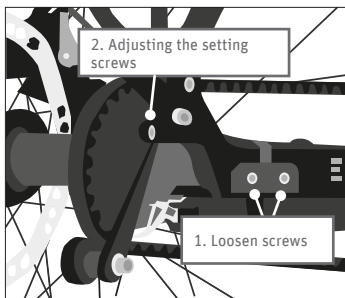


Fig. 112 Setting the belt tensioning

4. Tighten the four screws on both sides of the rear stays clockwise to the specified tightening torque.

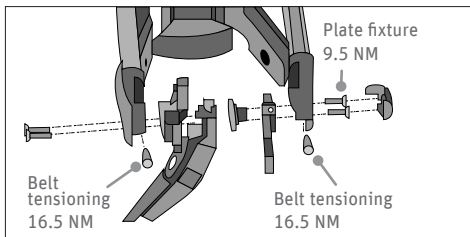


Fig. 113 Setting the belt tensioning

## 26.3 Checking the belt for wear

1. **Pedelec/S-Pedelec:** Remove the battery.
2. Check the belt for wear.



Fig. 114 Belt with no wear ©Gates

This belt is in good condition. The loss of blue colour is **not** a sign of wear.



Fig. 115 Worn belt ©Gates

Missing teeth and cracks in the tooth root: This belt is in a very poor condition.

3. When the safe wear limit has been reached, the belt must be replaced. Have this done in your specialist workshop.

## 26.4 Cleaning and care

### Notice

#### Damage to the electronics due to water ingress.

- Do not spray the bicycle or its components, either with a water hose or with a high-pressure cleaning device. Although the components are sealed, damage to the cycle may still result. Clean the bike with a soft damp cloth.

Please remove the battery before cleaning the belt on a Pedelec or S-Pedelec. Then, clean the belt with a soft, damp cloth. Allow it to dry before putting it back on your bike.

## 27. Wheels

Wheels provide the connection between your bicycle and the road. They can be attached to the frame and fork using axle nuts, quick-release skewers or through-axles.

### 27.1 Fastening wheels with quick-release skewers

#### **Warning**

##### Serious falls due to loose components.

- All quick-release skewers must be properly closed before setting off. Quick-release skewers **cannot** be closed by simply turning the lever.
- Check that all quick-release skewers are firmly seated before every use.
- Do not bend the brake disc or hold onto it when closing the quick-release skewer.

Wheels are attached to most bicycles using quick-release skewers. These are clamping devices which have the advantage that they can be quickly loosened and tightened by hand. Quick-release skewers normally consist of five parts: the axle, the tensioning lever, the clamping nut and two springs. The tensioning lever and axle are rigidly connected to one another, while the clamping nut is screwed onto the end of the axle. The tensioning lever exerts a clamping force, and the clamping nut is used to set the pre-tension.

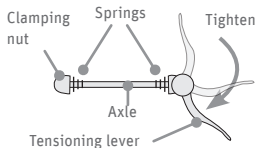


Fig. 116 Quick-release skewer on the wheel

1. Open the tensioning lever by folding it by 180°. **OPEN** should now be visible.
2. Check that the wheel is correctly positioned.
3. Close the tensioning lever by swinging the lever by 180°. **CLOSE** should now be visible. The lever should be very easy to move from the beginning of the closing movement up to halfway. Then, the force required to move the lever must significantly increase until the lever is very difficult to move at the end.
4. **a)** If the quick-release skewer closes too easily, the pre-tension must be increased: Hold the tensioning lever and turn the clamping nut on the opposite side clockwise. Check whether the correct pre-tensioning has been achieved by closing the tensioning lever.  
**b)** If the quick-release skewer is too difficult to close, the pre-tension must be reduced: Hold the tensioning lever and turn the clamping nut on the opposite side counterclockwise. Check whether the correct pre-tensioning has been achieved by closing the tensioning lever.
5. Close the tensioning lever. The lever must be positioned in such a way that it cannot be opened accidentally.

## 27.2 Attaching wheels with through-axes

### ⚠ Warning

#### Serious falls due to loose components.

- Close the lever as described. Otherwise, the wheel may become loose while cycling, and you run the risk of very serious or even fatal injuries. If you are unsure, have a specialist workshop show you this setting.

Through-axes are similar to quick-release skewers. While quick-release skewers in wheels are pushed through the axle of the hub, through-axes are themselves the axle. Unlike quick-release skewers, they have a threaded connection rather than a clamping nut. Through-axes can be completely screwed on, or can first of all be screwed on, and then tightened using a lever, as on a quick-release skewer. A further option is to attach the wheel using a T-piece, which is then secured by means of a lever (e.g., R.A.T. through-axe).



Fig. 117 Through-axe

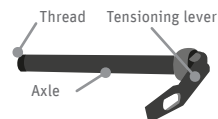


Fig. 118 Through-axe with lever

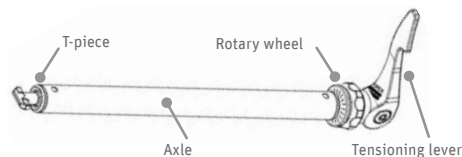


Fig. 119 R.A.T. through-axe

### 27.2.1 Mounting a R.A.T. through-axe

1. Insert the R.A.T. axle with the lever in the open position through the frame/fork and wheel, until the T-piece at the end of the R.A.T. axle penetrates the insert on the other side.

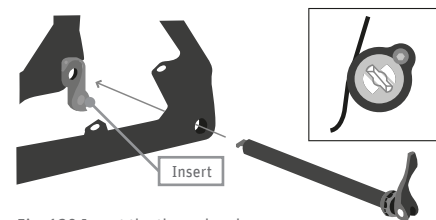


Fig. 120 Insert the through-axe

2. Turn the lever 90° clockwise until the T-piece hits the insert. The axle should turn easily, and it should no longer be possible to pull it out of the frame.

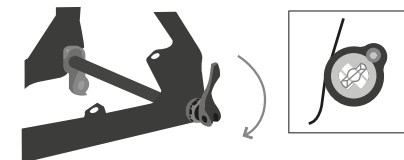


Fig. 121 Rotate the lever clockwise

3. Once the axle is in position, flip the lever to tension the system.

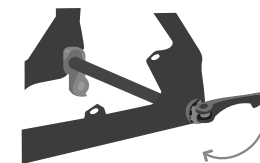


Fig. 122 Tension the lever

- If the lever does not apply any clamping force towards the end of its movement, the pre-tension must be increased. This is done using the rotary wheel under the lever. Open the lever and increase the pre-tension by turning the lever counterclockwise until the lever generates sufficient clamping force and can be closed hand-tight.

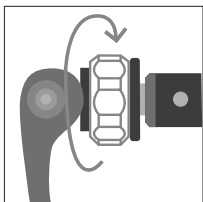


Fig. 123 Increase the pre-tensioning

## 27.3 Rims

### ⚠ Warning

#### Serious falls and accidents caused by broken rims.

- Carbon:** If you are using a bicycle with carbon brakes and carbon rims, bear in mind that this material has considerably inferior braking behaviour than aluminium rims. You should also note that only approved brake pads may be used.

The bicycle rim is the supporting, ring-shaped metal profile on a wheel, which accommodates the tyre, tube and rim tape. The rim is usually connected to the hub of the bicycle by means of spokes.

### 27.3.1 Checking for rim wear/fatigue on rim brakes

#### ⚠ Warning

##### Serious falls due to locked wheel.

- Check for wear on your rims at least once a year. If the rim wall is less than 0.7 mm thick, it may break open while riding.

Wear/fatigue on the rims can be detected in different ways. The easiest is a visual inspection. Examine the rim; you should replace the rims or consult a specialist workshop if you notice any of the following:

- Broken rim arch
- Cracks at the spoke attachment point
- Round, worn-down braking flanks
- Dark spots at spoke height
- Worn wear indicator

Many rims have a milled ring or a single small hole, the so-called wear indicator. If this can no longer be seen or felt, the rim is worn out.

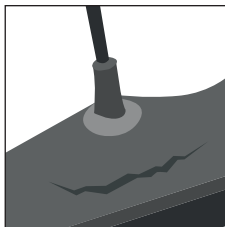


Fig. 124 Broken rim arch

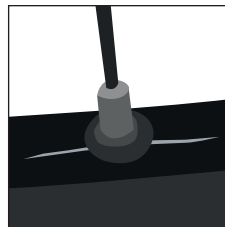


Fig. 125 Cracks on the spoke

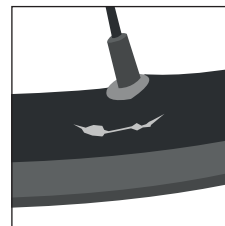


Fig. 126 Dark spots

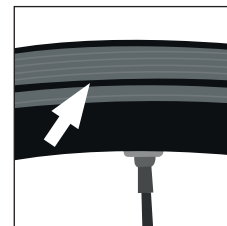


Fig. 127 Wear indicator

### 27.3.2 Cleaning and care

#### Notice 1

##### Pedelec/S-Pedelec: motor damage caused by water ingress.

- When you are cleaning the rims, make sure that no water gets into the motor.

Please remove the battery before cleaning the rims of an S-Pedelec or Pedelec. Then, brush the rims with a soft brush. Heavier soiling can be removed with a soft, damp cloth.

## 28. Tyres and tubes

### ⚠ Warning

#### Serious falls due to bursting tyres.

- Tyres are wear parts. Check the profile depth, pressure and the condition of the sidewalls regularly. Replace worn tyres before using the bicycle again.

There are a variety of different types of tyres. Off-road mobility and rolling resistance will depend on your tyre profile.

## 28.1 Checking tyre pressure

### ⚠ Warning

**Serious falls due to lack of bicycle control. Overinflated tyres can burst or come off the rim. The tyre can burst and cause an immediate loss of control. If the tyre pressure is too low, the tyre can come off the rim.**

- The air pressure indicated on the tyre must not be exceeded or undercut. A maximum air pressure indicated for certain rims must not be exceeded. The lowest maximum air pressure indicated on the tyre or rim is applicable. The permissible tyre pressure is given in bar or psi on the sidewall of the tyre and/or on the rim. There are many tools on the Internet that you can use to convert values from bar to psi, or vice versa.
- You should also observe the recommendations given on the websites and in the operating instructions of the tyre and rim manufacturers.

### Information

Use a standing air pump with integrated pressure display. This will allow you to check and adjust your tyre pressure at any time. You will need an adapter for certain valves. You can purchase these together with the pump from your specialist workshop.

## 28.2 Tubeless tyres

### ⚠ Warnings

**Serious falls due to bursting tyres.**

- Only use tubeless tyres on rims designed for this purpose. These are identified accordingly with the "tubeless ready" label.
- Mount and remove tubeless tyres as far as possible without using tools. Where necessary, however, a plastic assembly lever can also be used. Be extremely careful not to damage the sealing tyre bead. This can lead to leaks. If the sealing fluid is not able to prevent a defect, a normal tube can be used after removing the valve.
- Tubeless tyres should be removed from the rim as far as possible without using tools, otherwise leaks may occur as a result. If the sealing fluid is not able to prevent a defect, a normal tube can be used after removing the valve.
- Please follow the tyre manufacturer's instructions.

Today, so-called tubeless tyres can be found primarily on modern mountain bikes, and less often on racing bikes.

### 28.3 Tubes

The tube is necessary in order to maintain the pressure inside of the tyre. This is filled by means of a valve.

#### 28.3.1 Valves

There are three types of valves: Scloverand or racing valves, Schrader or car valves, and Dunlop or Blitz valves. All three types of valves are protected from dirt with a cover cap. Allow your specialist dealer to advise you which air pump is most suitable for your valve.

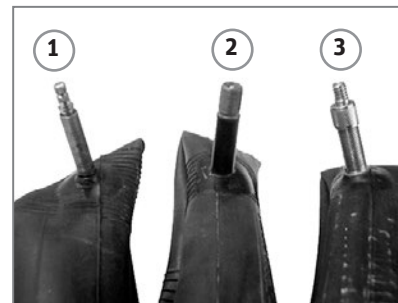


Fig. 128

1 Scloverand or racing valve

2 Schrader or car valve

3 Dunlop or Blitz valve

#### 28.3.1.1 Scloverand or racing valves

To inflate a tube with a Scloverand or racing valve, proceed as follows:

1. Unscrew the valve cap counterclockwise using your fingers.
2. Unscrew the knurled nut counterclockwise.
3. Push the knurled nut briefly into the valve with your finger until air escapes.
4. Inflate the tube with a suitable air pump. Note the pressure information on the tyre.
5. Screw the knurled nut back on.
6. Screw the valve cap clockwise onto the valve.

### 28.3.1.2 Dunlop or Blitz valves and Schrader or car valves

To inflate a tube with a Dunlop or Blitz valve, or a Schrader or car valve, proceed as follows:

1. Unscrew the valve cap counterclockwise.
2. Inflate the tube with a suitable air pump.
3. Screw the valve cap clockwise onto the valve.

## 29. Fixing a flat tyre

### Warnings

#### Serious accidents caused by lack of bicycle control.

- When changing a tyre, only use tyres of the same type, dimension and profile. Otherwise, this can negatively influence the riding characteristics.
- Allow a specialist workshop to provide support if you do not trust yourself to do the repairs.
- Observe the usage instructions on the repair kit.

If you want to fix a flat tyre, you will need a repair kit and the appropriate tools for your bicycle type.

Remove the battery before fixing a flat tyre on a Pedelec/S-Pedelec. Then, open or remove the brakes. The way in which you do this will depend on the type of brakes on your bicycle. Then remove the defective wheel.

## 29.1 Opening the brakes

### 29.1.1 Removing a rear wheel with a coaster brake

Open the threaded connection on the brake arm on the chain stay.

### 29.1.2 Opening side-pull brakes

Open the quick-release skewer on the brake arm or brake lever. If there is no quick-release skewer for the brake, let the air out of the tyre. The wheel can now be pulled out between the brake pads.

### 29.1.3 Opening V-brakes

Grasp the wheel with one hand. Push the brake pads or brake arms together against the rim. Unhook the brake cable from one of the brake arms.

### 29.1.4 Removing hydraulic rim brakes

If a quick-release skewer is provided for the brakes, dismantle a brake unit. Please follow the brake manufacturer's operating instructions. If there is no quick-release skewer for the brake, let the air out of the tyre.

## 29.2 Removing the wheel

### 29.2.1 Removing a front wheel

Please note that the work steps described here are examples.

Please follow the instructions of the respective manufacturer, or get in touch with your dealer.

1. **a)** If your bicycle is fitted with axle nuts, loosen these counterclockwise using a suitable wrench.  
**b)** If your bicycle is fitted with quick-release skewers, open these up ⇒ 27.1 *Fastening wheels with quick-release skewers Page EN-51*.  
**c)** If your bicycle is fitted with through-axles, remove them ⇒ 27.2 *Attaching wheels with through-axles Page EN-52*.
2. Now remove the front wheel from the fork.

### 29.2.2 Removing a rear wheel

Please note that the work steps described here are examples.

Please follow the instructions of the respective manufacturer, or get in touch with your dealer.

#### 29.2.2.1 Derailleur: removing a rear wheel

1. Shift the shifter to the smallest sprocket.  
In this position, the rear derailleur will hinder you least during removal.
2. **a)** If your bicycle is fitted with axle nuts, loosen these counterclockwise using a suitable wrench.  
**b)** If your bicycle is fitted with quick-release skewers, open these up ⇒ 27.1 *Fastening wheels with quick-release skewers Page EN-51*.  
**c)** If your bicycle is fitted with through-axles, remove them ⇒ 27.2 *Attaching wheels with through-axles Page EN-52*.
3. Fold the rear derailleur back a little.
4. Raise the bicycle a little.
5. Pull the wheel out of the frame.

#### 29.2.2.2 Hub gear: removing a rear wheel

The removal of a Shimano hub gear on a bicycle with axle nuts is shown here as an example.

1. Loosen the axle nut counterclockwise using an appropriate wrench.
2. Loosen the cable from the gearshift unit in order to be able to take the rear wheel out of the frame.

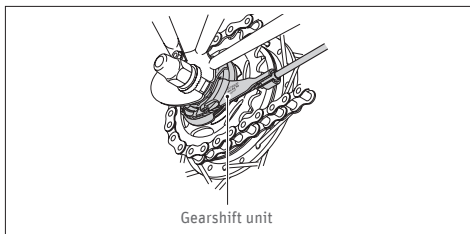


Fig. 129 Tip for removing the cable sleeve ©Shimano

3. Set the control element on the handlebars to 1.
4. Draw the cable sleeve out of the cable sleeve holder of the gearshift unit and remove the cable from the slot in the bracket.

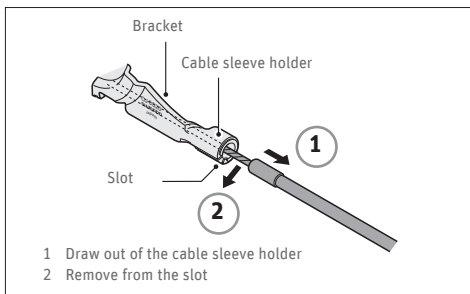


Fig. 130 Removing the cable ©Shimano

5. Remove the cable fastening screw from the ratchet wheel.

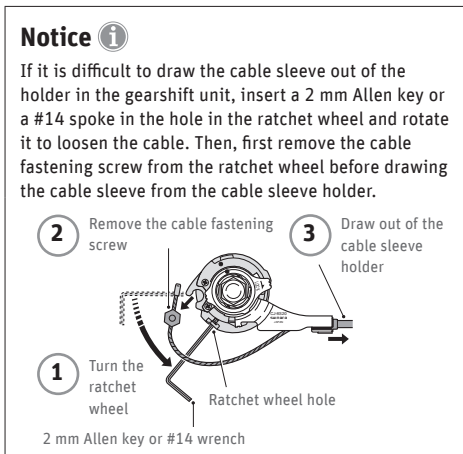


Fig. 131 Tip for removing the cable sleeve ©Shimano

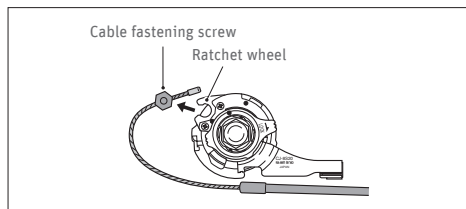


Fig. 132 Removing the cable fastening screw ©Shimano

6. Loosen and remove the screw on the brake arm.
7. Loosen the wheel nuts and set them aside. Remove the lock washers from the wheel axle.
8. Pull the rear wheel out of the drop-out slots.

## 29.3 Dismantling the tyre and tube

1. Unscrew the valve cap, securing nut and eventually the union nut from the valve.
2. Let the remaining air out of the tube.
3. Place the tyre lever against the valve on the inside edge of the tyre.
4. Lever the tyre wall over the rim flange.
5. Push the second tyre lever approximately 10 cm away from the first between the rim and tyre.
6. Use the tyre lever to lever the tyre over the rim until the tyre is loose over its entire circumference.
7. Remove the tube from the tyre.

## 29.4 Repairing the tube

1. Inflate the tube.
2. To check where the tube is damaged, place the tube in a container full of water.
3. Submerge the tube. Air bubbles will escape at the position of the damage on the tube.
4. If the problem occurs while you are under way, and you are unable to determine the position of the hole, simply inflate the tube heavily. It will become larger, and the increased pressure and noise of the escaping air will allow you to determine the position of the hole.
5. Allow the tube to dry.
6. You can now repair the tube. Observe the usage instructions on the repair kit.



## 29.5 Mounting the tyre and tube

1. Make sure that the rim tape covers the spoke nipples and is undamaged.
2. Place the rim with one wall inside the tyre.
3. Push one side of the tyre completely into the rim.
4. Insert the valve through the valve hole in the rim and insert the tube into the tyre.
5. Press the tyre over the edge of the rim.
6. Pull the tyre firmly into the centre of the rim.
7. The section that has already been mounted will slide into the bottom of the rim.
8. Check that the tube is correctly positioned once again.
9. Used the ball of your hand to push the second half of the tube completely over the rim flange.
10. For Dunlop or Blitz valves: Put the valve insert back into its seating and tighten the union nut.
11. Inflate the tube slightly.
12. Check the fit and concentricity of the tyre using the control ring on the rim flange. If it is not completely round, correct the fit of the tyre using your hand.
13. Inflate the tube to the recommended tyre pressure ⇒ 28. Tyres and tubes Page EN-53.

## 29.6 Installing the wheel

Please note that the work steps described here are examples. Please follow the instructions of the respective manufacturer, or get in touch with your dealer.

### 29.6.1 Inserting the front wheel

#### ⚠ Warnings

**Serious falls and accidents caused by insufficient bicycle control.**

- Pay attention to the direction of rotation of the tyre when installing the front wheel.
- If your bicycle has a disc brake, ensure that the brake discs sit properly between the brake pads.

### 29.6.1.1 Axle nut: inserting the front wheel

1. Insert the wheel into the fork drop-out.
2. Tighten the axle nuts clockwise to the specified tightening torque using a torque wrench ⇒ 13. *Tightening torques for threaded connections Page EN-19.*

### 29.6.1.2 Quick-release skewer: inserting the front wheel

1. Insert the wheel into the fork drop-out.
2. Turn the clamping nut on the quick-release skewer clockwise slightly.
3. Close the tensioning lever by folding it 180°. The lever should be very easy to move from the beginning of the closing movement up to halfway. Then, the force required to move the lever must significantly increase until the lever is very difficult to move at the end.
4. **a)** If the quick-release skewer closes too easily, the pre-tension must be increased: Hold the tensioning lever and turn the clamping nut on the opposite side clockwise. Check whether the correct pre-tensioning has been achieved by closing the tensioning lever. **b)** If the quick-release skewer is too difficult to close, the pre-tension must be reduced: Hold the tensioning lever and turn the clamping nut on the opposite side counterclockwise. Check whether the correct pre-tensioning has been achieved by closing the tensioning lever.
5. Close the tensioning lever. The lever must be positioned in such a way that it cannot be opened accidentally.

### 29.6.1.3 Inserting the front wheel through-axle

1. Moisten the through-axle with a thin layer of grease.
2. Slide the wheel between the drop-outs.
3. Mount the through-axle ⇒ 27.2.1 Mounting a R.A.T. through-axle Page EN-52.

## 29.6.2 Inserting the rear wheel

### 29.6.2.1 Derailleur: inserting the rear wheel

1. When installing the rear wheel, position the chain on the smallest sprocket.
2. Insert the wheel centrally in the drop-outs as far as it will go.
3. Tighten the hub nut or close the quick-release skewer ⇒ 27.1 Fastening wheels with quick-release skewers Page EN-51.

### 29.6.2.2 Hub gear: inserting the rear wheel

#### I. Mounting a wheel with a gear hub in the frame

1. Place the chain on the sprocket and attach the hub axle to the drop-outs.

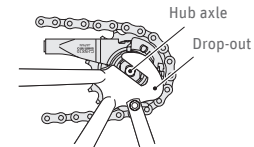


Fig. 133 Inserting the rear wheel ©Shimano

2. Attach the locking washers to both sides of the hub axle. Turn the shift arm so that the protrusions on the locking washers engage in the drop-out slots. In this case, the shift arm can be mounted almost parallel to the frame fork. The protruding part must be on the side of the drop-out. Insert the locking washers so that the protrusions engage exactly in the drop-out slots on the front or rear of the hub axle.

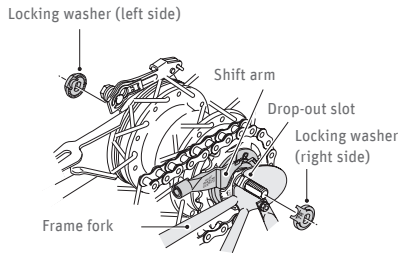


Fig. 134 Fitting the locking washers ©Shimano

3. Tension the chain and fasten the wheel onto the frame using the cap nuts.

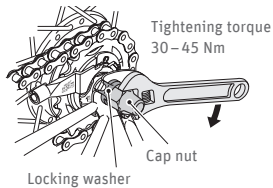


Fig. 135 Fastening the wheel ©Shimano

4. Attach the brake arm correctly to the frame fork using the brake arm clamp.

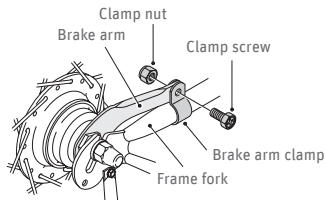


Fig. 136 Securing the brake arm ©Shimano

## Information 1

When fitting the brake arm clamp, hold the clamp nut in position with a 10 mm wrench when tightening the clamp screw. The tightening torque should be 2 - 3 Nm. After fitting the brake arm clamp, check to see that the clamp screw protrudes approximately 2 - 3 mm from the clamp nut.

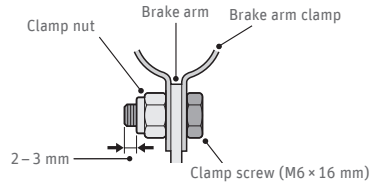


Fig. 137 Fitting the brake arm clamp ©Shimano

5. Before using the coaster brake, check that the brake work correctly and that the wheel turns easily.
6. Install and secure the brake cable or close the brake quick-release skewer.
7. Check that the brake pads contact the brake surfaces.
8. Check that the brake arm is securely mounted.
9. Perform a brake test.

## II. Fitting the shift cable for hub gears

1. Attach the cable to the ratchet wheel so that the cable securing nut faces outward against the drop-out. Slide the straight side of the spacer into the open side of the ratchet wheel.

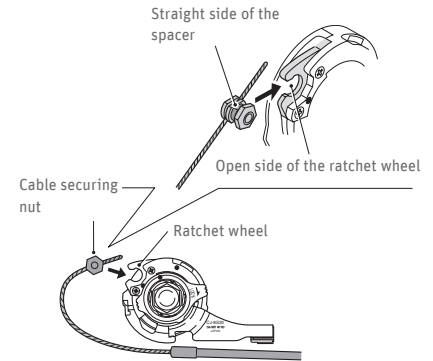


Fig. 138 Mounting the cable ©Shimano

2. Turn the cable 60° to the right and attach it to the hook.

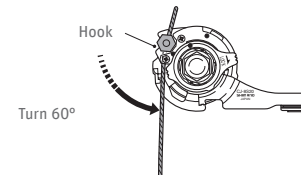
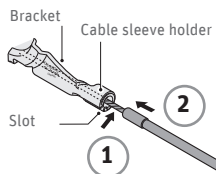
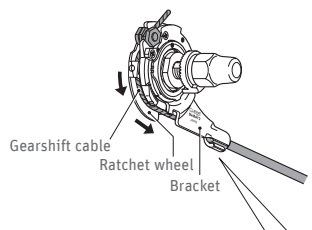


Fig. 139 Turn the cable to the right ©Shimano

3. Attach the cable to the ratchet wheel as shown in the illustration. Draw it through the slot in the bracket of

the gearshift unit and push the end of the cable sleeve firmly into the cable sleeve holder.



- 1 Pull through the slot
- 2 Insert into the cable sleeve holder

Fig. 140 Pulling the cable through the slot ©Shimano

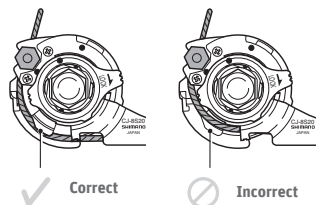


Fig. 141 Checking the cable arrangement ©Shimano

## 30. Luggage rack

### ⚠ Warnings

**Serious falls and accidents caused by component failure.**

- Do not exceed the load capacity of the luggage rack. The maximum load capacity is engraved onto the luggage rack.
- Do not make any modifications to the luggage rack.

**Serious falls and accidents caused by insufficient bicycle control.**

- **Front-wheel luggage rack:** Even small loads make steering more difficult, because the mass of the luggage must be moved every time you steer. Make sure to position the centre of gravity of the luggage as close as possible to the steering axis to ensure safer riding characteristics.

### Notice 1

**Abrasion due to bag mountings.**

- Please protect all contact points on the luggage rack from abrasion due to attaching bags. You can for example use a protective film or abrasion protection.



Fig. 142 Rear-wheel luggage rack Fig. 143 Front-wheel luggage rack

Rear-wheel luggage racks are mounted on the rear frame of the bicycle. Front-wheel luggage racks are mounted on the front axle or on the front wheel fork. These are designed for lighter loads than rear-wheel luggage racks. If you want to know exactly how the luggage rack was mounted on your bicycle, you can download an exploded view from our website. If you want to attach a luggage rack to your bicycle at a later stage, please contact your specialist workshop about this.

## 31. Luggage

### 31.1 Bicycle baskets

If you want to attach a bicycle basket to the luggage rack or to the handlebars of your bicycle, ask your specialist workshop about the right model for your bicycle. Please note the following safety instructions should you want to fit a bicycle basket to your bicycle:

### Information 1

If it is easier for you, insert the cable sleeve into the cable sleeve holder beforehand. Then, turn the ratchet wheel using a 2 mm Allen key or a #14 wrench that you have inserted into the ratchet wheel hole. This is the correct way to fit the cable fastening screw into the open side of the ratchet wheel.

4. Check that the cable is correctly inserted into the ratchet wheel guide.

## Warnings

### Serious falls and accidents caused by component failure.

- Observe the manufacturer's specifications. Do not load the basket more heavily than specified by the manufacturer.
- **Front basket:** Ensure that brake and gearshift cables are not kinked or crushed during installation. In the worst-case scenario, this can cause the brakes to fail or lock up.

### Serious falls and accidents caused by insufficient bicycle control.

- **Front basket:** Even small loads make steering more difficult, because the mass of the luggage must be moved every time you steer. Make sure to position the centre of gravity of the luggage as close as possible to the steering axis to ensure safer riding characteristics.
- **Front basket:** At higher speeds, such as when travelling downhill, this can cause steering flutter. Grasp the handle grips with both hands and adjust your speed.

## Notice

### Abrasion and damage caused by mounting a bicycle basket.

- Please protect all contact points on the luggage rack and/or handlebars from abrasion due to mounting the basket. You can for example use a protective film or abrasion protection.
- **Front basket:** When securing the basket, make sure not to damage the handlebars or front stem.

## 31.2 Child seats and trailers

### Warnings

#### Serious falls and accidents caused by component failure.

- Only use child seats and trailers that conform to the relevant national regulations. Child seats should be designed and tested in accordance with EN 14344, and bicycle trailers in accordance with EN 15918. Trailers on Pedelecs must also be fitted with lighting. Please consult your cycle dealer if you want to purchase a child seat or trailer.
- Observe the manufacturer's instructions. Install the child seat and trailer in accordance with the manufacturer's specifications, and only in the permitted positions. Check regularly that these are firmly mounted. Make sure that no straps, etc. can get caught up in the spokes and/or rotating wheels.

#### Serious falls and accidents caused by insufficient bicycle control.

- Child seats and trailers alter the riding characteristics. The braking distance becomes longer, thus, you should start braking earlier, and the steering response becomes more sluggish. Practise starting, braking, going round corners, and up and down hills, starting with an empty/unloaded trailer. Adapt your riding style accordingly.
- Avoid loading the child seat or trailer too heavily. The heavier the load, the more difficult it will be to brake.

#### Serious head injuries from riding without a bicycle helmet.

- Make sure your child wears a good cycle helmet. Explain to your child that the cycle helmet is only to be worn when riding the bike and must be taken off when the child is no longer being transported.

## 31.2.1 Child seats

- **S-Pedelec:** Attaching a child seat to an S-Pedelec is not allowed.
- **Carbon:** Attaching a child seat to carbon components is not allowed.
- Attaching a child seat to the handlebars or a handlebar extension is not allowed.
- Attaching a child seat to a luggage rack on a bicycle (motorless) or Pedelec with a load capacity of less than 27 kg is not allowed. Ask your dealer or child seat manufacturer whether you can attach a child seat to your luggage rack with a load capacity of at least 27 kg.
- Should you want to attach a child seat to the seat tube of your bicycle (motorless)/Pedelec, please ask your dealer or child seat manufacturer whether this is possible with your model.

### Caution

#### Trapped fingers due to unprotected spiral springs.

- If there are coil springs underneath your saddle, cover them up. A child being carried in a child seat can trap their fingers in them.

## 31.2.2 Trailers

- **S-Pedelec:** Attaching a trailer to your S-Pedelecs is not allowed.
- **Carbon:** Attaching a trailer to carbon components is not allowed.
- Should you want to be able to attach a trailer to your bicycle (motorless) or Pedelec, ask your dealer or trailer manufacturer whether this is possible with your bicycle model.

## 32. Transporting the bicycle

It is essential that you comply with the following safety instructions when transporting your bicycle.

### 32.1 Transport by car or mobile home

#### Warnings

**Pedelec/S-Pedelec: serious accidents caused by loosening/falling bicycle carriers.**

- As Pedelecs/S-Pedelecs are heavier than motorless bicycles, your bicycle carrier must be designed for this increased bicycle weight. It is imperative to follow the guidance of the bike rack manufacturer.

**Pedelec/S-Pedelec: accidents caused by loosening batteries.**

- Remove the battery from your Pedelec/S-Pedelec before transportation. Use a special battery bag that protects the battery from heat, shocks and impacts.

**Serious accidents caused by pannier bags and other attachments on the roadway.**

- Remove panniers and other attachments during transportation.

#### Notice

**Pedelec/S-Pedelec: damage to the electronics due to water ingress.**

- Only transport Pedelecs/S-Pedelecs on a bicycle carrier when provided with suitable rain protection. In particular, protect the motor and docking station from water ingress.

### 32.1.1 Carbon frame or parts

#### Warning

**Serious falls and accidents caused by broken components.**

- When transporting the bicycle on a roof luggage rack or on a tow bar carrier, ensure that the mounting is never fitted to the frame. Always secure the bicycle by its seat post, never by its down tube, crossbar, seat tube, fork blades, fork steerer tube, chain stays, cranks or seat stays. The clamping mechanism may cause visible or hidden damage to the frame which may affect safety. If your bicycle is fitted with a carbon seat post, we recommend fitting an aluminium or steel post for transport.

### 32.2 Transport by bus, rail & air

#### Information

Find out from your travel company well in advance if their regulations allow you to take your bicycle with you.

## 33. Protection from theft, manipulation and loss

#### Warning

**Serious falls and accidents caused by unauthorised access by third parties.**

- Protect your bicycle from unauthorised access. Inspect your bicycle before every trip and after each time it has been transported anywhere or left unattended. If your bike is damaged, only ride it again once the damage has been rectified. Your bike will not be replaced under warranty if lost or stolen.

#### Information

The following measures can help you to protect your bicycle from theft and manipulation and to recover it if it has been stolen:

- **Pedelec/S-Pedelec:** Always lock the bike and battery even if you leave it for a short while. Ideally, the lock(s) should block the wheel powered by the motor.
- **Pedelec/S-Pedelec:** Do not leave the key in. To be on the safe side, you can also remove the battery. The Pedelec must also be secured with a lock when it is parked outside the home (e.g. sheds, basement).

#### Information

- Do not park your bicycle in isolated locations – especially for long periods. If possible, park your bicycle in private or communal garages or individual bike lockers which have surveillance. Lock your bicycle to a fixed object (such as a tree, street lamp or fence), so that it cannot be carried away.
- Quick-release wheels should be attached to a fixed object together with the frame. This prevents the wheel from being stolen. Alternatively, the quick-release skewers can be replaced by an anti-theft device. Contact your cycle dealer if you have questions on this.
- Use a high-quality bike lock. Invest about 10% of the purchase price of the bike in locks. Your cycle dealer will be able to fit a suitable frame lock if your bike does not already have one. You can also use other types of bike locks. Ask your cycle dealer for advice.

## Notice

- Make a note of the important details of your bicycle (e.g. in the service book, bike passport, etc.) and get it registered with the police. This makes it easier to describe and identify if stolen.
- Ask the police to code your bicycle; the address and initials of the owner are engraved on the frame in an encrypted form. Coding makes the illegal resale of a bike more difficult and deters thieves. A coded bike also makes it easier to identify the owner.
- Bicycle theft is often covered by household contents insurance. Check the terms of your insurance policy as soon as possible.

### 33.1 Ordering another key

If your bicycle is fitted with an Abus, Axa or Trelock lock, you can simply order another key if you lose it. All you need is the key number. To order, go to [schluesselservice.abus.com](http://schluesselservice.abus.com), [keyservice.axasecurity.com](http://keyservice.axasecurity.com) or [trelock-keyservice.de](http://trelock-keyservice.de) and follow the instructions. If you cannot reorder a key because of a missing key number, ask your dealer to replace the lock.

**Pedelec/S-Pedelec:** You can normally use the keys to open and close the bicycle lock as well as the battery lock.

### 34. Cleaning the bicycle and its components

#### Warning

**Pedelec/S-Pedelec: serious bruising due to accidental actuation of the On button.**

- Remove the battery before cleaning the Pedelec.

## Notice

### Damage to the electronics due to water ingress.

- Do not immerse the bicycle or its components in water, rinse them off with a water hose or clean them with a high-pressure cleaning device. Although the components are sealed, damage to the cycle may still result. Clean them with a soft damp cloth.

### Scratches and dull surfaces due to abrasive cleaners and sponges.

- Do not use solvent-based or abrasive cleaners for cleaning. No coarse sponges or brushes may be used either. Clean the bicycle and its components with a damp, soft cloth or a soft brush.

Clean your bicycle regularly, but especially after you've been out in the rain.

### 35. Pedelec/S-Pedelec: storage

Remove and store the battery separately. The Pedelec/S-Pedelec should preferably be kept in a dry, not excessively warm room.

### 36. Disposal

## Notice

### Misdemeanours and fines.

- Observe the respective national regulations regarding the disposal of the individual components.

Do not dispose of the bicycle, its components and transport packaging in the household refuse, but hand them in at designated locations. This is the only way to recycle raw materials and properly dispose of hazardous substances. This saves on natural resources, and protects the environment.

<b>Packaging</b>	Cardboard, paper	• Wastepaper
	Plastic film	• Recyclable materials
<b>Bicycle (remove batteries before disposal)</b>	Aluminium frames	• Recycling centre • Bulky waste
	Steel frames	• Specialist bicycle dealership
	Carbon frames	• Recycling centre • Specialist bicycle dealership
<b>Electronic components (if possible, remove batteries before disposal)</b>	Displays, control elements	• Recyclable materials • Recycling centre
<b>Hazardous substances</b>	(S-)Pedelec batteries	• Specialist bicycle dealership
	Round cell batteries	• Specialist dealers
	Greases, assembly pastes, cleaning agents, LED lamps	• Recycling centre • Hazardous substance collection
<b>Carbon components</b>	Seat posts, forks, rims	• Recycling centre • Specialist dealers
	<b>Residual waste</b>	Bicycle tyres and tubes

## 37. Warranty conditions

The statutory warranty valid at the time of delivery applies to all bicycle models. This begins with the handover of the bicycle by the dealer, who is the contact person for warranty claims.

Please retain purchase receipts such as the invoice and/or till receipt for the duration of the warranty period as proof of your purchase and handover date.

### 37.1 Warranty conditions

#### 37.1.1 Requirements for a warranty claim

The following criteria must be met in order to be entitled to submit a claim against the statutory warranty:

- Manufacturing, material or information defect.
- The cause of the change in the bicycle or component is not wear or ageing arising naturally or as a result of its functions ⇒ *37.1.3 Wear parts Page EN-63.*
- The damage was not caused by use of the bike for other than the intended purpose ⇒ *7.1 Bicycle (motorless)/Pedelec Page EN-13.*

#### 37.1.2 Caveat emptor

You are not entitled to submit a warranty claim in the event of any of the following:

- The damage is caused by improper use or force majeure. The damage is due to accidental damage or other external influences – provided that the cause is not an information or product defect.
- The bicycle was used in competitions.
- The damage is due to improper or inadequate care (e.g., caused by cleaning the electronic components with high-powered water jets, transporting the Pedelec on the rear luggage rack of a car with no rain protection)

- The damage was caused by improperly performed repairs, conversions or replacement of components. Used components were used in repairs. Special equipment, accessories or non-standard equipment were used, particularly if these lead to technical changes.
- The components subject to the claim are aged or worn to the normal extent, provided that this is not a manufacturing or material defect ⇒ *37.1.3 Wear parts Page EN-63.*
- Fluctuations in consumption and battery power, and a reduction in capacity due to the cycle's age, are commonplace and technically unavoidable – and as such do not represent material defects.

#### 37.1.3 Wear parts

The following are considered wear parts under the statutory warranty:

- Tyres
- Rims
- Brake pads
- Chains and belts
- Chain wheels, sprockets, bottom bracket and rear derailleur rollers
- Bearings
- Handlebar tapes and grip covers
- Hydraulic oils and lubricants
- Gear-shift and brake cables
- Paint finishes
- Battery configuration

## 38. Handover

### 38.1 Handover inspection and settings

Ask your dealer to perform the following inspections and to adjust the bicycle for you.

Please ask your dealer to tick off the items that have been completed.

#### General

##### Inspection and settings

Frame / forks

Handlebar / front stem

Saddle / seat post

Wheels

Bottom bracket

Pedals attached

Shifter

Chain or belt

Brakes

Lights

Threaded joints

Cable check

Elastic mounts

Test ride completed

Technical documentation /  
other accessories handed out




#### Pedelec/S-Pedelec

##### Inspection and settings

General functional check  
(e.g., push assistance, support modes,  
button functions)

Display set for the customer  
(e.g., contrast, brightness, language)

Battery

Motor screw connections

Position of the speed sensor  
and spoke magnet (if present)

Battery charger

Software version (depending on model),  
update completed if necessary

Handover inspection and settings have  
been carried out.




---

Date, signature of the customer



## 38.2 Handover talk

Have your dealer show and explain the following points to you, and take a test ride.  
Please ask your dealer to tick off the items that have been completed.

### General

#### Topics

Check the functionality of the bicycle

Carbon frame and parts

Luggage, child seat, trailer, trailer bike  
(e.g., total weight, assembly)

Bicycle transport (e.g., car, rail, air)

Cleaning the bicycle and preparing it for  
winter

Traffic regulations (e.g., helmet  
requirement)

Test ride (safe getting on and off,  
gearshift and braking practice)

#### Pedelec/S-Pedelec

#### Topics

Operation and basic functions

Bringing the Pedelec/S-Pedelec to a rapid  
stop in a dangerous situation

Inserting and removing the battery

✓


✓


#### Topics

Battery: care, range, display panel,  
charging, safety

Function and meaning of shutdown speed

Motor safety instructions

Regulations for the disposal of electronic  
components

The handover talk has been completed.

\_\_\_\_\_  
Date, signature of the customer

The bicycle was handed over in a proper, road-worthy  
condition.

\_\_\_\_\_  
Date, signature and stamp of the dealer

✓


## 39. Maintenance intervals

As the spokes settle, the brake and gearshift cables stretch and the bearings run in during the first few kilometres travelled, the first inspection should be performed after approximately 100 km of travel or six weeks from the date of purchase. After that, please visit a specialist workshop once a year or after every 2000 km of travel. Have the components listed for the maintenance intervals adjusted, checked (tightening torques, wear), if necessary replaced, cleaned and – if necessary and possible – lubricated.

### ⚠ Warnings

#### ■ Serious falls due to malfunctions.

Observe the maintenance intervals. The intervals recommended in the maintenance tables should only be used as guidelines for normal operation and can vary depending on the conditions (e.g., weather). Please also observe the specifications in the component operating instructions ⇒ 5. *Component guides Page EN-10*. Make sure that the bicycle is maintained in accordance with our specifications and all maintenance work is logged. Components can fail if wear and damage are not identified in good time. If this happens whilst you are cycling, you run the risk of very serious or even fatal injuries. Replace any worn, damaged or bent components before using the bike again.

- If you use your bicycle intensively, remember that it will be subjected to greater wear and tear. Many parts of bicycles, particularly on light sports bicycles, are designed for a specific period of use. Once this is exceeded, there is a considerable risk that components will fail.

### Notice

Please note that maintenance is not free of charge.

## Maintenance interval 1

At the latest after 100 km or six weeks after the date of purchase.

General		Pedelec   S-Pedelec	
<b>Maintenance</b>	✓	<b>Maintenance</b>	✓
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebar / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Suspension elements	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>		
Bottom bracket	<input type="checkbox"/>	<b>Replaced parts</b>	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

## Maintenance interval 2

At the latest after 2000 km or one year after the date of purchase.

General		Pedelec   S-Pedelec	
<b>Maintenance</b>	✓	<b>Maintenance</b>	✓
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebars / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>		
Bottom bracket	<input type="checkbox"/>	<b>Replaced parts</b>	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

## Maintenance interval 3

At the latest after 4000 km or two years after the date of purchase.

General		Pedelec   S-Pedelec	
<b>Maintenance</b>	✓	<b>Maintenance</b>	✓
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebar / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>		
Bottom bracket	<input type="checkbox"/>	<b>Replaced parts</b>	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

## Maintenance interval 4

At the latest after 6000 km or three years after the date of purchase.

General	✓	Pedelec   S-Pedelec	✓
<b>Maintenance</b>		<b>Maintenance</b>	
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebar / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>	<b>Replaced parts</b>	
Bottom bracket	<input type="checkbox"/>	_____	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

## Maintenance interval 5

At the latest after 8000 km or four years after the date of purchase.

General	✓	Pedelec   S-Pedelec	✓
<b>Maintenance</b>		<b>Maintenance</b>	
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebar / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>	<b>Replaced parts</b>	
Bottom bracket	<input type="checkbox"/>	_____	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

## Maintenance interval 6

At the latest after 10,000 km or five years after the date of purchase.

General	✓	Pedelec   S-Pedelec	✓
<b>Maintenance</b>		<b>Maintenance</b>	
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebar / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>	<b>Replaced parts</b>	
Bottom bracket	<input type="checkbox"/>	_____	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

## Maintenance interval 7

At the latest after 12,000 km or six years after the date of purchase.

### General

#### Maintenance

Review

Test drive

Cable check

Frame / forks

Handlebar / front stem

Elastic mounts

Saddle / seat post

Wheels

Bottom bracket

Shifter

Chain or belt

Brakes

Lights

Threaded joints

### Pedelec | S-Pedelec

#### Maintenance

General functional check

Display + easy-to-reach control

Battery

Motor

Battery charger

Software (depending on model)

#### Replaced parts

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Maintenance interval 8

At the latest after 14,000 km or seven years after the date of purchase.

### ⚠ Warnings

Replace the seat post after 14,000 km, unless the seat post manufacturer specifies a different interval in their operating instructions. The component must be replaced regardless of the material and of whether external defects, cracks or damage are visible on the seat post. If the seat post is not promptly replaced, it can break and you can fall seriously.

## Maintenance interval 8

At the latest after 14,000 km or seven years after the date of purchase.

### General

#### Maintenance

Review

Test drive

Cable check

Frame / forks

Handlebars / front stem

Elastic mounts

Saddle / seat post

Wheels

Bottom bracket

Shifter

Chain or belt

Brakes

Lights

Threaded joints

### Pedelec | S-Pedelec

#### Maintenance

General functional check

Display + easy-to-reach control

Battery

Motor

Battery charger

Software (depending on model)

#### Replaced parts

Seat post

\_\_\_\_\_

\_\_\_\_\_

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

## Maintenance interval 9

At the latest after 16,000 km or eight years after the date of purchase.

General	✓	Pedelec   S-Pedelec	✓
<b>Maintenance</b>		<b>Maintenance</b>	
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebars / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>	<b>Replaced parts</b>	
Bottom bracket	<input type="checkbox"/>	_____	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

## Maintenance interval 10

At the latest after 18,000 km or nine years after the date of purchase.

General	✓	Pedelec   S-Pedelec	✓
<b>Maintenance</b>		<b>Maintenance</b>	
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebars / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>	<b>Replaced parts</b>	
Bottom bracket	<input type="checkbox"/>	_____	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

## Maintenance interval 11

At the latest after 20,000 km or 10 years after the date of purchase.

General	✓	Pedelec   S-Pedelec	✓
<b>Maintenance</b>		<b>Maintenance</b>	
Review	<input type="checkbox"/>	General functional check	<input type="checkbox"/>
Test drive	<input type="checkbox"/>	Display + easy-to-reach control	<input type="checkbox"/>
Cable check	<input type="checkbox"/>	Battery	<input type="checkbox"/>
Frame / forks	<input type="checkbox"/>	Motor	<input type="checkbox"/>
Handlebars / front stem	<input type="checkbox"/>	Battery charger	<input type="checkbox"/>
Elastic mounts	<input type="checkbox"/>	Software (depending on model)	<input type="checkbox"/>
Saddle / seat post	<input type="checkbox"/>		
Wheels	<input type="checkbox"/>	<b>Replaced parts</b>	
Bottom bracket	<input type="checkbox"/>	_____	
Shifter	<input type="checkbox"/>	_____	
Chain or belt	<input type="checkbox"/>	_____	
Brakes	<input type="checkbox"/>	_____	
Lights	<input type="checkbox"/>	_____	
Threaded joints	<input type="checkbox"/>	_____	

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

The bicycle was handed over in a proper, road-worthy condition.

Date, signature and stamp of the dealer

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