Training 2019

BOSCH
Invented for life

THE BOSCH eBIKE MANUAL

FEEL THE FLOW

Bosch eBike Systems | EN
bosch-ebike.com

PICTOGRAMS

Useful tips and supplementary information

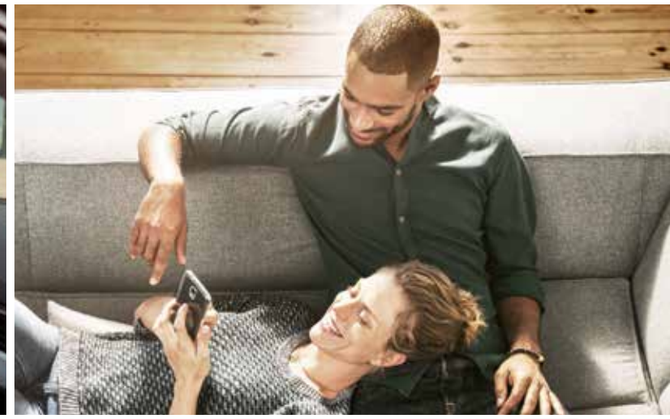
Measures required to prevent accidents, damage or defects

Measures required to prevent severe injury to persons or major material damage

A Brief History of Robert Bosch GmbH

Robert Bosch

Volkmar Denner,
Chairman of the Board of Management



An early passion for cycling

From 1890 onward, Robert Bosch (1861 – 1942) used a modern "safety bike" – a forerunner of today's bicycles – to visit his customers. It not only got him there faster, but also saved him money on tram fares. At this time, "penny farthings" were customary and Robert Bosch attracted a lot of attention in the streets of Stuttgart with his vehicle.

"We should all strive to improve on the status quo: none of us should ever be satisfied with what they have achieved, but should always endeavour to get better." (Robert Bosch, writing in 1919)

Bosch – using technology to improve quality of life

- In 1886, Robert Bosch (1861–1942) founded the "Workshop for Precision Mechanics and Electrical Engineering" in Stuttgart, Germany
- Today, a leading global supplier of technology and services comprising of four business sectors
- The company employs over 400,000 associates in around 60 countries, over 64,000 of them in research & development
- More then 30 billion euros invested in research and development in the last five years
- Company goals: Development of innovative and beneficial products and solutions that improve the quality of life – **"Invented for life"**

The four business sectors

Mobility Solutions

- One of the world's largest supplier of mobility solutions
- 2009 Founding of Bosch eBike Systems within the Automotive Electronics division

Bosch brings innovation in automotive engineering to mass production and sets standards, such as airbag control, ABS, ESP®

Consumer Goods

- Führender Anbieter von Hausgeräten
- A leading supplier of power tools and accessories

In 2003 Bosch became the first company in the world to use lithium-ion battery technology in a power tool – the Ixo. Around 16 million Ixo cordless screwdrivers have been sold making it the world's most popular power tool

Industrial Technology

- Leaders in drive and control technology
- Leaders in packaging and process technology

Energy and Building Technology

- One of the leading manufacturers of security and communications technology
- A leading provider of heating products and not water solutions

Bosch eBike system

Overview

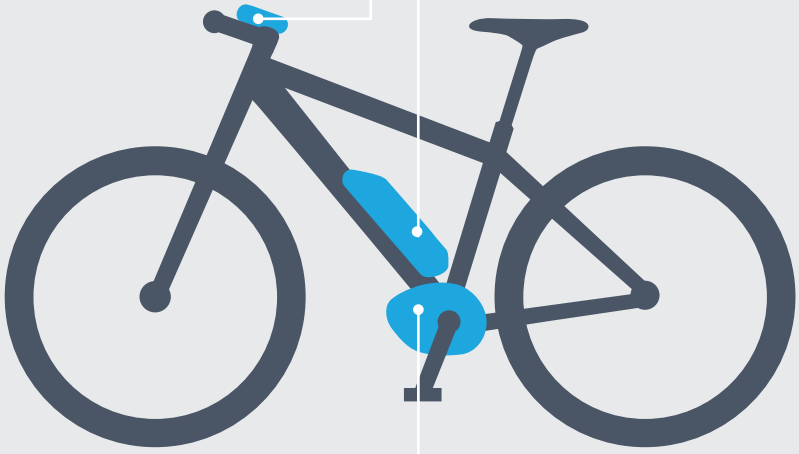
On-board computer, Drive Unit and rechargeable batteries: The individual components have been developed so that they are perfectly matched and work together in harmony. This results in maximum efficiency and comfort – for a unique riding sensation. Feel the Flow.

On-board computers

Take as much information and support as you need. Purion displays all the basic information at the click of a thumb. Intuvia guarantees easy and intuitive control of your eBike and gives you a view of all riding data at all times. The new compact and robust Kiox provides ambitious sporty riders the perfect the off-road companion. In conjunction with the app and the eBike Connect online portal, Nyon offers next generation connectivity.

Batteries

Whether for relaxed cruising, your daily commute to work or ultimate Uphill Flow – we offer you exactly the right battery for your requirements. PowerTube and PowerPack impress with their high energy density, great mileage, long service life, light weight and they are all easy to handle. The Bosch PowerTube 500 allows you to travel with style.



Drive Units

The Drive Unit of the Bosch eBike system is available in the Active Line, Active Line Plus, Performance Line Cruise (25 km/h), Performance Line Speed (45 km/h) and Performance Line CX variants. Whether in the flow through the city, on trails or alpine terrain: With proper support, each ride becomes your very own personal, inspirational eBike moment.

The terms **"electric bicycle"**, **"pedelec"** and **"e-bike"** are often used interchangeably to refer to two-wheelers with electric drive. The most common examples are pedelecs with motor support of up to 25 km/h and a maximum continuous rated power of 250 watts. These "Pedelec 25s" only provide support while the rider is pedalling and are uniformly defined in Europe as EPAC (Electrically Power Assisted Cycles). Under traffic law they are defined as bicycles with all the associated rights and obligations. For S-pedelecs (up to 45 km/h) or e-bikes with throttle grip, however, other legal regulations apply. Bosch eBike Systems uses the term "eBike" almost exclusively to refer to a "Pedelec 25" and is committed to responsible, lawful and compliant eBiking – for even more cycling enjoyment.

On-board computers

Purion

The compact on-board computer is display and control unit in one – perfectly suited for anyone who wants to concentrate on the key information. The display provides a clear overview of the charging status, speed, riding mode, range, trip distance and total distance.

Intuvia

Intuvia offers optimized operating comfort. Handling is self-explanatory and the display is clearly visible, even in sunlight. This gives you a view of all riding data at all times. Intuvia reliably informs you about speed, distance, riding time and the current range. The separate control unit enables the Intuvia to be operated using your thumb.

NEW

Kiox

The perfect training partner for ambitious riders: robust, small and compact, but in a clear, stylish design. You can keep track of the battery charge level, as well as your speed, heart rate and performance. The magnetic mount allows for speedy installation, as well as a firm hold. The separate Remote Compact with clear tactile feedback also ensures comfortable and ergonomic operation of the on-board computer.

Nyon

The Nyon all-in-one on-board computer combines navigation, eBike control, riding data and so much more in a single device. Connect Nyon to your smartphone via Bluetooth with the eBike Connect App. You can plan your own personal, networked, interactive eBike experience on the ebike-connect.com online portal.

Drive Units

Active Line

With up to 40 Nm, the quiet drive unit provides just the right support for relaxed riding enjoyment up to a maximum of 25 km/h. With minimal pedal resistance, the rider reaches the destination even faster. Weighing only approx. 2.9 kg, the Drive Unit provides low overall weight and is also available with a backpedal function.

Active Line Plus

The power of the Active Line Plus Drive Unit is delivered smoothly to achieve a natural riding sensation. Even crossing the 25 km/h boundary is possible with minimal pedal resistance. The particularly quiet motor supports the rider with up to 50 Nm and is also available with a backpedal function.

Performance Line Cruise/Speed

The Performance Line delivers the right amount of support at the right moment, guaranteeing even more riding enjoyment. The finely balanced system facilitates top performance and a sporty riding style – up to 25 km/h with the Drive Unit Performance Cruise or up to 45 km/h with the Speed variant.

Performance Line CX

Setting the standard for sporty terrain and on the mountain. With a maximum torque of 75 Nm, the Performance Line CX allows sporty, dynamic acceleration, even over alpine terrain. The drive for the ultimate Uphill Flow.

Batteries

PowerPack 300/400/500

Whatever you are planning - Bosch has just the right battery for your needs. The Bosch PowerPacks 300, 400 and 500 are available as frame or rack batteries. The lightweight lithium-ion batteries are easy to install and remove. The PowerPack can also be charged on the eBike via the charging socket.

PowerTube 500

With the PowerTube 500, Bosch offers a battery that fits perfectly inside the frame and that can be installed horizontally or vertically. A minimalist design opens up new possibilities for eBike manufacturers during integration into the frame. The battery is concealed and perfectly protected by the frame. A convenient function means that the battery pops approx. 2 cm out of the frame when unlocked, making it easier to take hold of.

DualBattery

Ideal for tour bikers, long-distance commuters and cargo bikers. The combination of two Bosch batteries delivers up to 1,000 Watt hours. The eBike manufacturer can combine the PowerPack 400 and 500 or PowerTube 500.

Chargers

NEW

Compact, Standard and Fast Chargers

Bosch chargers are handy, lightweight and robust, The housings are designed without vents to protect the chargers from dirt and grime. Wherever your journey may take you: With the 2A Compact Charger, 4A Standard Charger and the new 6A Fast Charger, Bosch has developed three models that will charge your eBike quickly and reliably.

New Features MY 2019

Bosch eBike ABS

- First production-ready anti-lock braking system for pedelecs
- The intelligent combination of front wheel ABS and rear wheel lift control increases your safety and ensures optimised riding stability and control during braking

Kiox On-board Computer

- Robust, small and compact, specially developed for the needs of ambitious riders

Fast Charger

- The faster charging speed of the 6A Fast Charger means that it makes short work of recharging the eBike battery

Performance Line CX

- Even more powerful walk assistance as reliable support when encountering obstacles and steep dirt tracks
- eMTB mode: New application available for cranks measuring < 165 mm

DiagnosticTool

- Tampering detection
- Diagnostics and software update for the Fast Charger
- Functional test of the ABS speed sensors
- Deactivation of batteries for final decommissioning

CapacityTester

- Overwintering: Preparing batteries for longer storage periods
- Evaluation of battery measurement results in a warranty context, based on determined parameters, date of purchase and type of use

Service and Workshop

- Hazardous-goods: Updated instructions for handling and shipping eBike batteries
- Recommendations when dealing with tuning
- Introduction of a bearing protection ring to increase the robustness of the Active Line/ Active Line Plus Drive Units (BDU3xx)

COBI

compatible with BOSCH

Digital Riding Enjoyment with COBI.Bike

With the acquisition of the start-up COBI.bike, Bosch eBike Systems is expanding its product portfolio in the area of connected products and services. Together with the products from Bosch eBike Systems, COBI.bike products offer exceptional digital riding enjoyment.

ON-BOARD COMPUTERS


12:58
eMTB
21.4
BOSCH

On-Board Computers at a Glance

NEW

NEW

COBI

	Purion (BUI210)	**Intuvia** (BUI251)	**Kiox** (BUI330)	**Nyon** (BUI275)	Your smartphone can be transformed into an on-board computer with an app specially designed for cycling - full concentration on riding and simultaneous use of a variety of applications
Optimum application area	Quick overview for those who want to focus on the essentials	Optimized operating comfort, all riding data at a glance	The perfect training partner for athletic riders	Smart system, that accompanies you with individual options from route planning on the ride all the way up to evaluating your activities	
Product features	▶ Clearly arranged display: charge level of the rechargeable battery, speed, riding mode, range, trip distance, total distance ▶ Uncluttered look on the handlebar ▶ Optimal readability due to backlit non-glare display NEW ▶ Residual range can be reset ▶ Lighting indicator is saved and activated/deactivated accordingly when switching on ▶ Additional information displays: software version of Fast Charger, serial number of battery/batteries, product code of Drive Unit and battery	▶ Intuitive operation on the on-board computer in the rider's field of view and via an operating element on the handlebar ▶ Highly legible display under all lighting conditions ▶ Welcome screen with display of the Product Line at system start NEW ▶ Light status is saved and activated accordingly when switching on ▶ Extended display of distance travelled since the last reset ▶ Additional component information in the settings	▶ Robust and compact with a clear, stylish design ▶ Magnetic mount for speedy removal and installation, as well as a firm hold ▶ High resolution 1.9" colour display – Perfect readability under all light conditions. – Scratch-resistant Gorilla Glass ▶ Remote Compact provides distinct, tactile pressure behind the buttons to give the rider clear feedback ▶ Training data can be calculated in real time. Can be connected with a heart rate monitor ▶ An indicator on the display shows the rider whether he is riding at above or below his average speed	▶ The high resolution transreflective 4.3" colour display automatically adapts to the ambient light ▶ Navigation and route planning optimised for the particular bike with different route profiles. Memory capacity for plenty of maps NEW ▶ New maps ▶ Resumption of a map download after cancellation ▶ Road information displayed with turn instructions ▶ Training data can be calculated in real time. Can be connected with a heart rate monitor ▶ The perfect supplement with eBike Connect smartphone app and ebike-connect.com online portal	▶ For normal bicycles and Bosch eBikes ▶ Bicycle navigation with voice guidance ▶ Fitness tracking ▶ Music streaming ▶ Telephony function ▶ Local weather forecasts ▶ Regular new functions through software updates ▶ Weather-proof hub, sturdy smartphone holder ▶ Theft protection and electronic bell ▶ Optional: bright AmbiSense lighting system with daytime riding light
Service interval display	●	●	●	●	–
Shift recommendation	–	●	–	●	–
Compatible with eShift	–	●	●	●	–
Compatible with DualBattery	●	●	●	●	●
Compatible with Classic+ Line	–	●	–	–	–
Detachable device (off-board mode)	–	●	●	●	●
Charging function for external devices	–	●	●	●	●
Operating language setting	–	●	●	●	–
Reset of the residual range	●	●	●	●	–
Navigation	–	–	–	●	●
Fitness function	–	–	to follow	●	●
Special notes	All new features available via software update	All new features available via software update	More functions to follow	All new features available via software update. eBikes can be retrofitted starting from MY 2015, see page 201	Compatible with Bosch eBikes starting from MY 2014

Initial operation of the eBike System

- Charge on-board computer
- Ensure correct operation:
  - a sufficiently charged battery is inserted
  - the on-board computer is properly inserted in the mount
  - magnet to the speed sensor is correctly positioned (see p. 226)
- Switching the eBike system on/off
  - Press the On/Off button on the on-board computer or, alternatively, on the battery
  - With Nyon: slide the on-board computer into or out from the mount.
- The drive is activated as soon as you start pedalling (provided riding mode is not ***OFF*** or walk assistance is active)
- The drive is deactivated as soon as you stop pedalling or if a speed of 25 km/h, respectively, 45 km/h is exceeded.

If the speed 0 km/h is not shown when stationary:

- check whether the on-board computer is correctly seated in the mount and has clicked into the lock latch.
- check the on-board computer mount and cable

Protection and care

Care and Cleaning

Do not immerse the on-board computer in water or clean it with a high pressure/steam cleaner. Risk of damaging electronic parts or causing malfunctions

- Keeping the display clean
- Use a soft cloth without any cleaning agent

The plastic used in the on-board computer absorbs a small quantity of moisture. When large fluctuations in temperature occur, this can cause internal condensation

- This will not cause any malfunctions or corrosion
- It disappears after the temperature equalizes

Transport with an automobile

- Always remove the on-board computer and stow it safely inside the car
- Protect the control unit and Purion during transport using a plastic or neoprene cover

Protective covers are available, e.g. via dealer online shops

Storage

- Observe the operating and storage temperature
  - Protect against exposure to direct sunshine
  - Use below the operating temperature can result in restrictions (e. g. the contrast of the display)
- If the on-board computer is not to be used for an extended period, it should be stored fully charged at room temperature, meaning that it should be re-charged every 3 to 4 months

How to Operate Purion

Adjust riding mode

- ▶ Briefly press [+] or [–] to select a lower or higher support level (riding mode)
- → Depending on the function display selected, riding mode is briefly shown or permanently displayed

Changing the display of functions

- ▶ Press the [–] button several times for 1 to 2.5 seconds
- → Purion displays the following in succession ***TRIP*** (trip distance), ***TOTAL*** (total distance in kilometres), ***RANGE*** (battery range) and ***MODE*** (riding mode)

Resetting the TRIP or NEW RANGE values

1. When the corresponding value is displayed, hold down the [+] and [–] buttons simultaneously
- → ***RESET*** appears on the display
2. Press and hold the two buttons.
- → ***TRIP*** or ***RANGE*** is reset to zero

Switching the display between kilometres and miles

1. Hold down the [–] button
2. Briefly press the [On/Off] button
- → The display changes

Switching bike lights on/off

1. Hold down the [+] button for 1 to 2.5 seconds
- → The front light and rear light are activated
2. To switch off, hold down the [+] button for a long time

NEW Light status is saved and activated accordingly when switching on

Setting the display brightness/displaying the software versions and product codes

1. While the **system is switched off**, simultaneously press and hold the [–] and [+] buttons
2. Briefly press the [On/Off] button
   The information is displayed as ticker text: software versions of the Drive Unit and battery, as well as
   NEW software version of Fast Charger, serial number of battery, product code of Drive Unit and battery
3. While the ticker text is actively running, adjust the display brightness by means of the [+] and [–] buttons

How to Operate Intuvia

Function display

- ▶ Repeatedly press the [i] button until the desired value is displayed
  - – ***Time***
  - – ***Maximum:*** maximum speed since the last reset
  - – ***Average:*** average speed since the last reset
  - – ***Trip time:*** Trip time accrued since the last reset
  - – ***Range:*** estimated range of the battery charge (see p. 85) under constant conditions such as riding mode, route profile, etc.
  - – ***Trip distance:*** distance travelled since the last reset
  - – ***Odometer:*** total distance travelled with the eBike
  - – ***Gear*** and ***Automatic on/off*** (Shimano Di2): see p. 114 and p. 117
  - – ***Cadence/gear*** (enviolo NuVinci Optimized Automatic+): see p. 120
  - – ***Gear*** (Rohloff E-14 Speedhub 500/14): see p. 123
- ▶ eBikes with DualBattery: Display progress during charging. Flashing indicator indicates which battery is currently being charged

Reset Trip distance, Trip time and Avg. speed

1. Repeatedly press the [i] button one of the three values is displayed
2. Hold down the [Reset] button

→ All three values will be set to zero

Reset Max. speed or Range

1. Repeatedly press the [i] button until the desired value is displayed
2. Hold down the [Reset] button

→ The value will be reset to zero

→ Reset deletes the data used for the calculation

NEW Maximum possible display of distance travelled since the last reset up to 9999.9 km (only one decimal place after 999.99)

After a Drive Unit software update (hardware as of MY 2014) and subsequent range reset, the residual range view changes. The values shown on the display then no longer reflect *ideal conditions* according to the information in the battery guide under *Favourable conditions*

NEW Light status is saved and activated accordingly when switching on

How to Operate Intuvia

Displaying and modifying the settings

The Settings menu is no longer available during the trip

1. Hold down [Reset] and [i] at the same time until you see ***Settings*** appear
2. Press the [i] button until the desired setting is displayed. To change the values:
   – Press the [On/Off]-or [–] button on the control unit
   → The value is reduced or scroll downward
   – Press [Bike lights] or the [+] button on the control unit
   → The value is increased or scroll upward
3. Hold down the [Reset] button for 3 seconds
→ The setting is saved and/or the menu is exited

Overview of settings

- ***Time***
- ***Language*** (German, English, Danish, Spanish, French, Italian, Dutch, Portuguese, Swedish)
- ***Units*** (kilometres/miles)
- ***Time format*** (12/24 hours)
- ***Shift recommendation*** (enable/disable)
- ***Software version*** of the on-board computer
- ***Power-on hours:*** Total travel duration with the eBike system (not editable)

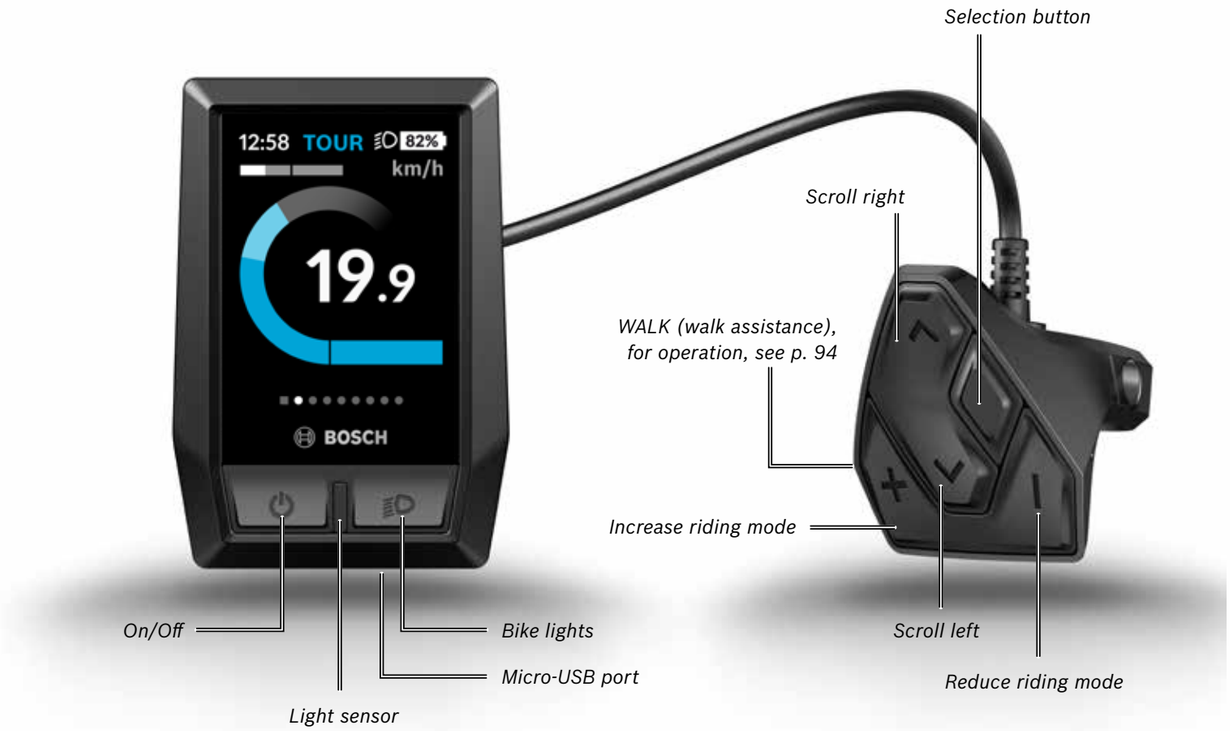
Only if Intuvia is inserted in the mount:

- ***Wheel size circumference*** (up to maximum of ± 5 %) if changing to tires with different dimensions
- ***Basic settings for eShift*** (see from p. 110 onwards)
- ***Software versions*** of eBike components
- ***Serial number*** of the Drive Unit

NEW Software version of Fast Charger, type part number and serial number of Drive Unit, type part number of battery

- ***Service interval***
  – According to a fixed date and/or
  – When a certain mileage is attained

How to Operate Kiox NEW



Operating logic

- The system is always operated via Compact Remote

1. Select the required screen or menu level with the [>] and [<] buttons
2. Confirm values and information with [selection button] and quit any dialogue

Lighting indicator is saved and activated/deactivated accordingly when switching on

Before first use, charge the Kiox battery for at least 1 hour via a USB port

Storage mode:

- Minimises the discharge from the internal battery; the date and time are lost
- To activate, press [On/Off] for at least 8 seconds
- To deactivate, press [On/Off] for at least 2 seconds or connect with USB or switch on via eBike battery

Home screen

- **The status bar** is displayed on all screens
  - **Time/speed:** If the speed is displayed on the screen, the time appears here
  - **Charge indicator of the eBike battery:** percentage display
  - **Lighting indicator**
  - **Current riding mode** in colour coding
- **Performance evaluation:** displays current speed (white bar) in relation to the average speed
  - If the current speed appears to the left of the black line: below average value
  - If the current speed appears to the right of the black line: above average value
- **Navigation bar:** the current screen is highlighted; more screens can be selected with [<] and [>]

Off-board mode

- Display information about the last distance as well as status information in a loop
- Kiox will switch off if no button is pressed for longer than one minute.

How to Operate Kiox NEW

Status screen

Status screen

▶ Call-up from the home screen with [<] or first screen from left in the navigation bar

Quick menu

▶ Access from all screens except the status screen

1. Press the [selection key]

→ A quick menu appears with the following functions:

- Reset trip data to zero
- poss. eShift settings (e.g. cadence, starting gear)

After a Drive Unit software update (hardware as of MY 2014) and subsequent range reset, the residual range view changes. The values shown on the display then no longer reflect *ideal conditions* according to the information in the battery guide under *Favourable conditions*

Settings

The ***Settings*** menu is not available during the trip

▶ Kiox must be inserted in the mount

1. Call the status screen as described on the left
2. In the status screen use [selection key] to call ***settings***
3. Use the [+] and [–] buttons to select the required setting and open it with [selection key] or select the submenu with [>]

▶ ***My eBike***
- Reset the distance travelled, average values for travel time and maximum speed automatically or manually to zero
- Reset range
- Configure eShift system (see p. 110 ff)
- Adjust the wheel circumference by ±5 %
- Display the next service appointment
- Component information: serial numbers, hardware and software status and other system data

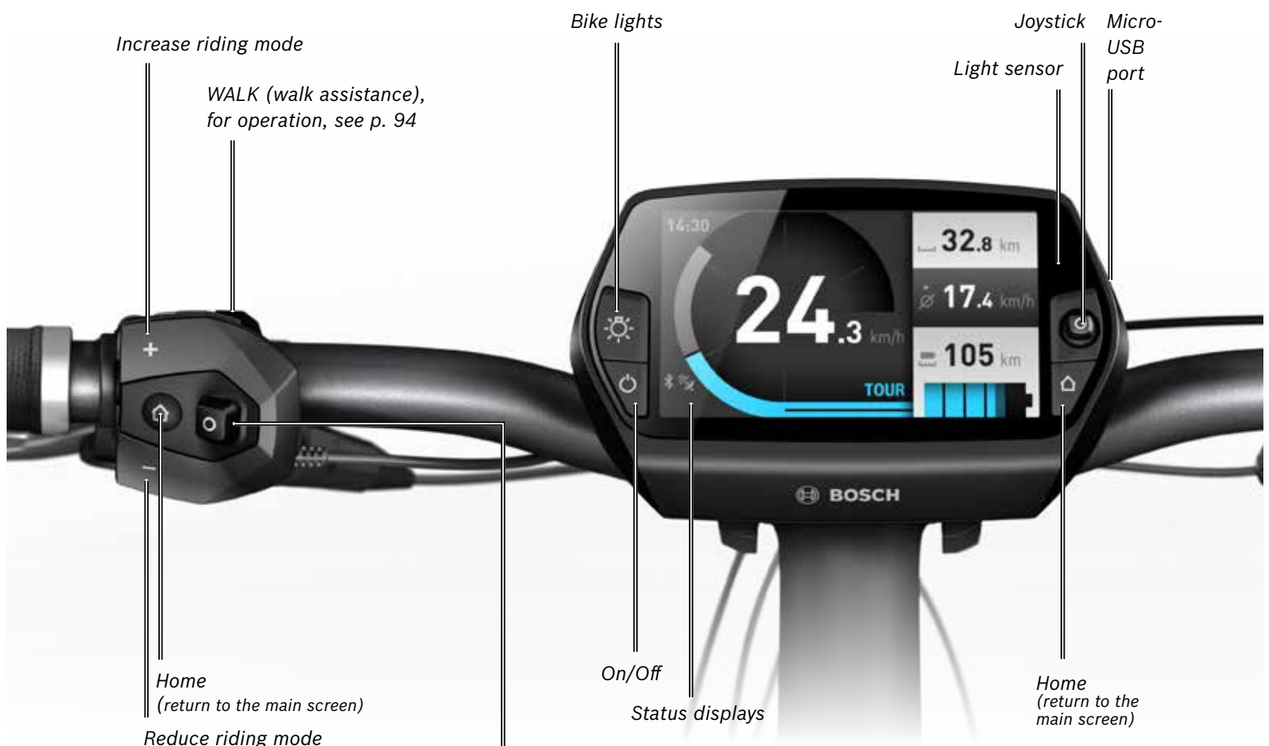
▶ ***Bluetooth***
- Bluetooth function on or off
- Display connected devices

▶ ***User profile***
- Introduction at a later point

▶ ***System settings***
- Adjust display brightness manually or automatically
- Determine time, time format, date and time zone
- Set the display background colour
- Select units (kilometres/miles)
- Selection of the operating language: German, English, French, Spanish, Portuguese, Italian, Dutch, Danish, Swedish)
- Reset to the factory settings

▶ ***Information***
- Registration (introduction at a later point)
- FAQs and contact
- Introduction of Kiox
- Certificates and licenses

Operating Nyon



Operation with joystick

- To the left: Select operating mode
- To the right: sub-functions within an operating mode. Within sub-functions: Confirm selection or function
- Press the joystick: Confirm selection or function
- Move the joystick up or down: Page up or down
- Move the joystick down and hold it there: Direct call-up of the settings from other operating modes

If it is no longer possible to operate Nyon: Press the [Home], [On/Off], [Bicycle lights] buttons and the joystick simultaneously to perform a reset. Personal settings will be lost

Operating mode *Dashboard*

Sub-functions

- **Manual synchronisation (*Synchronise*)**
  - Transfer the changes made (saved routes/places, custom screens/riding modes, user settings, etc.) in the smartphone app or online portal directly to Nyon
  - Prerequisite: Bluetooth or Wi-Fi connection active

The *Total distance* refers to the total distance covered by the current rider (possibly on several eBikes, may not be the same as the total operating time of the Drive Unit)

Operating mode *Ride*

Sub-functions

- **Enabling a customised riding mode (*Individ. riding modes*)**
  - Paid premium feature, configuration via smartphone (see p. 39) or in online portal (see p. 44)
- **Activation of a user-defined screen (*user screen*)**
  - Configuration via smartphone (see p. 39) or in online portal (see p. 44)

  Automatic return to the last display used (standard or user-defined) when the system is switched back on
- ***Reset Trip***
  - Reset the trip distance and average values to zero

Example of a user-defined screen

Operating mode *Map & Navigation*

Prerequisites for usage

- Maps available (see p. 32)
- GPS reception available:
  - After switching on, Nyon searches for GPS satellites
  - This may take slightly longer in adverse weather conditions or unfavourable locations
  - The current location is displayed as soon as the minimum number of satellites is found

GPS positioning is faster if Nyon is paired with a smartphone with an activated Internet connection during the satellite search.

Safety Instructions

- Do not use in safety-critical situations (e.g. road closures, construction sites, detours, etc.). Do not disregard traffic signs even if the navigation specifies a certain way. The navigation system cannot take into account construction sites or temporary detours.
- Do not plan routes while riding
- Abort the route if the navigation suggests a route that is risky in respect to the ability of the rider. Seek an alternative route.
- Always have additional maps or smartphone with you.
- Nyon is not suited for navigation without a bicycle (ex.: pedestrian travel or driving a car)

Operating mode *Map & Navigation*

Enter destination for navigation

Route selection

Show the next road by means of the turn arrow

Sub-functions

▶ ***Navigate***

Option 1: Enter destination

1. ***Select*** Enter destination
2. Route selection:
   – ***FAST***, ***SCENIC***, ***MTB*** (with Cruise drive, 25 km/h)
   – ***FAST***, ***SCENIC***, ***SHORT*** (with Speed drive, 45 km/h)

Option 2: Retrieve previously saved destinations

1. Select previously saved destinations: ***Recent Destinations***, ***Take Me Home*** (home address), ***Saved Locations***, ***Saved Routes*** or ***Points of Interest***
2. Under ***Saved Routes*** → ***Selection of GPX route*** can also use GPX tracks imported on the online portal

Addresses of Bosch eBike Experts are entered under ***Points of Interest***

Option 3: Route planning via the smartphone app or online portal

See p. 37 and p. 41

Navigation starts and route guidance remains active even if switched to another operating mode. Navigation instructions will then be overlaid over the current display

▶ ***Stop Navigation*** to end active navigation

Altitude graph

Route display

Topo Range

▶ ***Altitude graph:*** Altitude profile of the current route (during active navigation only)
   ▶ To end, move the joystick to the right and select a ***map***

▶ ***Zoom out/Zoom in***

1. Press the joystick several times in map view during active navigation

→ The zoom level of the map display is changed. The route course in the travel direction is displayed in 2 D in levels with extreme zoom-out

2. Pressing the joystick again returns you to the 3D map display

▶ ***Pan***

The map section can be moved with the joystick during navigation to view the route.

1. To zoom in, press the joystick.
2. End by pressing the [Home] button

▶ ***Battery range***

By default, the battery range is displayed in a circular shape

– To end, move the joystick to the right and select ***Back to navigation***

▶ ***Topo Range*** **(a premium function)**

– This can be purchased in the *Shop* menu of the smartphone app
– Displays the actual residual range on Nyon and takes into account the topographical conditions (altitude), your riding behaviour and the charge level of the battery
– The calculation time depends on the possible residual range

Due to technical reasons, graphic representation of the Topo residual range is restricted to 50 km and is not calculated in OFF mode

Installation of map material

Download of map materials to Nyon

1. Connect Nyon with a power source
2. Activate the Wi-Fi connection.
3. Select ***Settings*** → ***Map & Navigation*** → ***Map Manager***
4. Select country or region* and download map data
5. Switch off Nyon and then switch it back on again

→ Map material is available after GPS positioning

NEW Interrupted map download can be resumed later

Installation of maps by the dealer using DiagnosticTool

▶ see Diagnostics, page 145

When transferring the maps, all maps previously saved on Nyon are overwritten!

Download of map materials to the smartphone

▶ Registration required via smartphone app, see p. 36

1. In the smartphone app select ***Settings***, then ***Map Manager***
2. Select country or region and download map data

→ Nyon uses the map material saved on the smartphone for navigation if Bluetooth is activated

- ▶ Maps are not saved on Nyon
- ▶ Ideally, download maps via Wi-Fi in order to save data volume

Streaming of map materials from the Internet during the trip

- ▶ Registration required via smartphone app, see p. 36
- ▶ If a Bluetooth connection with the smartphone is enabled, Nyon can use maps from the Internet for navigation during the ride. However, maps are **not** saved on either Nyon or the smartphone
- ▶ In the smartphone app select ***Settings*** → ***Map streaming***

- ▶ Additional roaming costs may be charged if you are outside the EU
- ▶ Usage of maps from the Internet requires data download volume of the smartphone

* If the free memory on Nyon is insufficient: delete maps that are not required.

Operating mode *Fitness*

Training effect analysis

- ▶ Calculated from pedal power, duration of the trip and the fitness information entered during registration.
- ▶ Display current activity level ***Regeneration***, ***Maintaining fitness***, ***Improving fitness***, ***Highly improving***, ***Overreaching!***
- ▶ Visualisation and analysis of training success on the online portal (see p. 43)

Sub-functions

- ▶ **Enabling a customised display screen (*User screen*)**
  - – Configuration via smartphone app or in the online portal, see p. 39 and p. 44

Automatic return to the last display used (standard or user-defined) when the system is switched back on

- ▶ ***Reset Trip***
  - – Reset the training time, calories burned and average values to "0".

Measure heart rate

Detailed information can be found under bosch-ebike.com → Products → Nyon → Tutorials → Fitness training with Nyon

1. Attach a heart rate monitor with slightly moistened electrodes
2. Select Operating mode ***Settings*** → ***Connections*** → ***Heart Rate Monitor***

Measurement of heart rate increases the accurate analysis of the training effect. However, the heart rate displayed may be distorted by electromagnetic interference and therefore are for reference only

Operating mode *Settings*

- ***Connections***
  - ***Bluetooth:*** Configuration of Bluetooth connection with a smartphone or a heart rate monitor
  - ***Sync heart rate data:*** Synchronise data from the trip with online portal/smartphone app
  - ***Heart Rate Monitor:*** configuration of heart rate monitors
  - ***WI-FI:*** configuration of Wi-Fi connections
- ***Map & Navigation***
  - ***Auto Day/Night:*** automatic adaptation of display colours and display brightness according to the time of day (enable/disable)
  - ***Map Manager:*** install and manage maps on Nyon (see p. 32)
  - ***Map style:*** select either 2D or 3D display of map material
  - ***Map in driving direction:*** Select 2D display
- ***My Profile***
  - The profile of the current user is displayed here.
- ***My eBike*** (can only be called up when Nyon is mounted)
  - ***Service:*** displays the next service appointment
  - ***Wheel circumference:*** Adjust the wheel circumference by +/– 5 %
  - ***Shift recommendation:*** switch shift recommendation On/Off.
  - ***eShift:*** Configure eShift system (see p. 110 ff)
  - ***Battery:*** With DualBattery the charge level of both batteries is displayed
  - ***Reset range:*** resets the range indicator to zero

After a Drive Unit software update (hardware as of MY 2014) and subsequent range reset, the residual range view changes. The values shown on the display then no longer reflect *ideal conditions* according to the information in the battery guide under *Favourable conditions*

Display the charge level for DualBattery

Display the configuration of the Home button

Display system information

- ***My Nyon***
  - ***Check for updates:*** searches for software updates for Nyon (if Wi-Fi connection is enabled)
    - To update, connect Nyon to a power source
  - ***Altitude correction:*** manual calibration of the altitude display to compensate for weather-related barometric fluctuations
  - ***Automatic brightness:*** automatic adaptation of the screen brightness depending on the ambient light (enable/disable)
  - ***Home button:*** selection of operating mode that Nyon switches to when the [Home] button is pressed
  - ***Automatic reset:*** Trip distance, calorie consumption, average and maximum values to "0" at midnight every night
  - ***Reset Nyon:*** Reset the Nyon to the default settings
    - Maps must be reinstalled afterward
    - Personal settings are available once again after synchronisation with the online portal or the smartphone app
- ***Region & Language***
  - ***24-hour format:*** Select time format
  - ***Imperial units:*** Select country-specific units
  - ***Language:*** select the operating language (German, English, Danish, Spanish, French, Italian, Dutch, Portuguese and Swedish)
  - ***Automatic time zone:*** select the time zone (the current time is automatically taken over from the GPS signal)
- ***Help***
  - ***FAQs:*** frequently asked questions about Nyon
  - ***Contact us:*** detailed information sources and contact information
  - ***System information:*** hardware and software versions of eBike components, version of map material, serial number of Drive Unit, addresses for Bluetooth and Wi-Fi connections, date of last synchronisation/update, total mileage of the eBike Drive Unit
  - ***Licenses:*** Bundle specifications for OSS license usage, overview of licenses and Open Source sources

Registering Nyon

Online via the smartphone app

1. Have the eBike ready with the Nyon mounted and a smartphone ready. Activate Bluetooth on the smartphone.
2. Select the language on Nyon, then acknowledge the operation instructions.
3. Activate Bluetooth on the Nyon. (***Settings*** → ***Connections*** → ***Bluetooth***)
4. Select the ***Register*** function → ***Online*** → ***Smartphone*** on the Nyon and follow the instructions

Online via online portal

1. Have the computer with the current Internet browser and eBike ready with the Nyon connected
2. Select the language on Nyon, then acknowledge the operation instructions.
3. Select the ***Register*** function → ***Online*** → ***Wi-Fi*** on the Nyon and follow the instructions

Offline on Nyon

1. Insert Nyon in the mount on the eBike, select the language, then acknowledge the operation instructions.
2. Select the *Register* function → ***Offline*** and follow the instructions

- Data can only be saved on Nyon.
- The functions of the smartphone app and the online portal can not be used.

- Automatic data synchronisation between Nyon, online portal and app – if Wi-Fi or Bluetooth is activated
- It is only necessary to register once (smartphone app or online portal), as the same login data is then valid for both accesses

Smartphone app eBike Connect

- App is available in the Apple Appstore or Google Play Store

- Perform regular software updates for smartphone and app to ensure full functionality
- All user data in the smartphone app are stored and protected on a secure Bosch server

Menu *Dashboard*

- Additional function compared to Nyon:
  - Short-cut to route planning
  - Display current location on the map

Menu *Map*

- Route planning by entering the destination via the keyboard or by selecting a previously saved location or route
- ***Take me home/Take me to work:*** quick access to the saved home or work address
- The end point can also be selected directly in the map
- To transfer the route to Nyon, press the button on the top right

Menu *Shop*

- Purchase of fee-based premium functions:
  - ***Topo range*** (see p. 31)
    and
  - ***Custom riding modes*** (see p. 39)

Smartphone app eBike Connect

Menu *Activities*

- Documentation of trips can be displayed in three selectable views:
  - ***Rides:*** individual rides (from switch-on of the eBike system until the next switch-off)
  - ***Days:*** summary of all rides begun within one day
  - ***Trips:*** all rides undertaken since the last reset
- Displays for selected activity
  - ***Map:*** route length, ride duration and average speed
  - ***Graphs:*** display altitude profile, speed and/or cadence pattern
  - ***Assistance:*** proportion of motor and personal performance, distribution of selected riding modes

Unfinished/synchronised rides are especially earmarked. Trips are only evaluated as complete after Nyon is removed from the mount and synchronisation is carried out

Menu *Settings* – Create user-defined screens

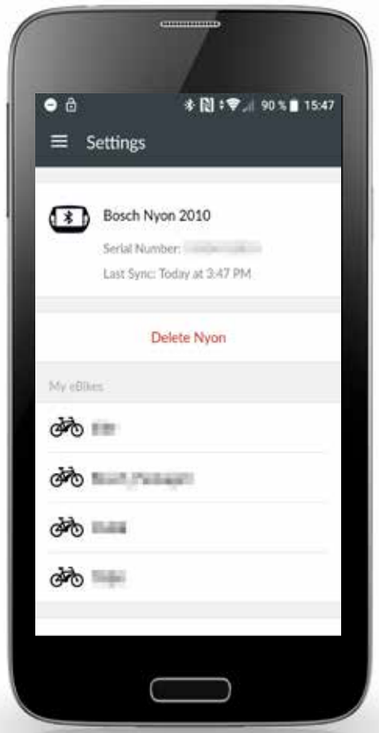
1. Select your own bike under ***My eBikes*** then ***Custom ride screens*** or ***Custom fitness screens***
2. Choose from three layouts with ***Change layout***
3. Tap the button for the display values in the upper area, then select the required values (e.g. ***Cadence***, ***Speed***, ***Battery***) from the list
4. Confirm with ***Save***

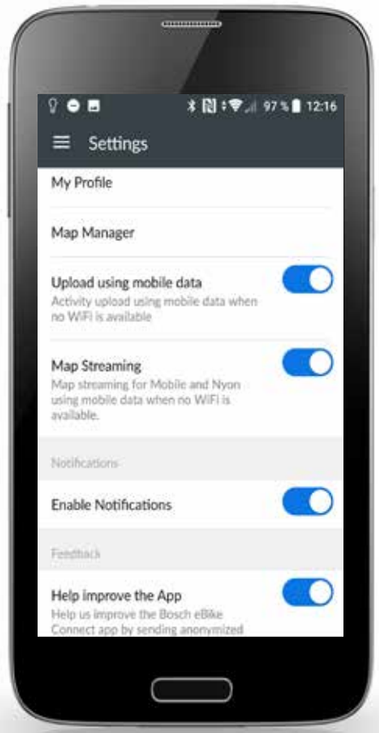
Menu *Settings* – Configure custom riding modes

1. Select your own bike under ***My eBikes*** then ***I ndividual ride modes***
2. There are five checkpoints available (a to e). **You can select any desired speed and performance support** For the middle three points (b – c – d) by means of the + and – buttons. For points "a" and "e", you can only change the **performance support**
3. Confirm with ***Save***

Example of a user-defined screen

Smartphone app eBike Connect





Menu *Settings – My Profile*

- ***Personal data*** Adjust and synchronise fitness data, clear heart rate data, select unit format
- ***My locations:*** Work and home address for route planning
- ***Change password***
- Registration via Facebook
- Log off from the app

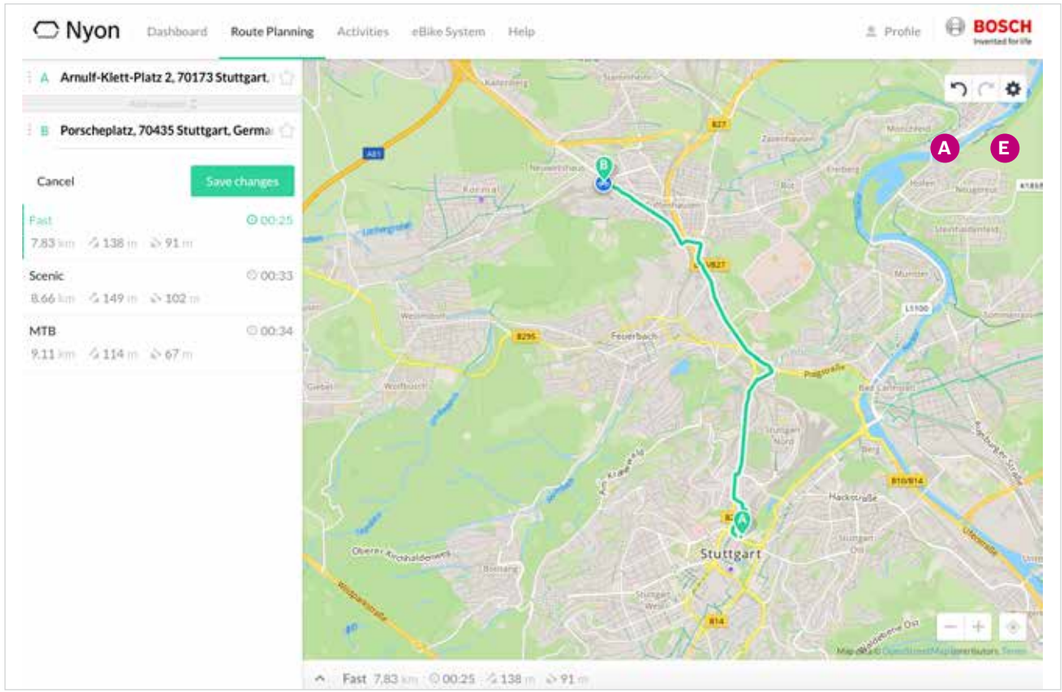
Settings menu – *My eBikes*

- ***Change*** **Bike name**
- ***Create*** **custom ride screens**
- ***Create*** **custom fitness screens**
- ***Create*** **individual ride modes**

Additional settings

- ***Maps Manager*****:** download maps to the smartphone
- ***Upload using mobile data:*** Upload activity to Nyon via mobile data connection
- ***Map streaming*** for smartphone and Nyon via a mobile data connection
- ***Enable notifications:*** Display app notifications on the smartphone
- ***Help improve the app:*** Send anonymous user data to improve the app
- ***Delete Nyon:*** Clear the link to Nyon
- Display Nyon name, connection status, serial number, date of last synchronisation

Online portal ebike-Connect.com



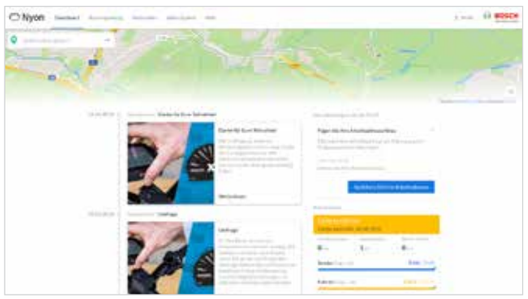
- Perform regular browser and operating system software updates
- All user data in online portal are stored and protected on a secure Bosch server

Menu *Dashboard*

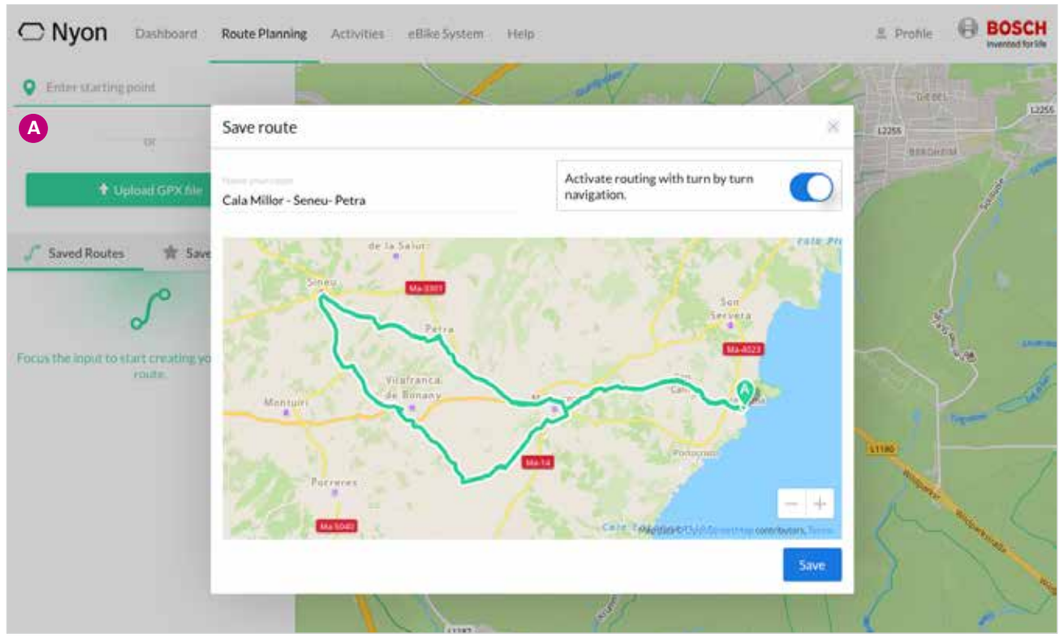
- Current location if the position localization is activated in the web browser
- Short-cut to route planning
- New features and tips regarding Nyon
- Statistics for the latest activities

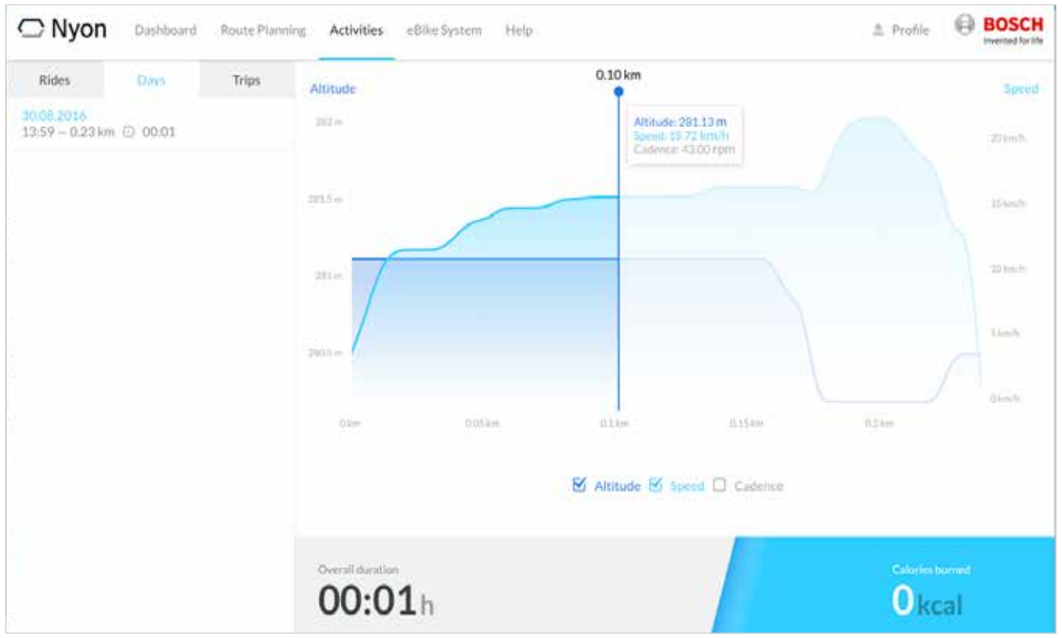
Menu *Route planning*

- Multi-point navigation with up to eight waypoints
- Planning directly on the map: Starting point (A), destination (B) and waypoints (C) can be selected or deleted directly
- ***Undo/Redo button*** (D) for the last ten actions
- ***Reverse route*** (E) exchanges starting point and destination
- You can move any of the waypoints on the route using drag and drop



Online portal ebike-Connect.com





Upload GPX files

- GPX routes ? can be uploaded in the ***Route planning*** menu A and saved under ***Saved Routes***
  → are available after synchronisation with Nyon in the ***Map & Navigation*** operating mode under ***Saved Routes***

Transfer of GPX routes from the Internet or via USB directly onto Nyon is not possible

- If the navigability of the GPX route is restricted: use a ***modified version*** *after import to Nyon*:
  → The route will be converted into a completely routable track and saved
- If the GPX route is not navigable
  → Route is displayed statically
  → No display of turn instructions, remaining distance information or estimated time of arrival

GPX routes

- These can be created and processed in suitable portals and then imported
  – Maximum file size is 5 MB
  – Format GPX 1.1
  – Maximum of 20,000 waypoints or length of 200 km
- Navigability depends on
  – Detail accuracy of Open Street Maps (OSM) maps (the trails and side streets in remote regions may not be recorded)
  – Routing of waypoints: not navigable if the route lies external to streets and paths or routed on expressways, motorways or highways

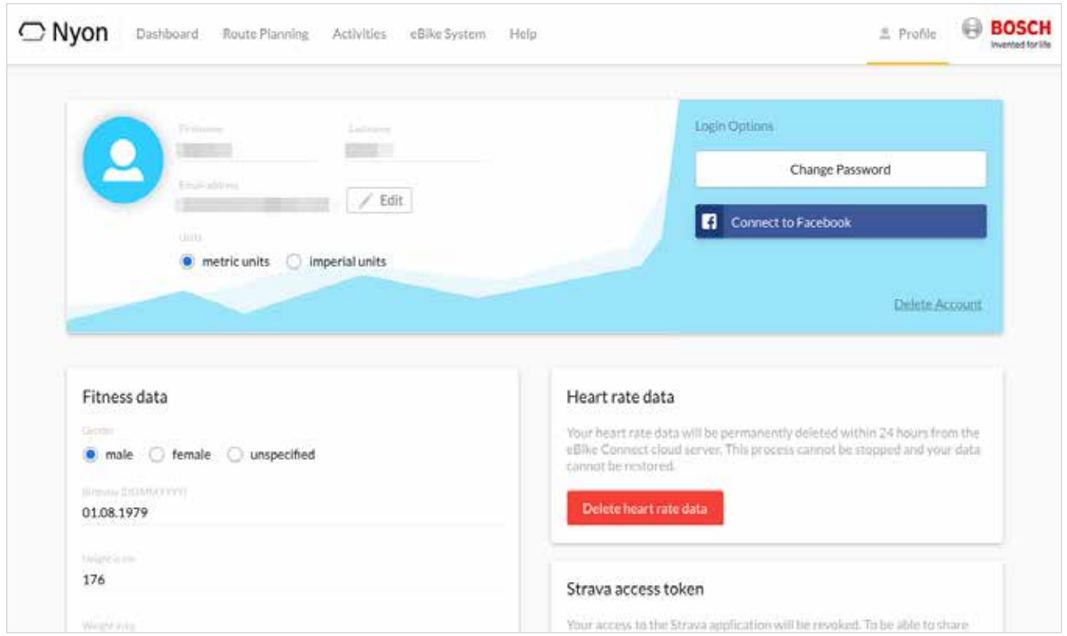
Menu *Activities*

- Documentation of trips can be displayed in three selectable views:
  – ***Rides:*** individual rides (from switch-on of the Nyon until switch-off)
  – ***Days:*** summary of all rides begun within one day
  – ***Trips:*** all rides undertaken since the last reset

Unfinished/synchronised rides are especially earmarked. Activities are only evaluated as finished after Nyon is removed from the mount and a synchronisation is carried out

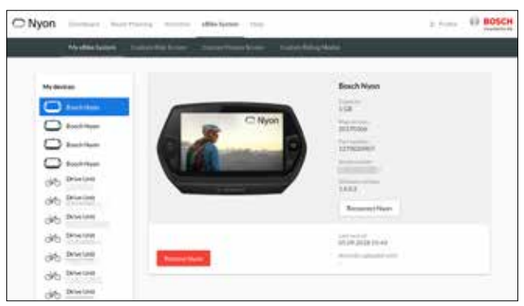
- Analysis of an activity with the optional display of the progressive course of cadence, speed, altitude profile or heart rate
- Map style with corresponding indication of altitude in metres, speed, total duration, total distance, ascent/descent, cadence, calories burned, average and maximum speed
- Saving of one's own activities as routes: After synchronisation with Nyon, the new route will be displayed in ***Map & Navigation*** operating mode under ***Saved Routes***
- Select the ***Facebook*** symbol to publish the activity there. For this the connection must be released by eBike-Connect and Facebook
- Under ***Options*** routes ridden can be exported in formats GPX, CSV or TCX and to Strava

Online portal ebike-Connect.com



Menu *eBike system*

- Display all components of the eBike system and the most recent synchronisation
- Delete or add new components (e.g. usage of an existing Nyon with a new eBike)
- **Custom riding screens** (see p. 28),
- **Custom fitness screens** (see p. 33) and
- **Configure custom riding modes** (see p. 39)



Menu *Profile*

- Configure rider profile and fitness information
- Change password
- Select units (kilometres/miles)
- Delete recorded heart rate data
- Establish/revoke connection to Facebook
- Revoke Strava access token
- Language selection

Menu *Help*

- Video tutorials for the operation of Nyon
- Download user manual
- FAQ, tips and Quick Help
- Contact information, legal information, version information and licenses

Power Supply

Purion

- Powered by two CR-2016 button cell batteries
- If ***LOW BAT*** appears on the display, change the battery (see p. 204)

If the batteries are exhausted, then the eBike can still be switched on at the eBike battery

Intuvia, Kiox and Nyon

- Automatically activated by the eBike battery if the eBike system is activated and the on-board computer is inserted in the mount
- Alternatively, you can also charge the internal battery of the on-board computer via the micro-USB port:
  1. Use an appropriate USB cable to connect to a commercially available USB charger or to a USB port of a computer
     → On-board computer display: ***USB connected*** (in the case of Kiox, this only appears briefly, followed by a switch to offboard mode
  2. After charging, close the protective cap again.

Kiox can only be charged while switched on. If Kiox is switched off while charging, the USB cable must be disconnected before switching it on again

Power supply of external devices (e.g. smartphone)

- Prerequisites: An on-board computer and a sufficiently charged rechargeable battery are installed in the eBike and the eBike system is activated
- Note the different charging currents
  1. Use a USB Micro A - Micro B charging cable (**1.270.016.360**) to connect an external device to the on-board computer
  2. After charging, close the protective cap again.

External devices connected to on-board computers can negatively affect the range of the eBike

Technical data

Purion (BUI210)	
Batteries	2x 3 V CR2016
Operating temperature	–5 ... +40°C
Storage temperature	–10 ... +50°C
Type of protection	IP 54
Weight	approx. 100 g

Intuvia (BUI251)	
Lithium-ion rechargeable battery, internal	3.7 V; 230 mAh
Charging current via USB interface	max. 500 mA
Charging voltage on USB interface	5 V
Operating temperature	–5 ... +40 °C
Storage temperature	–10 ... +50 °C
Charging temperature	0 ... +40 °C
Type of protection	IP 54
Weight	approx. 150 g

Kiox (BUI330)	
Lithium-ion rechargeable battery, internal	3.7 V; 230 mAh
Charging current via USB interface	max. 1000 mA*
Charging voltage on USB interface	5 V
Operating temperature	–5 ... +40 °C
Storage temperature	–10 ... +50 °C
Charging temperature	0 ... +40 °C
Type of protection	IP x7
Weight	approx. 60 g
Bluetooth Low Energy®	Frequency: 2400 – 2480 MHz Transmission power < 10 mW

* at a temperature < 25 °C

Nyon (BUI275)	
Total internal memory	8 GB
Lithium-ion rechargeable battery, internal	3.7 V; 710 mAh
Charging current via USB interface	500 mA
Charging voltage on USB interface	5 V
Operating temperature	–5 ... +40 °C
Storage temperature	–10 ... +50 °C
Charging temperature	0 ... +40 °C
Type of protection	IP x7
Weight	approx. 200 g
Display	4.3", 95 mm × 53 mm 480 × 272 pixels, 16 million colours
Bluetooth	Standard: Bluetooth 4.0; Frequency: 2400 – 2480 MHz Transmission power < 10 mW
Wi-Fi	Standards: 802.11b/g/n – (2.4 GHz) Frequency: 2400 – 2480 MHz Transmission power < 100 mW
Supported smartphones	Android operating system ≥ Version 4.0.3 iOS operating system ≥ 8.0 List of compatible smartphones: bosch-ebike.com → Service → Downloads → User manual → **Nyon (online version)** It may be possible to connect smartphones that are not included in the list above, but that use the listed operating systems to Nyon. However, complete compatibility is not guaranteed

Bosch eBike Systems uses FreeRTOS (see freertos.org)

NEW COBI | ride ahead

The Smart Connected Biking System

- Connects the smartphone to the bicycle.
  Result: a fully integrated smart bike.

Hub

- Wireless connection to the smartphone via Bluetooth
- Smartphone power supply:
  – **with normal bicycles** from battery pack
  – **with eBikes** from eBike battery

Smartphone mount

- Flexible Universal mount or slim mount case for iPhones in standard or plus size
- Secure hold, even on challenging routes
- Optional dirt and rain protection cover

Comprehensive safety:

- Theft protection: An intelligent alarm detects suspicious movements
- Electronic bell: imitates the sound and volume of a bicycle bell
- Hub protected from third party access

Navigation and weather

- Bike navigation via smartphone GPS with voice guidance and turn-by-turn commands
- Minute-by-minute local weather forecasts
- Worldwide free offline maps (Open Street Map)
- Selection: Quietest (taking environmental/industrial areas, etc. into consideration), shortest or fastest route
- Plan and upload routes with komoot

Thumb controller

- Control all functions safely and comfortably, while keeping your eyes on the road
- Can be mounted on either side of the handlebar
  – **on normal bicycles** by means of a supplied COBI.Bike controller
  – **on eBikes** with an Intuvia/Nyon control unit

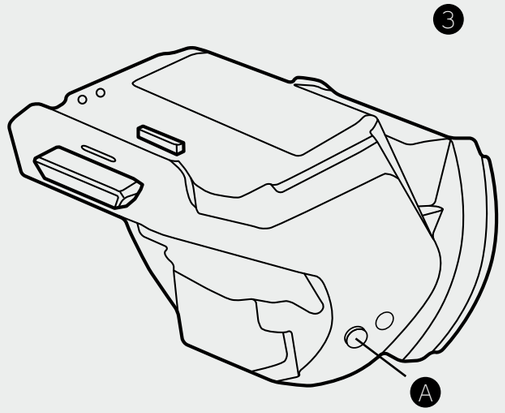
Smartphone app

- The smartphone becomes an on-board computer, which is securely fixed to the hub
- Use numerous applications while cycling: e.g. music streaming, fitness tracking, phone calls
- Design optimised for cycling
- New functions can be added any time through software updates

AmbiSense lighting system

- Smart lighting system adjusts itself to the driving situation by means of sensors; manual operation possible
- Powerful front light evenly illuminates routes over a large area
- The tail light is wirelessly integrated
- Optional style kits for front light: naked, urban, MTB

COBI.Bike hardware



Mount case for Apple iPhone 6, 6s, 7, 8, Plus versions and X ❶

- Securely connects an iPhone to the hub and protects it from damage
- Available for standard sizes and plus sizes
- Charge by means of an integrated Lightning® plug
- Transparent rain cover

Universal mount (Android/iPhone) ❷

- Flexible clamping mechanism, can be permanently attached to the hub with a screw
- Compatible with most smartphones between 4" and 6" (see *https://COBI.Bike*)
- Charging cable
- Compatibility of existing covers, depending on the design

Charging the smartphone

- The smartphone is charged by the **battery pack**/**eBike rechargeable battery** if the smartphone is installed in the mount case and connected to the hub
- If the charge level of the **battery pack**/**eBike battery** drops below 20 %, the charging function will stop automatically

Hub ❸

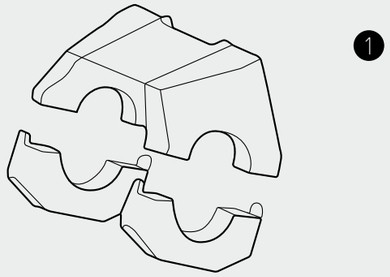
- Mount for smartphone, **battery pack** and optional AmbiSense front light
- Built-in sensors and interfaces such as Bluetooth ANT and CAN ensure optimum communications with the bicycle/eBike
- Internal battery is charged by **battery pack** or **eBike rechargeable battery**

→ Can also be operated if the eBike battery/battery pack has been removed

- The following functions are available even if there is no smartphone used/connected:
  - Adaptation of the support level (riding mode)
  - Electronic bell
  - Theft alarm

Ⓐ Hub button

If problems are encountered with the power supply on the hub: https://manual.COBI.Bike → Bug fixing → Hub power failure



Handlebar adapter ❶

- For mounting the hub **on normal bicycles**
- Fits handlebars with standard diameters 22.2 mm, 25.4 mm or 31.8 mm and a width of 54 mm

eBike versions from COBI.Bike are secured on mounts from Intuvia or Nyon

Battery pack ❷

- The rechargeable battery is integrated in the hub **for normal bicycles** and supplies the system with energy
- Can be removed from the hub and charged via the supplied micro-USB to USB cable

Bug fixing under https://manual.COBI.Bike → Bug fixing → Battery pack won't charge

AmbiSense front light (optional) ❸

- Automatic light mode via light sensor in the hub or manual change
- Three different modes: Daytime running light, dipped beam at dusk and full beam
- Luminous intensity of 65 lux exceeds German Road Traffic Licensing Regulations (StVZO)

AmbiSense rear light (optional) ❹

- Wireless system integration; switches on with the front light as required
- Integrated acceleration sensor
- Removable and rechargeable via USB cable
- Optional offroad version: Flashing signal at the press of a button on the thumb controller (flashing function not permitted under StVZO).

How to Operate COBI.Bike

COBI.Bike controller

[up]
- Scroll through the experience views
- for one second: Front light at full power

[to the left]
- Flashing to the left (with rear light in offroad version – Versions without type classification K)

[to the right]
- Flashing to the right (with rear light in offroad version – Versions without type classification K)

[Middle button]
- Full-screen mode of the current experience view
- long: back to the dashboard (see p. 58)
- for about two seconds: switches off the rear light manually; to switch it on again, press and hold the same button

[Bell button]
- several times in short succession: electronic bell

[down]
- Scroll through the experience views
- for one second: Direct switch to the audio player

Bosch Remote

[+]
- In the dashboard (see p. 58): Select the riding mode
- for one second: Front light at full power
- Flashing to the right (with rear light in offroad version – Versions without type classification K)

[WALK]
- several times in short succession: electronic bell
- Hold down [WALK] and [+]: Pushing aid

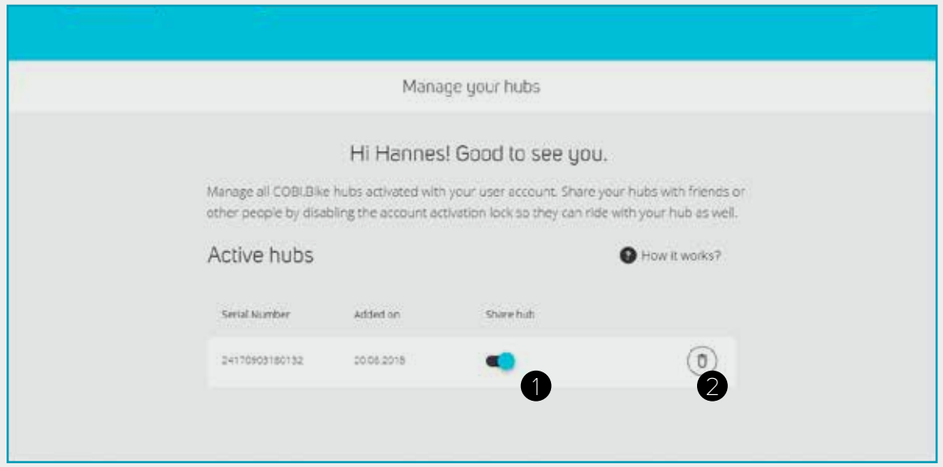
Instructions for walk assistance: https://manual.COBI.Bike → Bug fixing → 2-step activation of eBike walk assistance

[i]
- long: full-screen mode/back to the dashboard
- for about two seconds: switches off the rear light manually; to switch it on again, press and hold the same button

[–]
- In the dashboard (see p. 58): Select the riding mode
- for one second: Direct switch to the audio player
- short: Flashing to the left (with rear light in offroad version – Versions without type classification K)

Nyon joystick
- [Home] button instead of [i] button – Same function, see above
- Turn [left] or [right] until the flashing light starts (with rear light in offroad version – Versions without type classification K)

How to Operate COBI.Bike



Manage hubs on website

1. Call up user area under https://my.COBI.Bike
2. Enter login data as in the app

Manage hub release

Disable the hub to prevent it from being used by third parties:

• Disable slide control for ***Share hub*** 1

Release the hub for other persons/smartphones:

• Enable slide control for ***Share hub*** 1

Bug fixing under https://manual.COBI.Bike → Bug fixing →Hub connection blocked

Clear hub

• Click the delete symbol 2 and confirm security prompt

→ The hub now behaves like a new hub when first installed (e.g. when sold by COBI.Bike)

Delete hub with COBI.Bike app

• Prerequisite: The smartphone and hub are connected via Bluetooth

• ***Settings → My Bike → Reset & release hub***

Logging out of the app account is not enough to delete the hub. If the hub has already been passed on to another person, contact COBI.Bike Customer Service

Initial Operation of COBI.Bike

1. Download and start the app
2. Create a COBI.Bike account/log in
3. **Switch on the** eBike
4. Connect the smartphone to the COBI.Bike hub via Bluetooth

On request, activate the ***Share hub*** protection function on the COBI.Bike website: after Bluetooth pairing, only this smartphone can connect to the hub

Bug fixing under https://manual.COBI.Bike → Bug fixing → ...

- App fails to find hub (bike)
- Hub does not connect during setup
- eBike fails to start

Operation of the hub

• Hold down the hub button to activate or switch back to standby mode

• Alternatively:

- Open/close the COBI.Bike app within Bluetooth range of the hub
- Install/remove **battery pack**/**eBike battery**

In standby mode, Bluetooth remains enabled so that COBI.Bike can be activated with the app

• Recovery mode for connection problems and firmware update (see p. 65): Holding down the hub button for at least 10 seconds resets the hub. To quit,press the hub button briefly

• Switch lighting modes manually: Briefly pressing the hub button changes light modes (see below)

Light modes on AmbiSense front light and rear light, if fitted

Light mode/display in app		Front light:	Rear light
Off		Off	Off
AmbiSense (Auto-controlled)		Turns light on or off, depending on ambient light conditions (including daytime riding light for increased visibility during the day)	Automatic
Low-Power-Beam		Standard lighting mode at night (provides adequate illumination)	On
Full beam		Increases front light to maximum possible brightness	On

How to Operate COBI.Bike

System status messages via LED and acoustic signal

Status	LED and acoustic signal	Other actions
Hub not connected with smartphone	LED remains white	
Ready to start	LED flashes white slowly	Front light is switched on and off once
Trip started	LED lights up in user theme, acoustic signal 1x	Front light and rear light switch on
Flashing light activated	Acoustic signal emitted several times in sync with the flashing rear light	- Rear light flashes 5x in turning direction - flashing LED on the COBI.Bike controller, displayed in the app
Standby activated	LED switches off, acoustic signal 1x	Front light, rear light and LED on the COBI.Bike controller go out
Theft alarm enabled	LED flashes 2x white, acoustic signal 2x	The front light flashes rapidly twice, the lock symbol on the status bar on the home screen changes to the colour of the user theme
Theft alarm triggered	LED flashes red; acoustic signal becomes louder	Front light flashes 2x
Low battery status	LED flashes slowly in user theme, acoustic signal 2x	
Change of support level (riding mode)	LED flashes rapidly in the user theme, acoustic signal sounds each time levels are changed in riding mode	The LED of the thumb controller flashes each time steps are changed in riding mode (provided the smartphone is not connected to the hub)
No power source	LED flashes white	
Recovery mode	LED lights up dark blue	Firmware update in progress or hub is being reset
Firmware damaged/ update has failed	LED flashes dark blue	Connect the hub or eBike to the power supply, hold down the hub button for approx. 15 seconds until the LED flashes blue; repeat update (see p. 65)
Not ready to start	LED flashes white	System check has failed

Status LED on top of AmbiSense rear light

Status LED	Significance
Lights up red	Rear light connected to the hub
Flashing slowly	Find hub
Flashing rapidly	Rear light battery < 20 %
If USB charging cable is connected:	
Flashing slowly	Rear light battery is charging
Continuous red	Charging complete

Home screen

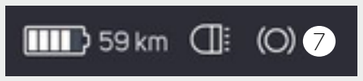
- App view before/after a trip
- The app switches to dashboard view when Bluetooth connection is established with the hub
  - ❶ Last known location of the bicycle
  - ❷ Quick access to COBI.Bike ***Contacts***
  - ❸ Weather forecast for current location
  - ❹ Charge status of **battery pack** or **eBike battery**
  - ❺ If there is no connection to the hub Message ***My Bike not connected***
  - ❻ Enable/disable alarm
  - ❼ Quick Start Guide for ***Fitness*** and ***Music***
  - ❽ Settings (see p. 64)
    - – under ***Help*** Access to the Online User Manual, Quick Start Guide ***User Manual, FAQ***
    - – Android version: additional tutorial on the thumb controller
- Integrated bike finder (within Bluetooth range of the hub) Holding down the status bar generates an acoustic signal on the hub and may cause the front and rear lights to light up
- Shortcut to the dashboard: tap the status bar;

the internal battery means that the alarm works even without a **battery pack**/**eBike battery**

How to Operate COBI.Bike

Dashboard

- Show current speed ❶, distance travelled ❷ and duration of the current trip to date ❸, average speed ❹, compass ❺
- **Quick settings**
  Tap the arrow symbol ❻ bottom right (this button is not available while riding; it can be reactivated by tapping the screen):
  - Switch lighting modes manually
  - Switch voice feedback on or off
  - Enable/disable smartphone charging
  - To exit the quick settings, press the arrow ❻
- When a rear light has been added to the hub, a ❼ symbol appears on the dashboard
  - This disappears while riding
  - It appears again when the rear light battery <20 % or the trip is over



Fitness

- Show calorie consumption ❶, speed ❷, cadence ❸, and heart rate ❹ in real time
- Calculation based on sensor data and personal data (gender, age, weight, height) and weight of the bike, etc.
- Pairing of a Bluetooth smart compatible sensor (pulse strap, pulse wristband, or other wearables):
  Ride settings → External sensors
- Customisable heart rate and cadence zones:
  Settings → About Me → Profile → Fitness
  - Otherwise, average values are assumed

List of recommended speed, cadence and heart rate sensors:
https://COBI.Bike → Support → Online User Manual → FAQ → Fitness

- Synchronisation with Google Fit, Apple Health, Strava or Komoot: ***Settings → My Account → Connected services***
- Strava integration:
  - Retrieve KOM title in Strava favourite segments and analyse rides in detail on Strava
- Komoot integration:
  - Save and share trips with friends

To track activities over several days: remove the smartphone from the hub, stop the current trip by means of the pause button then displayed

How to Operate COBI.Bike

Live weather

- Probability of rain, hail or snow ❶
- Temperature experienced along the route for the next 120 minutes ❷
- Time required to reach the destination according to the planned route (expected time of arrival) with active navigation ❸
- Visualisation of sunset

Navigation

- Route is always planned starting from the current location of the bicycle
- To plan a route, enter the destination or hold your finger down on the map view

Red lines in the maps indicate cycle paths

- For how to download maps see p. 65

If the position is wrong or there is no speed displayed: https://manual.COBI.Bike → Bug fixing → No location or speed

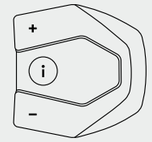
- Connection to Komoot account
  - Activate integration under ***Settings*** → ***My Account*** → ***Connected services***
  - Allow COBI.Bike access in Komoot account
  - Komoot tours are synchronised with COBI.Bike
  - Selection under ❶ ***Plan a route*** → ***Where to?*** → ***Komoot tours***)
  - A tour in Komoot must be defined as a bike tour (e.g. mountain bike, racing bike).
  - The corresponding region must be released in Komoot

COBI.Bike controller

- [up]: zoom in
- [down]: zoom out
- [middle button]; switch between 2D and 3D view

Bosch Remote

- [+]: zoom in
- [–]: zoom out
- [i]: switch between 2D and 3D view



How to Operate COBI.Bike

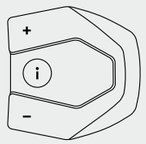
Music

1. Start playback of the local music library or streaming service
2. Switch to the COBI.Bike app
3. Retrieve Experience View ***Music***

COBI.Bike controller

- [up]: increase volume
- [down]: reduce volume
- [back]: previous track
- [forward]: next track
- [middle button]; Pause

Bosch Remote



- [+]: increase volume
- [–]: reduce volume
- [i]: Pause

Contacts

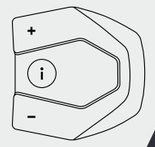
- ***Tap Edit*** and select the contacts to be included in the contact list of the COBI.Bike app from the phone book of the smartphone
- The speaker of the smartphone is generally used to make calls

- On Android phones, the contact list of the COBI. Bike app is always synchronised with favourite numbers in the smartphone
- At present it is not possible to hang up during a call

COBI.Bike controller

- [back]: previous contact
- [forward]: next contact
- [middle button]; start/accept call
- [middle button] long: decline incoming call

Bosch Remote



- [+]: next contact
- [–]: previous contact
- [i]: start/accept call
- [i] long: decline incoming call

How to Operate COBI.Bike

Settings

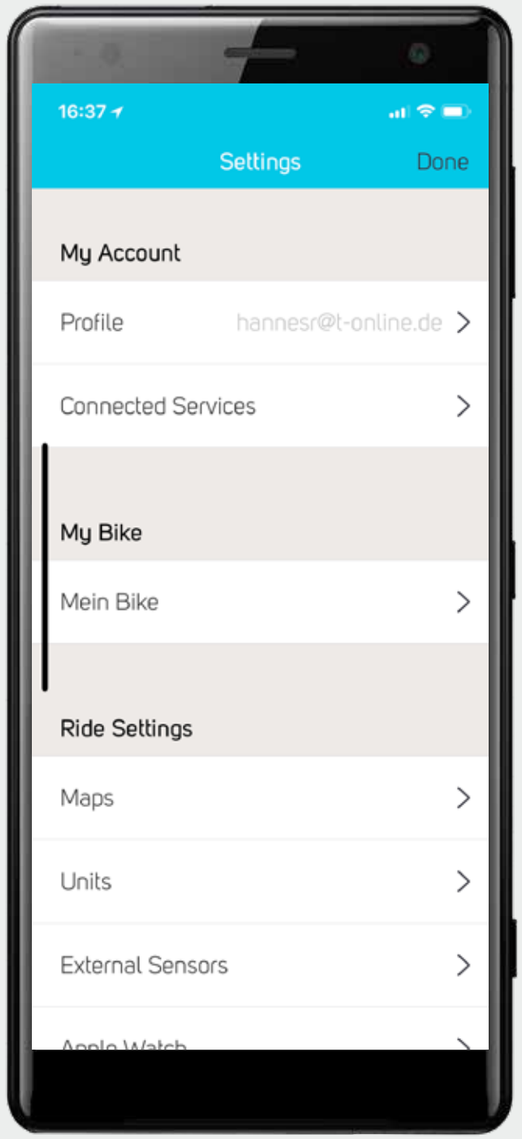
▶ In the Home screen tap the symbol

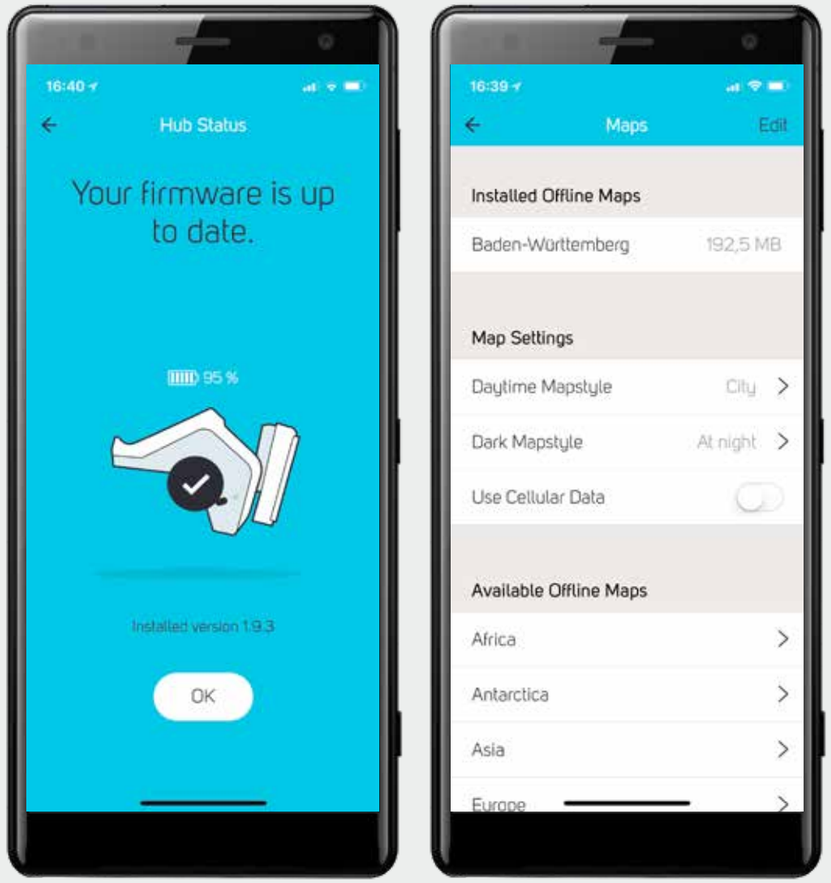
My Account

- ***Profile:*** Personal information and fitness data
  - ***Logout:*** Log off from the app
- ***Connected services:*** Settings and privileges for Google Fit/Apple Health, Komoot, Strava
  - ***Use mobile data***: Upload new trip data directly at the end of the trip

My Bike

- Configure information about the bike:
  - Bike type, bike name, gear type, drive, weight
  - Colour of the user theme
  - ***Controller:*** Type of thumb controller, key assignment (e.g. priority riding mode compared to other functions)
  - ***Bike settings***
    - **Add a Rear Light:**
      - Prerequisites: Smartphone in Bluetooth range of the activated hub; battery in rear light charged over 20 %; app and hub firmware are up to date (p. 65)
      - Press the rear light button for 15 seconds until the rear light software starts
      - Follow the further instructions in the app
    - ***Energy saver:*** Smart Screen (reduces display brightness after inactivity)
    - ***Hub sounds*** on/off
    - ***Speed source:*** source of the speed information
  - ***Hub information:***
    - Manage release, Turn off hub, Reset & release hub
    - Serial number
    - Firmware update





Hub/rear light firmware update

- Prerequisites: Battery pack charged at least 60 % charged or supplied with power via eBike battery; smartphone must be in Bluetooth range of the hub

1. Select ***Settings*** → ***My Bike*** → ***Firmware*** in the app
2. Tap ***Start update***
3. Hold down the hub button for approx. 15 seconds
4. During installation, leave your smartphone near the hub and wait for the message indicating the update is complete

Bug fixing under https://manual.COBI.Bike → Bug fixing → Failed firmware update

Trip settings

- ***Dashboard orientation:*** Automatic, to the left or to the right
- ***Maps:*** Download offline maps, map settings
- Define ***Units***
- Connect ***External sensors***
- Install ***Apple Watch*** as a heart rate sensor and install the COBI.Bike watch app on Apple Watch

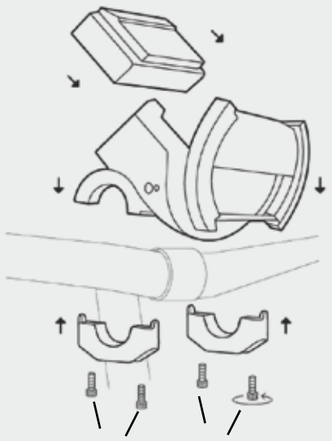
Help

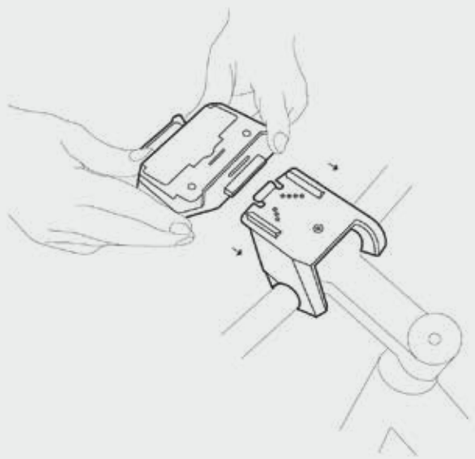
- Operating instructions, tutorials on app operation and FAQs
- Create a support request or error diagnosis

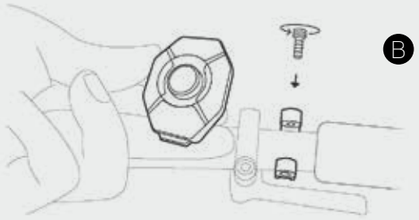
Legal notes & data protection

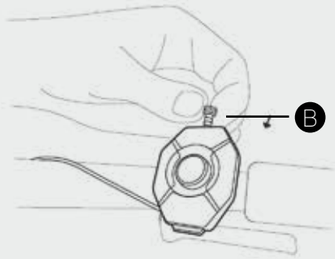
- Data protection policy, terms of use, imprint, licenses
- Version number of the app

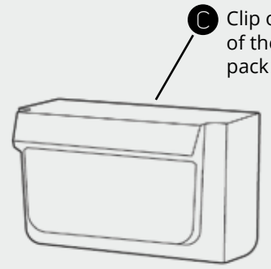
Installing COBI.Bike

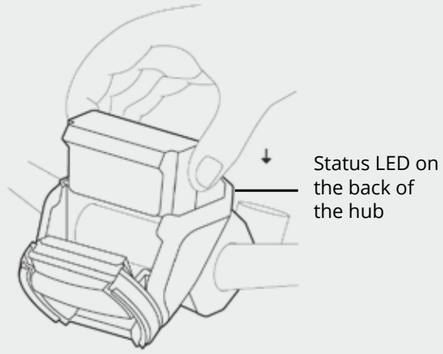












Installing the hub - normal bicycle

1. Check that the two screws that secure the handlebar adapter to the hub are tightened
2. Position the hub in the centre of the handlebar
3. If necessary, replace rubber liners in the handlebar clamps
4. Secure the mounts by using an Allen key to tighten the 4 screws Ⓐ on the underside of the hub (torque: max. 1 Nm)

Video instructions can be found under https://manual.COBI.Bike → Installation → Mounting the hub

Installing the hub – Bosch eBike

1. Remove the on-board computer
2. Slide the COBI.Bike hub onto the Bosch mount.

To prevent theft and for greater robustness, secure the hub with the screw supplied:

1. Remove the Bosch mount (see also p. 201)
2. Slide the COBI.Bike hub onto the Bosch mount
3. Use a nut to secure the hub from below on the Bosch mount
4. Secure the mounts by using an Allen key to tighten the 4 screws on the underside of the hub (torque: max. **1 Nm**, see also p. 200)

Video instructions can be found under https://manual.COBI.Bike → Installation → Mounting the hub

Installing the COBI.Bike controller

- Optimum position: between the handle and gear lever on the left or right of the handlebar
- The bell button must face downwards

1. Remove the long screw Ⓑ completely, in order to remove the mount from the COBI.Bike controller
2. Position the mount between the handlebar and gear lever/brake
3. Use a 2.5 mm Allen key to secure the COBI.Bike controller with a screw Ⓑ

For thicker handlebars (such as taped drop bars), use the adapter provided. Secure the COBI.Bike controller to the handlebar with two cable ties

Inserting/removing the battery pack

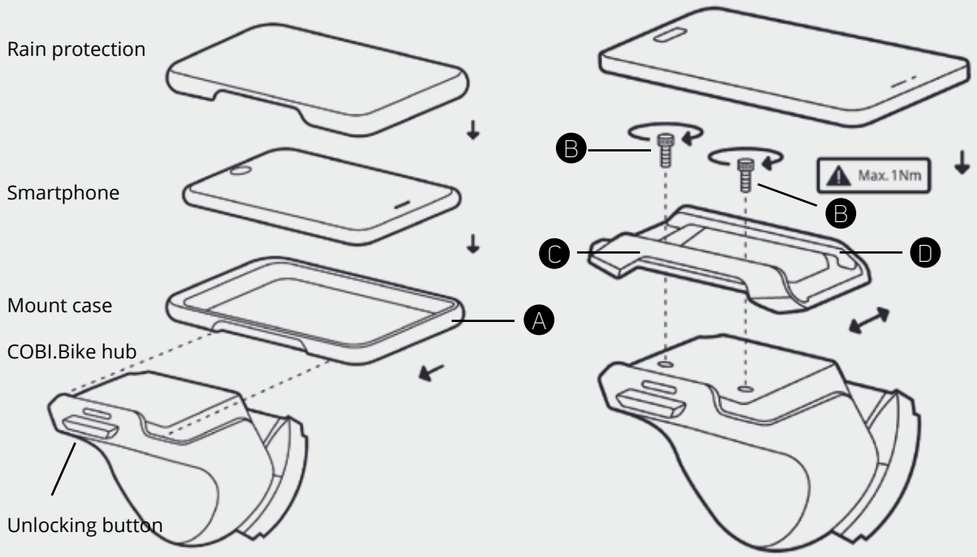
- Insert the battery pack so that the clip Ⓒ faces in the direction of the status LED of the hub

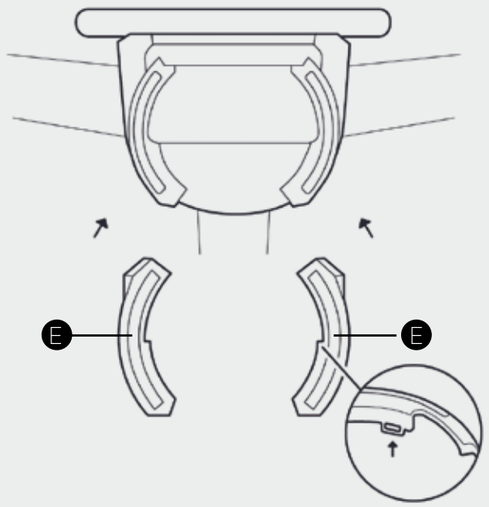
→ The battery pack is securely engaged when a clicking sound is heard

- **Removal:** Press the clip Ⓒ in the direction of the battery pack and draw it out

Video instructions can be found under https://manual.COBI.Bike → Installation → Mounting and Removing the Battery

Installing COBI.Bike





Installing the iPhone mount case

1. Insert the iPhone in mount case (A)
2. Slide the mount case onto the hub until it engages securely
3. **To remove:** press the unlocking tab on the hub and push the mount inwards

Installing the universal mount

1. Slide the universal mount onto the hub until it engages securely
2. Tighten using the two screws (B) (torque: max. **1 Nm**)
3. Hold the smartphone crosswise above the hub, press it into the front clamp (C) and stretch this until the smartphone fits into the second, rear (D) clamp
4. Before setting off, always check that your smartphone and universal mount are secure
5. **Removal:** Grasp the smartphone on both sides and press against the front clamp until it no longer touches the rear clamp. Then remove the phone

Installing the front light style kit

1. Carefully loosen both clips (E) on the back of the original cover of the front light
2. Remove the original cover from the front light
3. Place the new style kit on the front light

→ The style kit is securely mounted when a clicking sound is heard

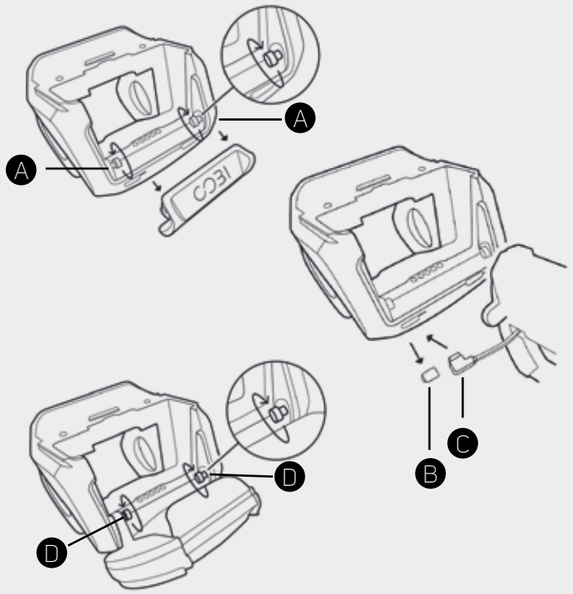
Video instructions can be found under https://manual.COBI.Bike → Installation → Mounting the Style Kit

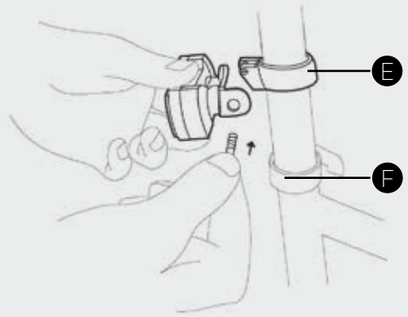
COBI.bike retrofitting kit

To ensure that the conversion does not invalidate the declaration of conformity (CE) issued by the bicycle manufacturer, the following must be observed:

1. The pedelec must meet CE conformity requirements before retrofitting
2. Before retrofitting, bicycle dealers must check whether the Bosch Drive Unit carries one of the following numbers. Only then is replacement permitted in accordance with the machinery directive:
   0275.007.027 – … 035
   0275.007.037
   0275.007.039, 0275.007.040
   0275.007.042, 0275.007.043
   0275.007.045 – …047
   0275.007.063

Installing COBI.Bike





Installing the AmbiSense front light

1. **Remove the battery pack/eBike battery**
2. Remove the bumper from the hub by removing screws A
3. Remove two screw A with Allen key
4. Remove the rubber cover B on the front of the hubs and insert cable C for the front light
5. Secure the front light with the two screws D in the hub

Video instructions can be found under https://manual.COBI.Bike → Installation → Retrofitting the AmbiSense Front Light

Installing the AmbiSense rear light

- The rear light must be at least 25 cm above the ground and must not be covered by bags, baskets or similar

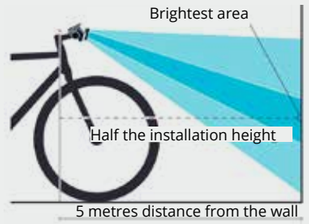
1. Carefully open back the clip E and attach to the saddle support
2. Secure the rear light to the clip with a screw F
3. Align the rear light so that it points parallel to the road
4. **Removal:** Pull the rear light upwards

Video instructions can be found under https://manual.COBI.Bike → Installation → Mounting the AmbiSense Rear Light

Positioning the front light

According to German law (StVZO Article 67, para. 3):

1. Place the bike 5 metres in front of a wall and, keeping it straight, turn on the light
2. Using an Allen key, loosen the front light
3. Adjust the beam so that the brightest area is at half the installation height



Technical data

	COBI.Bike sport	COBI.Bike plus	COBI.Bike plus	COBI.Bike sport
Hub	for normal bicycles		for eBikes	
Dimensions W x H x D (with handlebar mount, without controller and smartphone holder)	91 × 86 × 98 mm	91 × 86 × 115 mm	91 × 86 × 100 mm	91 × 86 × 83 mm
Weight	297 g	345 g	168 g	120 g
Installation on the handlebar	25.4-mm and 31.8 mm handlebar		Central display mount (for Bosch Intuvia or Nyon)	
Power supply	COBI.Bike lithium-ion battery		About the eBike battery	
Wireless technology	Bluetooth 4.0 (Bluetooth Smart)			
Speaker	Digital bell, alarm			
Sensors	Acceleration sensor, AmbiSense lighting system			
Thumb controller	COBI.Bike controller		Bosch Remote (Intuvia or Nyon)	
Type of protection	IPX5 (protection against water jets from all directions)			
Operating temperature	–5 … 40 °C			
Storage temperature	–10 … 50 °C			
Universal mount				
Dimensions W x H x D	118 mm × 71 mm × 21 mm			
Weight	35 g			
Installation	Tongue and groove connection with hub, two screws			
Smartphone platform	Android/iOS			
Smartphone sizes	4–6" (inches)			
Charging connection.	Charging via a micro-USB port: micro-USB to micro-USB adapter cable, micro-USB to Lightning® adapter cable, optional micro-USB to USB-C adapter cable			
Scope of delivery	Hub, Quick Start Guide, Universal Mount, 3 adapter cables			
		Battery pack, Remote, Bike mount, Charging cable		
AmbiSense front light				
Lighting		1 OSRAM main LED; 2 × 6 LEDs for daytime running light		
Brightness		up to 70 lux		
Light modes		Automatic, Dipped beam, Full beam and Daytime running light		
Light control		Manual button, via app, automatic sensor		
AmbiSense rear light				
Usual duration		> 40 hours		
Charge connector		Micro-USB type AB		
Certification for light		K versions: certified according to StVZO; offroad version: additional flashing light function (not StVZO-approved)		

RECHARGEABLE BATTERIES AND CHARGERS

The benefits of Bosch eBike rechargeable batteries

The cutting-edge of eBike batteries

- High mileage, low weight and modest size
- Convenient charging right on eBike
- Ergonomic design and easy handling
- No memory effect; can be briefly charged at any time regardless of its charge state; complete discharge is not required
- Minimum self-discharge – even after prolonged storage
- The batteries are fully charged on delivery and do not require repeated complete charging and discharging cycles before usage

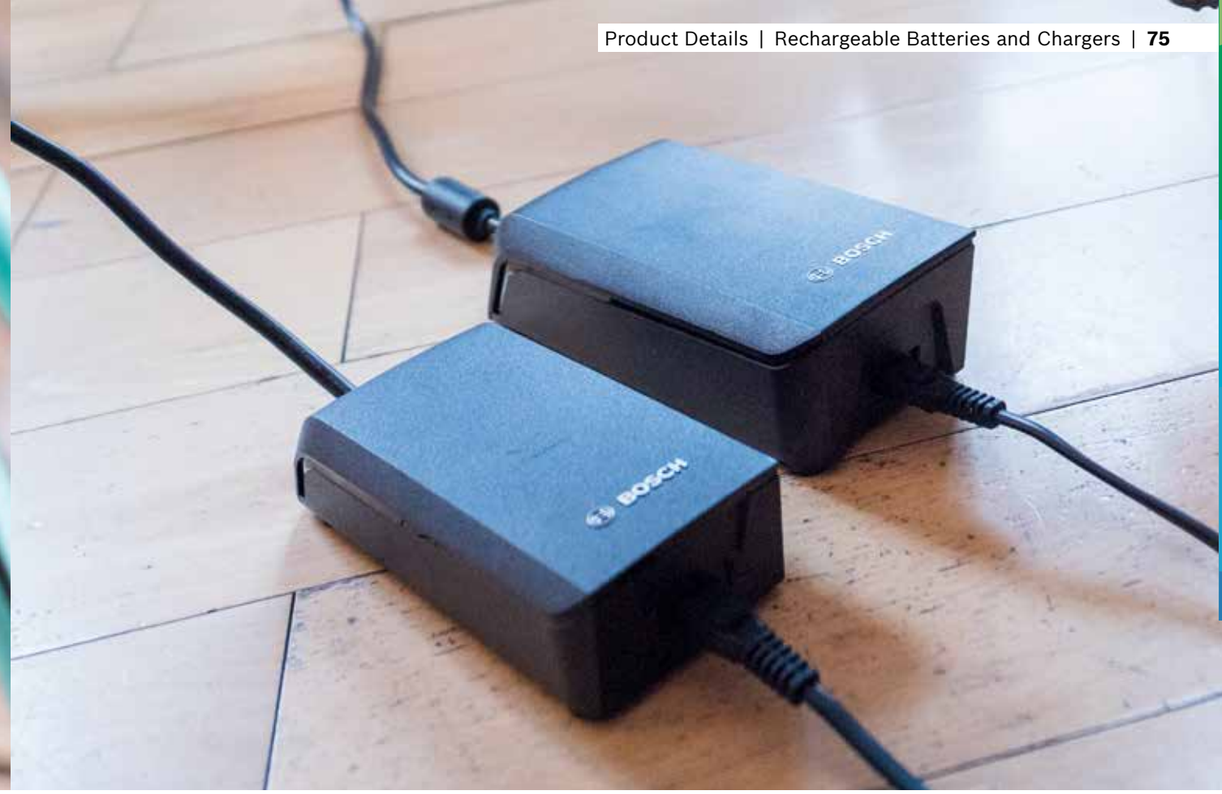
Long service life and high level of safety thanks to the Bosch Battery Management System (BMS)

- Detects potential sources of error and protects against overload
- Monitoring of the voltage, current, temperature and state of charge of the cells
- Reset option for the user
- Power is reduced from approx. 40 °C cell temperature
- Automatic battery switch-off at approx. >60 °C cell temperature
- Prevents charging at temperatures below 0 °C or over 40 °C
- Integrated emergency shut-down

Exceptional quality, extensive testing

- High-quality, technically advanced high quality lithium-ion cells from leading cell manufacturers
- In addition to the legally required tests, internal testing regarding the safety, function, service life and industrial health & safety

Test protocols for UN transportation test: bosch-ebike.net → Service → Hazardous goods transport → General → Documents for down-loading



Bosch eBike Chargers at a Glance

	Compact Charger (BCS230)	**Standard Charger** (BCS220)	**Fast Charger** (BCS250) NEW
	▶ Protected from dirt due to absence of any air vents ▶ Easy storage thanks to very compact dimensions and practical cable Velcro tape ▶ Ergonomically shaped charging plug ▶ The enclosed housing increases stability and ensures low-noise charging ▶ Protecting the battery from short circuiting and damage during charging		
Product features	▶ Volume approx. 40 % less than Standard Charger ▶ Ideal for eBikers who are often on the go ▶ Compatible with supply voltages from 100 to 240 volts (can also be used in USA, CA und AUS)	▶ Ideal ratio between performance, weight and size ▶ Versatile	▶ The fastest eBike charger in its class ▶ Perfect for recharging quickly while on the go ▶ Ideal for eBikes that are often used and frequently charged Retrofitting may require a battery software update
Charging time for the PowerTube 500/Power-Pack 500 approx.	50 %: 3.5 hours/ 100 %: 7.5 hours	50 %: 2 hours/ 100 %: 4.5 hours	50 %: 1.2 hours/ 100 %: 3 hours
Maximum charging current	2 A	4 A	6 A*
Weight, approx.	600 grams	800 grams	1000 grams
Compatibility	Active Line, Active Line Plus, Performance Line, Performance Line CX (Classic+ Line via optional **Charger Adapter**)		

* limited to 4 A in the case of PowerPack 300 and Classic+ Line batteries; in this case, charging times are the same as for the Standard Charger

Bosch eBike Batteries at a Glance

	PowerPack 300 (BBS240/BBR240)	PowerPack 400 (BBS260/BBR260)	PowerPack 500 (BBS270/BBR270)	PowerTube 500 (BBP280/BBP281)	DualBattery
Optimum application area	For shorter distances, e.g. in the city or for occasional riders	Flexible all-rounder for city trips and touring	For even longer range and higher loads	For high design standards	Ideal for ambitious sports enthusiasts, tour bikers, long-distance commuters and cabby bikers
Product features	▶ **Frame battery:** installed close to the eBike's centre of gravity to ensure stability and optimal weight distribution ▶ **Rack battery:** often used with wheels with a low entry point, thus facilitating safe mounting and dismounting ▶ Easy and safe removal and insertion			▶ Battery can be optimally integrated in the bicycle frame, enabling it to be built in invisibly and protected by the frame ▶ Two variants available for **horizontal** or **vertical** installation (see figure on p. 81) ▶ Convenience feature: when unlocking, the battery pops out approx. 2 cm from the frame, making it easier to grasp ▶ A safety mechanism prevents the battery from falling out	▶ Doubles the range by combining two batteries. Energy content up to 1000 Wh ▶ Combination of two PowerPacks, PowerTube and PowerPack or two PowerTubes ▶ Charging using only one charging socket; the system switches intelligently between the two batteries both during charging and discharging
Charging time with Standard Charger approx.	50 %: 1 hour / 100 %: 2.5 hours	50 %: 1.5 hours / 100 %: 3.5 hours	50 %: 2 hours / 100 %: 4.5 hours	50 %: 2 hours / 100 %: 4.5 hours	Depending on the battery combination
Weight, approx.	Frame battery: 2.5 kg Rack battery: 2.6 kg	Frame battery: 2.5 kg Rack battery: 2.6 kg	Frame battery: 2.6 kg Rack battery: 2.7 kg	Horizontal: 2.8 kg Vertical: 2.8 kg	Depending on the battery combination
Special notes	▶ Compatible with all product lines starting from model year 2014 ▶ Not compatible with DualBattery	▶ Compatible with all product lines starting from model year 2014	▶ Compatible with all product lines starting from model year 2014	Two different variants: Horizontal and vertical (see figure on p. 81)	▶ Not available in combination with a PowerPack 300 ▶ Only retrofittable, if intended by the bicycle manufacturer ▶ Both batteries must have up-to-date software versions ▶ The eBike system can also be operated with just one battery ▶ Pin cover to protect the contacts included as standard with the eBike and available as a spare part – also an ideal add-on when purchasing an eBike

Removing and Inserting Batteries

Remove the PowerPack

1. Switch off the PowerPack
2. Insert the key and unlock the lock
3. **Frame battery:** PowerPack must be tilted in the upper mount and then pulled from the lower mount
   Rack battery: Pull the PowerPack from the mount
4. Remove the key

Battery locks can be purchased from ABUS, AXA-BASTA or TRELOCK or their respective dealer partners

Inserting the PowerPack

1. Switch off the PowerPack
2. Insert the key and unlock the lock
3. Place the **frame battery** with contacts into lower mount. The battery can be tilted by up to 7° to frame. Then tilt the battery until it engages in the upper mount; push the
   rack battery with contacts forwards until they click into the mount on the rack
   ▶ Depending on the lock maker, the lock cylinder will either snap automatically in or will need to be locked with the key
4. Make sure the battery is securely mounted, otherwise it may fall out of the mount during the journey

Removing the PowerTube

1. Switch off the PowerTube
2. If necessary open the frame cover Ⓐ
3. Insert the key and unlock the lock Ⓑ
   → Battery is unlocked and drops about 2 cm out of the frame into the restraint support; secure the battery with your hand
4. Press down on the latch to release the battery from the restraint support Ⓒ
   → Battery will be completely released and drops onto your hand
5. Remove battery from the frame Ⓐ

Depending on the various designs used by the bike manufacturers, the battery may be inserted or removed in another way. See the documentation of the respective bike manufacturer

Battery locks can be purchased from ABUS, AXA–BASTA or TRELOCK or their respective dealer partners

Insert the PowerTube

1. Switch off the PowerTube
2. Insert battery with the contacts into the lower mount
3. Insert the key, open the lock and keep it open with the key
4. Swing the battery upward until it is held by the restraint support
5. Press the battery upward until it latches firmly in place. Make sure the battery is securely mounted, otherwise it may fall out of the mount during the journey
6. Lock the lock and remove the key

PowerTube 500 for vertical installation

PowerTube 500 for horizontal installation

Charging of the Battery

Safety Instructions

- Points to be noted while charging:
  - Only carry out charging indoors, preferably in unused rooms with smoke detectors
  - In dry conditions and at room temperature
  - Not near heat sources or flammable materials
  - Do not charge batteries without supervision
- Disconnect the battery and charger from the mains after charging
- Avoid contamination of charging socket and contacts, e.g. by sand or earth, and remove immediately in all cases
- Always close the protective cover when the eBike charging socket is not used

A full charge of a PowerPack 500 costs less than 15 cents (assumption: green electricity rate of 27 cents/kWh). Typical energy requirement of an eBike commuter: approx. 40 kWh/year (compared with: power consumption of a refrigerator at about 250 kWh/year)

Information about charging with DualBattery

- Only charge batteries at the accessible charging socket
- Never open a charging socket that has been locked by the manufacturer
- A battery with locked charging socket can only be charged separately by removing it from the eBike

Charge level indicator on the battery

- Each LED that lights up corresponds to 20 % of the capacity
- A flashing LED during charging indicates that the next 20 % is being charged
- All LEDs will switch off when the battery is fully charged

Charge level indicator on the on-board computer

- Each bar corresponds to 20 % of the capacity (Kiox: additional colour coding, see p. 23)
- On DualBattery eBikes, the charging status of both batteries will be displayed
- If the energy content is exhausted, the remaining energy will be reserved for bike lights, on-board computer and ABS and eShift system (if needed). This suffices for approx. 2 hours of lighting (4 watts) (does not account for other electricity consumers)

When energy capacity is low, refrain (if possible) from using automatic modes of eShift systems

Error Display	Cause	Repair
LEDs 1, 3 and 5 flash	The battery is out of the charging temperature range (0 °C to 40 °C)	Disconnect from the charger and allow it to acclimatise
LEDs 2 and 4 flash	Electronic defect of the battery; the eBike system switches itself off	Submit a service case (see p. 162)
One or more LEDs light up, depending on the charge state; no LED flashes	Charger does not charge	Submit a service case (see p. 162)
None of the LEDs light up	Charging is not possible	Check plug connections and mains voltage; clean the contacts on the battery
The battery cannot be switched off; in addition, one or more LEDs light up continuously	Danger of an excessively deep discharge	Reset of the Battery Management System: ▶ Remove battery from its mount ▶ Hold down the On/Off button on battery for 10 s

The eBike Rechargeable Battery Guide: Order free of charge from Bosch Dealer online stores (see p. 161) Download under bosch-ebike.net → Sales support → Brochures

Handling and care

Safety Instructions

- Only use original Bosch batteries and chargers, otherwise
  - The guarantee and warranty claims will be voided
  - Risk of a reduced battery life, damage and malfunction of the eBike system
- Never open batteries or allow them to be opened, otherwise
  - The guarantee and warranty claims will be voided
  - Risk of functional impairments or uncontrolled thermal reactions
- Do not attempt any repairs and do not have them repaired
- Remove the battery from the mount before transporting or working on the eBike to prevent accidental activation of the eBike drive
- Buying used batteries carries risks (e.g. battery defective/damaged, illegal goods from theft)
- Observe safety instructions regarding battery and charger in the operating manual

Which factors influence the service life of the battery?

- Intensity of usage
- Storage temperature
- Charge state of the battery during storage
- The effect of heat

The battery life is subject to "natural aging" regardless of this

Tips for an optimum service life

1. Store the battery correctly (e.g. for storage during winter)
   - Cool and dry, between 0 °C and 20 °C
   - Neither fully charged or fully discharged, but optimally at 30 % to 60 % energy content (see also p. 152)
2. Protect the battery against extreme heat (bright sun, heating, interior temperatures in cars in summer)
3. Adapting battery handling in winter
   - Store and charge the battery at room temperature. Insert battery into the eBike just before starting the ride
4. Avoid battery temperatures below -10 °C and above 60 °C
5. Regular inspection: Dealer can check the condition of the battery and the number of charging cycles - see from page 149 onwards

Cleaning

Do not immerse the battery in water or clean it with a high pressure/steam cleaner. Risk of damaging electronic parts or causing malfunctions

- Turn the battery off and remove it before cleaning the eBike
- Wipe the battery with a damp cloth
- Clean the plug poles on the battery holder and lightly grease them occasionally (polypropylene or technical Vaseline)
- Thoroughly dry the contact points before the battery is used again

Transport

- Always remove the battery and stow it safely prior to transport by car

Private individuals may transport eBike batteries on the road without any further requirements. Dealers are asked to observe p. 167 et seq.

- eBike batteries can only be transported on cargo planes
- Private persons may only send fully functional eBike batteries
  - Special requirements for packaging and labelling
  - Contact the transport company or bicycle dealer

Commercial storage of batteries

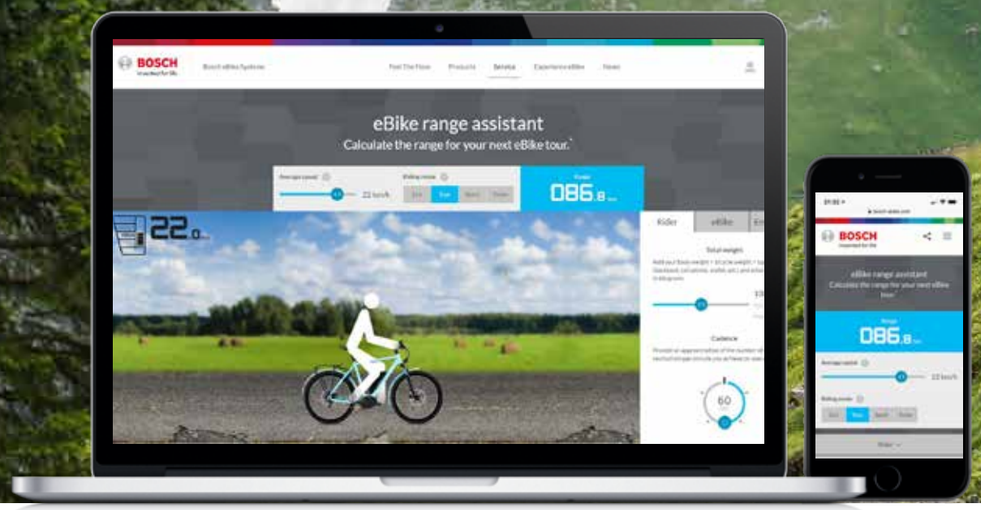
- Extend building insurance, if required
- Business insurance should record that eBikes and lithium-ion batteries > 100 Wh are stored
- Not on flammable surfaces or in the vicinity of flammable liquids
- Store in well ventilated and cool areas (well below 30 °C)
- Protect from humidity and water
- Equip the storage room with smoke detector

When eBikes are displayed in the shop window, remove the battery or use dummy batteries (can be ordered in dealer online stores), otherwise service life will be significantly reduced

Regular service tips with useful information about the eBike can be found under bosch-eBike.com → Service → Service-Tips

Recycling

Disposal information can be found under bosch-ebike.net → Service → Recycling



Optimising the range

What factors influence range?

- **Riders**
  - Selected riding mode
  - Shifting frequency
  - Speed
  - Cadence (pedalling frequency)
  - Rider weight
- **Environment**
  - Terrain type (hilly or flat)
  - Surface
  - Temperature
  - Wind conditions
  - Starting up frequency
- **eBike**
  - Tyre pressure
  - Performance of the eBike drive
  - Energy content of the battery
  - Type of shifting system (derailleur or hub gear system)
  - Bicycle type/style (aerodynamic, e.g. touring bike)
  - Tyre tread (e.g. trekking bike tyres)
  - Electric consumers such as the light, on-board computer or devices connected to the USB port of the on-board computer

Tips for optimum range

1. If possible, operate the engine in the optimum efficiency range
   - Constant cadence over 50 rpm (slow pedalling requires more energy)
   - Use shifting system/shift recommendation - start-up and uphill gradients in low gear, upshift according to terrain/speed
   - Observe the motor performance indicator (Intuvia, Kiox and Nyon) and adjust the riding style accordingly: long bar = high energy consumption
2. Minimize the weight of the bike and luggage as much as possible
3. Frequent starting and braking is less economical than the most even possible speed
4. Always ride with max. permissible tyre pressure to minimize rolling resistance
5. As the temperature drops, the performance of the battery decreases. Therefore, expect a reduced range in winter, if necessary use a thermal protective cover (can be ordered via dealer online stores)

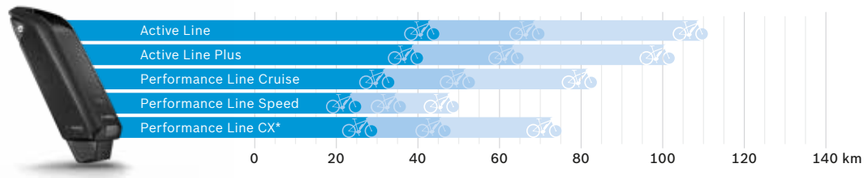
Range Assistant

- **Range Assistant:** Calculate typical ranges under different conditions
  - bosch-ebike.com → Service → Range Assistant
  - For embedding on your own website: bosch-ebike.net → Sales support → Online tools

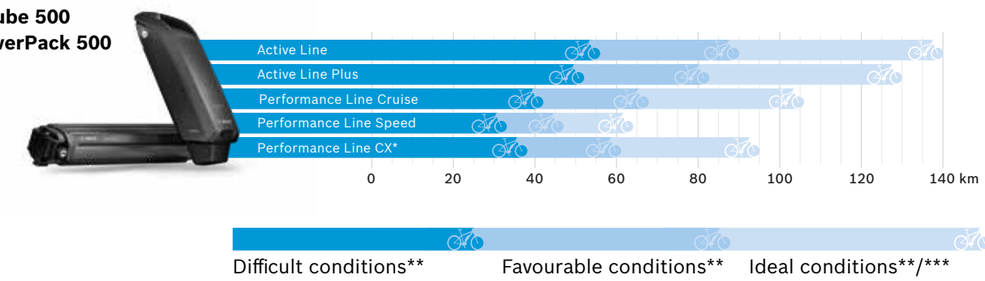
Range graphics

- Detailed **range graphics** can be found in the eBike battery guide

PowerPack 400



PowerTube 500 and PowerPack 500



The values below show the average when combining all four riding modes* and under different conditions.

* eMTB mode was not considered when calculating these ranges
** The ranges are typical values for new batteries, which may decrease if one of the conditions listed deteriorates
*** No additional connected electrical components, e.g. light

Technical data

Batteries*		**PowerPack 300** (BBS240/BBR240)	**PowerPack 400** (BBS260/BBR260)	**PowerPack 500** (BBS270/BBR270)	**PowerTube 500** (BBP280/BBP281)
Supply voltage		36 V	36 V	36 V	36 V
Energy content ** approx.		300 Wh	400 Wh	500 Wh	500 Wh
Capacity		8.2 Ah	11.0 Ah	13.4 Ah	13.4 Ah
Size approx.		Frame battery: 325 x 92 x 90 mm Rack battery: 372 x 122 x 80 mm	Frame battery: 325 x 92 x 90 mm Rack battery: 372 x 122 x 80 mm	Frame battery: 325 x 92 x 90 mm Rack battery: 372 x 122 x 80 mm	349 x 84 x 65 mm
Weight, approx.		Frame battery: 2.5 kg Rack battery: 2.6 kg	Frame battery: 2.5 kg Rack battery: 2.6 kg	Frame battery: 2.6 kg Rack battery: 2.7 kg	2.8 kg
Charging temperature		0 °C ... 40 °C	0 °C ... 40 °C	0 °C ... 40 °C	0 °C ... 40 °C
Operating temperature		–5 °C ... 40 °C	–5 °C ... 40 °C	–5 °C ... 40 °C	–5 °C ... 40 °C
Storage temperature		–10 °C ... 60 °C	–10 °C ... 60 °C	–10 °C ... 60 °C	–10 °C ... 60 °C
Protection class		IP 54 (protection from dust ingress/water spray)	IP 54 (protection from dust ingress/water spray)	IP 54 (protection from dust ingress/water spray)	IP 54 (protection from dust ingress/water spray)
Charging times approx.	Compact Charger	50 %: 2 hours / 100 %: 5 hours	50 %: 2.5 hours / 100 %: 6.5 hours	50 %: 3.5 hours / 100 %: 7.5 hours	50 %: 3.5 hours / 100 %: 7.5 hours
	Standard Charger	50 %: 1 hour / 100 %: 2.5 hours	50 %: 1.5 hours / 100 %: 3.5 hours	50 %: 2 hours / 100 %: 4.5 hours	50 %: 2 hours / 100 %: 4.5 hours
	Fast Charger	50 %: 0.7 hour / 100 %: 2 hours	50 %: 1 hour / 100 %: 2.5 hours	50 %: 1.2 hours / 100 %: 3 hours	50 %: 1.2 hours / 100 %: 3 hours

Compact Charger

Standard Charger

Fast Charger

NEW

Charger	**Compact Charger** (BCS230)	**Standard Charger** (BCS220)	**Fast Charger** (BCS250)
Supply voltage	100 – 240 V AC	220 – 240 V AC	220 – 240 V AC
Output voltage	36 V	36 V	36 V
Maximum charging current	2 A	4 A	6 A***
Size approx.	160 x 75 x 45 mm	190 x 86 x 54 mm	200 x 90 x 60 mm
Weight, approx.	600 g	800 g	1000 g
Cable lengths approx.	AC input: 1.5 m, DC output 1.0 m		
Operating temperature	–5 °C ... 40 °C		
Storage temperature	–10 °C ... 50 °C		
Protection class	IP 40		

* Lithium-ion battery based on LiNiCoMn (lithium nickel cobalt manganese) or LiNiCoAl (lithium nickel cobalt aluminium)
** Cell packs: 40 cells – 10s4p (s = number of cells in a row, p = number of rows)

*** Limited to 4A in PowerPack 300 and rechargeable batteries of the Classic+ Line. In this case, charging times are the same as those of the Standard Charger

DRIVE UNIT

Bosch Drive Units at a Glance

	Active Line (BDU310)	**Active Line Plus** (BDU350)	**Performance Line** (Cruise: BDU250P, Speed: BDU290P)	**Performance Line CX** (BDU250P CX)
Optimum application area	▶ Flexibility for everyday and occasional riders ▶ For everyday use, city cycling and short excursions on surfaced roads or cycle paths ▶ Flat terrain	▶ Excursions and trips beyond the city limits ▶ Surfaced roads or cycle paths with moderate gradients	▶ Sporty riding and longer distances, predominantly on paved paths and roads ▶ For ambitious riders (trekking bikers, mountain bikers, commuters) ▶ Flat and steep terrain	▶ Very sporty riding in challenging terrain on unpaved roads ▶ For ambitious riders and demanding eBikers
Riding sensation	▶ Moderately controlled acceleration and support up to 25 km/h ▶ Gentle start-up behaviour ▶ Relaxed, safe and comfortable ▶ Minimal pedal resistance in Off mode or above 25 km/h	▶ Gentle acceleration up to 25 km/h ▶ Natural riding sensation ▶ Minimal pedal resistance in Off mode or above 25 km/h	▶ Powerful riding behaviour, especially when starting up – even on mountain slopes ▶ Sporty dynamic support up to 25 km/h (speed: 45 km/h)	▶ Powerful Drive Unit for fast sprints and sporty riding up to 25 km/h ▶ Very sporty start-up behaviour and acceleration, even on alpine terrain ▶ a light start-up pull that can be felt on steep grades
Product features	▶ Clean eBike look: 25 % smaller than predecessor ▶ Compact size enables improved integration in the bicycle frame ▶ Award-winning design with flowing shapes and appealing lines (Red Dot Award 2017) ▶ An innovative drive concept facilitates a lightweight Drive Unit ▶ Quiet engine minimises annoying extraneous noises	▶ Clean eBike look: 25 % smaller than predecessor ▶ Compact size enables improved integration in the bicycle frame ▶ Award-winning design with flowing shapes and appealing lines (Red Dot Award 2017) ▶ An innovative drive concept facilitates a lightweight Drive Unit ▶ Quiet engine minimises annoying extraneous noises	▶ Powerful and robust drive concept ▶ Finely balanced system with high performance for a sportier riding style ▶ With a torque of up to 63 Nm, it delivers full support even at low cadences ▶ S-Pedelec: Performance Line Speed supports up to 45 km/h (see p. 96) NEW Application for Performance Line Speed ensures motor support up to 45 km/h (previously 42.5 km/h)	▶ The most powerful drive for ultimate Uphill Flow ▶ Robust and reliable; will not overheat even on long mountain trips ▶ Powerful walk assistance, even on steep gradients ▶ eMTB mode replaces Sport mode: – Depending on the pedal pressure, the progressive motor support automatically adapts to the individual riding style – The rider's own pedal power is dynamically supported by between 120 % and 300 % ▶ Effortless riding and optimal traction in technical uphill passages or in the case of obstacles NEW eMTB mode specially for short cranks up to 165 mm
Gear shift detection	Derailleur system: yes Hub gear system: no	Derailleur system: yes Hub gear system: no	Derailleur system: yes Hub gear system: no	Derailleur system: yes (dynamic)
Special notes	Optional backpedal function with hub gear system	Optional backpedal function with hub gear system		eMTB mode can be installed on the eBike using the diagnostic tool

The benefits of the Bosch Drive Units

Superior centre-mounted motor concept

- **Precise motor control** enables gentle support depending on your model and type of application
- **The most natural riding sensation** of all motor concepts due to direct power transmission to the chain
- **The low centre of gravity** exploits ideal weight distribution for straight-line directional stability and stable handling
- **The drive power via the chainring/drive pinion** enables motor control within the optimal RPM speed range and therefore high efficiency and lower energy consumption
- **Faster wheel dismounting** during transportation or repairs compared to a normal bicycle
- **The mid-drive motor means:**
  - A back pedal brake can be used
  - A very compact constructional design of the motor
  - Derailleur or hub gear system
  - Makes possible use of most common bicycle components

That special Bosch riding sensation

- **A demanding multi-sensor concept** for optimal balancing of motor support: more than 1000 sensor measurements per second record the torque (pedal power), cadence (pedalling frequency) and speed
  - No unintended, premature initiation of support
  - No continued "after-run" operation when pedalling is discontinued
  - The feeling that you are riding a bike using your own bodily force remains
- **Precise motor control**
  - Rapid processing of sensor signals minimise noise and vibrations
  - When the maximum legally permissible speed is reached, the motor support powers down
  - Efficient and reliable temperature monitoring
- **Optimal interaction with the shifting system**
  - Motor is always operating in the optimal RPM speed range
  - The adjustment of the torque during gear shifting protects the components and ensures easy and smooth gearshifts
- **Compact construction and low weight enable:**
  - Seamless integration into the frame design
  - More ground clearance and a smaller Q factor (pedal distance) for ergonomic power transmission

Riding modes

Selecting the riding mode

- Press [+] or [–] on the on-board computer or control unit to increase or reduce support

→ Riding mode is permanently displayed or briefly shown on the display, depending on the on-board computer and, if applicable, the selected menu display

Riding mode	Characteristics
Off *	The motor support is switched off, the eBike can be propelled just like a normal bicycle by pedalling. Walk assistance cannot be activated in this mode
Eco	Effective but gentle support, designed for maximum efficiency and long ranges
Tour	Measured support for long distances with a clear focus on long ranges
Sport eMTB	Direct, powerful support at maximum power into the highest cadence ranges for sporty riding, whether off-road or in urban traffic eMTB mode, specially designed for the Performance Line CX, dynamically varies between the Tour and Turbo riding modes, progressive motor support for maximum performance on the trail
Turbo	Direct and maximum powerful support up to the highest cadences for sporty riding

* Support off, but eBike system active

Walk assistance

Function of walk assistance

- Maximum speed of walk assistance between 3 km/h and 6 km/h, depending on the gear selected
- Up to MY 2017 hardware, a max. speed of start-up help for Performance Line Speed of ? 6 or 18 km/h, depending on country of homologation

- Risk of injury if the wheels are not touching the ground (e.g. when mounted on a stand) when the function is activated
- The pedals also rotate in the case of eBikes with backpedal function

NEW **For Performance Line CX:** More powerful walk assistance for reliable support without any delay in the face of obstacles or steep gradients by means of software update for Drive Units starting from hardware MY 2016, see p. 133

Activate walk assistance

1. Activate support (riding mode other than ***OFF***)
2. First press the [WALK] button and then the [+] button on the control unit and keep it pressed

- Prior to MY 2017: Activation/deactivation solely by means of the [WALK] button
- Function switches off automatically if:
  - the [+] button is released
  - the wheels are blocked (e.g. by actuating the brakes or impacting against an obstacle)
  - maximum speed for the function is exceeded
  - the crank is blocked

? **ECE homologation**

International system for the registration of vehicles and vehicle components according to ECE (Economic Commission for Europe). Approval in one member country automatically applies in all other member countries

Protection and care

Cleaning

Do not immerse the Drive Unit in water or clean it with a high pressure/steam cleaner: Risk of damaging electronic parts or causing malfunctions

- Prior to cleaning remove the battery and display, and cover the Purion and control unit with a cloth or foil
- Cleaning with garden hose and brush; use bike shampoos, care products from specialist retailers or mild soap/detergent
- When greasing the drive chain, make sure that no lubricant reaches the disc brake

Storage

- Store the eBike in a dry and well ventilated place
- Observe the operating and storage temperatures
  - Protect against exposure to direct sunshine
  - Failure to reach the operating temperature can result in restricted function
  - Components can be damaged by extreme temperatures

Transport

- Protect electrical contacts from rain and dirt
- Use an eBike boot rack (for higher load capacity and special dimensioning); car-top bike racks should not be used
- Protective cover for Drive Unit protects against mechanical damage and environmental influences such as penetrating water in the event of rain (can be purchased via dealer online stores)
- Different provisions for transport by public long-haul and commuter transport services: you should observe the guidelines published by transport companies and providers
- eBikes and batteries can only be transported on cargo planes; bikes without batteries may be transported at the discretion of the airline

Regular service tips with useful information about the eBike can be found under bosch-eBike.com → Service → Service-Tips

Legal Status of an S Pedelec

§ This double page explains the legal status in the EU for newly equipped S-pedelecs from MY 2018 onward. Information on the divergent legal status in individual countries can be obtained through the relevant ministries (e.g. Ministry of Transport)

Definition S-Pedelec

- Pedalling support up to max. 45 km/h
- Max. continuous rated power of the motor: 4000 W
- Max. four-fold riding support
- Classified under EU law as a small two-wheeled motor vehicle, therefore similar to mopeds and scooters
- Vehicle class L1e-B

Required documents

- Operating licence with registered tyre size
- Liability insurance incl. vehicle ID (small licence plate)
- Vehicle class AM

Special equipment regulations

- Tires with UN/ECE-R75 test symbol (country code encircled, e.g. "E1" for Germany and "75R" on the side wall of tyre)
- On vehicles with a technically permissible total mass of up to 150 kg, tyres without type approval with a cross-section width of max. 67 mm may be mounted
- Rear-view mirrors
- Insurance certificate mounted and illuminated
- At least one stand, self retracting for S-Pedelecs over 35 kg
- Two independent brakes
- Brake lever with ball ends
- Helmets are mandatory: "Suitable protective helmet" must be worn
- At least one electrical device for "sound" (horn according to UN/ECE-R28)
- Additional side reflectors
- Permanently mounted pedal reflectors
- Fixed lighting system (light must switch on automatically when the motor is activated)
- Brake light
- Headlight (approved according to UN/ECE-R74)

Conversion and replacement of bicycle parts

- Essential parts (e.g. drive, steering, compare special equipment regulations, p. 96) may not be modified or require a new technical inspection if changed
- Only use original spare parts. Contact the bicycle manufacturer before modification or replacement using non-identical spare parts
- In the case of infringements, there is a risk of loss of the operating licence and insurance coverage, as well as criminal prosecution (see p. 199)

Trailers

- Children's trailers/bicycle seats are not allowed
- Only trailer with max. 50 % of the mass of the vehicle in running condition (= unloaded, without rider and without battery)

Other provisions

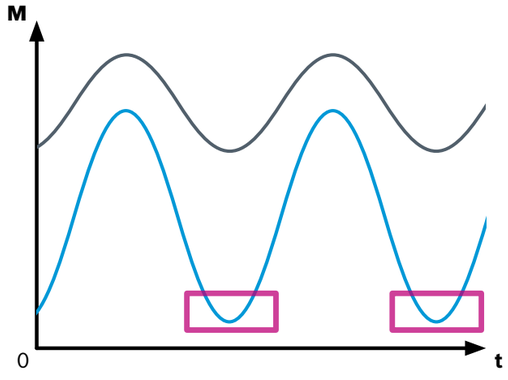
- Alcohol limits are the same as for driving a car (depending on the country 0.0 to 0.5 per thousand)
- Cycle paths must not be used
- Riders must not enter one-way streets in the wrong direction
- Carrying on buses and trains is allowed in some instances

Country specific regulations:

Background Information about Control Technology

Adjusted motor support with hub gear system

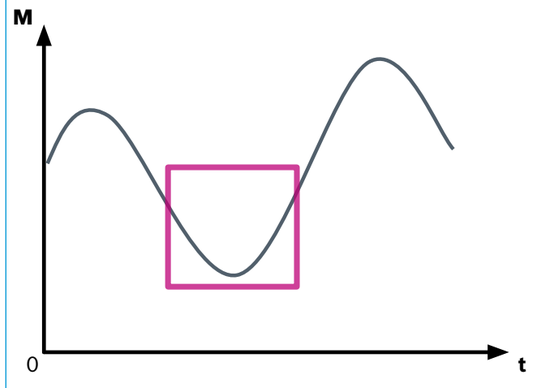
- Motor support acts directly on the chainring and is not constant, but fluctuates up and down, just like pedal force during normal cycling
- Motor support is significantly lowered at every turn of the crank to facilitate gear shifting operations
- **Benefits:** A change in the torque curve protects the mechanical components and facilitates the activation of the selected gear



M = Motor support in Nm
t = Time (of the represented period is for approx. one crankshaft rotation)
Motor support characteristic with derailleur gear system
Motor support characteristic with hub gear system
Time window for gear shifting with hub gear system

Gear shift detection during derailleur gear shifting

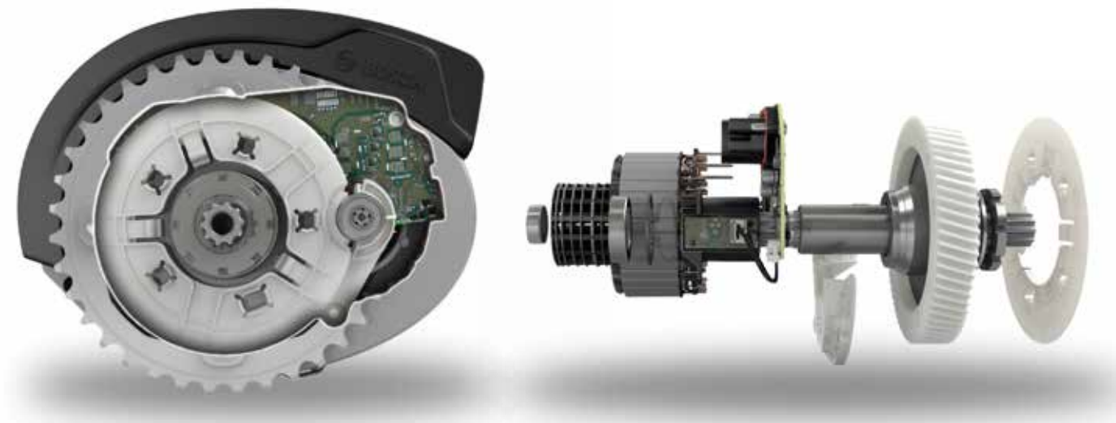
- During gear shifting, the motor torque is reduced at exactly the right moment and then increased again
  - The chain pull is reduced during the gear shift
  - The drive control detects this interruption and briefly reduces the motor support
- **Benefits:** Smoother gear change and significantly reduced noise during gear shift to a higher gear



M = Motor support in Nm
t = Time (of the represented period is for approx. one crankshaft rotation)
Motor support characteristic
Reduced motor support to facilitate the gear shifting process

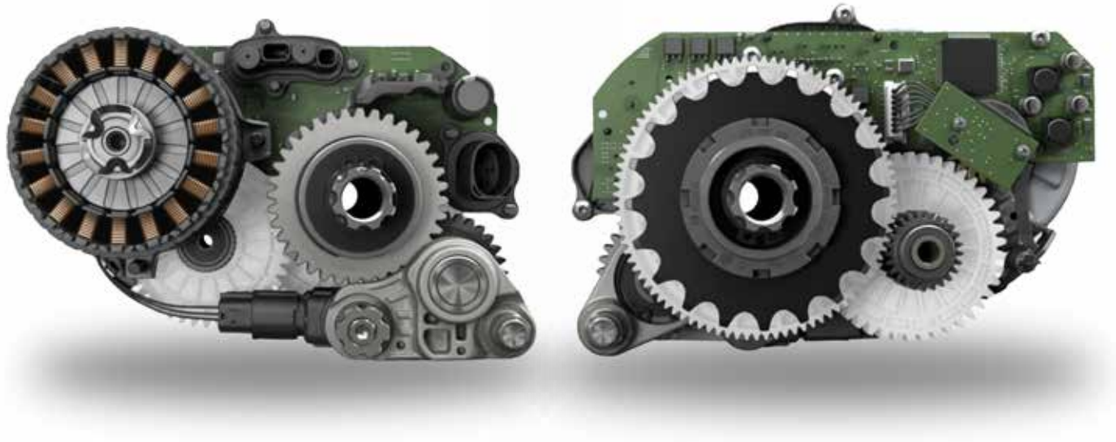
The inner workings of a Drive Unit

3. Generation (BDU3xx)



Interactive Animation Drive Unit, 3rd Generation: bosch-ebike.com
→ Products → Drive Units → Discover the Drive Unit

2. Generation (BDU25x)



Interactive Animation Drive Unit, 2nd Generation: Download under bosch-ebike.net
→ Sales Support → Online Tools → Drive Unit Animation

Technical data

Support factor
Percentage value by which the rider's own pedal power is increased. Example: With a support factor of 100 %, the rider's performance is increased by the same amount

		Active Line Cruise (BDU310)		Active Line Plus Cruise (BDU350)		Performance Line Cruise (BDU250P)		Performance Line Speed (BDU290P)	Performance Line CX (BDU250P CX)	
Shifting system type		Derailleur system	Hub gear system	Derailleur system	Hub gear system	Derailleur system	Hub gear system	Derailleur system	Derailleur system	
Nominal continuous power		250 W	250 W	250 W	250 W	250 W	250 W	250 W	250 W	
Support factor	Turbo	250 %	250 %	270 %	250 %	275 %	260 %	275 %	Turbo	300 %
	Sport	170 %	170 %	180 %	170 %	190 %	170 %	190 %	eMTB	120 - 300 %
	Tour	100 %	100 %	100 %	100 %	120 %	110 %	120 %	Tour	120 %
	Eco	40 %	40 %	40 %	40 %	50 %	50 %	55 %	Eco	50 %
Max. possible drive torque (converted to a gear ratio of 1:1 crankset to chainring)	Turbo	40 Nm	40 Nm	50 Nm	50 Nm	63 Nm	50 Nm	63 Nm	Turbo	75 Nm
	Sport	38 Nm	38 Nm	45 Nm	45 Nm	55 Nm	50 Nm	55 Nm	eMTB	75 Nm
	Tour	35 Nm	35 Nm	40 Nm	40 Nm	50 Nm	45 Nm	50 Nm	Tour	50 Nm
	Eco	30 Nm	30 Nm	35 Nm	35 Nm	40 Nm	40 Nm	40 Nm	Eco	40 Nm
Maximum cadence (rpm) with drive support	Turbo	100 rpm	100 rpm	100 rpm	100 rpm	120 rpm	120 rpm	120 rpm	Turbo	120 rpm
	Sport	100 rpm	100 rpm	100 rpm	100 rpm	120 rpm	120 rpm	120 rpm	eMTB	120 rpm
	Tour	100 rpm	100 rpm	100 rpm	100 rpm	120 rpm	120 rpm	120 rpm	Tour	120 rpm
	Eco	90 rpm	90 rpm	90 rpm	90 rpm	120 rpm	120 rpm	120 rpm	Eco	120 rpm
Support up to		25 km/h ***		25 km/h ***		25 km/h ***		45 km/h	25 km/h ***	
Operating temperature *		–5 °C ... 40 °C		–5 °C ... 40 °C		–5 °C ... 40 °C			–5 °C ... 40 °C	
Storage temperature		–10 °C ... 50 °C		–10 °C ... 50 °C		–10 °C ... 50 °C			–10 °C ... 50 °C	
Type of protection **		IP54		IP54		IP54			IP54	
Weight		approx. 2.9 kg		approx. 3.2 kg		< 4 kg			< 4 kg	
Bike lights		Voltage: approx. 12 V Maximum output: 17.4 W front light; 0.6 W rear light		Voltage: approx. 12 V Maximum output: 17.4 W front light; 0.6 W rear light		Voltage: approx. 6/12 V (switchable) Maximum output: 8.4/17.4 W front light; 0.6/0.6 W rear light			Voltage: approx. 6/12 V (switchable) Maximum output: 8.4/17.4 W front light; 0.6/0.6 W rear light	

* Outside this temperature range, support is reduced or interrupted ** With all plug connections or blanking plugs fitted on the plugs; not proofed against water jets! *** Taking into account the permitted tolerance limits

BOSCH eBIKE ABS

Re-inventing safety: Bosch eBike ABS

NEW

The first Bosch eBike ABS

- First production-ready anti-lock braking system for pedelecs
- Bosch has been an expert in ABS systems and a market leader in motorbike safety systems for over 40 years

Why ABS on the eBike? Why front wheel ABS?

- Hydraulic disc brakes have become stronger over the years. Many riders avoid using the front brake for fear of being thrown over the handlebar or loss of riding stability
- 65 % of eBike accidents are so-called solo accidents (without the involvement of third parties), 49 % of which are caused by rider errors in which the influence of the brakes plays a key role*
- Even in the event of accidents involving third parties, the front wheel brake is often used inadequately or incorrectly **
- Investigations by Bosch Accident Research ** showed that 25 % of all accidents could be prevented by ABS or that the severity of the accidents could be reduced
- The risk of falling due to a blocked front wheel is 7 times higher compared to accidents caused by a blocked rear wheel*
- In summary, the rider will benefit from:
  - Worry-free, more active and more effective use of the front brake (thus generally enabling shorter braking distances to be achieved)
  - Greater stability and improved control

* Source: Maier, Pfeiffer et al - Empirical Survey on Bicycle Accidents to estimate the Potential Benefits of Braking Dynamics Assistance Systems (2015)

** Source: Bosch Accident Research: German In-depth Accident Study (GIDAS), Master's thesis: C. Müller

Target groups

- Purchasers of eBikes for trekking/touring, city use
- Riders
  - who use their bike frequently or who commute by bike (and therefore frequently find themselves in critical riding situations)
  - who have already had an accident and who therefore have reservations/fears

Tips for providing advice/demonstrating Bosch eBike ABS

- Ask customers which critical brake situations they have already experienced/know about
  - → In most cases, the answers will identify two basic problems:
    - Skidding of the front wheel
    - Behaviour of the bike in overrun
  - → Tell the customer that this is precisely the starting point for ABS and these problems can usually be reduced by ABS
  - → The customer can now reflect on the clear benefits of ABS through his own experiences
- The experiential character of ABS is extremely important for the purchasing decision, so:
- provide an ABS system for extensive testing in an outdoor area – ideally with different types of surface (e.g. sand, gravel, etc.)
- The opportunity for a test ride is particularly relevant for sceptical potential purchasers
- Alternatively, show the Bosch eBike ABS video:

bosch-ebike.com →Products → ABS → View video

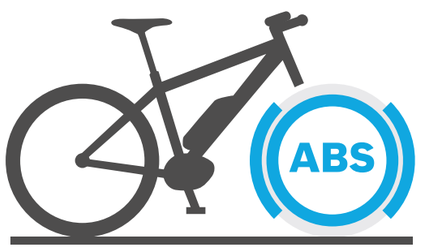
Bosch eBike ABS basic functions

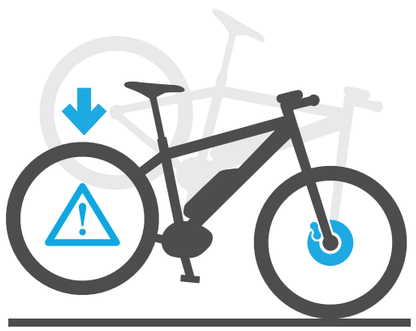
Front wheel ABS

- The front wheel is crucial for the driving stability of the eBike. In addition, the front wheel brake provides significantly better braking than the rear brake (higher wheel load higher friction better deceleration)
- Bosch eBike ABS reduces the risk of the front wheel skidding on loose, wet and slippery surfaces or surfaces with varying surface conditions
- High-resolution wheel speed sensors on the front and real wheel monitor the speed of both wheels
- If the front wheel is on the verge of locking when the brake is applied too forcefully, the ABS control unit regulates optimum brake pressure
  - → This improves the control and stability of the eBike

Intelligent rear wheel lift control

- Reduced risk of rear wheel lift on non-slip surfaces, when the brake is applied very forcefully (in emergencies) and on downhill gradients
- Wheel speed sensors use sudden changes in the wheel speed to detect wheel lift
  - → ABS control unit briefly regulates and controls the brake pressure on the front wheel
  - → The rear wheel quickly regains contact with the ground, reducing the probability of overrun





The Bosch eBike ABS in everyday use

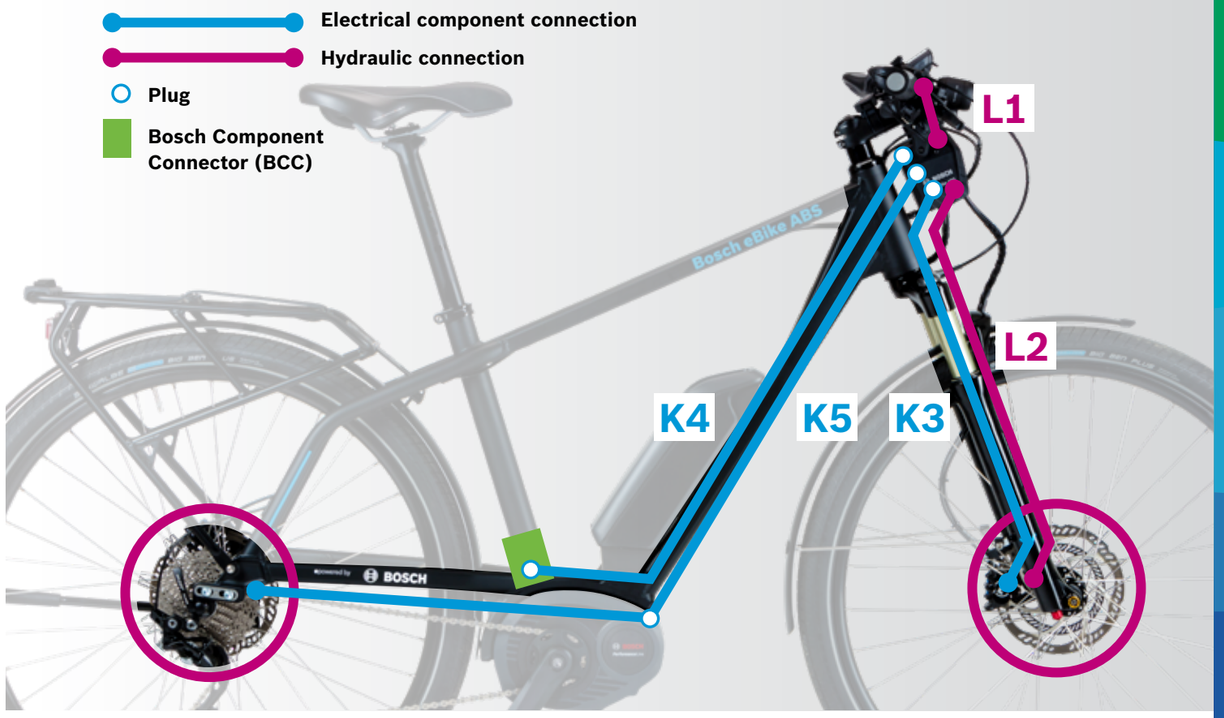
Details of the mode of operation

- The ABS control light comes on when the Bosch eBike system is switched on and the Bosch eBike ABS performs a system test
  - → Once the light goes out Bosch eBike ABS is active (as soon as the bike first reaches a speed of approx. 6 km/h)
  - → If the light does not go out, an error has occurred (ABS diagnosis with DiagnosticTool see p. 135, error codes starting from p. 187)
- Bosch eBike ABS has no noticeable effect on the range, as it is only active in emergency braking situations
- The Bosch eBike ABS, like the light and on-board computer also runs in backup mode and only switches off when the battery is completely exhausted
  - → The end of backup mode is indicated by an ABS control light flashing briefly
- Bosch eBike ABS is active in all riding modes when the eBike is switched on and cannot be switched off
- A fault in the Bosch eBike ABS will not impair the standard brake function
- In extreme riding situations, it can happen that the Bosch eBike ABS cannot take control until the wheel stops
  - → Briefly releasing the front brake allows the ABS function to be re-used

Information for the rider

- Disc brakes require a braking time; the braking force increases continuously (applies even after the brake pads/disc have been replaced)
- Riding style must always be adapted to environmental conditions and riding skill, even when using Bosch eBike ABS
- The usual braking behaviour can be maintained. However, it is possible to use the front wheel brake more forcefully/effectively in most situations
- Bosch eBike ABS was mainly developed for riding in a straight line. The greater the steering angle (the smaller the radius of curvature), the less support the Bosch eBike ABS can provide
- Additional loads that change the centre of gravity of the eBike to a significant extent may alter the braking performance of the Bosch eBike ABS and reduce its effectiveness
- Avoid front-loading when using components such as a basket or child seat

- A fault in the tyre can be repaired by the rider
- Only use original parts. No other brakes/ brake pads/brake discs are permitted
- Brake components and the ABS control unit may only be vented and replaced by trained specialist personnel



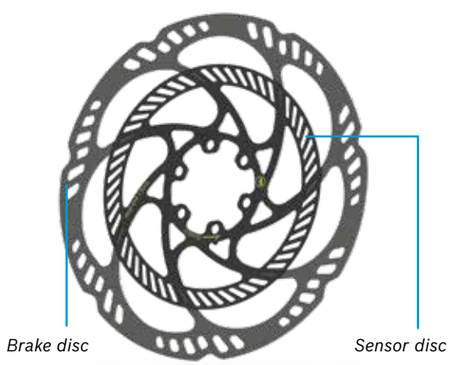
Components and maintenance

Compatibility

- Only for 28 inch trekking/city bikes
- Compatible with all Bosch product lines, not compatible with eShift solutions or COBI.Bike products
- Cannot be retrofitted

Components

- Bosch eBike ABS control unit ❶
- ABS control light ❷
- ABS wheel speed sensors ❸
- CMe ABS hydraulic disc brakes from Madura: Brake handle ❹ and sensor disc plus brake disc ❺
- Complete set weighs approx. 800 grams

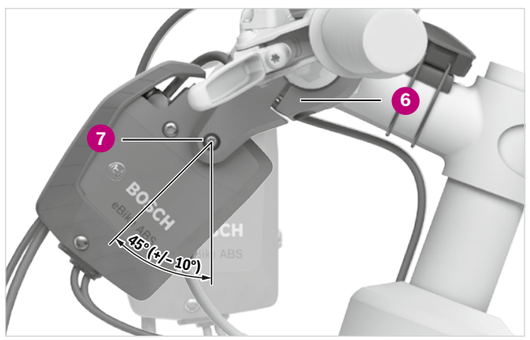


Information about maintenance

- Bosch eBike ABS is generally maintenance-free; however it is advisable to check brake function during visits to the workshop

Instructions for venting the Magura CMe brake can be found at magura.com → Magura Performance Components → Tech Center

Before venting, twist the ABS control unit forward by 45° (± 10°) (see Figure). To do this, loosen the terminals on the handlebar ❻ or on the ABS housing ❼ slightly



NEW Functional test of the ABS wheel speed sensors with diagnostic tool (see p. 136)

Cables and lines

- 12 V power supply via the Bosch Component Connector (BCC)
- **Hydraulic line L1:** Front wheel brake handle for Bosch eBike ABS control unit
- **Hydraulic line L2:** Bosch eBike ABS control unit for front wheel brake calliper

Must not be shortened

- **Electrical component connection (cable) K3:** Bosch eBike ABS control unit for front wheel speed sensor
- **Electrical component connection (cable) K4:** Bosch eBike ABS control unit for Bosch Component Connector (BCC)
- **Electrical component connection (cable) K5:** Bosch eBike ABS control unit for rear wheel speed sensor
- **Other electrical cables:**
  - Bosch eBike ABS control unit for control light
  - Y cable for connecting rechargeable battery to Bosch Component Connector (BCC)

eSHIFT

eShift Solutions at a Glance

The electronic solution for integrated gear shifting

- Technological partnerships with leading gearshift manufacturers enviolo, Rohloff and Shimano have made it possible to integrate the gear-shifting function in the eBike system
- Data exchange between the components allow perfectly coordinated and optimised gear shifting
  - More safety due to complete concentration on riding
  - More riding comfort due to the barely noticeable, smooth and fast gear shifting
  - Reduced stress on the components
  - Optimal utilisation of battery capacity because it is always possible to ride in the optimum gear range (see also p. 84)

Videos with descriptions of the functions of the individual eShift systems under bosch-ebike.com → Products→ eShift

	SHIMANO		enviolo	Rohloff
	Shimano Nexus Di2 + Alfine Di2	Shimano XTR Di2 + Deore XT Di2	NuVinci Optimized enviolo Automatic+	Rohloff E-14 Speedhub 500/14
Shift method	Automatic, alternatively manual	Manual	Automatic, alternatively manual (9 speeds)	Manual (14 speeds)
Shifting system	Hub gear system	Derailleur system	Hub gear system	Hub gear system
Gear ratio	Defined gears	Defined gears	Variable gear ratio	Defined gears
Compatibility	▶ Active Line, Active Line Plus, Performance Line Cruise, Performance Line CX ▶ Intuvia, Kiox, Nyon NEW Compatible with DualBattery and PowerTube	▶ Active Line, Active Line Plus, Performance Line Cruise, Performance Line CX ▶ Intuvia, Kiox, Nyon NEW Compatible with DualBattery and PowerTube	▶ Active Line, Active Line Plus, Performance Line Cruise/Speed, Performance Line CX ▶ Intuvia, Kiox, Nyon NEW Compatible with DualBattery and PowerTube	▶ Active Line, Active Line Plus, Performance Line Cruise/Speed, Performance Line CX ▶ Intuvia, Kiox, Nyon NEW Compatible with DualBattery and PowerTube
Functional principle	Automatic gear change based on speed, cadence and pedal force	Electronic shift system, manual control over gear selection specifically designed for sporty riding	Automatic gear change based on the rider's preferred cadence	Manual gear selection with quiet, nearly maintenance-free hub gears
Product features	▶ Auto-downshift: if the eBike is stopped, the system shifts automatically to a preset starting gear ▶ Smart system (for manual gear shifting in automatic mode) adjusts gear shifting to the individual rider's riding style	▶ Quick, precise gear changes ▶ Brief throttling of the motor during the gear shifting operation ▶ Shift recommendation feature for the best gear ratio	▶ Stepless gear ratio based on the rider's preferred cadence: – Active Line, Active Line plus: 30-100 rpm – Performance Line Cruise/Speed, Performance Line CX: 30-120 rpm ▶ Riding with a steady load and always with the best possible gear ratio, even on gradients	▶ Reliable hub gear, designed for maximum mileage ▶ Up to 526 % gear spread ▶ Integrated multishift function for fast gear changes ▶ Auto-downshift: if the eBike is stopped, the system shifts automatically to a preset starting gear

SHIMANO Di2 hub gear system with Intuvia

Gear change

- **In manual mode:** select the gear with the Shimano gear lever on the handlebar
  → The newly selected gear is briefly shown on the display
- **In automatic mode:** When the gear shift lever is used, the bike will shift to the new gear, but automatic mode will remain active
- Switch from manual to automatic mode, see the Shimano operating instructions
- Function display ***Auto: on/off*** indicates whether automatic mode is switched on or off

In the case of a new bike that has not yet been ridden, the gears are learned the first time they are used. The automatic gear shifting system switches first to the highest gear during initial use and then through all gears once

Adjust Start Gear

If the eBike is brought to a stop from a speed of more than 10 km/h, the system can automatically switch back to a set starting gear:

1. Continuously press [Reset] and [i] at the same time until you see ***Settings***
2. Repeatedly press the [i] button until you see ***Start Gear***
3. Set the starting gear using [+] and [–]

- In the **––** position, the automatic function for shifting to starting gear is switched off

Highest start gear:
– 8-gear hub: 5th gear
– 11-gear hub: 7th gear

Gear adjustment

Fine adjustment of the Shimano Di2 in the event of unusual noises:

1. Hold down [Reset] and [i] at the same time until you see ***Settings***
2. Repeatedly press the [i] button until you see ***Gear adjustment***
3. Perform fine adjustment using the [+] and [–] buttons according to the Shimano operating manual

SHIMANO Di2 hub gear system with Kiox

Gear change

- select the gear with the Shimano gear lever on the handlebar
  → The start screen always indicates when a new gear is used (**M** = Manual, **A** = Automatic), otherwise a new gear is briefly displayed

In the case of a new bike that has not yet been ridden, the gears are learned the first time they are used. The automatic gear shifting system switches first to the highest gear during initial use and then through all gears once

Adjust Start Gear

If the eBike is brought to a stop from a speed of more than 10 km/h, the system can automatically switch back to a set starting gear:

1. Use the [>] and [<] buttons to select the ***Settings*** menu
2. **Select *My eBike* → *eShift***
3. Select ***Start Gear***
4. Set the starting gear using [+] and [–]

Selection via the Quick menu

1. Press the [Selection button] outside the status screen
2. Select ***My eBike* → *eShift*** there
3. Select ***Set st. gear*** (Set start gear)
4. Set the starting gear using [+] and [–]

Highest start gear:
– 8-gear hub: 5th gear
– 11-gear hub: 7th gear

Gear adjustment

Fine adjustment of the Shimano Di2 in the event of unusual noises:

1. Use the [>] and [<] buttons to select the ***Settings*** menu
2. **Select *My eBike* → *eShift***
3. Select ***Adjust gear***
4. Perform fine adjustment using the [+] and [–] buttons according to the Shimano operating manual

Selection via the Quick menu

1. Press the [Selection button] outside the status screen
2. **Select *My eBike* → *eShift***
3. Select ***Adjust gear***
5. Perform fine adjustment using the [+] and [–] buttons

SHIMANO Di2 hub gear system with Nyon

Gear change

- **In manual mode:** select the gear with the Shimano gear lever on the handlebar
  → The newly selected gear is shown on the display
- **In automatic mode:** When the gear shift lever is used, the bike will shift to the new gear, but automatic mode will remain active
- Switch from manual to automatic mode, see the Shimano operating instructions
- When Automatic mode is active an ***A*** appears next to the gear

In the case of a new bike that has not yet been ridden, the gears are learned the first time they are used. The automatic gear shifting system switches first to the highest gear during initial use and then through all gears once

Adjust Start Gear

If the eBike is brought to a stop from a speed of more than 10 km/h, the system can automatically switch back to a set starting gear:

1. ***Settings*** → ***My eBike*** → ***eShift (Shimano)*** → ***Select Starting gear***
2. Set the required starting gear by turning the control to the left or right

Highest start gear:
– 8-gear hub: 5th gear
– 11-gear hub: 7th gear

Gear adjustment

Fine adjustment of the Shimano Di2 in the event of unusual noises:

1. ***Settings*** → ***My eBike*** → ***eShift (Shimano)*** → ***Select Gear adjustment***
2. For the setting range, see the Shimano operating manual

SHIMANO Di2 derailleur system with Intuvia

Gear change

- select the gear with the Shimano gear lever on the handlebar
  → The newly selected gear is briefly shown on the display

Gear recovery

- if the gearing has been moved out of position (e.g. due to an impact on the gearing or a fall), the gear system must be reset:

1. Hold down [Reset] and [i] at the same time until you see ***Settings***
2. Repeatedly press the [i] button until you see ***Gear recovery***

- For further procedure, see the Shimano operating manual

Gear adjustment

Fine adjustment of the Shimano Di2 in the event of unusual noises:

1. Hold down [Reset] and [i] at the same time until you see ***Settings***
2. Repeatedly press the [i] button until you see ***Gear adjustment***
3. Perform fine adjustment using the [+] and [–] buttons according to the Shimano operating manual

SHIMANO Di2 derailleur system with Kiox

Gear change

- select the gear with the Shimano gear lever on the handlebar
  → The start screen always indicates the gear used (**M** = Manual) otherwise a new gear is briefly displayed

Gear adjustment

Fine adjustment of the Shimano Di2 in the event of unusual noises:

1. Use the [>] and [<] buttons to select the ***Settings*** menu
2. ***Select My eBike → eShift***
3. Select Setting ***Adjust gear***
4. Perform fine adjustment using the [+] and [–] buttons according to the Shimano operating manual

Selection via the Quick menu

1. Press the [Selection button] outside the status screen
2. ***Select My eBike → eShift***
3. ***Select* Adjust gear**
   – Perform fine adjustment using the [+] and [–] buttons

SHIMANO Di2 derailleur system with Nyon

Gear change

- select the gear with the Shimano gear lever on the handlebar
  → The gear is always shown on the display

Gear recovery

- if the gearing has been moved out of position (e.g. due to an impact on the gearing or a fall), the gear system must be reset. Select ***Settings → My eBike → eShift (Shimano) → Gear recovery***
- For further procedure, see the Shimano operating manual

Gear adjustment

Fine adjustment of the Shimano Di2 in the event of unusual noises:

1. ***Settings → My eBike → eShift (Shimano) → Select Gear adjustment***
2. For the setting range, see the Shimano operating manual

enviolo NuVinci Optimized enviolo Automatic+ with Intuvia

Adjust cadence

1. Press the [i] button for more than 1s to access the NuVinci menu
2. If necessary, switch between NuVinci gear and NuVinci cadence by pressing the [i] button
3. Press [+] and [–] to increase or reduce the cadence

▶ Hold down the buttons to change the cadence in increments of 5 gears

Setting the gear

1. Press the [i] button for more than 1s to access the NuVinci menu
2. If necessary, switch between NuVinci cadence and NuVinci gear by pressing the [i] button
3. Press [+] and [–] to increase or reduce the gear

Gear calibration

Calibration of the stepless gear

1. Hold down [Reset] and [i] at the same time until you see ***Settings***
2. Repeatedly press the [i] button until ***Gear Calibration*** is displayed
3. Press the [Bike lights] button and follow the instructions

▶ This may also be necessary during the journey if an error occurs

enviolo NuVinci Optimized enviolo Automatic+ with Kiox

Adjust cadence

1. Press the [Selection button] outside the status screen
2. Navigate to ***eShift cadence***

▶ Kiox saves the last selection. The next time you open the ***Settings*** menu, the ***eShift cadence*** option appears immediately

3. Use the [+] and [–] buttons to select the cadence

Gear calibration

Calibration of the stepless gear

1. Use the [>] and [<] buttons to select the ***Settings*** menu
2. ***Select My eBike → eShift***
3. Select the ***Calibration*** menu item
4. Follow the instructions on the display

▶ This may also be necessary during the journey if an error occurs

enviolo NuVinci Optimized enviolo Automatic+ with Nyon

Adjust cadence

1. ***Select Settings*** → ***My eBike*** and then ***eShift (NuVinci H|Sync)***
2. ***Select Automatic*** cadence in order to activate Automatic mode
3. Press [+] and/or [–] on the control unit to increase or reduce the required cadence

▶ Alternatively, hold down the buttons to change the cadence in increments of 5 gears

→ The cadence is always shown on the display

Setting the gear

1. ***Select Settings*** → ***My eBike*** and then ***eShift (NuVinci H|Sync)***
2. ***Select Gear Control***
3. Press [+] and/or [–] on the control unit to increase or reduce the gear

→ The gear is shown on the display

Gear calibration

Calibration of the stepless gear

1. ***Select Settings*** → ***My eBike*** → ***eShift (NuVinci H|Sync)***
2. Follow the further instructions on the display

▶ This may also be necessary during the journey if an error occurs

Rohloff E-14 Speedhub 500/14 with Intuvia

Gear change

▶ Select the gear with the Rohloff Speedhub gear lever on the handlebar

▶ Multishift function: Hold down the gear lever to shift the gear in increments of three gears until the smallest/largest gear is attained

→ The newly selected gear is briefly shown on the display

Adjust Start Gear

If the eBike is brought to a stop from a speed of more than 10 km/h, the system can automatically switch back to a set starting gear:

1. Hold down [***Reset***] and [***i***] at the same time until ***Settings*** is displayed
2. Repeatedly press the [***i***] button until ***Start Gear*** is displayed
3. Set the starting gear using [***+***] and [***–***]

▶ In the ***––*** position, the automatic function for shifting to starting gear is switched off

E-14 Speedhub 500/14 with Kiox

Gear change

- Select the gear with the Rohloff Speedhub gear lever on the handlebar
- Multishift function: Hold down the gear lever to shift the gear in increments of three gears until the smallest/largest gear is attained
  → The start screen always appears on the start screen, otherwise a new gear is briefly displayed

Adjust Start Gear

If the eBike is brought to a stop from a speed of more than 10 km/h, the system can automatically switch back to a set starting gear:

1. Use the [>] and [<] buttons to select the ***Settings*** menu
2. ***Select My eBike → eShift***
3. Setting ***Start Gear***
4. Set the starting gear using [+] and [–]

Selection via the Quick menu

1. Press the [Selection button] outside the status screen
2. ***Select My eBike → eShift***
3. ***Def. Start Gear*** (Set start gear)
4. Set the starting gear using [+] and [–]

- In the **––** position, the automatic function for shifting to starting gear is switched off

E-14 Speedhub 500/14 with Nyon

Gear change

- Select the gear with the Rohloff Speedhub gear lever on the handlebar
- Multishift function: Hold down the gear lever to shift the gear in increments of three gears until the smallest/largest gear is attained
  → The gear is always shown on the display

Adjust Start Gear

If the eBike is brought to a stop from a speed of more than 10 km/h, the system can automatically switch back to a set starting gear:

1. ***Select Settings → My eBike → eShift (Rohloff eShifter)***
2. ***Start Gear***
3. Set the required starting gear by turning the control to the left or right.
4. Use the joystick to mark Adjust ***Start Gear*** and move it left or right to set the required starting gear

DIAGNOSTICS

DiagnosticTool at a glance

Scope of functions

- Optimise the functionality and stability of Bosch eBikes through software updates (starting from Classic+ Line)
- Diagnose the eBike System
- Create diagnostic reports for the traceability of completed work and for faster assistance by the Bosch eBike Service team
- Adjust configuration data and configure the eBike according to customer requirements
- Configure service intervals
- Remote diagnostics: Correct configuration data from the bicycle manufacturer (e.g. application ID)
- Installation of map materials on Nyon

NEW Final deactivation of defective batteries

NEW Tampering detection

NEW Functional test of the ABS speed sensors

NEW Diagnostics and software update for the Fast Charger

Prerequisites for use

1. Ensure that system requirements are met (see p. 153)
2. Attendance at a Bosch eBike training program or participation in online training to purchase a certificate
3. Order the DiagnosticKit (DiagnosticDongle + USB cable) in the dealer online stores
4. Registration on the Bosch eBike dealer portal bosch-ebike.net → Service → Diagnosis

Always keep the software of the DiagnosticTool up to date to ensure you can also use new functions

Online training for the DiagnosticTool and CapacityTester: bosch-ebike.net → Know&Learn → Online-Training

CapacityTester at a glance

Scope of functions

- Additional diagnostic tool for Bosch eBike batteries which is controlled by the DiagnosticTool
- Measurement of the energy content of batteries starting from Classic+ Line using controlled discharge
- Diagnose an eBike battery

NEW Winter storage: Preparing batteries for longer storage periods

NEW Evaluation of measurement results in a warranty context, based on determined parameters, date of purchase and type of use

Guarantee requirements for Bosch eBike batteries: bosch-ebike.net → Service → Diagnosis → CapacityTester → Current guarantee requirements

Prerequisites for use

1. Purchase the DiagnosticKit and download the DiagnosticTool
2. Order the CapacityTesters in the dealer online stores. Scope of delivery: Plug-in power adaptor, power cable, country-specific adapter, USB cable, adapter for Classic+ Line PowerPacks (blue)

Always keep the software of the CapacityTester up to date to ensure you can also use new functions

Start DiagnosticTool

1. Make sure that the eBike battery is sufficiently charged (at least one LED lit, respectively, 20 % energy capacity)
2. Insert the DiagnosticDongle into a USB port on the computer
3. Start the DiagnosticTool on the computer

→ The Home screen appears

4. Use the supplied USB cable to connect the on-board computer to a USB port on the computer

→ The eBike system switches on automatically

→ DiagnosticTool detects the connected eBike system and connects all components step-by-step

- Use of the original diagnostics cable prevents interference and damage
- Do not insert or remove the battery while the eBike is connected to DiagnosticTool

During the first use of the DiagnosticTool, first select individual Configuration in the ***Settings*** menu (see p. 144)

User interface overview

- A Menus (Configuration, Service, Maps, Settings, Support)
- B Software version of DiagnosticTool
- C Status of action currently executing
- D Identification of the connected eBike system
  - eBike ID (bike manufacturer-specific identification number)
  - eBike product line and product code
  - Application ID (application ?) of the eBike

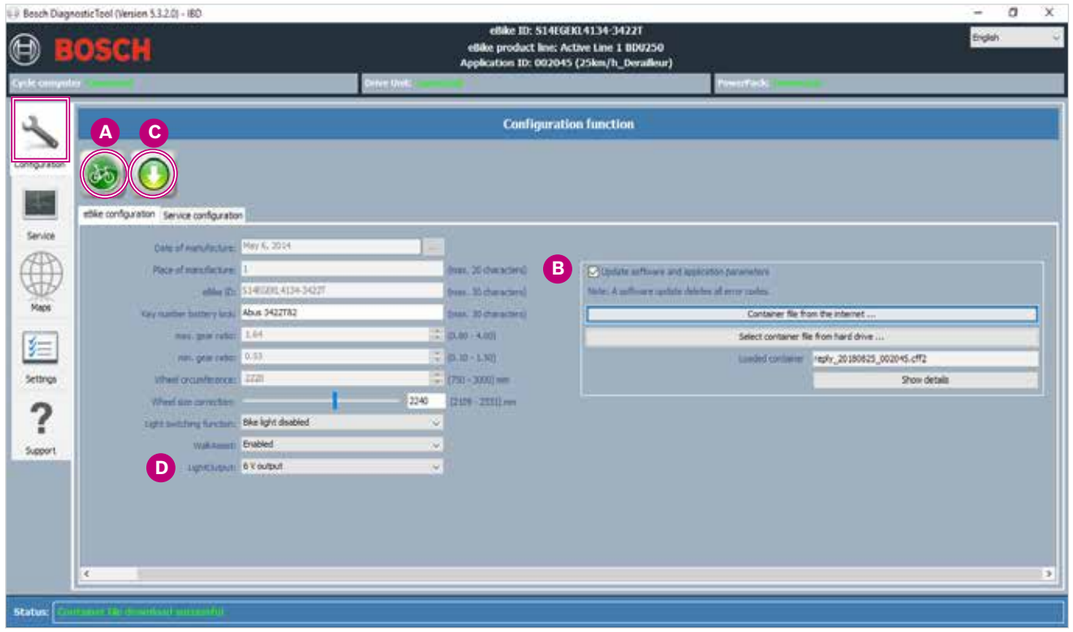
    NEW Additional details:
    - eBike gear shifting system type
    - Warning if there is no eBike programming available
- E Current connection status to the eBike components

  NEW "Programming in progress" displayed instead of "FBL" during software update
- F Language settings

Application

Application software that bike manufacturer installs on eBike. This is brand-specific and is adapted to the equipment on the eBike (e.g. derailleur or hub gear system). The application determines the riding style and may include country-specific configurations. For the purposes of a software update of the eBike, the individual product software versions are brought together in one container.

Configuration menu



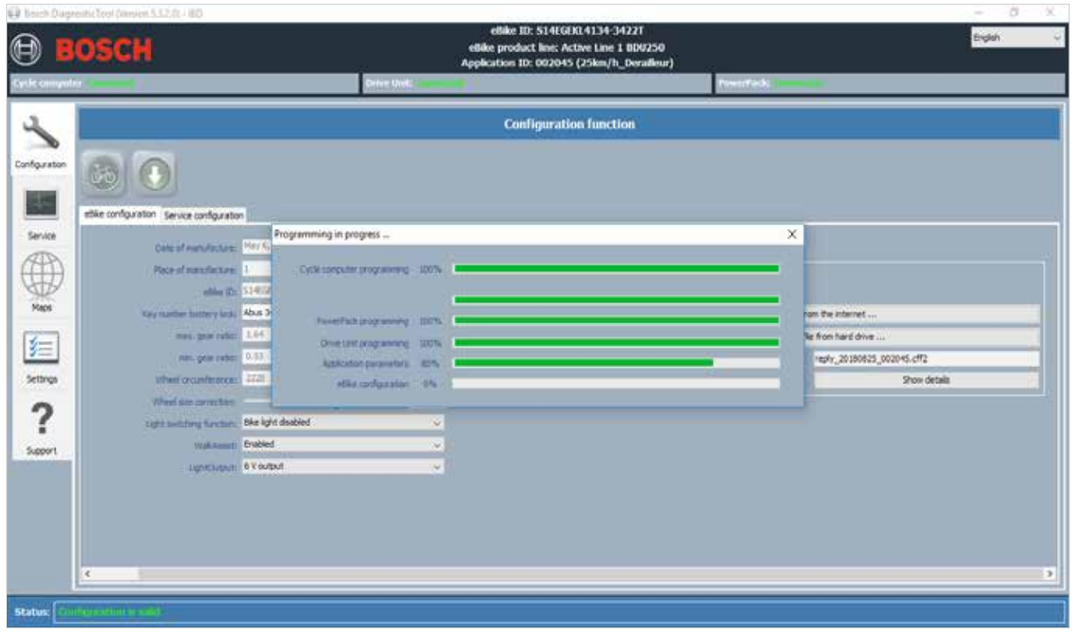
Read out the eBike configuration data

- ▶ This takes place automatically when the Diagnostic-Tool is started
- ▶ Click the button with the bicycle icon Ⓐ to start the process manually

Adjust the eBike configuration data

1. Make your desired changes here (fields that cannot be changed are greyed out)
2. Make sure that the ***Perform software and application parameter update*** Ⓑ " box is not activated
3. Click the button with the green arrow Ⓒ
- → Changes are transferred to the eBike
4. Turn the eBike system off and on again once to finally apply changes
- ▶ **Configuration options:**
  - – Battery lock key number
  - – Wheel size correction* by a maximum of +/– 5 %
  - → Only corrects the speed display. The legally stipulated shutdown speed is not influenced here
  - – Light switch function (bike lights) permanently enabled by eBike battery in Performance Line Speed
  - – Voltage supply for the light output Ⓓ 6 V/12 V (starting from MY 2017, see p. 220)

    If switching to 12 V, first check the front light and rear light for compatibility
  - – Walk assistance (cannot be deactivated with Performance Line Speed)
  - – Display language and units for Intuvia
  - – Auto-Down-Shift function on eBikes with eShift (starting from p. 110)



Manual update of the eBike software

1. Make sure an active Internet connection exists
2. Activate the check box ***Perform software and application parameter update***
3. Click on the ***Get container file from Internet*** button
4. Select whether the container is to be saved on the computer or transferred directly to the eBike
- → The container is downloaded
- → If the container contains several applications (eMTB mode, for example), the corresponding selection dialogue appears
5. Click the ***Show details*** button in order to display information on the software versions contained in the container file
6. Click on the button with the green arrow to transfer the software update to the eBike
- → The currently programmed component is displayed in the status bar
7. Click on the ***Done*** button after the transfer is completed
8. Turn the eBike system off and on again once to finally activate the software update on the eBike

Always update eBikes with Nyon always using Intuvia (due to the size of the container file for Nyon). This will speed up the update

NEW **eMTB mode on Performance Line CX**
Three different applications are available: Sport, eMTB and eMTB crank length < 165 mm

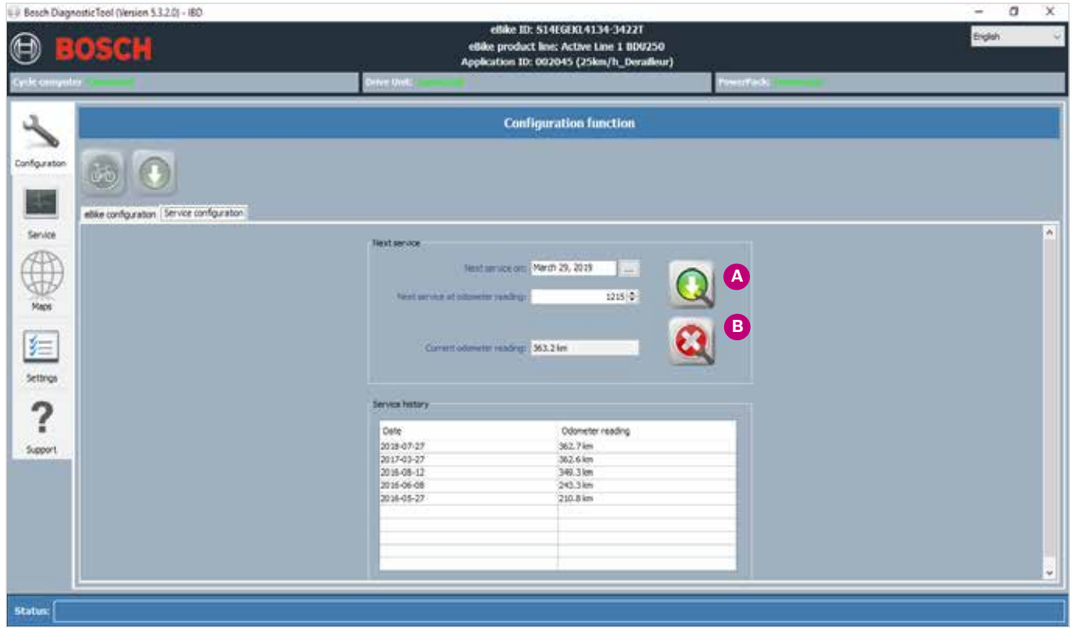
Prerequisite: update the Drive Unit software

When the application is changed, all statistical values of the Drive Unit are reset

- ▶ When updating PowerPacks with software version older than MY 2017 for eBikes with DualBattery: update the PowerPacks one-by-one in sequence

* except Classic+ Line

Configuration menu



Individual updates for Intuvia/Nyon

- ▶ This is especially useful if the last update of the eBike/on-board computer was a long time ago

1. Charge the Nyon to at least 85 %
2. Connect the on-board computer to a PC via the USB cable for diagnostic purposes
3. Start the DiagnosticTool on the computer
4. Perform the update as described on page 133

Nyon can also be updated via Wi-Fi (see p. 35). Personal data and saved map material remain saved

Restoring Kiox/Nyon

- ▶ In some cases, it may be helpful to re-load the Kiox/Nyon software

1. Connect the on-board computer without the eBike to a PC
2. In the ***Configuration*** menu, click on the ***eBike configuration*** tab under ***Perform software and application parameter update*** Activate the ***Cycle computer recovery*** checkbox
3. Confirm recovery

→ All settings, the user profile and the maps on Nyon will be deleted (tip: make a note of the map status before hand)

Perform service configuration

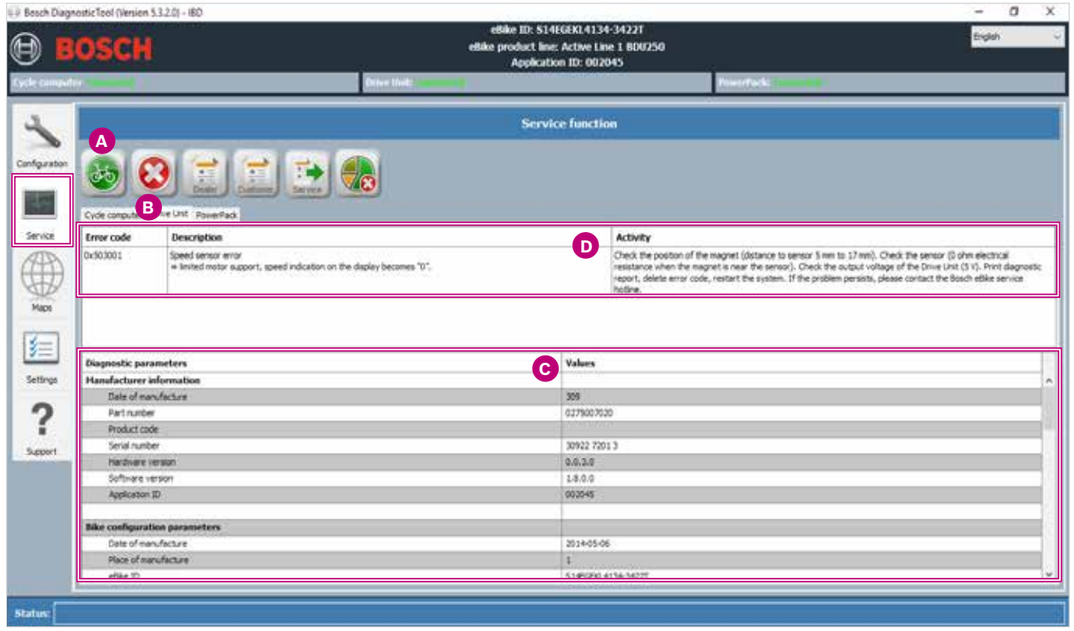
- ▶ Set the service interval according to date and/or mileage (only possible in Purion after the mileage has expired)

→ Message in the on-board computer display when due

- ▶ Service interval can be removed with the ***Delete*** Ⓑ button
- ▶ After service is complete, enter the data for the next service
- ▶ Click on the button with the green arrow Ⓐ to save the entries on the eBike

→ The current date and mileage are transferred to service history

Service menu



eBike diagnostics

1. Click the ***Read configuration from eBike*** Ⓐ button
2. To select the desired system component, select the corresponding tab Ⓑ.
   On eBikes with DualBattery, a second PowerPack tab is displayed. Assignment indicated by number of flashing LEDs (Battery 1/Battery 2).
3. Diagnostics parameters/values are display Ⓒ.
   In addition, error codes, a description of the errors and instructions for correcting it are displayed Ⓓ, if available

The display of an error code is an indication of a possible malfunction caused, for example, by:

– Communication problem of eBike software

– Error of software/hardware

The cause is often remedied in a few steps; it is not always necessary to exchange component

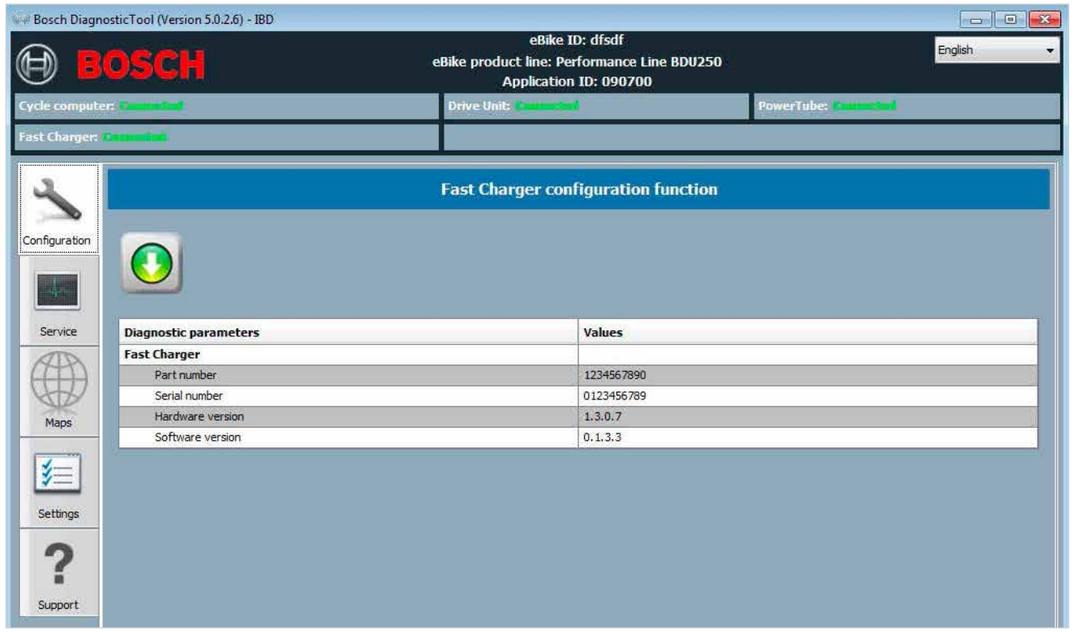
NEW ***Max. charging current*** battery parameter: Indicates whether a battery can be charged with Fast Charger (6 A). Otherwise a maximum of 4 A is possible

NEW Average **energy consumption per km** in riding statistics

NEW **Tampering detection** for Drive Units with software starting from MY 2019: Display ***Tampering*** (Yes/No) and ***Number of tampering incidents detected***

NEW Product code parameter (starting from hardware and software for MY 2019)

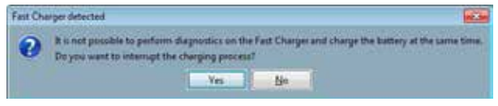
Service menu



NEW Diagnostics and software update for the Fast Charger

- ▶ Prerequisites:
  - – eBike software up to date
  - – Fast Charger connected to eBike and the mains
  - – eBike with 5-pin charging socket starting from MY 2017
  - – A maximum of one battery connected

1. When an eBike with Fast Charger is connected, the following message appears:



2. When you click ***Yes*** the view will switch to the ***Configuration*** menu
3. For the diagnostic procedure see p. 133
4. For the software update procedure see p. 133

- ▶ To update other eBike components, disconnect the Fast Charger from the eBike

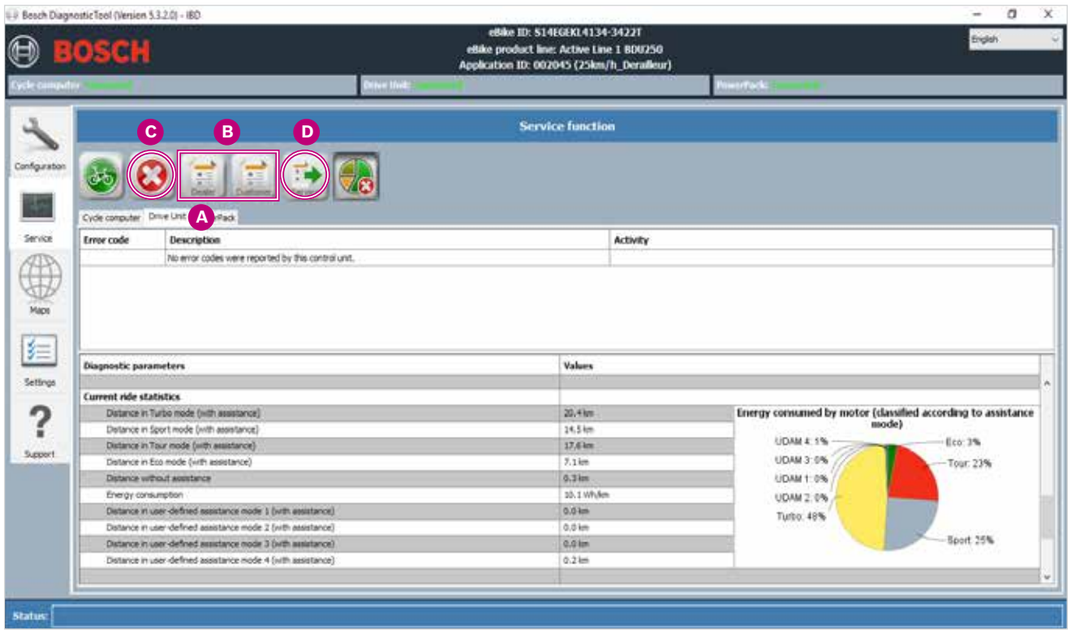
NEW Functional test of the ABS speed sensors

1. In the ***Service*** menu switch to the ***eBike ABS*** tab
2. Make sure that both wheels turn freely. Then turn the front wheel and rear wheel in turn

→ The status of ***Sensor test on front wheel/rear wheel*** will change from ***pending*** to ***successful***

ABS information	
Front brake lever	not activated | 0.09 bar
Front wheel speed	Value unavailable
Rear wheel speed	Value unavailable
Front wheel sensor test	pending
Rear wheel sensor test	pending

3. To reset the test result, click ***Reset sensor test*** or disconnect the eBike



Creation of reports

1. Click the ***Dealer*** or ***Customer*** Ⓑ button to generate the desired report type

→ eBike Diagnostic Report (for dealers, RTF file format) or eBike Service Report (for customers, PDF file format)

2. Select storage location
3. Either accept the suggested file name (eBike ID + date) with/without any additions (e.g. customer name) or modify
4. Save the report file on the computer

- ▶ Save the dealer logo and address details for the eBike Service Report in the ***Settings*** menu (see p. 144)

NEW Information in the eBike Diagnostic Report if the component is in FBL mode during diagnostics

Delete error messages

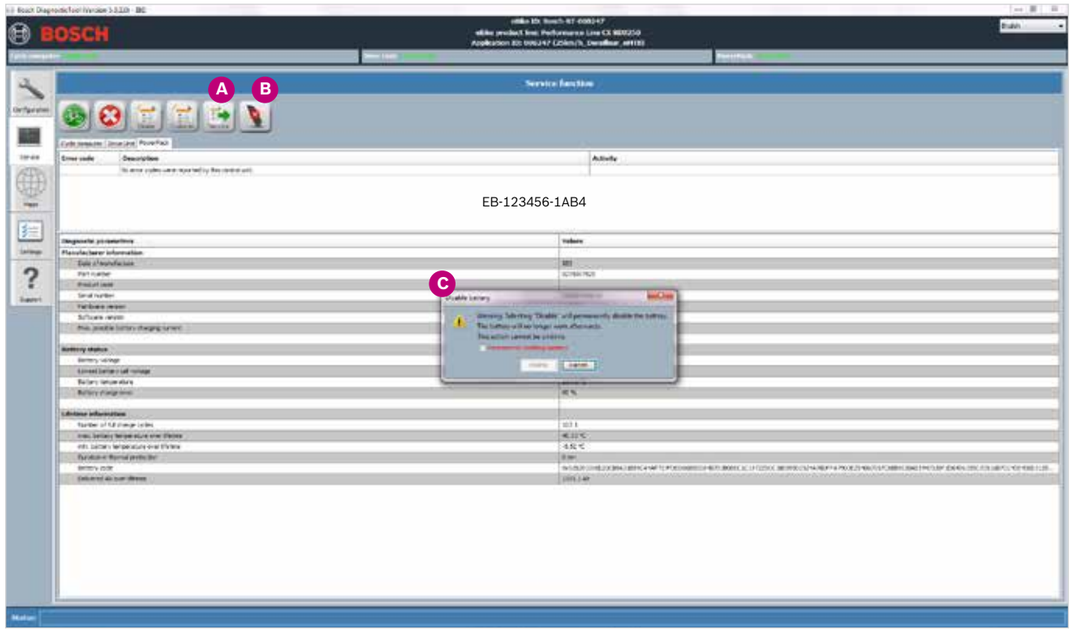
1. Print or save the report
2. Select each tab Ⓐ in succession by clicking it and click the ***Delete error codes in eBike*** Ⓒ button to clear error messages

Delete riding statistics

1. Click on the ***Reset statistical data*** Ⓐ button

→ All saved statistical data will be **irretrievably** deleted

Service menu



NEW Create or expand a service case (introduced in MY 2019)

1. Click on the ***Service*** button
→ The ***Provide report*** window appears
2. Complete in full
→ Some details (if available) are transferred from the ***Settings*** menu
3. When adding to an already existing service case, enter the case number Ⓐ
4. Confirmation that the user has been informed of the transfer of data Ⓑ, enable
5. Click the ***Send report*** Ⓒ button
→ A message including case number appears as soon as the report has been successfully transferred to the Bosch eBike Service Team
→ Additional confirmation by e-mail

NEW Deactivate batteries

- Function only possible with generation 2 batteries and software version from MY 2019 onwards
- In the case of DualBattery, first remove the battery that is not to be deactivated

1. Click on the ***Deactivate battery*** button
→ A dialogue box appears
2. Place a tick in the ***Permanently disabling battery*** checkbox and confirm with ***Disable***
→ The battery will be permanently disabled

Deactivation cannot be reversed

Your Personal eBike Dealer

eBike diagnostic report

08/15/2018, 04:56 PM

Contact person

	Dealer	Owner
Name	Your Personal eBike Dealer	
Address	Bikehügel 15, 75642 Stuttgart	
Phone number	0711/76543210	
E-mail	info@your-personal-ebike-dealer.de	
Website	http://your-personal-ebike-dealer.de	

Editable in programs such as Acrobat Reader

eBike

eBike product line	Active Line	eBike type	Cruise
eBike ID	S14EGEKL4134-3422T	max. support speed	25 km/h
Key number battery lock	Abus 3422T82		

NEW: Details of the PowerPack type

Components

Component type	Nyon	Drive Unit Cruise	PowerPack Frame 400
Part number	1270020907	0275007020	0275007512
Serial number	51924 0120 10	30922 7201 3	55529 0252 02
Software version	1.6.0.2 (Front-End) 1.6.0.2 (Back-End)	1.8.0.0	1.8.0.0

Error codes

Component	Error code	Description
Cycle computer		No error codes were reported by this control unit.
Drive Unit		No error codes were reported by this control unit.
PowerPack		No error codes were reported by this control unit.

Settings

Display unit	see Cycle computer	max. gear ratio	1.64
Language settings	see Cycle computer	min. gear ratio	0.53
Light switch status	Bike light disabled	Wheel circumference	2220 mm
LightOutput	6V	Wheel size correction	2240 mm
WalkAssist	Enabled		

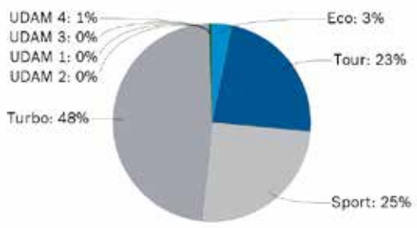
Bosch DiagnosticTool Version 5.3.2.0

epowered by BOSCH

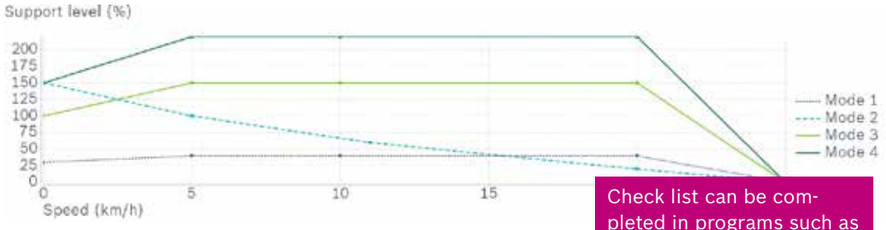
Statistics

Odometer	362.70 km	Battery voltage	40.1 V
Total operating time	410 h	Battery charge level	86 %
Total active operating time (with assistance)	11 h	Number of full charge cycles	24.3
Energy consumption	10.0 Wh/km	min. battery temperature over lifetime	2.59 °C
Distance in Turbo mode	20.2 km	max. battery temperature over lifetime	52.04 °C
Distance in Sport mode	14.5 km	Electrical charge delivered over lifetime	259.3 Ah
Distance in Tour mode	17.6 km		
Distance in Eco mode	7.1 km		
Distance without assistance	0.0 km		
Distance in user-defined assistance mode 1	0.0 km		
Distance in user-defined assistance mode 2	0.0 km		
Distance in user-defined assistance mode 3	0.0 km		
Distance in user-defined assistance mode 4	0.2 km		

Energy consumed by motor (classified according to assistance mode)



User-defined assistance mode



Check list can be completed in programs such as Acrobat Reader

Service log

Component	Activity	OK	not OK	corr.
Cycle computer	Check that the eBike switches on/off at the cycle computer	☐	☐	☐
	Carry out a function test on all buttons	☐	☐	☐
	Check that the cycle computer and display holder are secured properly	☐	☐	☐
	Check contacts on the display holder for corrosion, damage and dirt	☐	☐	☐
	Visually inspect the cables for damage	☐	☐	☐
	Check that the design mask is fitted correctly and is not damaged	☐	☐	☐
	Clear error memory	☐	☐	☐
	Check that the software is up-to-date	☐	☐	☐
Control panel	Check that the control panel is fitted correctly and is not damaged	☐	☐	☐
	Visually inspect the cables for damage	☐	☐	☐
	Carry out a function test on all buttons	☐	☐	☐
Battery	Check that the eBike switches on/off at the battery	☐	☐	☐
	Visually check the battery housing and switch foil for damage	☐	☐	☐
	Visually check and carry out a function test on the battery fixtures and battery lock	☐	☐	☐
	Carry out a function test on the charging socket hatch	☐	☐	☐
	Check contacts and cables for corrosion, damage and dirt	☐	☐	☐
	Clear error memory	☐	☐	☐
	Check that the software is up-to-date	☐	☐	☐
Drive Unit	Check that the design cover is fitted correctly and is not damaged	☐	☐	☐
	Check that the Drive Unit is secured properly to the frame interface	☐	☐	☐
	Check that the crank fixing bolts are tightened properly	☐	☐	☐
	Check contacts and cables for corrosion, damage and dirt	☐	☐	☐
	Visually check and carry out a function test on the chainring holder and lock ring	☐	☐	☐
	Check chainring for wear and damage	☐	☐	☐
	Visually check the chainring housing and retrofit if necessary	☐	☐	☐

Service support

Editable in programs such as Acrobat Reader

eBike error analysis by component cross-swap

When does a cross-swap make sense?

- Error analysis to pinpoint the affected component or to confirm an error
- When using the DiagnosticTool, especially in the following situations:
  - The on-board computer indicates ***USB connected***, however components are displayed in the DiagnosticTool as ***Not connected***
  - No diagnostic values displayed
  - On-board computer control unit does not respond/responds incorrectly to the touch of a button

Identifying the correct component in complaints saves time when recording and processing service cases

Cross-swap procedure

- Possible for: on-board computer, battery,charger, mount and control unit of on-board computer, battery cable, light cable, speed sensor

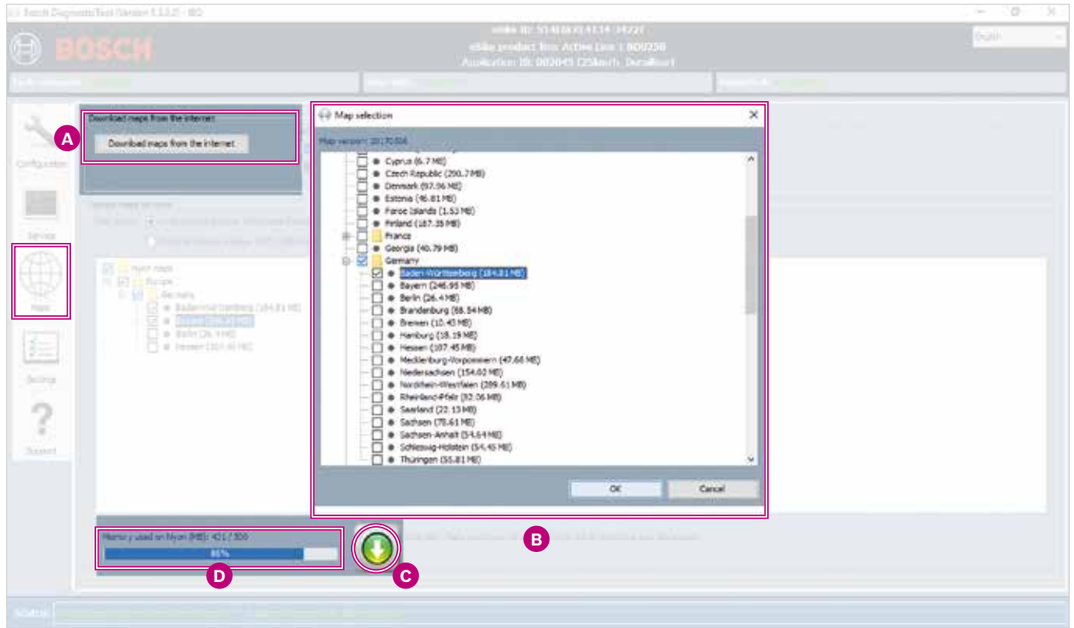
1. If necessary disconnect the eBike from the DiagnosticTool
2. Have another fully functional eBike or corresponding spare parts ready
3. If you suspect a defect in a particular component, start there, otherwise start with the on-board computer or battery
4. Remove the component and replace it with a spare part

- To replace a cable, unscrew the design cover of the Drive Unit, disconnect the plug from the slot and connect a new cable
- When cross-swapping the speed sensor and cable, this must be bolted to the frame and the magnet must be installed in the correct position

5. Perform a new diagnosis/function check
6. **If the error persists:** disconnect the eBike from the DiagnosticTool and continue the cross-swap with the next component

→ **If no more errors are displayed/there are no more malfunctions**: the last component swapped-out is probably defective

Maps menu



Download maps onto the computer and then install on Nyon

1. In the ***Settings*** menu, select the storage location for the maps (see p. 144).
2. Select ***Maps*** by clicking on it
3. Click the ***Download maps from Internet*** Ⓐ button

→ The map selection window appears

4. Select the desired map and click ***OK*** Ⓑ

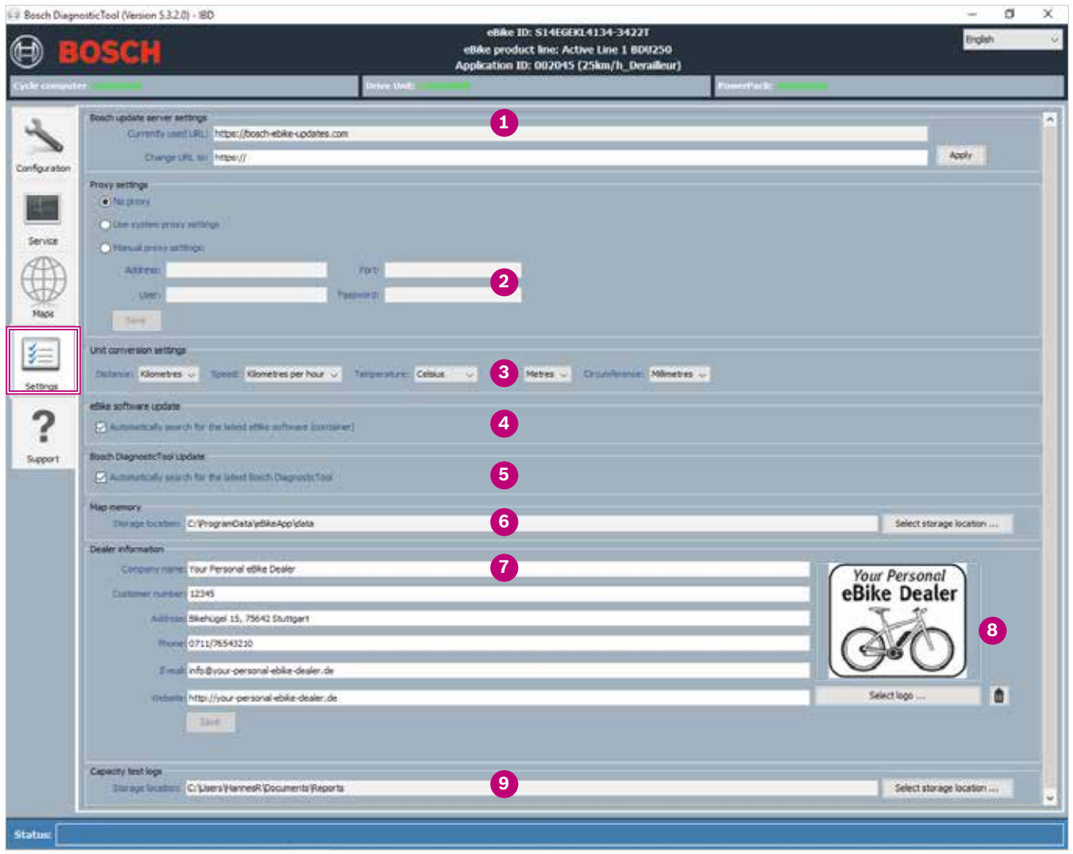
→ Maps are now downloaded and stored at the selected location

5. Connect Nyon with the PC (Nyon does not need to be inserted in the mount)
6. Then click on the button with the green arrow Ⓒ to transfer the maps to Nyon. The button is only active when at least one map is selected and sufficient storage capacity is available on Nyon Ⓐ (maximum storage capacity for maps: 6 GB, Nyon model year 2015: 500 MB)
7. Switch off Nyon and then switch it back on again

→ Map material is available after GPS positioning

- The download may take considerable time depending on the size of the map selected and the Internet speed available. Therefore the map material should first only be downloaded for the home region
- When transferring the maps, all maps previously saved on Nyon are overwritten. To avoid this, install maps via Wi-Fi (see p. 32)

Settings menu



❶ The Internet address for the Bosch Update Server is the default; changes only as directed by the Bosch eBike Service Team

❷ Access data for proxy server (if used)

❸ Country-specific unit conversion (e.g. kilometres or miles)

❹ Check box to automatically determine if the eBike software is up-to-date

After the DiagnosticTool has been started, the check can take a little time

❺ Check box to automatically determine if the DiagnosticTool software is up-to-date

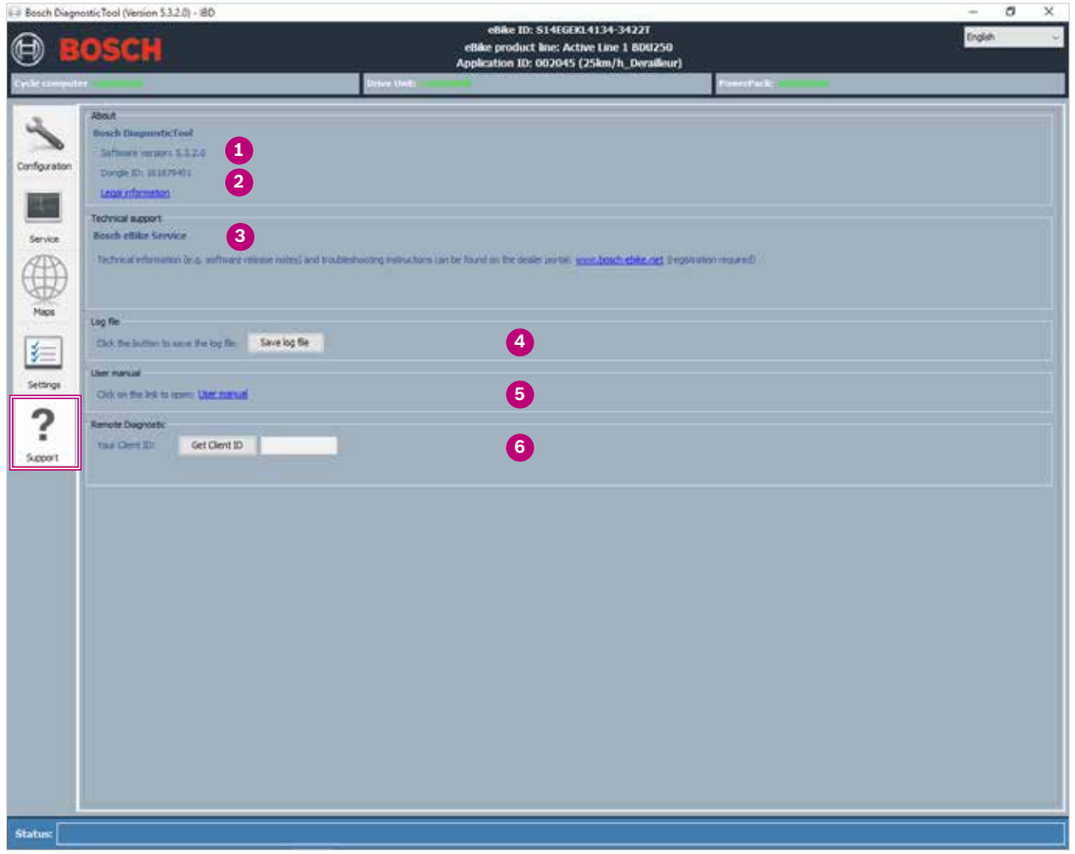
❻ Define storage location for Nyon map material on computer

❼ Option for storing business address and dealer logo (at least 100 x 80 pixels, formats: jpg, jpeg, bmp, tif or png)

NEW The saved company logo can be deleted with the ***Delete*** ❽

❾ Specify storage location for eBike battery capacity report (see p. 150)

Support menu



❶ Software version of DiagnosticTool

❷ Dongle ID

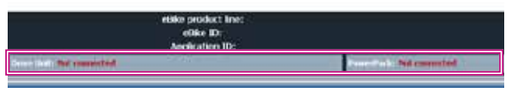
❸ NEW Link to technical information (e.g. for the DiagnosticTool - change documentation for software updates) in the dealer portal

❹ Button for saving a log file

❺ Link to the DiagnosticTool User Manual

❻ Get a client ID for remote diagnostics (see p. 148)

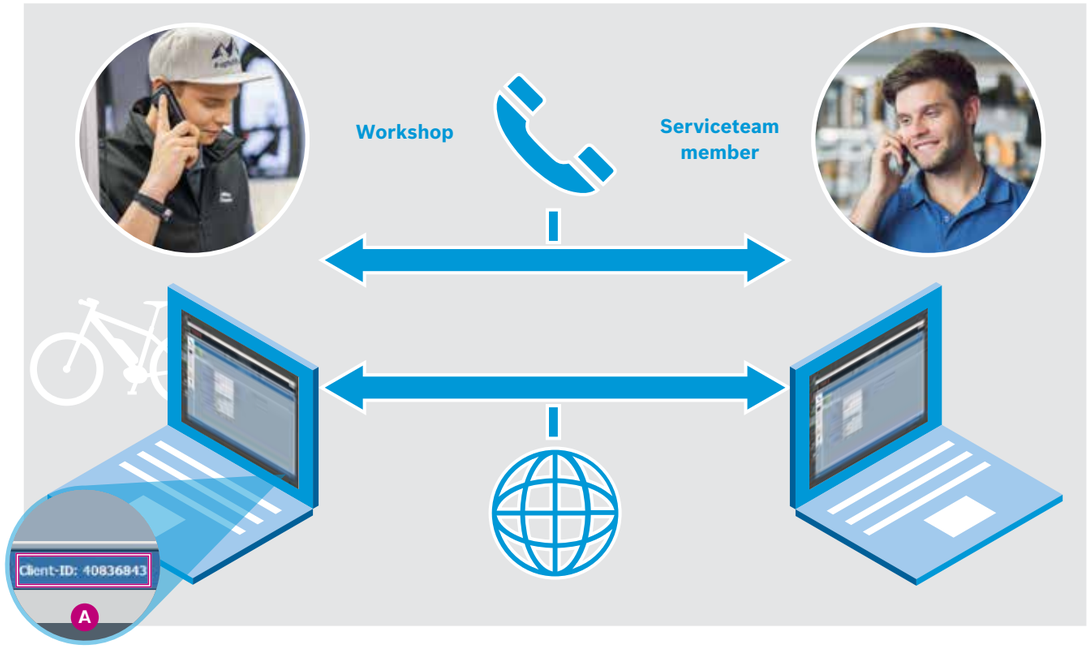
Remedy problems when using the DiagnosticTool

Problem description	Measures
▶ One or more components indicate malfunctions and are continuously displayed in ***FBL mode***. ▶ Function disruptions without any apparent damage to the eBike components → The software of the respective component(s) may not be functional 	1. Make sure that the DiagnosticTool is updated to the most recent version (if required, perform update). 2. Connect the eBike to the DiagnosticTool. If only the on-board computer is involved, connect this directly. 3. Perform a software update,making sure the connection is not interrupted during the process If this does not correct the error: 4. download the software update container again, press key combination CTRL + ALT + A and then confirm the following message with ***OK*** 5. Click on the green arrow button to transfer software update to the eBike or on-board computer → Software will be completely reinstalled **Do not abort the process under any circumstances!** ▶ In the case of Nyon, the process may take 10 minutes or longer ▶ Upload progress may possibly remain at 98 % for a long time → The software of the eBikes/of the on-board computer is reprogrammed. Map material for Nyon must be retransferred. Personal settings are available once again after synchronisation with the smartphone app/online portal
The battery and Drive Unit are not detected when connecting the eBike to the DiagnosticTool 	1. Check cable connections between on-board computer and the Drive Unit and determine whether the on-board computer is correctly attached 2. Carry out a separate update of the on-board computer (see p. 134). 3. After the separate update, insert on-board computer into the mount and perform the eBike update → If the problem persists, carry out a component cross-swap (see p. 142).
The separate Nyon update is interrupted before successful completion	▶ Always use the **Nyon USB A – Micro B 600 mm** USB cable (Order number 1.270.016.364). ▶ Make sure the connection between Nyon and the computer does not pass through the USB hub ▶ Check connection between Nyon and the computer (cable and USB port intact?). ▶ Use a different USB port and, if needed, replace the cable

Problem description	Measures
When updating the eBike, an error code is displayed when downloading the container file from the Internet	▶ Check Internet connection ▶ Check Internet settings. ▶ Check the connection status of eBike components
DiagnosticTool does not connect to the eBike components. ***USB connected*** does not appear on the on-board computer display	▶ Use a different USB port on the computer ▶ Attach a different on-board computer. If this solves the problem, then you may have a defect in the on-board computer ▶ Replace the USB cable
An eBike update is not possible even though all the components are displayed as connected	1. Check the entries in the black status display at the upper edge of the screen of the DiagnosticTool 2. If an entry is missing or the message ***No eBike programming*** appears, contact the bicycle manufacturer

Notes

Remote Diagnostics



Start a remote diagnostics session

- ▶ When multiple screens are used, remote diagnostics can only be performed on the main screen

1. Ensure that the Internet connection is active
2. NEW Request a client ID Ⓐ in the ***Support*** menu by clicking ***Get Client ID***

→ The client ID appears at the bottom right in the window of the DiagnosticTool

3. Send the client ID to the Service team member

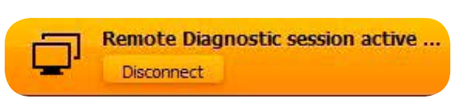
→ The Service team member starts the remote diagnostics session

→ The connection request is displayed

4. Click the ***Yes*** button to start the remote diagnostics session

→ The Service team member can now view the screen on the bicycle dealer's diagnostics computer

→ NEW During remote diagnosis, the words ***Remote Diagnostic session active*** appears in the top right of the screen



5. Before remote control is transferred to the service team member, another dialogue box appears. Confirm this by clicking ***Allow***

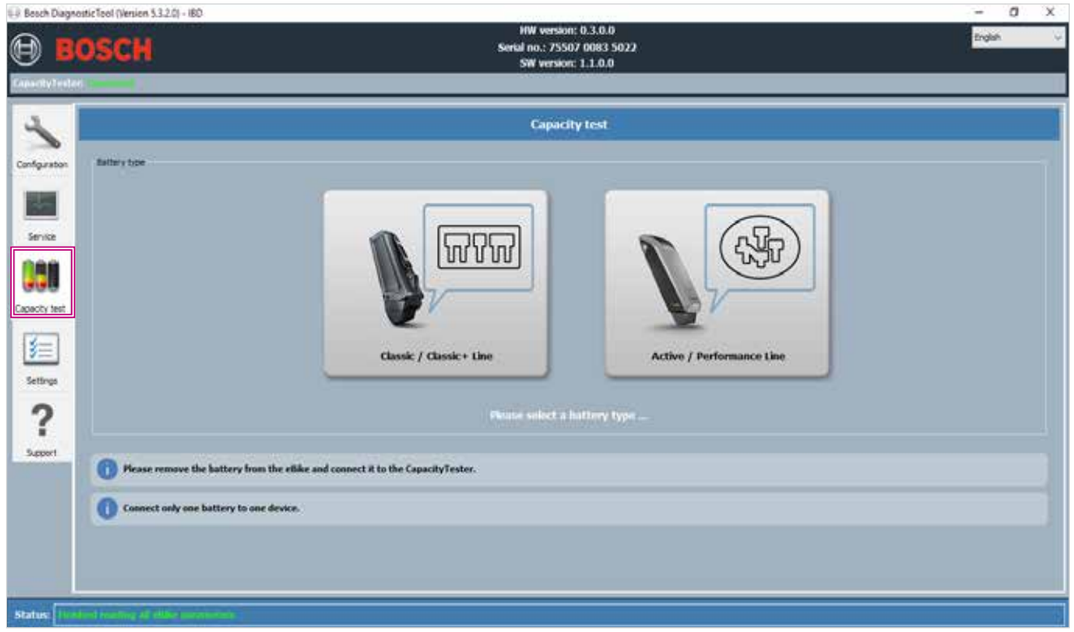
→ The mouse and keyboard are then temporarily disabled. Disabling of the mouse and keyboard can be cancelled by simultaneously pressing CTRL+ALT+DEL and then ***Cancel***

6. To end the session press CTRL+ALT+DEL and then click ***Disconnect*** in the ***Remote Diagnostic session active*** window

NEW The remote diagnosis session automatically ends after 15 minutes of inactivity. A warning is given one minute in advance

Do not leave the computer unattended during the remote diagnostics session

Prepare a capacity test



Safety Instructions

- ▶ Only use indoors with smoke detector and in a dry, clean environment
- ▶ The device converts the energy released by the battery into heat. Hence there are heat sinks and cooling fans installed inside the device
  - – Make sure that the air intake and outlet vents are not blocked
  - – Place the battery being tested beside the CapacityTester and not in front of or behind it
  - – Protect the device against exposure to direct sunshine
  - – Minimum distance 30 cm from the wall
- ▶ Do not perform the test without supervision

- ▶ The energy capacity of batteries can be slightly less or greater than the nominal values. Reason: manufacturing-related tolerances
- ▶ Starting with their production, batteries are subject to a natural aging process: The energy capacity can decrease by up to 0.5 % each month - irrespective of the charging or discharging processes in this period

1. Make sure that the DiagnosticTool is updated to the current software version and the DiagnosticDongle is attached
2. The battery temperature must be at least 15° C
3. Ensure that the battery is not in FBL mode
4. Battery fully charged, start measurement after max. 5 mins.
5. Connect the plug-in power adaptor to the CapacityTester and plug in the mains power socket
6. Connect the CapacityTester with the DiagnosticTool using the USB cable provided

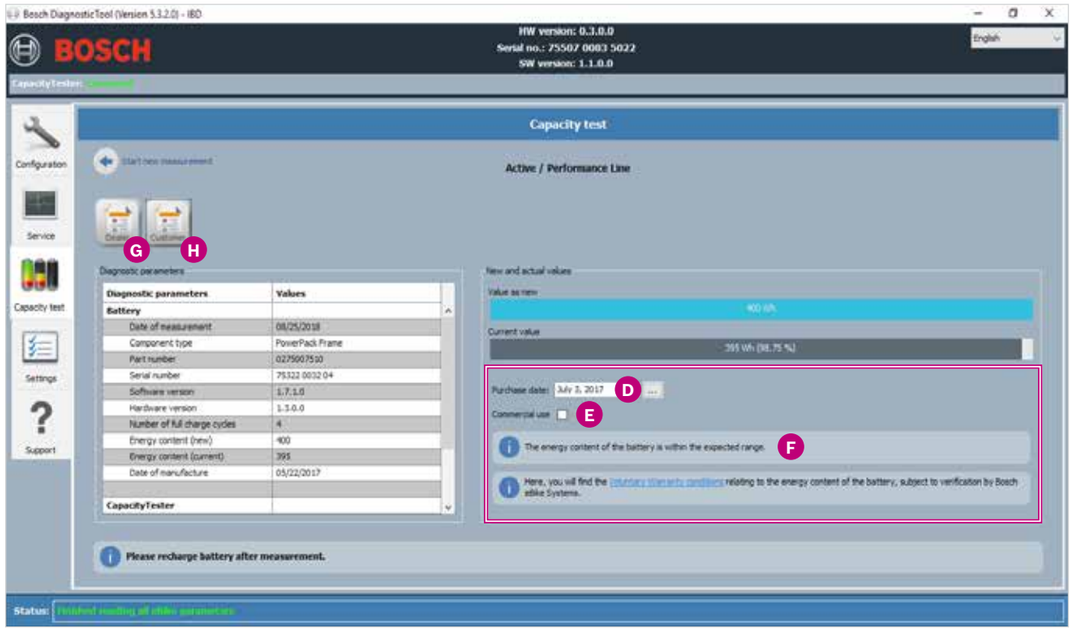
→ The screen view changes

→ Connection status displays ***Connected***

→ The serial number, hardware and software version of the CapacityTester are displayed in the black header

Only connect a PowerPack of the Classic+ Line by means of the supplied blue adapter. This should not be confused with the charging adapter!

Perform capacity test



1. Connect the battery to the CapacityTester (this must not be inserted in the eBike)
2. Click on the ***Capacity Test*** menu
3. Select battery type
4. Check whether the ***Ready*** Ⓐ LED lights up on the CapacityTester
5. Press the ***Start capacity test*** button

→ Active measurement and estimated measurement duration are displayed. The ***Running*** LED lights up on the CapacityTester Ⓑ

→ Continuous measurement can be stopped with one click if required by clicking ***Stop***

NEW If measurement is cancelled, the capacity determined up to that point is displayed

→ During the measurement procedure, the CapacityTester can be disconnected from the computer. The computer is then freed for other applications

→ Test duration: 300 Wh battery: approx. 1.6 hours
400 Wh battery: approx. 2.3 hours
500 Wh battery: approx. 2.8 hours

→ If an error occurs, all three LEDs on the CapacityTester flash, error codes are displayed in the ***Service*** menu

→ If the battery is completely discharged, then the ***Finished*** Ⓒ LED lights up on the CapacityTester

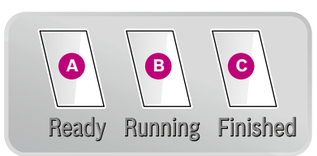
6. Reconnect the CapacityTester with the DiagnosticTool when measurement has ended

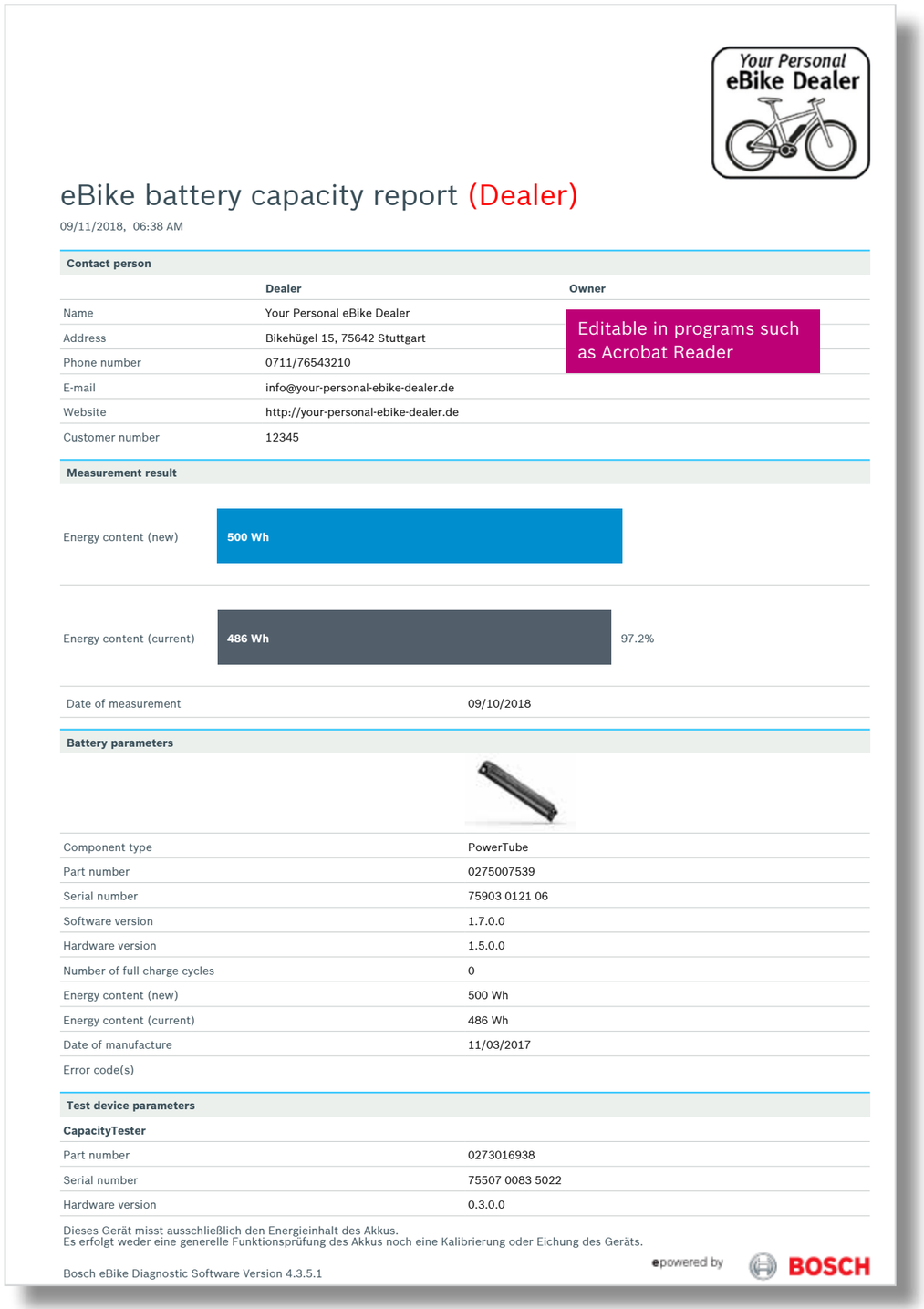
→ The DiagnosticTool displays the measurement values

7. If possible, enter the date when the battery Ⓓ was purchased

NEW Warranty evaluation Bosch offers a voluntary warranty of energy capacity. The evaluation Ⓕ is based on the determined parameters and the entry for the date of purchase Ⓓ and type of use (Ⓔ commercial yes/no).

8. Create eBike battery capacity reports for dealers Ⓖ and end users Ⓗ. The storage location can be specified under ***Settings*** in the ***Service*** menu (see p. 144). Do not disconnect the plug-in power adaptor of the CapacityTester before the report is printed
9. Recharge the battery fully before returning it to the customer.




Your Personal eBike Dealer

eBike battery capacity report (Dealer)

09/11/2018, 06:38 AM

Editable in programs such as Acrobat Reader

Contact person	Dealer	Owner
Name	Your Personal eBike Dealer	
Address	Bikehügel 15, 75642 Stuttgart	
Phone number	0711/76543210	
E-mail	info@your-personal-ebike-dealer.de	
Website	http://your-personal-ebike-dealer.de	
Customer number	12345	

Measurement result

Energy content (new) 500 Wh

Energy content (current) 486 Wh 97.2%

Date of measurement	09/10/2018

Battery parameters

Component type	PowerTube
Part number	0275007539
Serial number	75903 0121 06
Software version	1.7.0.0
Hardware version	1.5.0.0
Number of full charge cycles	0
Energy content (new)	500 Wh
Energy content (current)	486 Wh
Date of manufacture	11/03/2017
Error code(s)	

Test device parameters

CapacityTester

Part number	0273016938
Serial number	75507 0083 5022
Hardware version	0.3.0.0

Dieses Gerät misst ausschließlich den Energieinhalt des Akkus.
Es erfolgt weder eine generelle Funktionsprüfung des Akkus noch eine Kalibrierung oder Eichung des Geräts.

Bosch eBike Diagnostic Software Version 4.3.5.1

epowered by BOSCH

CapacityTester winter storage and software updates

NEW Winter storage

- Discharge starts only when the charge status reaches >60 %
  - at charge levels between 30 % and 60 % the battery is already in optimal an state of charge
  - at charge levels <30 %, you will be prompted to charge the battery

1. Connect the battery to the CapacityTester (this must not be inserted in the eBike)
2. Click ***Establish charge level for winter storage*** Ⓐ

→ The ***Discharge for winter storage*** window appears, indicating the remaining time until the process is complete

→ After discharge is complete, the following display appears:

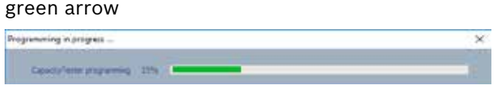
→ The battery is discharged to a charge level of approx. 42 % for winter storage

Software update for CapacityTester

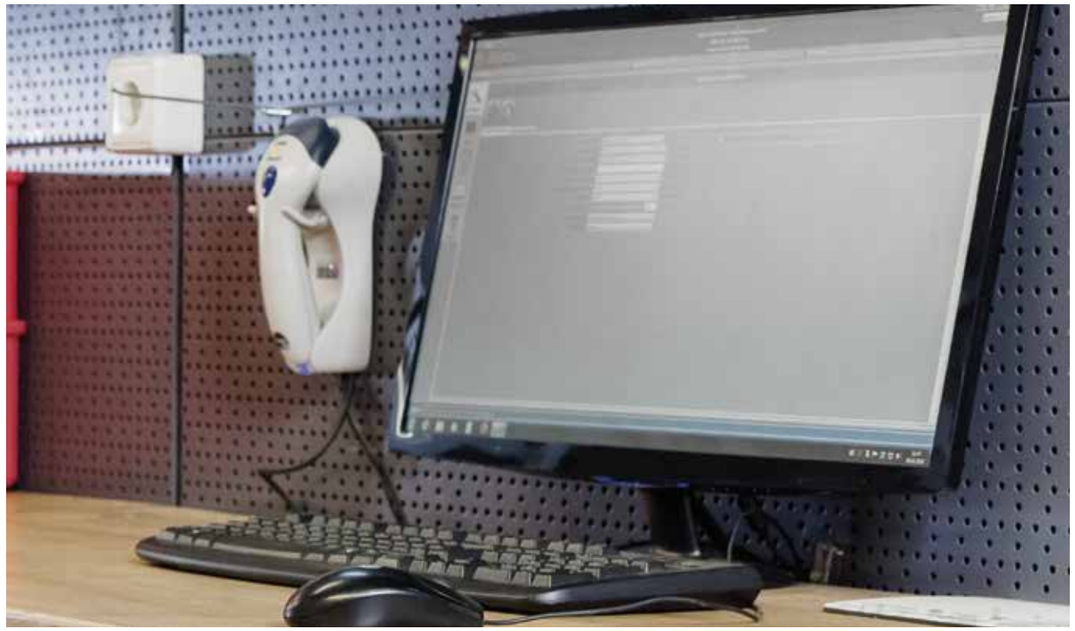
1. Click on the ***Configuration*** menu
2. Click the button with the green arrow

→ Software update starts

→ The current parameters of the CapacityTester (serial number, hardware version and software version) are displayed below the button with the green arrow



System Requirements and Technical Data



DiagnosticTool/CapacityTester

- Processor: min. CPU: Intel® Core™ i3-3217U (3 MB cache, 1.80 GHz) or similar; recommended: Intel Core i5 or similar or better
- Free hard disk space: minimum of 2 GB
- Storage capacity: min. 4 GB RAM; recommended 8 GB RAM
- Two free USB ports USB 2.0 or higher
- Operating system: min. Windows 7 SP 1, recommended: Windows 10 (32 bit/64 bit)

Remote Diagnostics

- Windows operating system
- Bandwidth of Internet connection: upstream ≥ 1 Mbit/s, downstream ≥ 6 Mbit/s; otherwise delays/loss of connection can occur
- If a firewall or proxy server is used, this can result in restrictions during remote diagnostics
- Do not use other programs or perform software updates/installations during remote diagnostics

CapacityTester technical data

Input voltage	12 V
Input current	2000 mA
USB port	USB 2.0
Operating temperature	+15 °C ... +40 °C *
Storage temperature	–10 °C ... +60 °C
Measuring tolerance	+/– 5 % **
Maximum discharging current	6 A
Protection class	IP 30
Weight	2.1 kg
Dimensions (L x W x H)	242 x 193 x 133 mm

* Ideally should be operated at room temperature 20 °C at altitudes up to 2000 m above sea level; relative humidity max. 80 % at 31 °C

** Maximum deviation of the measured value from the actual energy content of the battery. Sum of all tolerances of CapacityTester, battery and charger

SERVICE OFFERS FOR DEALERS

Online Contact Points at a Glance

	Dealer Portal	Dealer Online Stores
	bosch-ebike.net	bosch-ebike.com/webshop bosch-ebike.ch/webshop
Battery Guide	→ Sales Support → Brochures	●
Operating Instructions	→ Service → Technical Information	–
Brochures and Catalogues	→ Sales Support → Brochures	●
Checklist for Checking New eBikes	→ Service → Technical Information → General Documents	–
Download DiagnosticTool	→ Service → Diagnostics → DiagnosticTool	Ordering the DiagnosticKit and CapacityTester
Ordering Spare Parts	–	●
Technical representatives, Regional responsibility	→ Contact → Technical representatives	–
FAQs	→ Know and Learn → FAQs	–
Hazardous goods transport	→ Service → Hazardous goods transport	Ordering Packaging for Dangerous Goods
Logos and Images	→ Sales Support → Media	–
Assembly Instructions	→ Service →Technical Information → Assembly instructions	–
Newsletter, Subscription	→ Profile ( )	–
Newsletter Archive	→ News & Events → News → Newsletter archive	–
Online Training Courses	→ Know and Learn → Online Training Courses	–
Range assistant	→ Sales Support → Online-Tools → Range assistant	–
Range Tables	→ Service → Technical Information → General Documents	–
Training Course Registration	–	●
Service Action for Classic+ Line	→ Service → Service Cases → Classic+ service initiative	–
Service Cases (Internal)	→ Service → Service cases → My service cases	–
Software Versions	→ Service → DiagnosticTool → Software Versions	–
Advertising Resources	→ Sales Support → Media	●
Accessories, Retrofitting Products	–	●

Bosch eBike-website bosch-ebike.com

Social Media

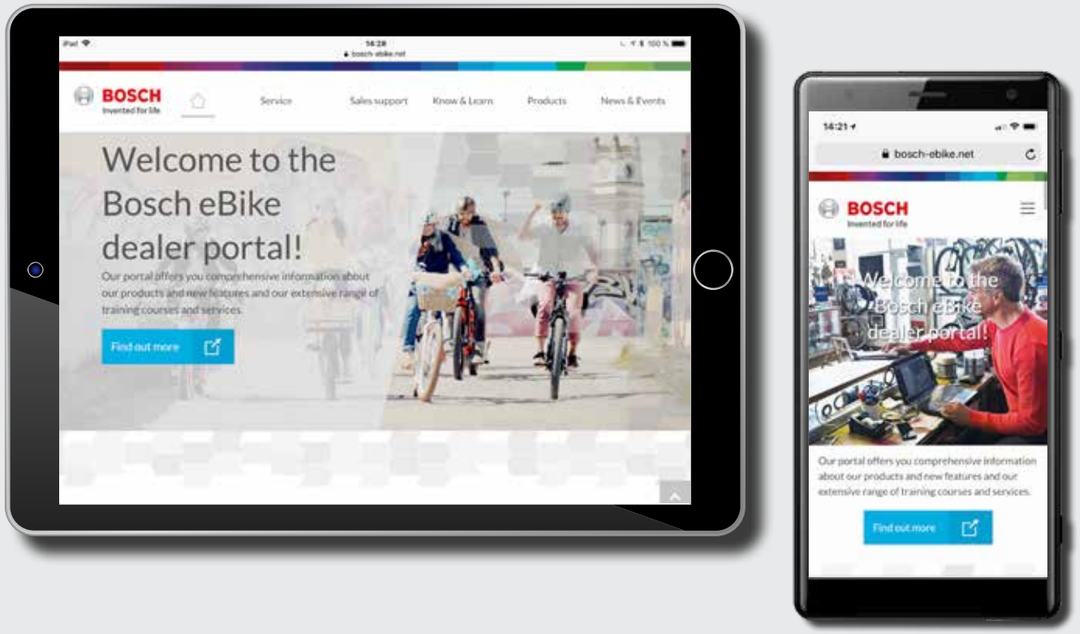
youtube.com/boschebikesystems

facebook.com/boschebikesystems

instagram.com/boschebikesystems

twitter.com @BoschEBikeUSA

COBI.Bike Website cobi.bike



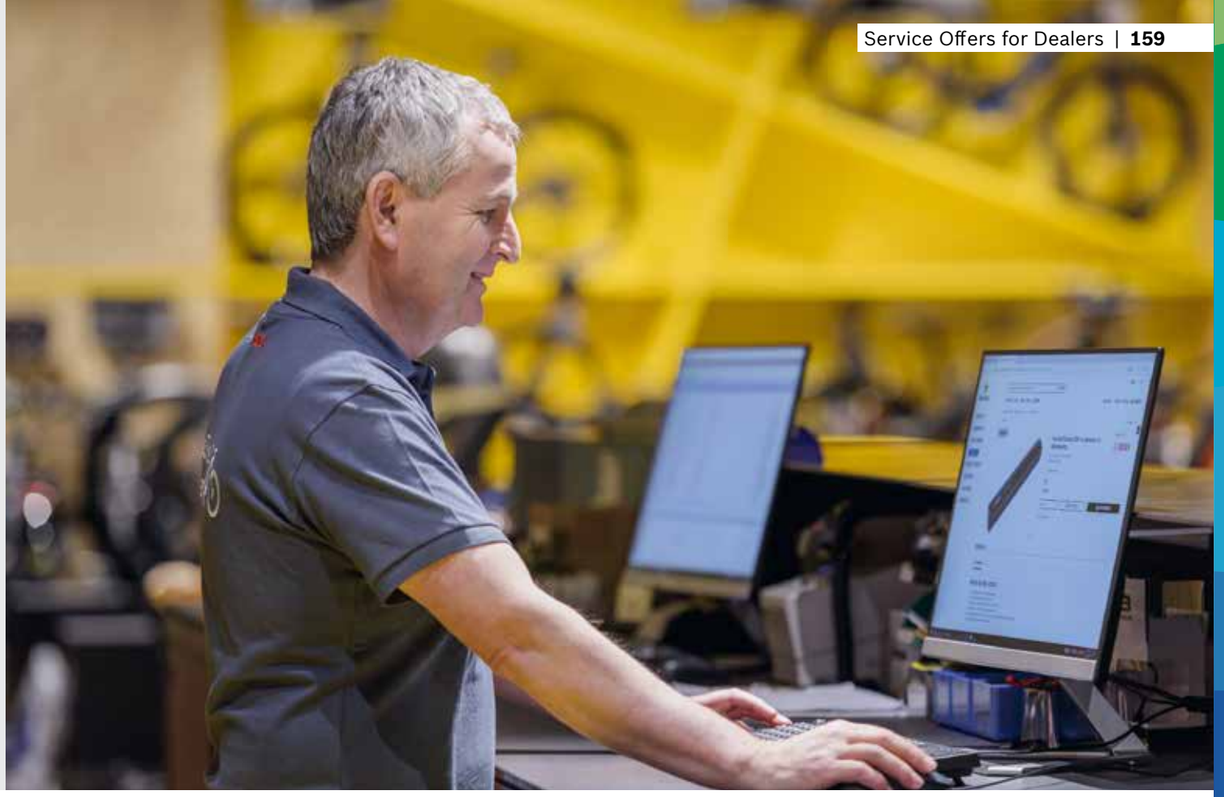
bosch-ebike.net Bosch eBike Dealer Portal and Newsletter

Benefits at a glance

1. Internal service cases with all relevant information at a glance
2. Online training on products, diagnostic tools, dangerous goods and assembly
3. Extensive download offering for sales support tools
4. Download of the software for the DiagnosticTool
5. Technical documents, product and service instructions
6. Overview of current software versions of all eBike components
7. Dealer newsletter archive

Bosch eBike Systems Dealers Newsletter

- Regular updates with all important information on
  - Software updates
  - New features
  - Service offerings
  - Training course schedules, legal topics, eBike market
- Registration to the newsletter
  1. After you login to the dealer portal click on
  2. ***Select*** Profile
  3. Subscribe to the profiles newsletter in the area below

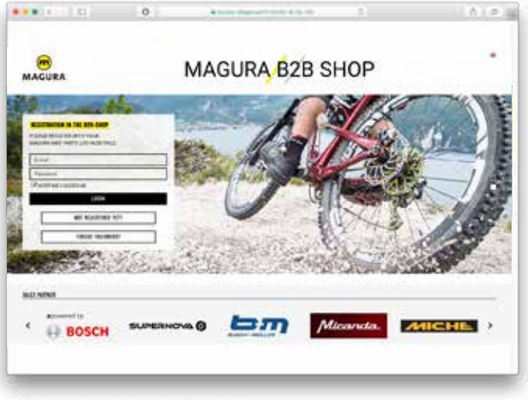


Dealer Online Stores

- Ordering
  - Spare parts, tools and accessories
  - Products to retrofit
  - Diagnostic tools
  - Brochures and catalogues
  - Advertising resources
  - Clothing
- Registering for Bosch eBike Training Courses

The following is required for registration: Commercial register number and extract or trade certificate

Bosch eBike online store powered by Magura (Europe)



bosch-ebike.de/webshop

Bosch eBike online store powered by Fuchs-Movesa (Switzerland)

bosch-ebike.ch/webshop

Bosch eBike Service Team

- Support during processing of service cases as well as answers to all questions about Bosch eBike systems
- If you have a question about a service case that has already been recorded, have your service case form ready to hand

For spare parts orders, please visit the respective online store

- Availability:
  - Telephone call billed at country-specific local call rate
  - European Union / Norway:
    Mon.– Fri. from 7:00 a.m. to 4:00 p.m.

Great Britain
service@bosch-ebike.co.uk
+44 (0) 20 36 84 48 77

Bosch eBike advisor team

- **Bosch eBike experts** with many years of expertise and comprehensive know-how in the branch
- **Bosch eBike trainers**, for example, coaching at the annual Bosch eBike training tour
- **Customer service support of specialised bicycle dealers** in Germany, Austria, Switzerland, The Netherlands, Luxembourg, Belgium, France, Great Britain, Italy, Denmark, Norway, Sweden and Finland:
  - Needs-based consulting for optimal sales promotion, maintenance and service
  - Technical training for all Bosch eBike components and the diagnostic tools
  - Support for handling complex customer complaints and error diagnostics

Name and contact information of the bicycle dealer responsible for the region under bosch-ebike.net → Contact → Technical representatives

Service case sequence

1. Error identification

... with DiagnosticTool

1. Perform diagnosis again and save the eBike diagnostic report (see p. 137)
2. Resolve errors as described starting on p.175
3. Delete error messages (see p. 137)
4. Perform software update (see p. 133)
5. Perform test drive
6. Repeat diagnostics. Save new eBike-diagnostic report (see p. 137)
7. If the error persists ...

... without DiagnosticTool

1. Perform a cross-swap until the error or defective component is identified or located (see p. 142)
2. If the error has been identified or located ...

2. Preparing to speak to Bosch eBike Service Team:

- Exact problem description
  - Does just an error message appear or does the eBike system exhibit malfunctions?
  - When and where does the malfunction occur?
  - Are noises audible?
  - Does the pedalling support drop out?
- Have the following to hand:
  - eBike diagnosis report
  - Customer number on the service partner side
  - Copy of eBike invoice
  - eBike including battery code
  - Bosch article number of faulty component

3. The Bosch eBike Service Team registers the service case and the dealer receives an e-mail with service documents

- Service form with unique job number
- Hazardous goods transport documents if necessary

4. Bosch eBike Service Team arranges pickup after preparation by dealer

- Pack component(s)
- Observe specific dangerous goods regulations for the shipment of batteries (see p. 167)
- Enclose the service form and, if applicable, the dangerous goods transport document and a copy of the proof of purchase
- **Please note:** Never ship defective components without first recording the service case (the handling process will be delayed, risking additional costs)

5. Warranty claim is checked by the Bosch eBike Service Team

- **Eligible**
  - → Free exchange and return shipment
  - → Simply send an e-mail quoting the service case number to receive a reimbursement for your working hours
- **Ineligible**
  - → Dealer receives a cost estimate and orders the replacement part if necessary (in the Bosch eBike service partner's online store)

Service event form

Bosch eBike Systems
Service Order Form | Drive Unit

BOSCH

Please enclose the service order form and purchase receipt for the eBike in the package. Processing will not be possible without the service order form and proof of purchase.

- **Warning: Components must not be opened.**
  The warranty claim will be voided in the case of non-compliance.
- **Please do not enclose any accessories or assembly materials.**
- **No collection of complete eBikes!**

EB-594641-L7Z8

A Service order no.:	EB-594641-L7Z8	Product: F	Antriebseinheit CX, 25km/h (0275007027)
Date:	18/07/2017	Serial no.:	
B Customer no.:	107648		
C Contact:	Alex Hughes	Root Cause:	Under investigation
A Tel.:	+44 02920529955		
Company:	Damian Harris Cycles Ltd.	Error description: G	DU makes atypical noise from the bearing
Adress:	55 Merthyr Road Whitchurch Cardiff CF14 1DD United Kingdom		
Date of purchase:	14/03/2016		
Brand:	Scott		
External reference:			

Additional information:

E eBike adjustment data

Frame no.:		Number of teeth, front:	
Gearshift:		Number of teeth, rear, small:	
Gearshift designation:		Number of teeth, rear, large:	
Wheel circumference or Tyre dimension, e.g. 37-622:		Units: O km O miles	Light activated: O yes O no

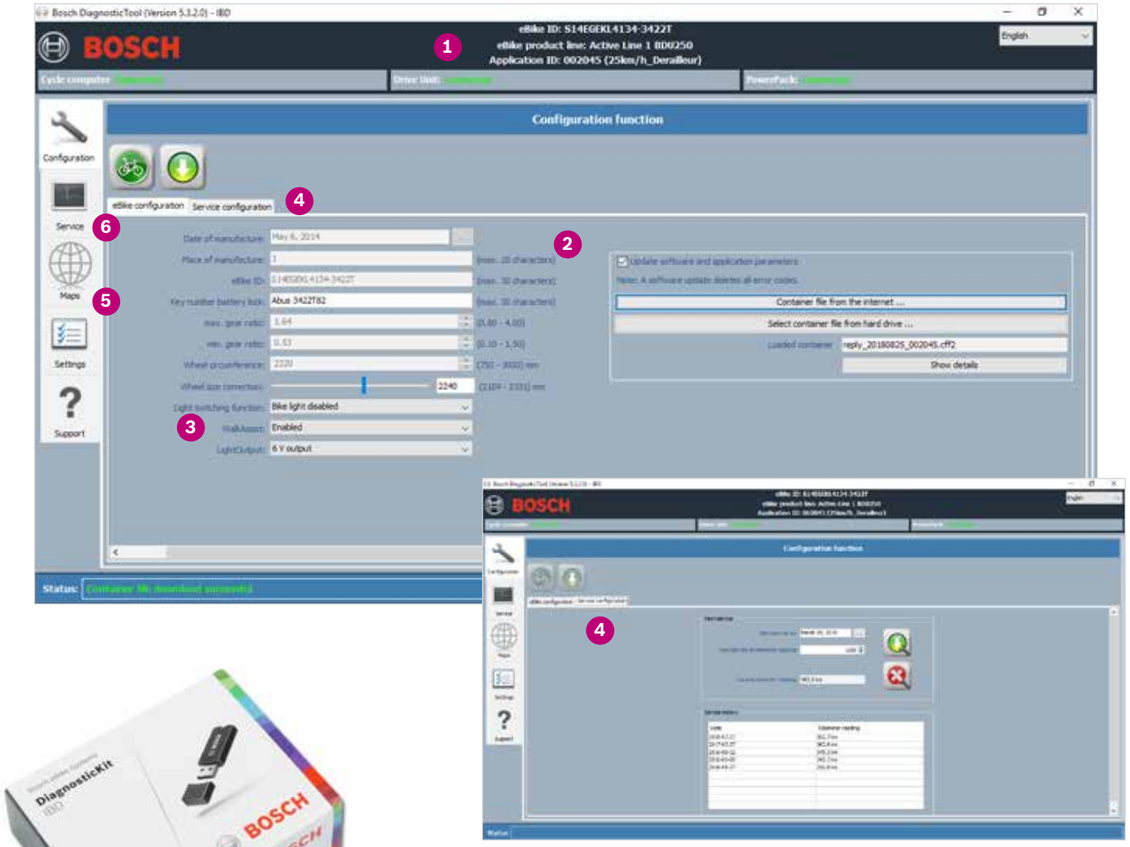
I hereby confirm the correctness of the information and declare that I will perform replacement of the drive unit exclusively on the eBike with the above-specified frame number.

Name (readable):_____ Signature:_____

Goods received on:	Completed on:

- Unique job number A
- After this form is received, check entries B to G and, if required, supplement/correct

Checklist for Checking New eBikes



DiagnosticTool

1. Check that the application ID and eBike ID ❶ and wheel circumference are entered (if not: see p. 132)
2. Perform software update ❷ (see p. 133)
3. Activate/deactivate ❸ walk assistance
4. Set the service interval (Service Configuration tab ❹)
5. Enter the key number ❺ for the battery lock.
6. Save the eBike diagnostic report (Service menu ❻)
7. Create an eBike Service Report and present this to the customer

Benefits of checks for the dealer

- Avoidance of customer complaints immediately after the sale of an eBike
- Defects or malfunctions are detected immediately and can be reported or corrected immediately
- Handover of a well-prepared eBike to the customer

The checklist can be downloaded at bosch-ebike.net → Service → Technical Information → General documents

Bicycle/eBike system

1. Carry out the general check of bicycle functions
2. Check whether all cable are free and not pinched or trapped
3. Check the light function if connected to the eBike system
4. Check the correct position from the magnet to the speed sensor (see p. 226)
5. Check torque of crank bolts (according to manufacturer's specifications, see p. 224)
6. Check function of walk assistance
7. Test drive in all support levels

Battery

1. Check the locking function of the battery
2. Charge the battery before transferring the eBikes and check the charging function
3. On transfer of the eBike to the customer, instruct him/her in the correct insertion/removal of the battery

On-board computers

1. Angle of control unit - correct it if required
2. Check the on-board computer language and correct as necessary
3. Test all on-board computer functions and the separate control unit

Also for Nyon

1. Install maps using DiagnosticTool (see p. 143)
2. Check function of navigation outdoors (map material available after GPS positioning fix, see p. 29)
3. Customers registering offline (see p. 36)
4. Advise the customer of the existence of the smartphone app eBike Connect (see p. 37), ebike-Connect.com online portal (see p. 41) and tutorials on the bosch-ebike.de website

Kim Britten/shutterstock.com

Responsibility for material defects

Type of damage		Examples	Contact
	**Transport damage**	Carton torn open and on-board computer damaged as a result	Transport company In the presence of the transportation company, check the package for damage, and if required, **immediately** make a complaint
	**Incorrect assembly/ programming**	Missing application ID, cable trapped during assembly	Bicycle manufacturer
	**Defective Bosch eBike components**	Charger does not charge, battery does not function	Bosch eBike Service Team

- The liability/warranty of the commercial seller (bicycle dealer) for material defects with respect to the consumer is legally regulated
- The seller guarantees that the goods sold are free from defects upon handover
- The limitation period in the EU is generally 24 months (deviations are possible in the individual countries) starting from the transfer of the product to the consumer, regardless of the duration of storage on the bicycle dealer side

Hazardous goods transport in accordance with ADR

Verified safety

- Bosch eBike batteries undergo regular reviews and checks for function and safety
- However, misuse, damage and technical defects may result in an uncontrolled release of stored energy.
  Emitted vapours are toxic and corrosive
- Therefore all lithium-ion batteries must be tested according to UN model regulations:

The PowerPack safety data sheet can be found under bosch-ebike.net → Service → Technical Information

Commercial transport of batteries

- **The regulations controlling the transport of dangerous goods by road (ADR) apply for the commercial transport of lithium ion batteries in excess of 100 Wh**

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR): unece.org → Our Work → Transport → Areas of Work → Dangerous Goods

Once the battery is inserted in the eBike, the bike becomes a "Battery-powered vehicle or Battery-powered equipment" (UN number 3171)

- ADR regulations may be disregarded

Classification of batteries

- Batteries for which a service case is to be reported can be divided into three categories:

Battery defect is critical or unknown
→ see p. 168

Battery defect is noncritical
→ see p. 169

well-functioning battery
→ see p. 170

- The Bosch eBike Service team provides support with evaluation and further procedure

Never ship a battery before recording of the service request.

Hazardous goods transport in accordance with ADR

Handling of defective/damaged batteries

Battery defect is critical

- ▶ Examples: Smoke, heating, thermal deformation, degassing, battery cells are open

1. Immediately place the battery in a hazardous goods box (Ⓐ).
   Alternatively: place the battery in a fire-proof, sand-filled metal box; cover the battery with sand
2. Store the battery outdoors away from flammable materials
3. After you have made the battery safe, contact the Bosch eBike Service Team

- ▶ If the battery is burning or smouldering:
  - – Do not inhale the smoke
  - – If this is not possible, bring it outdoors
  - – Extinguish with large quantities of water or immerse (caution - risk of scalding).
  - – Contact the fire brigade
- ▶ Never transport it yourself or hand it over to a parcel service/freight forwarder
- ▶ Subsequent shipment is only possible in individual cases after evaluation by Bosch experts

Battery defective for an unknown reason

- ▶ Examples: Battery cannot be switched on or diagnosed; possible water damage, batteries with damage to the housing

→ At least 3 weeks quarantine in hazardous goods box (can be ordered via dealer online stores)

1. If instructed, peel off the LED sticker from the battery
2. Add desiccant if necessary
3. Avoid trapping any padding material when closing the box
4. Store box flat in a safe and dry place outdoors. Avoid extreme temperatures

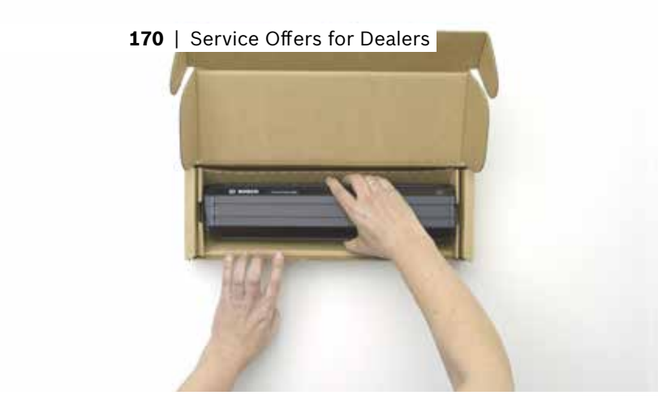
→ After quarantine without anomalies, the battery can be classified as **non-critically defective**

Shipment of a non-critical defective battery

- ▶ Shipment of dangerous goods according to SV376 in special packaging (Ⓐ, shipment by the Bosch eBike Service Team):

1. Pack the battery in a Minigrip bag, close it with a l eak-proof seal and place it in a carton Ⓑlined with bubble wrap
2. Enclose the service order form Ⓒ
3. Seal the carton in accordance with instructions (50 mm wide, fibre-reinforced adhesive tape). Make sure not to cover any markings and do not allow overlaps
4. Fix the attached labels to the side of the carton Ⓐ
5. Hazardous goods transport documents are provided by the Bosch eBike Service Team
6. Make a copy, sign it and hand it over to the carrier
7. Ideally, the original should be signed by the carrier
8. The address label is to be applied by the carrier, no markings should be covered over
9. Hazardous goods transport documents must be retained for at least 3 months

The correct marking of the outer packaging informs persons involved in transport and enables them to take immediate and appropriate action in case of an emergency



MachineHeadz/iStock.com

Hazardous goods transport in accordance with ADR

Shipment of a fully functional eBike battery

- The battery can usually be switched on/diagnosed; examples: capacity problems, surface scratches
- Hazardous goods shipment according to SV230 in special packaging A
  - Shipment by the Bosch eBike Service Team
  - Alternatively purchase through dealer online stores (see p. 159)

1. Protected against damage, no room to move, if required, surrounded by suitable material (e.g. bubble wrap, newspaper or battery inlay) B
2. Before closing the carton, place the service form inside C
3. Close and carefully seal the carton
4. Hazardous goods transport documents are provided by the Bosch eBike Service Team
5. Make a copy, sign it and hand it over to the carrier
6. Ideally, the original should be signed by the carrier
7. The address label is to be applied by the carrier, no markings should be covered over
8. Hazardous goods transport documents must be retained for at least 3 months

The correct marking of the outer packaging informs persons involved in transport and enables them to take immediate and appropriate action in case of an emergency

Obligations of the shipper according to chap. 7.5 ADR

- Parties involved in transport: Packers (dealer) and shippers (dealer), carriers, drivers, unloaders, recipients
- Shippers must assess the transport vehicle before loading
  - Apparently good condition and clean
  - Sufficient load securing ensured (the goods will not move when being shipped)
  - Minimum of 2-kg ABC fire extinguishers available which are sealed with current test date and easily accessible
- No smoking during loading!
- Do not load if there are defects!

Hazardous Goods Training

- All persons involved in the transport of dangerous goods must be instructed in accordance with Chapter 1.3 ADR before taking up their duties according to their area of work and responsibility (otherwise supervision is required by trained personnel)
- Written records must be kept in relation to training
- Compliance is strictly controlled by trade inspectorates; breaches will result in severe penalties
- ADR is revised every 2 years, so that hazardous goods training must be repeated regularly

Explanations in this manual are provided for guidance only and do not release you from your own due diligence duties. Information on hazardous goods training, for example by the TÜV Technical Control Association, trades chambers or hazardous goods experts

Online hazardous goods training provided by SAFETY Training Plus GmbH. The following link can be used for reduced price registration: bosch-ebike.net → Know & Learn → Online Training

Recycling

Disposal information can be found under bosch-ebike.net → Service → Recycling

Error code overview

Basic approach

1. Perform diagnosis and save the eBike diagnostic report (see p. 137)
2. Resolve errors as described below
3. Delete error messages (see p. 137)
4. Perform software update (see p. 134)
5. Perform test drive
6. Repeat diagnostics. Save new eBike diagnostic report (see p. 137)
7. If the error persists, report a service case (see p. 162)

Purion (BUI210/215), **Intuvia** (BUI250/251/255), **Kiox** (BUI330), **Nyon** (BUI270/275)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x410015	410	Error on on-board computer key	Check whether keys are blocked. If the error persists, replace the on-board computer
0x414014	414	Error on remote control	Check wiring. If the error persists, replace the remote control and the socket
0x418016	418	Error on remote control	Check whether keys are blocked. If the error persists, replace the remote control
0x419001	419	Incorrect software variant	
0x419002	419	Unknown hardware version	
0x419003	419	Incorrect hardware variant	
0x422010	422	Drive Unit communication error	Check wiring and connections
0x423011	423	Battery communication error	Check wiring and connections
0x424012	424	Internal communication error	Check wiring and connections. If the problem persists, try another on-board computer and a different socket on the PC
0x426001	426	Internal timeout error	
0x430002	430	Compatibility error	The on-board computer used is not compatible with eShift. Call the Bosch eBike Service Team
0x430013	430	Internal on-board computer battery empty	In the case of Purion please replace the internal battery. In the case of Nyon, Kiox and Intuvia, connect the display to the system and turn it on via the battery button or charge it via the USB port. If the fault persists after charging, replace the on-board computer

Purion (BUI210/215), **Intuvia** (BUI250/251/255), **Kiox** (BUI330), **Nyon** (BUI270/275)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x430020	430	Battery cannot be loaded	System can still be switched on by means of a battery button
0x431002	431	Software version error. Earlier software version found	Update software and make sure to use the correct flash files. Use online access to the eBike server via DiagnosticTool to get the correct software files
0x44001B	440	Drive Unit compatibility error	
0x441001	441	Sample	Device is hardware sample; have it replaced by the bicycle manufacturer
0x44A001	–	Drive Unit compatibility error	Update the Drive Unit software
0x44A002	–	Battery compatibility error	Update the battery software
0x44A003	–	ABS compatibility error	Update the ABS software
0x450002	450	Internal software error	
0x450010	450	Power supply error	Check wiring. If the error persists, try another on-board computer
0x460002 0x460003	460	Voltage error. Surge detected at the USB input	Check USB cable. Disconnect the connected device. Connect the USB device. Perform test drive
0x490017 0x4A0001 0x4A5016	490	Internal on-board computer error	Check whether keys are blocked. If the error persists, try another on-board computer
0x4A5018 0x4B0024 0x4C002A	–	Internal communication error	Check whether keys are blocked. If the error persists, try another on-board computer
0x4A6010 0x4A6011 0x4A6012 0x4B0022 0x4B0023 0x4C002B 0x4C002C 0x4C002D 0x4C002E 0x4C0036 0x4C0037 0x4C0038 0x4C0039	–	Internal memory error	If the error persists, try another on-board computer
0x4B0019 0x4B001A	–	Reserved	
0x4B001F 0x4B0020 0x4C003C 0x4C003D 0x4C003E	–	Internal software error	If the error persists, try another on-board computer
0x4B0021	–	Internal system communication error	If the error persists, try another on-board computer
0x4C0025	–	Internal Bluetooth error	

Purion (BUI210/215), **Intuvia** (BUI250/251/255), **Kiox** (BUI330), **Nyon** (BUI270/275)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x4C0026 0x4C0027	–	Internal compass sensor error	
0x4C0028 0x4C0029	–	Internal GPS error	
0x4C002F 0x4C0030	–	Internal pressure sensor error	
0x4C0031	–	Internal temperature sensor error	
0x4C0032	–	External voltage supply too high	
0x4C0033	–	External voltage supply too low	
0x4C0034 0x4C0035	–	Internal light sensor error	
0x4C003A	–	Internal remote control error	
0x4C003B	–	Internal display error	

All Drive Units, eShift			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x503001	503	Speed sensor error → Restricted motor support, speed indication on the display is 0	Check the position of the magnet (Check the position of the magnet (distance to sensor 5 mm to 17 mm). Check the sensor (0 ohm of electrical resistance when the magnet is near the sensor). Check the output voltage of the Drive Unit (5 V)
0x503002	503	Speed sensor crankset tampering detected. Magnet in the incorrect position. → Restricted motor support, speed indication on the display is 0	Check for tampering on the bicycle. Check the position of the magnet. Check and adjust the speed sensor installation
0x503003	503	Speed sensor tampering detected. Constant speed frequency. → Restricted motor support, speed indication on the display is 0	Check for tampering on the bicycle. Check and adjust the speed sensor installation
0x503004	503	Speed sensor sprocket tampering detected. Magnet in the incorrect position. → Restricted motor support, speed indication on the display is 0	Check for tampering on the bicycle. Check the position of the magnet. Check and adjust the speed sensor installation
0x504001	504	Tampering with speed signal detected. → Limited motor support	Check for tampering on the bicycle. Check the position of the spoke magnet and adjust if necessary

All Drive Units, eShift			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x510001 0x510002	510	Internal sensor error → Motor support off or delayed in the starting phase	
0x510003 0x510004		Internal sensor error Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available	Check if software updates are available, and re-flash eBike
0x511001	511	Acceleration sensor defective	
0x512001	512	ABS and fleet parameters are activated in the eBike; this is not permitted	Print diagnostic report, update software, clear error code, restart system
0x512002	512	ABS has been detected and fleet parameter is activated	Remove ABS
0x520001	520	ABS component is not recognised, even though the system is configured for ABS	Check ABS, Bosch connection adapter and Drive Unit wiring. Perform software update
0x520002	520	ABS component recognised on the bicycle, even though ABS is not configured	Contact the bicycle manufacturer
0x521001 0x521002	521	ABS authentication error. ABS cannot be precisely identified. → No ABS functionality	Check for original Bosch ABS components. Print diagnostic report, update software, switch off eBike, disconnect battery from the bicycle and plug it in again, restart system
0x522001	522	ABS communication timeout. ABS cannot be precisely identified. → No ABS functionality	Check for original Bosch ABS components. Print diagnostic report, update software, switch off eBike, disconnect battery from the bicycle and plug it in again, restart system
0x530001 0x530002	530	Battery authentication error: Battery could not be correctly identified. → Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available	Make sure only to use genuine Bosch batteries. Switch off eBike, remove and reinstall the batteries, restart eBike
0x531001	531	eBike parameter error. Application parameters do not match the product line parameter. → Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available	Check for tampering of the bicycle software. Update software and make sure to use the correct flash files that match the product line. Use online access to the eBike server via the Bosch DiagnosticTool to get the correct software files
0x531002	531	Configuration error	
0x531005	531	Internal communication error	Check for tampering of the eBike software. Call the Bosch eBike Service Team

All Drive Units, eShift			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x531027	531	User support mode error → Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available	Check for tampering of the bicycle software. Update software and make sure to use the correct flash files. Use online access to the eBike server via the Bosch DiagnosticTool to get the correct software files
0x531029	531	eBike parameter error. Application parameters do not match the bicycle type parameter. → Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available	Check for tampering of the bicycle software. Update software and make sure to use the correct flash files that match the bicycle type. Use online access to the eBike server via the Bosch DiagnosticTool to get the correct software files
0x53102A	531	Parameter error. Application parameters do not match the OEM bicycle application ID → Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available	Check for tampering of the bicycle software. Update software and make sure to use the correct flash files that match the bicycle manufacturer's bicycle application ID. Use online access to the eBike server via the Bosch DiagnosticTool to get the correct software files
0x53102D	531	Software version error. Earlier software version found. → Motor support off. Walk Assist or Drive Off Mode not available	Update software and make sure to use the correct flash files. Use online access to the eBike server via the Bosch DiagnosticTool to get the correct software files
0x53102E	531	Software variation error. Incompatible software variant found	Update software and make sure to use the correct flash files. Use online access to the eBike server via the Bosch DiagnosticTool to get the correct software files
0x532001	532	CAN communication malfunction between Drive Unit and battery → No motor support	Only to use genuine Bosch batteries. Switch off eBike, check cables and connectors between Drive Unit and battery, remove and reinstall the batteries, restart eBike
0x540022	540	Internal temperature error. Drive Unit temperature was above 80 ° C → Motor support is switched off	Switch off the system so that the Drive Unit cools down
0x54D021		Internal temperature error. The Drive Unit temperature was below –10 °C. Non-critical error	Allow Drive Unit to slowly warm to room temperature
0x550023	550	Unknown load found → Motor support is switched off	Remove the unknown load
0x550024	550	Unknown power source found → Motor support is switched off	Remove the unknown energy source

All Drive Units, eShift			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x580001	580	Software version error. System software not up to date	Update system software
0x580002	580	Software version error. Battery software not up to date	Update battery software
0x590001 0x590002 0x590003 0x590004	590	eShift software not up to date	Perform a software update for the eShift system according to the instructions from the gear system manufacturer
0x591001 0x591002	591	Transmission authentication error: Transmission could not be identified correctly → Motor support off or delayed in the starting phase. Walk Assist or Drive Off Mode not available, no gear shift	Only use genuine transmissions. Switch off eBike, remove battery, replace battery, restart eBike. If the problem persists, call the Bosch eBike Service Team
0x592001	592	The connected on-board computer does not support eShift function	Use Intuvia, Kiox or Nyon
0x593001	593	Bicycle is not intended for eShift. Incorrect hardware container. No motor support and no gear shift possible	Contact the bicycle manufacturer
0x594001	594	Shimano Di2 RearDerailleur is not supported by the system	Switch from the Shimano Di2 RearDerailleur to the Shimano DI2 Hub system
0x595001	595	CAN communication error: No transmission communication. No eShift indicator	Turn the system off and then back on again. Check cables and connectors. Use the manufacturer's diagnostic tool to perform a gearbox diagnostics. Replace the transmission system electronics
0x596001 0x596002 0x596003 0x596004	596	Lost CAN communication: No transmission communication. No eShift indicator	Turn the system off and then back on again. If Error 595 is displayed, note the corresponding error description
0x5A00E7	–	Internal communication error	
0x5A1001 0x5A1002 0x5A1005 0x5B1126	–	Internal Drive Unit software error	
0x5A1004	–	Internal Drive Unit software error	Check if software updates are available, and re-flash eBike
0x5AA020	–	Error in engine calibration	
0x5AA02B	–	Internal sensor error → Delayed motor support in the starting phase	

Performance Line CX (BDU250P CX), **Performance Line Cruise** (BDU250P), **Performance Line Speed** (BDU290P), **Active Line** (BDU250C/255C)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x50002D 0x50002E 0x50002F 0x500103 0x500106 0x500107 0x50010A 0x50010B 0x50010C 0x50010D 0x50010E 0x50010F 0x500110 0x500111 0x500112 0x500113 0x500115 0x500116 0x500117 0x500118 0x50011B 0x50011C 0x50011D 0x500122 0x500128 0x500129 0x50012A 0x50012B 0x50012D 0x50012E 0x50012F 0x500131 0x500132 0x500133 0x500134	500	Internal Drive Unit software error → Motor support is switched off	
0x500200	500	Internal Drive Unit software error → Delayed motor support in the starting phase	
0x500201	500	Internal Drive Unit software error	
0x502108 0x502109 0x50212C	502	Internal error in light-voltage supply → Light is switched off	Check the front light as well as the wiring and the connection between the Drive Unit and the front light. Restart the system. If the problem persists, call the Bosch eBike Service Team
0x5B1030	–	Internal critical temperature error → Motor support is switched off	Switch off the system so that the Drive Unit cools down
0x5B1101	–	Internal sensor error → Delayed motor support in the starting phase	
0x5B1104	–	Internal Drive Unit software error → No motor support	
0x5B111E 0x5B111F	–	Internal Drive Unit software error → Motor support is switched off	
0x5B1124 0x5B1125	–	Internal sensor error → Invalid temperature value	

Active Line Plus (BDU350), **Active Line** (BDU310)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x500317 0x500319 0x50031B 0x500320 0x500321 0x500322 0x500323 0x500324 0x500325 0x500326 0x500330 0x500331 0x500332 0x500333 0x500334 0x500335 0x500336 0x500337 0x500338 0x500339 0x500340 0x500341 0x500342 0x500343 0x500344 0x500345 0x500346 0x500347 0x500348 0x500349 0x500350 0x500351 0x500352 0x500353 0x500354 0x500355 0x500364 0x50031A 0x500320 0x500321 0x500350 0x50A318	500	Internal Drive Unit software error → No motor support	
0x500366	500	Internal Drive Unit software error → Battery voltage too high	Check system for original equipment
0x501324	501	Internal temperature error → Shutdown of the eBike system	
0x510005 0x510006	510	Internal sensor error. → Motor support off or delayed in the åstarting phase	
0x550350	550	Front light is defective, overloaded or interrupted. → Light functionality is not available. This could have caused the system to switch off	Cross inspection by replacing the front/rear lights and plug. Disconnect the front light from the Drive Unit

Active Line Plus (BDU350), **Active Line** (BDU310)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x550351	550	Tail light is defective, overloaded or interrupted. → Light functionality is not available. This could have caused the system to switch off	Cross inspection by replacing the front/rear lights and plug. Detach the rear light from the Drive Unit
0x550352	550	Overload due to excessive internal current	Check display and display cable, connector and base
0x550353	550	Overload due to excessive current at front and rear light → Light functionality is not available	Cross inspection by replacing the front/rear lights and plug. Disconnect all lights from the bicycle
0x550360	–	Internal Drive Unit software error → 12 V undervoltage	Check cables for on-board computer and light
0x550361	–	Internal Drive Unit software error → 12 V overvoltage	Check cables for on-board computer and light
0x550362 0x550363	–	Internal Drive Unit software error	
0x5A2001	–	The configuration of the acceleration sensor is incorrect	
0x5A2002	–	Communication with acceleration sensor is defective	
0x5A2003	–	Self-test of acceleration sensor failed	
0x5B1322 0x5B1323	–	Internal sensor error → Invalid µc temperature	
0x5B1365	–	Internal Drive Unit software error → Battery voltage too low	Check system for original equipment

PowerPack 300 (BBS/BBR 240/245) / **400** (BBS/BBR 260/265) / **500** (BBS/BBR 270/275), **PowerTube 500** (BBP280/281)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x602040	602	Internal battery error → No voltage supply, system shutdown	
0x602041	602	Internal charging error → System shutdown	Disconnect charger, restart system
0x60303C	603	Discharging error. Excessive current found during discharging. → No voltage supply, system shutdown	
0x605007	605	Temperature error. Insufficient temperature found during charging. → No voltage supply, system shutdown	Allow the battery to warm slowly to room temperature
0x605008	605	Temperature error. Excessive temperature found during charging. → Charging is discontinued	Stop charging. Allow the battery to cool slowly to room temperature

PowerPack 300 (BBS/BBR 240/245) / **400** (BBS/BBR 260/265) / **500** (BBS/BBR 270/275), **PowerTube 500** (BBP280/281)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x60502A	605	Temperature error. Excessive temperature found during discharging. → No voltage supply, system shutdown	Allow the battery to cool slowly to room temperature
0x60502B	605	Temperature error. Insufficient temperature found during discharging. → No voltage supply, system shutdown	Allow the battery to warm slowly to room temperature
0x606011	606	External short circuit → No voltage supply, system shutdown	Check plug and cable for damage or tampering
0x61000E	610	Voltage error. Insufficient cell voltage found. → No voltage supply, system shutdown	
0x61000F	610	Voltage error. Surge cell voltage found. → Shutdown charging	
0x620001	620	Charger error	Replace the charger. Run the software update
0x620002	620	Multiple system charges detected at the same time	Please connect only one charger to the system. Run the software update
0x631005	631	Software error. XCP has been activated	Replace Battery. Please send the battery back to Bosch
0x64004B	640	Critical error: Debalance voltage limit exceeded. → No voltage supply, system shutdown	
0x655001 0x655002 0x655003 0x655004 0x655005 0x657002	655	Multiple battery error → No voltage supply, system shutdown	Switch off the eBike, remove and reinstall the batteries, restart the system
0x655009	655	Multi-battery error	
0x656001	656	Configuration error → No voltage supply, system shutdown	Software update
0x656003	656	Software version error. Invalid software version found. → No voltage supply, system shutdown	Software update
0x656005	656	Configuration error → External voltage off, pre-charge off, charger off	Run the software update
0x658001	658	More than one battery was detected on the eBike system	Remove a battery from the eBike system. Print diagnostic report, delete error code. Restart the system

PowerPack 300 (BBS/BBR 240/245) / **400** (BBS/BBR 260/265) / **500** (BBS/BBR 270/275), **PowerTube 500** (BBP280/281)

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
0x660001	660	Battery deactivated	Battery is permanently deactivated and ready for disposal. Print the diagnostic report. If you have any questions call the Bosch eBike Service Team
0x6A0003 0x6A0006 0x6A0009	–	Temperature error. Implausible temperature found. → No voltage supply, system shutdown	
0x6A0004 0x6A000A	–	Temperature error. Insufficient temperature found	Allow the battery to warm slowly to room temperature
0x6A0005 0x6A000B	–	Temperature error. Excessive temperature found. → No voltage supply, system shutdown	Allow the battery to cool slowly to room temperature
0x6A0010	–	Internal communication error → No voltage supply, system shutdown	
0x6A0011 0x6A0051 0x6A0052	–	Internal error	
0x6A0012 0x6A0028	–	Internal battery error → No voltage supply, system shutdown	
0x6A001E	–	On/Off button error → No voltage supply, system shutdown	Check the "Power" button (On/Off) for defects
0x6A002C 0x6A002D	–	Voltage error. Implausible battery voltage found. → No voltage supply, system shutdown	
0x6A0032	–	Internal battery cell error → No voltage supply, system shutdown	
0x6A0033	–	Charger error. Defective charger found. → Discontinue charging	Replace the charger
0x6A0039	–	Current direction errors. Battery is charged in discharge mode. → No voltage supply, system shutdown	Check system for original equipment
0x6A003A 0x6A003D	–	Current error → No voltage supply, system shutdown	
0x6A003B	–	Current direction errors. Battery has been discharged in the charging mode. → No voltage supply, system shutdown	Check system for original equipment. Replace the charger
0x6A003C	–	Discharging error. Excessive current during discharge process	Check for original components from eBike. Remove the batteries, press and hold the "Off" switch for 10 seconds, re-connect, restart the system
0x6A003E 0x6A0049 0x6A004A	–	Internal battery error → No voltage supply, system shutdown	
0x6A003F	–	Internal hardware error	

PowerPack 300 (BBS/BBR 240/245) / **400** (BBS/BBR 260/265) / **500** (BBS/BBR 270/275), **PowerTube 500** (BBP280/281)

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
0x6A0041 0x6A0044	–	Voltage error. Implausible battery voltage found. → No voltage supply, system shutdown	Print diagnostic report, clear fault code, disconnect charger and restart charging cycle
0x6A0042 0x6A0045	–	Voltage error. Surge found	Print diagnostic report, clear fault code, disconnect charger and restart charging cycle
0x6A0046	–	Voltage error. Undervoltage found	Print diagnostic report, clear fault code, disconnect charger and restart charging cycle
0x6A004C	–	Charging error. Excessive current found during charging. → No voltage supply, system shutdown	
0x6A004D	–	Internal signal error → Charging process is switched off	
0x6A0050	–	Multiple battery error → No voltage supply, system shutdown	Turn off eBike, remove batteries, reconnect, reboot the system
0x6A1001 0x6A1004	–	Internal software error	
0x6A1005	–	Internal hardware error	Replace Battery. Please send the battery back to Bosch
0x6A1006	–	Internal software error	Remove the batteries, press and hold the “on/off” switch for 10 seconds, re-connect, restart the system

Fast Charger (BCS250)

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
0xB0B010 0xB0B030	–	Fast Charger voltage error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xB0B031	–	Voltage difference between battery and Fast Charger is too great	Disconnect the Fast Charger from mains voltage for at least 30 seconds and plug it in again If the problem persists, cross-swap the battery, battery cable or battery charging socket
0xB0B110 0xB0B120 0xB0B125 0xB0B130	–	Error on the 5-volt pin of the charging socket	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again. If the problem persists, check the charging socket for dirt and, if necessary, cross-swap with the rechargeable battery
0xB22100	–	FastCharger temperature too high	Disconnect the Fast Charger from mains voltage and wait at least 30 minutes. Print diagnostic report, update software, clear error code

Fast Charger (BCS250)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0xB22200	–	FastCharger temperature too low	Disconnect the Fast Charger from mains voltage and wait at least 30 minutes. Print diagnostic report, update software, clear error code
0xB22300 0xB22400	–	Hardware error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xB41000 0xB42000	–	Battery voltage error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again. If the problem persists, carry out a battery cross-swap
0xB43000 0xB45000 0xB46000	–	Fast Charger voltage error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again. If the problem persists, carry out a battery cross-swap
0xB51000	–	Current difference between battery and Fast Charger is too great	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again. If the problem persists, carry out a battery cross-swap
0xB52000	–	Current measurement has failed	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xB58000 0xB59000	–	Error curing current regulation	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xB7177A	–	Second charger detected	Make sure only one charger is connected to the bicycle
0xBA1001 0xBA1004 0xBA5001 0xBC0101 0xBC0102 0xBC0103 0xBC0104 0xBC0105 0xBC0106 0xBC0107 0xBC0110 0xBC0111 0xBC0112 0xBC0113 0xBC0120 0xBC0121 0xBC0122 0xBC0123 0xBC0124	–	Internal software error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xBA1005 0xBA1040	–	Calibration error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again

Fast Charger (BCS250)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0xBB0000	–	Incorrect software version	Check the software version of the Fast Charger. Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xBC0130 0xBC0131 0xBC0132	–	Internal software error	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xBE1001	–	Internal software error	Check the software version of the Fast Charger. Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xBE1002 0xBE1003	–	Incorrect hardware version	Check the software version of the Fast Charger. Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again
0xBE1010 0xBE1020 0xBE1030 0xBE1040	–	Hardware self-test failed	Disconnect the Fast Charger from mains voltage for at least 30 seconds then plug it in again

eShift – NuVinci H|Sync The following error messages are not caused by the Bosch eBike system, but by the switch system. In the event of a service case, contact the shifting system manufacturer			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
–	750	Cadence control and shifting are not possible	Replace H|sync
–	751	Limited functionality of the cadence control. Manual shifting possible	Adjust/correct configuration via NuVinci Desktop (diagnostic tool)
–	760	H|sync attempted to calibrate, but the pedals were not used	Diagnostics via NuVinci Desktop (diagnostic tool), if required, to replace any unsupported components
–	761	Calibration completed and found that the entire switching range is not available	Restart calibration, cross exchange H|sync
–	770	Limited functionality of the cadence control. Manual shifting possible	Switch the system off and on again, cross-swap H|sync, if required, exchange the H|sync
–	771	Limited functionality of the cadence control	
–	780	Cadence control and manual shifting are not possible. The shifting system is locked in undefined gear	Switch the system off and on again, cross-swap H|sync, if required, exchange the H|sync
–	781	Cadence control and manual shifting are not possible. The shifting system is locked in undefined gear	Turn the system off and then on again, repair work by NuVinci Service Centre
–	799	Cadence control and manual shifting are not possible	Update H|sync via NuVinci Desktop (DiagnosticTool)

eShift – SRAM DD3 Pulse The following error messages are not caused by the Bosch eBike system, but by the switch system. In the event of a service case, contact the shifting system manufacturer

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
–	700	Internal error of the DD3-ClickBox	Exchange the ClickBox
–	730	The shifting system is unable to shift gears; the shifting mechanism blocked	Turn the system off and then back on again. Manually move the switching mechanism. If not possible: Remove the ClickBox from the bike and move the mechanics manually to the hub and ClickBox. Replace non-moving component. Contact SRAM Service
–	731	Self-adjustment of the shifting system is not possible	Turn the system off and then back on again. Shift the ClickBox into third gear, accelerate from a standstill to approx. 25 km/h
–	735	Actuator motor temperature too high	Turn the system off and then back on again. Let the ClickBox cool down
–	736	Surrounding temperature too high	Turn the system off and then back on again. Let the ClickBox cool down
–	737	Surrounding temperature too low	Turn the system off and then on again, allow the system to slowly heat to room temperature
–	799	SRAM-DD3-ClickBox software version does not support the connected Bosch eBike system	

eShift – Shimano DI2 The following error messages are not caused by the Bosch eBike system, but by the switch system. In the event of a service case, contact the shifting system manufacturer

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
–	700	Internal Shimano Di2 adapter error	Diagnosis via Shimano eTube Project (diagnostics tool), contact Shimano
–	720	Bike type is not supported	Check the Bosch DiagnosticTool "Bike Type". Support only for PEDELEC bike type, contact bicycle manufacturer
–	725	One of the Di2 components is not compatible	Diagnostics via Shimano eTube Project (DiagnosticTool), if required, unsupported Di2 components
–	726	Shimano-Di2 switch unit is not connected or communicates anymore	Check the connection between the Di2 adapter and the switching unit. Contact Shimano via the Shimano eTube Project (diagnostics tool)
–	727	No Shimano-Di2 switch connected or no communication	Check the connection between the Di2 adapter and the switch, contact Shimano eTube Project (diagnostics tool), Shimano
–	729	"i" button is active, although not supported via Di2 adapter	Update switch configuration via eTube Project (diagnostics tool)
–	799	Software version of the Shimano-Di2 adapter does not support the connected Bosch eBike system	Update the Shimano-Di2 components via eTube Project (diagnostics tool)

eShift – Rohloff E-14 Speedhub 500/14 The following error messages are not caused by the Bosch eBike system, but by the switch system. In the event of a service case, contact the shifting system manufacturer

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
–	740	Gear shifting via the Rohloff shift is not possible	With light pressure on the pedals, pedal and shift again
–	741	E-14 position sensor defective, shifting is not possible	Turn the system off and on again, shift gears. If Error 741 occurs again: Replace Rohloff E-14
–	743	E-14 voltage level too low	Check plug and cable for damage and connection, disconnect plug and reconnect
–	744	No communication between E-14 and DC/DC converter possible	Turn the system off and then back on again. Exchange or replace the Rohloff E-14, exchange or replace the Rohloff DC/DC-CAN converter
–	745	Unclear shifting performance	Carry out calibration again (press Up- and Downshift and start eBike system). If calibrating mode does not correct the problem, calibrate manually (see operating manual Rohloff eShift)

ABS

Error code in the DiagnosticTool	Error code on display	Precise description of fault	Repair
0x8xxxxx	**8xx**	**all ABS errors**	**Caution: do not yet perform software update** ▶ **Save the diagnostic report** ▶ **Erase error memory** ▶ **Restart the system** ▶ **Perform software update** ▶ **Perform test drive (at least 2 min.)** ▶ **ABS control light must go out and there should be no error code in the error memory** ▶ **Save the diagnostic report** **If error occurs repeatedly, perform the following steps**
0x800000	800	Error in control unit ABS10MC	▶ Call the Bosch eBike Service Team ▶ ABS kit (without electric cables, wheel speed sensor, ABS control light) including brake lines, replace brake generator and receiver

ABS			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x810000	810	One or both wheel speed sensors return an implausible signal	1. Check tyre diameter front and rear and compare with value in Bosch DiagnosticTool – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 2. Check front and rear sensor for correct installation – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 3. Check distance between wheel speed sensor and sensor disc (max 1 mm) on front and rear wheels and adjust with shims if necessary 4. Replace the wheel speed sensor – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out
0x820000	820	Short circuit or line to front wheel speed sensor defective	▶ Check front wheel speed sensor ▶ Check the correct locking of the front wheel speed sensor plug ▶ Check wiring to the ABS10MC control unit for mechanical damage ▶ Open connector of wheel speed sensor, check for foreign matter and corrosion, check pins for damage, ▶ lock connector; clear error; restart ▶ Test drive (at least 2 min.), ABS control light goes out after a few metres and remains permanently off, otherwise – Replace the wheel speed sensor – Replace the ABS cable harness

ABS			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x821000 0x822000 0x823000 0x824000 0x825000 0x826000 0x833000 0x834000 0x835000	821 822 823 824 825 826 833 834 835	Unusual driving situation in which different speeds are measured at the front and rear wheel (wheel has not been in contact with the ground for an unusually long time, significantly different tyre diameter front/rear) or faulty assembly: 1. Different tyre diameter 2. Front sensor disc not available or defective 3. Check distance/gap between wheel speed sensor and sensor disc on front wheel 4. Front wheel speed sensor defective or damaged	1. Check tyre diameter and compare with value in DiagnosticTool – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 2. Check front sensor disc and replace if necessary – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 3. Check distance between wheel speed sensor and sensor disc (max 1 mm) on front wheel and adjust with shims if necessary – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 4. Replace the front wheel speed sensor – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out
0x830000	830	Short circuit or line to rear wheel speed sensor defective	▶ Check rear wheel speed sensor ▶ Check the correct locking of the front wheel speed sensor plug ▶ Check wiring to control unit ABS10MC; ▶ Open connector of wheel speed sensor, check for foreign matter and corrosion, check pins for damage ▶ Lock connector; clear error; restart, test drive (at least 2 min.), ABS control light goes out after a few metres and remains permanently off, otherwise – Replace the wheel speed sensor

ABS			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x831000	831	Unusual driving situation in which different speeds are measured at the front and rear wheel (wheel has not been in contact with the ground for an unusually long time, significantly different tyre diameter front/rear) or faulty assembly: 1. Rear sensor disc not available, defective or tampered with 2. Check distance/gap between wheel speed sensor and sensor disc on rear wheel 3. Front wheel speed sensor defective or damaged	1. Check rear sensor disc and replace if necessary – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 2. Check distance between wheel speed sensor and sensor disc (max 1 mm) on rear wheel and adjust with shims if necessary – Erase error memory – Restart the system – Perform test drive (at least 2 min) – ABS control light must go out 3. Replace the rear wheel speed sensor – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out If the problem persists, call the Bosch eBike Service Team
0x840000	840	Error in control unit ABS10MC	▶ Call the Bosch eBike Service Team ▶ ABS kit (without electric cables, wheel speed sensor, ABS control light) including brake lines, replace brake generator and receiver

ABS			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x850000	850	One or both wheel speed sensors return an implausible signal or the ABS10MC control unit is defective	1. Check front and rear sensor for correct installation – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 2. Check distance between wheel speed sensor and sensor disc (max 1 mm) on front and rear wheels and adjust with shims if necessary 3. Replace the wheel speed sensor – Erase error memory – Restart the system – Perform test drive (at least 2 min.) – ABS control light must go out 4. Call the Bosch eBike Service Team – ABS kit (without electric cables, wheel speed sensor, ABS control light) including brake lines, replace brake generator and receiver
0x860000	860	Overvoltage detected on the ABS voltage supply	1. Check the wiring between the Drive Unit, Component Connector (BCC100) and ABS for damage and correct locking of the plugs 2. If necessary replace the eShift cable or ABS cable harness if the error persists: 3. Replace the component connector (BCC100) if the error persists: 4. Replace the ABS hydraulic module (ABS10MC control unit and front wheel actuator/calliper with brake lines)
0x861000	861	Undervoltage detected on the ABS voltage supply	1. Check the wiring between the Drive Unit, Component Connector (BCC100) and ABS for damage and correct locking of the plugs 2. If necessary replace the eShift cable or ABS cable harness if the error persists, 3. replace the component connector (BCC100), if the error persists, 4. Replace the ABS hydraulic module (ABS10MC control unit and front wheel actuator/calliper with brake lines)

ABS			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0x870000 0x871000	870 871	CAN communication with control unit ABS10MC faulty or permanently disrupted	If error occurs again: 1. Check the wiring between the Drive Unit, Component Connector (BCC100) and ABS for damage and correct locking of the plugs 2. If necessary replace the eShift cable or ABS cable harness if the error persists, 3. replace the component connector (BCC100), if the error persists, 4. Replace the ABS hydraulic module (ABS10MC control unit and front wheel actuator/calliper with brake lines)
0x880000	880	ABS does not recognize the Bosch Drive Unit correctly or the Drive Unit is not compatible with ABS	Request a new ABS compatible Drive Unit from the bicycle manufacturer
0x883000	883	Drive Unit SW configuration not compatible with ABS	Request a new ABS compatible Drive Unit from the bicycle manufacturer
0x884000	884	Drive Unit not compatible with ABS	1. Restart the system 2. If the error recurs, request a new ABS compatible Drive Unit from the bicycle manufacturer
0x885000	885	CAN communication with control unit ABS10MC faulty or permanently disrupted	1. Check the wiring between the Drive Unit, Component Connector (BCC100) and ABS10MC control unit for damage and correct fastening of the plugs 2. If necessary replace the eShift cable or ABS cable harness if the error persists, 3. Replace the component connector (BCC100), if the error persists, 4. Replace the ABS hydraulic module (ABS10MC control unit and front wheel actuator/calliper with brake lines)
0x889000	889	Error in control unit ABS10MC	▶ Call the Bosch eBike Service Team ▶ ABS kit (without electric cables, wheel speed sensor, ABS control light) including brake lines, replace brake generator and receiver
0x890000	890	Wiring between ABS10MC control unit and ABS control lamp defective or ABS control light missing or defective or ABS10MC control unit defective	1. Check that the cable plug behind the ABS front cover is inserted and locked 2. Check cable from ABS control light to ABS cable harness for damage 3. Check whether the connector of the ABS control light is damaged (detach the plug, perform a visual inspection and, if the result is positive, reattach the plug to the ABS cable harness and lock it 4. Reboot the system if the error is still present: 5. Replace the ABS control light if the error is still present: 6. Replace the cable harness if the error is still present: 7. Replace the ABS hydraulic module (ABS10MC control unit and front wheel actuator/calliper with brake lines)
0x8A0000	–	ABS configuration still incomplete	1. Reboot the system if the error recurs: 2. Request a new ABS compatible Drive Unit from the bicycle manufacturer

Capacity tester (BCT100)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0xA21000	–	Internal temperature sensor error	
0xA22100	–	The temperature at sensor 1 is too high	Allow the device to cool for 30 minutes
0xA22200	–	The temperature at sensor 1 is too low	
0xA22300 0xA22400	–	Internal hardware error on sensor 1	
0xA25100	–	The temperature at sensor 2 is too high	
0xA25200	–	The temperature at sensor 2 is too low	
0xA25300 0xA25400	–	Internal hardware error on sensor 2	

Capacity tester (BCT100)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
0xA35000 0xA37000	–	Internal error of fan voltage supply	Check for fan noise
0xA36000 0xA38000	–	Internal fan error	Check for fan noise
0xA41000	–	The voltage of the battery is too high	Reset the battery and check for fault codes. Check cable and battery connector
0xA42000	–	The battery voltage is too low	Reset the battery and check for fault codes. Check cable and battery connector
0xA43000	–	Internal discharge error	
0xA44000	–	Internal hardware error	
0xA51000	–	The measured discharge current is too high	Use a second rechargeable battery. Check cable and battery connector
0xA52000 0xA56000	–	The measured discharge current is outside the permissible range	Use a second rechargeable battery. Check cable and battery connector
0xA55000	–	The measured discharge current is too high	Use a second rechargeable battery. Check cable and battery connector
0xA58000 0xA59000 0xA5A000 0xA5B000 0xA5C000 0xA5D000	–	Internal hardware error	
0xAA1001 0xAA4000 0xAC0108 0xAC0109 0xAC0110	–	Internal software error	
0xAD0000	–	Incorrect software version	Check the software version of the CapacityTester
0xAE1002	–	Incorrect hardware version	
0xAE2000	–	Incorrect battery item number	
PC_TOOL FAULT No. 0	–	No error in the error memory	
PC_TOOL FAULT No. 1	–	CAN communication with the connected battery is not possible	Check the connection between the battery and the CapacityTester, if the battery is connected correctly, check the battery fault
PC_TOOL FAULT No. 2	–	The selected battery type does not match the connected battery	Adjust the battery type in DiagnosticTool

Capacity tester (BCT100)			
Error code in the DiagnosticTool	**Error code on display**	**Precise description of fault**	**Repair**
PC_TOOL FAULT No. 3	–	CAN communication was interrupted during the measurement	Check the connection between the battery and the CapacityTester. If the connection is correct, check the error memory of the battery
PC_TOOL FAULT No. 4	–	The charge level of the battery is too low	The battery must be charged before starting the measurement
PC_TOOL FAULT No. 5	–	Cooling the CapacityTester does not work properly, restart the system	Restart the system
PC_TOOL FAULT No. 6	–	The temperature of the connected battery is too low to start the measurement	Allow the battery to warm slowly to room temperature, restart the system
PC_TOOL FAULT No. 7	–	The temperature of the connected battery is too high to start the measurement	Slowly allow the battery to cool to room temperature, restart the system
PC_TOOL FAULT No. 8	–	The user has cancelled the measurement	Restart the system
PC_TOOL FAULT No. 9	–	The connection between the battery and the CapacityTester has been interrupted, or a fault has occurred in the connected battery	Check the connection between the battery and the CapacityTester. If the connection is correct, check the error memory of the battery
PC_TOOL FAULT No. 10	–	The connected battery is connected to a Drive Unit	For measurement purposes, the battery may only be connected to the CapacityTester
PC_TOOL FAULT No. 11	–	The connected battery is connected to a charger	For measurement purposes, the battery may only be connected to the CapacityTester
PC_TOOL FAULT No. 12	–	More than one battery is connected to the CapacityTester	Only one battery can be connected to the CapacityTester for the measurement
PC_TOOL FAULT No. 13	–	Read error of the battery data. Battery data necessary to start the measurement are not available	
PC_TOOL FAULT No. 14	–	The temperature of the CapacityTester is too high	Slowly allow the battery to cool to room temperature, restart the system
PC_TOOL FAULT No. 15	–	The input pack voltage of the CapacityTester has been short circuited following a ground contact	Check cable and battery connector. Use a second rechargeable battery. Print the diagnostic report, clear the error, and restart the device. Perform software update
PC_TOOL FAULT No. 16	–	General internal error of the CapacityTester. Check cable and battery connector	Use a second rechargeable battery. Print the diagnostic report, clear the error, and restart the device. Perform software update
PC_TOOL FAULT No. 17	–	General internal battery error	Check cable and battery connector. Check CapacityTester and battery. Print the diagnostic report, clear the error, and restart the device. Perform software update
PC_TOOL FAULT No. 18	–	The temperature of the CapacityTester is too low	Allow the battery to warm slowly to room temperature, restart the system

INSTALLING/ REMOVING eBIKE COMPONENTS

Classic+ Line und Active Line BDU250C/255C:
bosch-ebike.net → Service → Technical Information

Correct CE mark (Communauté Européenne)

Fake mark (China Export)

Safety in the workshop

Safety Instructions

- Remove the battery from the mount before working on the eBike
- The warranty is voided and components may be destroyed if they are opened by unauthorized persons
- Remove the Drive Unit only according to the instructions received from the Bosch eBike Service team
- Never use a hammer when working on the Drive Unit
- No additional threadlocking adhesives are required if the original Bosch screws are used
- Do not use magnetic tools

CE certification and parts replacement for eBikes

- Mandatory CE marking for products in the EU
- CE marking = manufacturer's declaration that his product satisfies the respective legal requirements of the EU: Safety, environmental, EMC, power requirements, etc.
- Each eBike must have a bill of material. The CE marking is only valid for the parts listed

Operating manual in local language must be handed over to the purchaser. Recommendation: verification on invoice

- The main components of the bicycle and eBike system may not be exchanged or altered without the manufacturer's approval
- When replacing components mounted on the Drive Unit and all other bicycle components (e.g. chainring, chainring spider, pedals): only install identical part or those specifically approved by the bike manufacturer for eBikes

You will find a guide for parts replacement on CE certified eBikes and pedelecs under bosch-ebike.net → Service → Technical information → General documents

Never purchase a eBike without CE marking

- The dealer becomes the manufacturer and is therefore liable
- The risk exists that a regulatory ban on sales is imposed and the goods are seized

eBike tuning

- Tuning breaks the law and may lead to prosecution for use of a motorised vehicle without a license and to a breach of the Obligatory Insurance Law. Fines and imprisonment of up to one year are possible. Insurance companies are entitled to refuse to cover the damage and consequences of an accident
- Technical manipulation can result in structurally unplanned continuous stresses; These affect the safety of the pedelecs and thus of the rider and other road users. Guarantee and warranty claims are placed at risk
- At present, pedelecs are considered as bicycles, ensuring unrestricted use. Tuning may provoke stricter regulations and future prohibitions by legislators

Recommendations when dealing with tuning

1. **Tuning known when an order is accepted**:
- Written note that the eBike has been technically modified by the customer and that no liability will be accepted for its roadworthiness

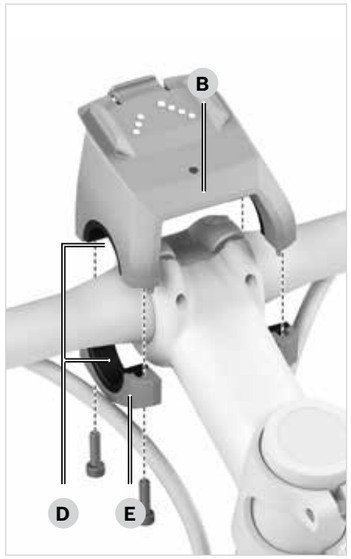
2. **Tuning is discovered in the workshop**:
- Work is halted, customer is contacted in writing
- Otherwise make a telephone note: work has been halted because the eBike has been subsequently technically modified by the customer and is no longer roadworthy
- Customer must state in writing whether work is to be continued or reversed
- Attach the information to the order and place a copy in the customer documentation

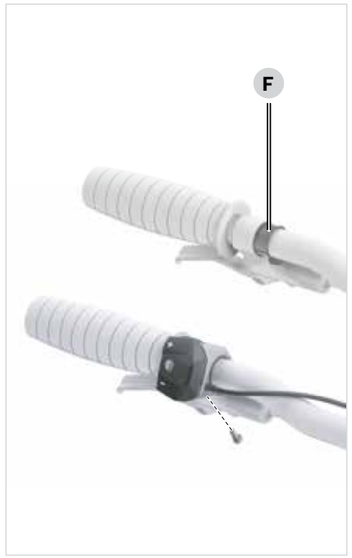
3. **Customer requests a technical modification:**
- Consult the guide to parts replacement: in the case of a significant technical changes, the dealer becomes the manufacturer within the terms of the Product Safety Act/Machinery Directive and would theoretically have to
  - perform an independent conformity assessment
  - draw up an EU declaration of conformity
  - Add a new CE mark
  - Produce an original operating manual
- **If the modification creates a product that is not sufficiently safe:** suggest measures, to ensure safety or decline the order
- **If the modifications increase the shutdown speed for support, an eBike is transformed into an S-pedelec.** The customer must be informed of the consequences in writing (see p. 96/97)

- If the customer does not intend to use the eBike within the framework of the road traffic regulations, he must confirm this in writing
- eBikes found not to be roadworthy must be transported by trailer or motor vehicle

Source and further information: www.ziv-zweirad.de/news → Press release dated 12.09.2017

Installing Intuvia/Nyon





Work steps

Secure the on-board computer in the mount (if requested by customer)

1. Attach the on-board computer (A) to the mount (B)
2. Secure blocking screw M3 x 8 (C)

- ▶ Do not use a longer screw for any reason
- ▶ The blocking screw is no longer accessible after attachment to the handlebar

Installing the mount

1. Position the mount (B) in the centre on the handlebar
2. Insert rubber spacers (D)
3. Screw the mount casings (E) onto the lower side of the mount

Mount the control unit on the left side of the handlebar

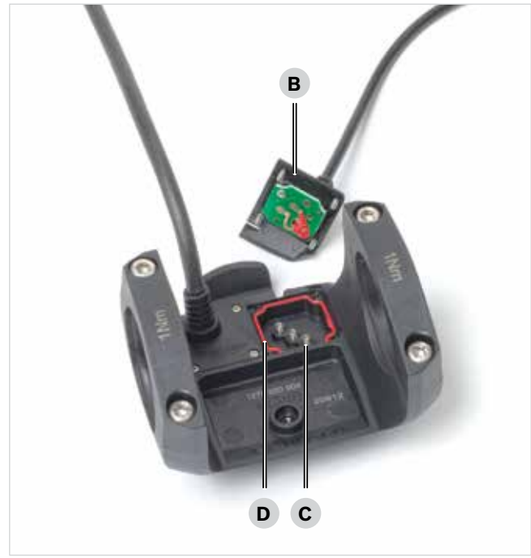
1. Position the rubber spacer (F) to the right of the brake handle.
2. Mount the control unit on the rubber spacer
   - Installation position: opposite the brake handle, at thumb level while riding

Tool

- ▶ Allen key size 3
- ▶ Phillips screwdriver size PH02
- ▶ Torque wrench

Tightening torques

- ▶ Fastening the on-board computer to the mount: **1 Nm**
- ▶ Clamping the mount on the handlebar: **1 Nm**
- ▶ Clamping the control unit on the handlebar: **1 Nm**



Work steps

Replace the mount

1. Remove the on-board computer from the mount
2. Remove the mount
3. Carefully remove the four screws (A) and the contact plate (B). When doing so, make sure that the contact springs (C) do not fall out of the mount
4. When connecting the cable to the new mount, make sure that the seal (D) is seated perfectly

- ▶ Cable connection mounting kit for the display mount with four screws (A) and seal (D) available as a spare part

A new mount can be screwed directly onto the contact plate. Cables laid in the eBike frame do not need to be time-consumingly rerouted

Retrofitting from Intuvia to Nyon
(Nyon Retrofit Kit: Order number **0.275.007.818**)

1. Perform an eBike software update (see p. 133)
2. Replace control unit and mount
3. If needed, execute a separate Nyon update (see p. 134)
4. Use the DiagnosticTool to save map material on the Nyon (see p. 143)
5. Perform offline registration for the customer (see p. 36)

Tool

- ▶ Phillips screwdriver size PH00
- ▶ Torque wrench

Tightening torques

- ▶ Control unit cable on the mount: **should be loosely tightened by hand**

Spare parts

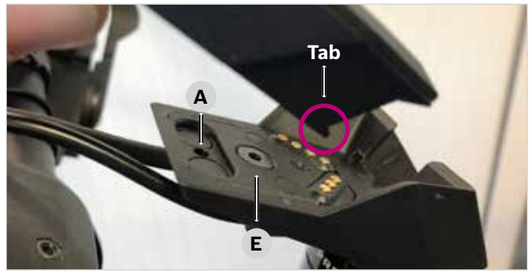
Intuvia - digital control unit

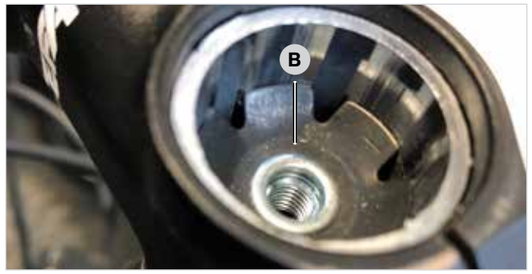
- ▶ Platinum: **1.270.016.723**
- ▶ Anthracite: **1.270.016.724**

For Intuvia systems with software older than version 5.3.0.0. first perform a software update

Display Holder Cable Connection Mounting Kit: **1.270.016.719**

Install Kiox





Process steps (scope of delivery with Bosch mount)

Place the Kiox on the mount

- If the supplied locking screw is to be used, the Kiox must be screwed to the Bosch mount before the mount is installed

1. Push the Kiox onto the mount as described in ***Installing Kiox***
2. Screw the Kiox to the mount through the hole (position see A) using locking screw M3 x 6

Install the mount

1. Fit the Bosch mount instead of the ahead cap with countersunk screw (B and C) (M5 or M6, depending on the installed Ahead mount, not included as standard)
2. Lay the cable for the Drive Unit through or along the frame and plug it into slot on the Drive Unit (see p. 220)

Mount the Compact Remote on the left side of the handlebar

- Mount Compact Remote (D) on the handlebar Buttons should be almost perpendicular to the handlebar

Install Kiox

1. Push the Kiox with the tab on the underside into the slot on the mount (E)

→ A magnet ensures that the Kiox engages in mounting position.

2. Check that the display is correctly engaged (F)

Tool

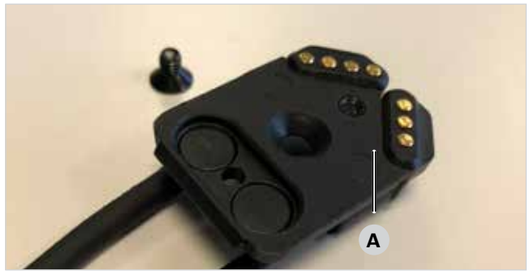
- Allen key size 2.5
- Wrench depends on the Ahead screw used
- Torque wrench

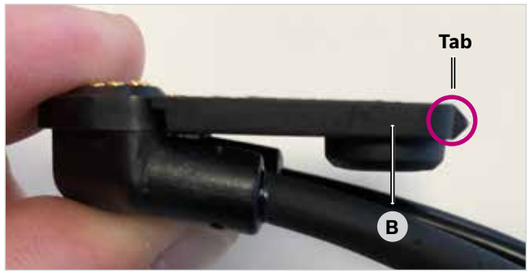
Tightening torques

- Fastening the on-board computer to the mount: **0.5 Nm**
- Mount on stem: **max. 15 Nm**
- Control unit on the handlebar: **1 Nm**

Spare parts

- Mount, including mounting plate and Compact Remote, pre-assembled
  - with 1300 mm cable: **1.270.020.413**
  - with 1500 mm cable: **1.270.020.414**





Process steps (scope of delivery without Bosch mount)

Fit the mounting plate on the mount

1. Insert the pre-assembled mounting plate (A) in the mount and secure it with countersunk screw M4 x 6
2. Make sure that the tab of the mounting plate fits correctly in the mount provided (B)

- If necessary, the preassembled unit may have to be dismantled (C)
  - Ensure that the pin connections of the cable boxes are correctly reconnected during assembly (D)
  - Screw the cable boxes back onto the mounting plate with cylinder head screw M3 x 6
  - Screw the mounting plate onto the mount provided with countersunk screw M4 x 6

3. Insert Kiox in the mount and secure with the M3 x 6 locking screw if necessary (see p. 202)
4. Lay the cable for the Drive Unit through or along the frame and plug it into the Drive Unit (see p. 220)

Install Compact Remote

See p. 202

Tool

- Allen key size 2.5
- Torque wrench

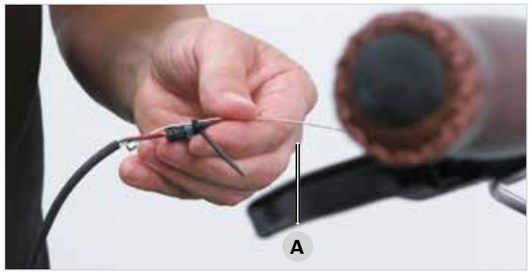
Tightening torques

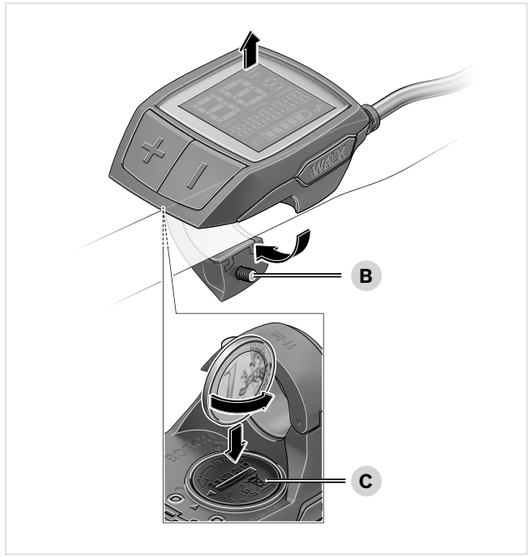
- Mounting plate on the mount: **1 Nm**
- Cable box on the mounting plate: **should be loosely tightened by hand**

Spare parts

- Mounting plate and Compact Remote, pre-assembled
  - with 1300 mm cable: **1.270.020.417**
  - with 1500 mm cable: **1.270.020.418**
- Optional accessories: Security cord for attachment to display tab (G) **1.270.016.835**

Install Purion





Work steps

Information about installation

- Assembly on the left side of the handlebar
- The Purion cable is moulded on for greater durability and water resistance. For this reason, the Purion and cable should always be replaced together. The cable must be replaced at the appropriate slot on the Drive Unit
- Using a cable puller (A) or shifter cable will make it easier to pull the new cable into the frame

Battery replacement

1. Unscrew the fastening screw (B) and remove the on-board computer from the handlebar
2. Use an appropriately-sized coin to open the battery compartment cover (C)
3. Replace the battery (type CR 2016). Pay attention to the correct polarity
4. Screw-close the battery compartment.
5. Reattach the on-board computer to the handlebar

Tool

- Allen key size 3
- Torque wrench

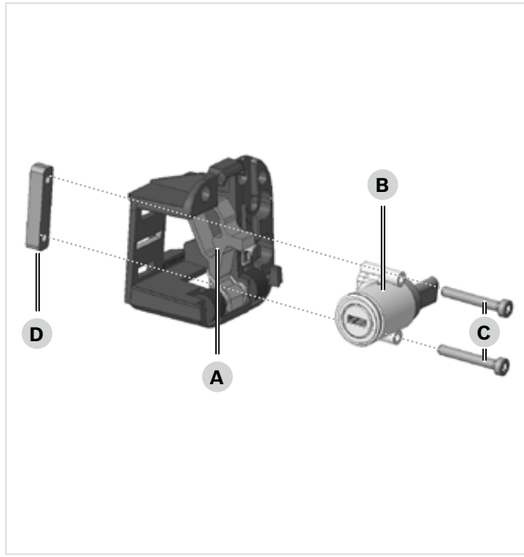
Tightening torques

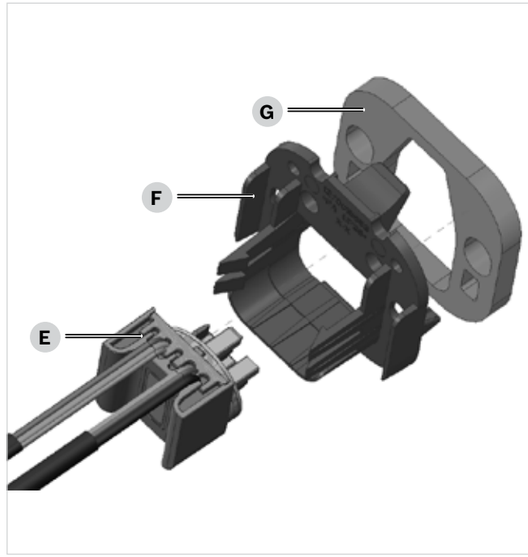
- Purion on the handlebar: **1 Nm**

Spare parts

- Button cell battery CR 2016 **1.270.016.819**
- Battery cover and seal, **1.270.016.813**

Install the PowerTube





Work steps

Preparing mount system for installation

Lock side:

1. Push back the latch (A) on the mount plate
2. Place the lock (B) in position and use two M4 x 27 screws (C) to attach it to the mounting flange (D)

Locks are available from ABUS, AXA-BASTA or TRE-LOCK or their respective dealer partners

Cable side:

1. Clip the PowerTube cable (E) into the mount plate (F)
2. Stick the damper plate (G) to the mount plate (F)

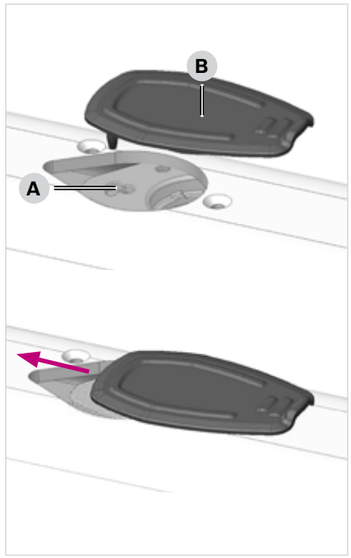
Tool

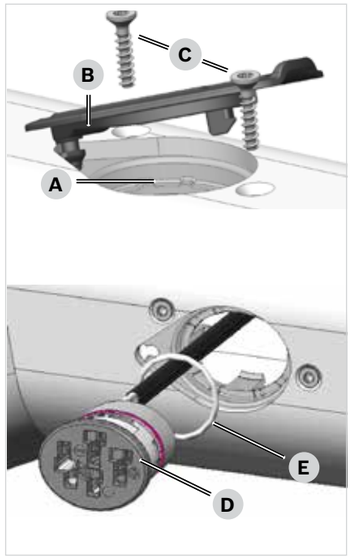
- Torx T20
- Torque wrench

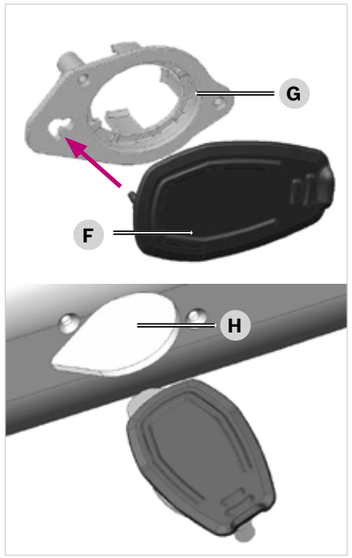
Tightening torques

- Lock on threaded flange: **4 Nm**

Install the PowerTube







Work steps

Install the charge-on-bike socket (COBS)

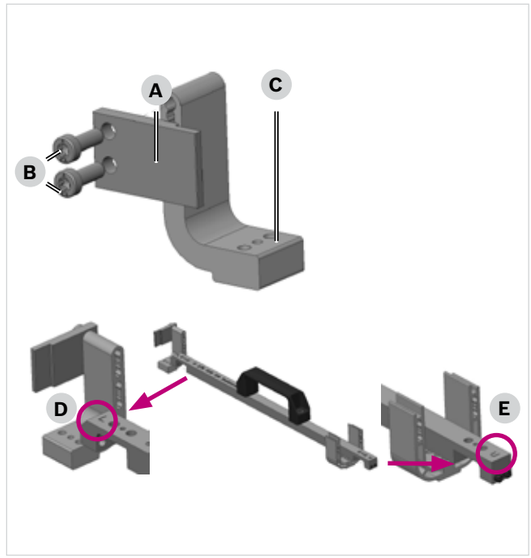
1. Hold the charging socket base (A) against the inside of the frame, push rubber cap (B) into the socket (A) until it engages
2. Push the charging socket base with the rubber cap into screwing position
3. Lift up the rubber cap (B) and use two M3 x 14 (C) countersunk screws to screw the charging socket base (C) onto the frame
4. Fit the charging socket (D) with an O-ring (E) (push this up to the point shown in the photo) and clip it into the socket (rubber cap not shown)

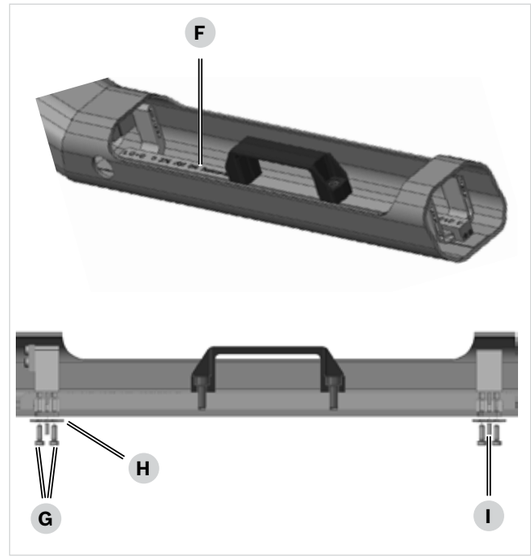
Alternative procedure:

1. Guide the rubber cap (F) into the cut-out provided for this in the charging socket base (G)
2. Move the rubber cap (F) into final position
3. Insert the charging socket base with the rubber cap sideways through the opening in the frame (H) and align it with the holes (rubber cap outside and charging socket base inside)
4. Lift up the rubber cap (B) and use two M3 x 14 (C) countersunk screws to screw the charging socket base (C) onto the frame
5. Fit the charging socket (D) with an O-ring (E) (push this up to the point shown in the photo) and clip it into the socket (rubber cap not shown)

Tool

- Torx T10





Work steps

Fit the L-shaped mount with an aluminium plate

- Screw the aluminium plate (A) to L-shaped mount (C) using two M5 x 14 screws (B)
  - The screw position for both the horizontal and vertical PowerTube is identical: upper thread on the L-shaped mount

Fit the assembly jig

- Insert the L-shaped mount (D) and the U-shaped mount (E) into the appropriate and correspondingly labelled slots on the mounting jig

Insert the mounting jig into the frame cut-out

1. Insert the assembled mounting jig (F) into the frame cut-out
2. Align the lock on the frame

Provisionally lay the cables in the frame

Screw the mount to the frame

3. Secure the mount using the two M5 x 14 screws (G) and a shim (H)
- Optional: Insert the threaded pin (I) for height adjustment and tighten it
  - M4 x 25 for vertical variant
  - M4 x 10 for horizontal variant
4. Remove the assembly jig from the frame

Tool

- SW2 Allen key
- Torx T25
- Torx T10

Tightening torques

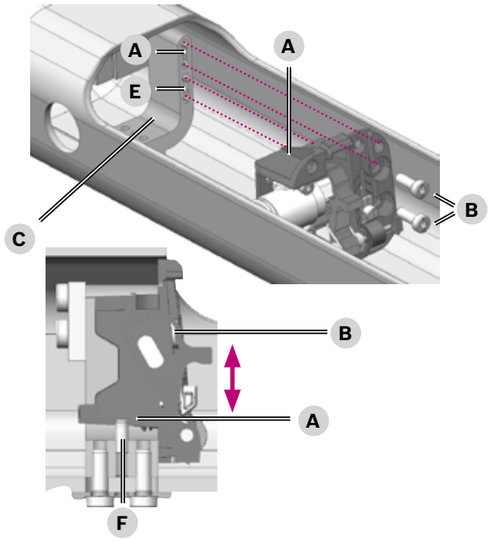
- Aluminium plate on the L-shaped mount, mount on frame: **5 Nm**

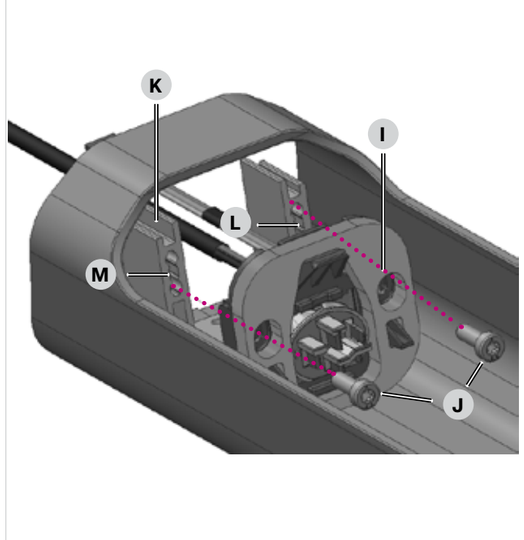
Mounting aid

Vertical assembly jig
orange handle, inscribed *vertical*
0.275.009.015

Horizontal assembly jig
black handle, inscribed *horizontal*
0.275.009.014

Install the PowerTube





Work steps

Assemble the lock side of mount system

1. Attach the pre-assembled mount system (A) to the L-shaped mount (C) with two M5 x 14 screws (B), **only tightening them slightly**
   - Use the upper tapped holes (D) in the L-shaped mount (C) for the vertical variant (holes 1 and 3 from the top)
   - Use the lower tapped holes (E) in the L-shaped mount (C) for the horizontal variant (holes 2 and 4 from the top)
2. The height can now be adjusted. To do this, slide the mount and lock into the required position by hand
   - ▶ Optional: Set the height with a threaded pin (F)
3. Tighten the M5 x 14 screws (B)

Assemble the plug side of mount system

1. Attach the pre-assembled mount system (I) to the U-shaped mount (K) with two M5 x 14 screws (J), only **tightening them slightly**
   - Use the upper tapped holes (L) in the U-shaped mount (K) for the vertical variant
   - Use the lower tapped holes (M) in the U-shaped mount (K) for the horizontal variant

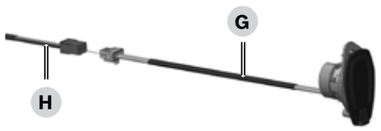
The height can now be adjusted. To do this, slide the mount and plug into the required position by hand

- ▶ Optional: Set the height with a threaded pin (F)

2. Tighten the M5 x 14 screws (J)

Make the cable connections

1. Connect the COBS (G) with the PowerTube cable (H)
2. Connect the PowerTube cable with the Drive Unit



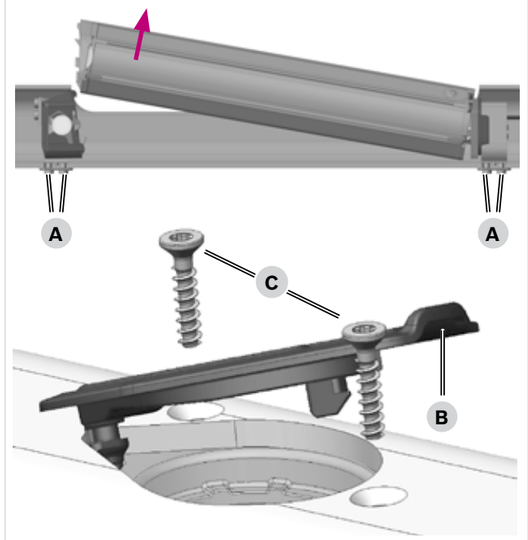
Tool

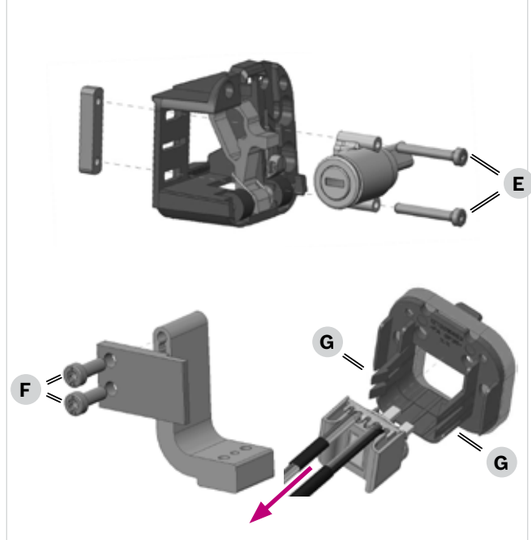
- ▶ Torx T25
- ▶ SW2 Allen key

Tightening torques

- ▶ Mount system on L-shaped mount:
  5 Nm

Remove PowerTube

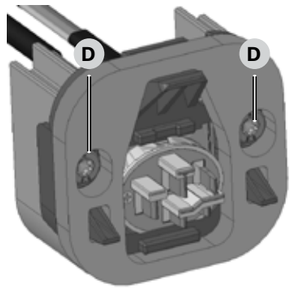


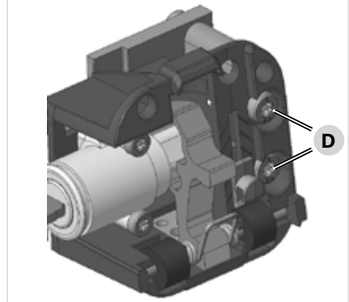


Work steps

Remove the PowerTube

1. Used a wrench to unlock the lock and remove the PowerTube
2. Loosen the screws on the frame and unscrew them
3. Detach the cable connections to the Drive Unit and COBS
4. Remove the mounting systems from the frame
5. Lift up the rubber cap (B) and loosen the screw connection (C) between the frame and the charging socket base
6. Remove the charging socket base with charging socket and rubber cap from the frame
7. Dismantle the mounting systems by loosening the screws (D)
8. Dismantle the lock by loosening the screws (E) of the mount plate
9. Dismantle the aluminium plate by loosening the screws (F) of the L-shaped mount
10. Loosen the clip connector (G) and draw the PowerTube cable out of the mount plate

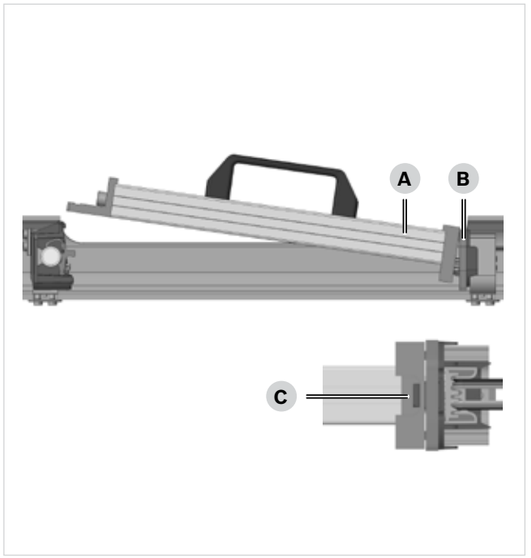


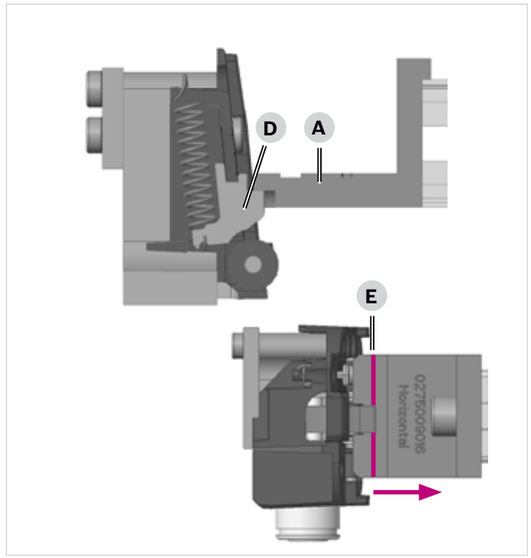


Tool

- ▶ Torx T25
- ▶ Torx T20
- ▶ Torx T10

Check the PowerTube mount





Work steps

Using the test gauge

1. Place the test gauge (A) on the cable side mount system (B) and make sure that it rests against the front (C) of the mount system
2. Insert the test gauge into the lock

1. Tolerance criterion

1. Used a wrench to unlock the lock (lock is not shown here)
2. Press down the lift latch (D) with the test gauge (A), making sure it does not spring back to its original position

→ If the lift latch springs back to its original position, the distance between the mounts is too great
→ reduce it

The test gauge indicates if the distance between the mounts is too large, not if it is too small

2. Tolerance criterion

1. Lock the lock with a wrench. The test gauge is secured between the lift latch and lock bolt
2. The marked edge (E) on the test gauge indicates the maximum distance between the U-shaped mount and L-shaped mount

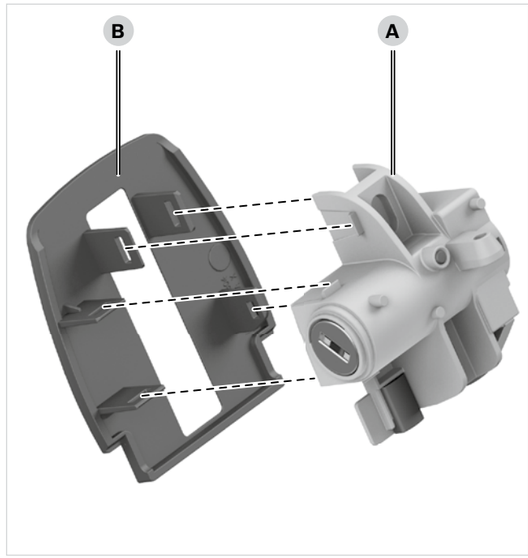
→ The lock bolt must be at least on this edge or overhang it in the direction of the arrow by up to 1.4 mm. If this is not the case, the distance is too great
→ reduce it

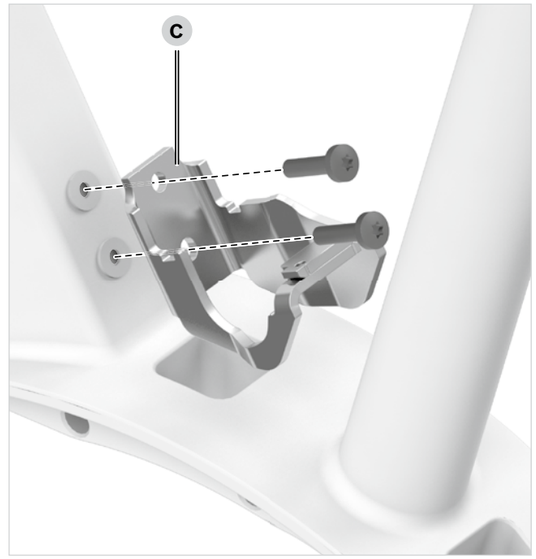
Mounting aid

Vertical test gauge
orange handle, inscribed *vertical*
0.275.009.017

Horizontal test gauge
black handle, inscribed *horizontal*
0.275.009.016

Install the frame battery





Work steps

Preinstalling the lock

1. Clip in the lock (A) into the lower housing section (B)
2. Make sure that all five clips have snapped into place

Locks are available from ABUS, AXA-BASTA or TRELOCK or their respective dealer partners

Installing the lower mount adapter

- Place the mount adapter (C) over the thread inserts in the frame and tighten it with two screws M5 x 20

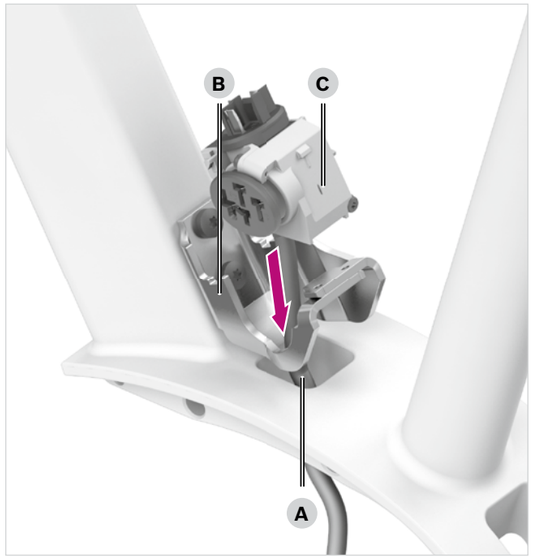
Tool

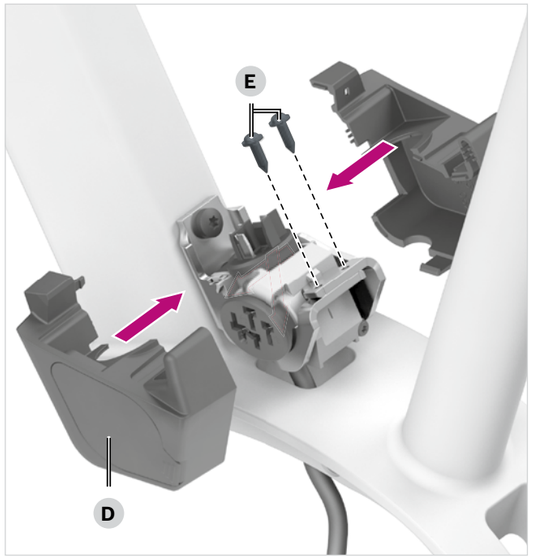
- Torx T25
- Torque wrench

Tightening torques

- Mount adapter on frame:
  4 Nm

Install the frame battery





Work steps

Installing the PowerPack cable and mount casing

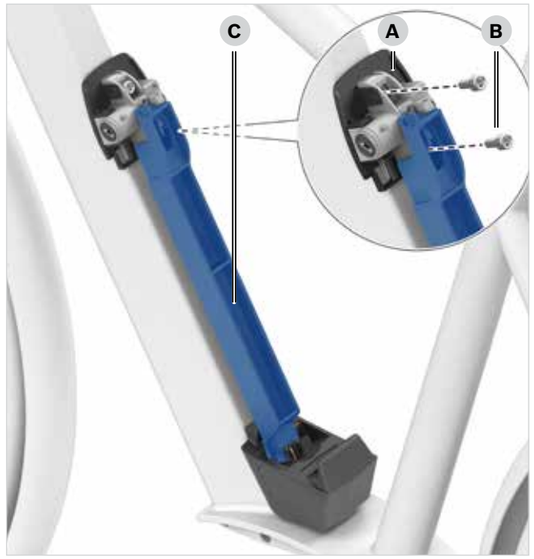
1. Thread the PowerPack cable (A) through the adapter (B) and insert the plug (C) in the adapter
2. Push the PowerPack mount casings (D) right and left onto the adapter section and clip it together
3. Use two M3.5 x 12 screws (E) to screw the PowerPack mount casings to the adapter

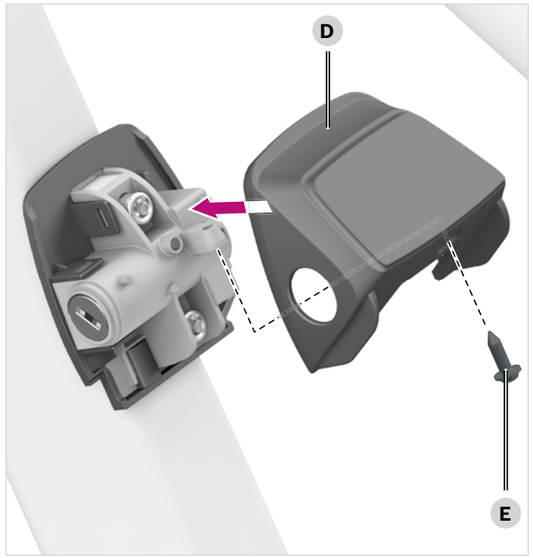
Tool

- Torx T15
- Torque wrench

Tightening torques

- Mount casing on adapter: **2 Nm**





Work steps

Install the lock

1. Place the lock with the lower housing section (A) onto the top mount section (welded onto the frame) and lightly tighten with two M5 x 12 screws (B), but not all the way. The locking bolt must point downward. Do not tighten the screws (B) yet
2. Place the blue PowerPack assembly jig (C) onto the lower mount
3. Slide the lock with the lower housing section until it contacts the PowerPack assembly jig
4. Tighten the two screws (B)
5. Remove the assembly jig

Install the lock cover

1. Put on the lock cover (D) and allow the clips to engage
2. Tighten the lock cover with one M3.5 x 12 screw (E)

Tool

- Allen key size 4
- Torx T15
- Torque wrench

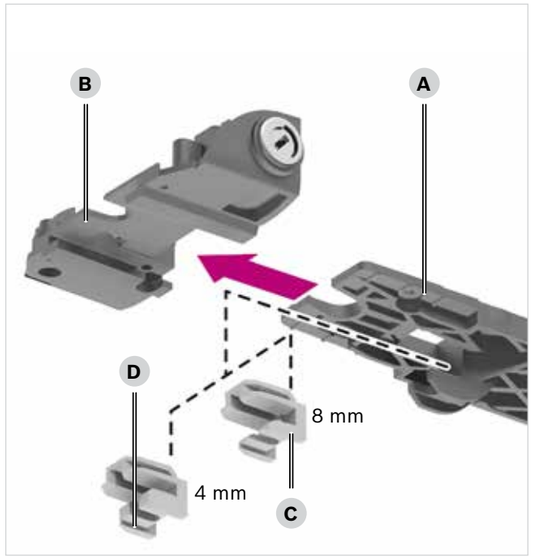
Tightening torques

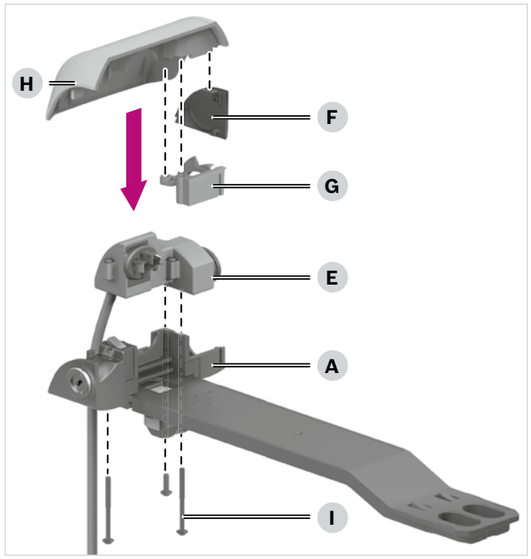
- Lock on frame: **4–5 Nm**
- Lock cover: **2 Nm**

Mounting aid

- Blue PowerPack assembly jig **0.275.009.004**

Install rack battery





Work steps

Pre-installation of the PowerPack mount

1. Slide the rail (A) into the key cylinder (B) and clip it on
2. Place the appropriate guide rail adapter (C or D) into the hooks on the rail
3. Insert the plug with PowerPack cable (E) into the key cylinder
4. Insert the plug cover (F) with mount (G) into the lock cover (H)
5. Put on the lock cover (H) and tighten it with three screws (I)

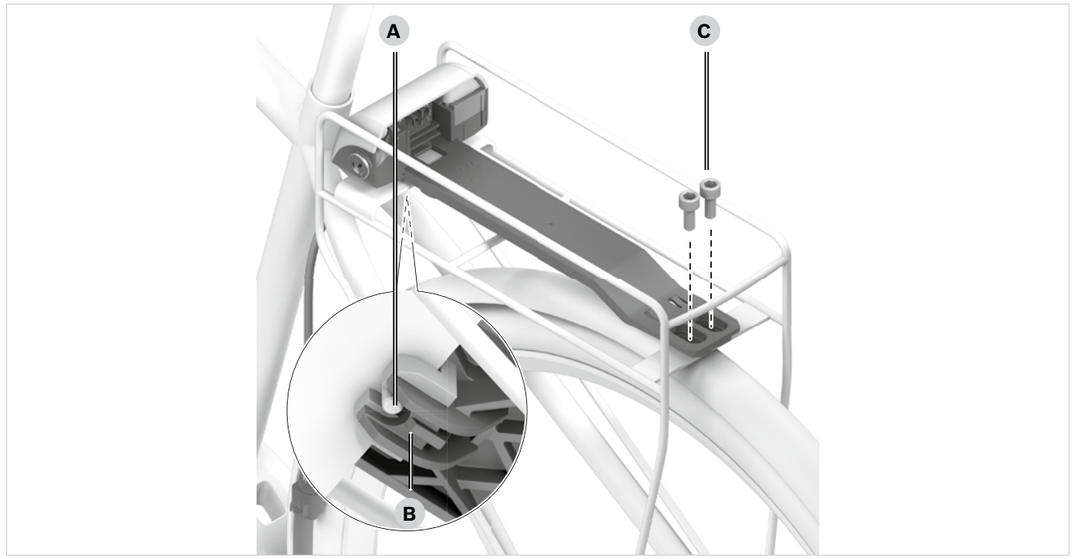
Key cylinders (incl. lock cylinders) are available from ABUS, AXA-BASTA and TRELOCK or their respective dealer partners

Tool

- Torx T15
- Torque wrench

Tightening torques

- Lock cover on the key cylinder: **2 Nm**



Work steps

Install the PowerPack mount

1. Insert the PowerPack mount into the rack. Make sure that the centring pin (A) on the bike rack engages in the cut-out on the guide rail adapter (B)
2. Tighten the PowerPack mount using two screws (C) on the rear traverse of the rack (screws not included in scope of delivery)

Matching luggage racks can be purchased from e.g. Curana, Hebie, Pletscher, Tubus-Racktime

Tool

- Tool depends on the screws used
- Torque wrench

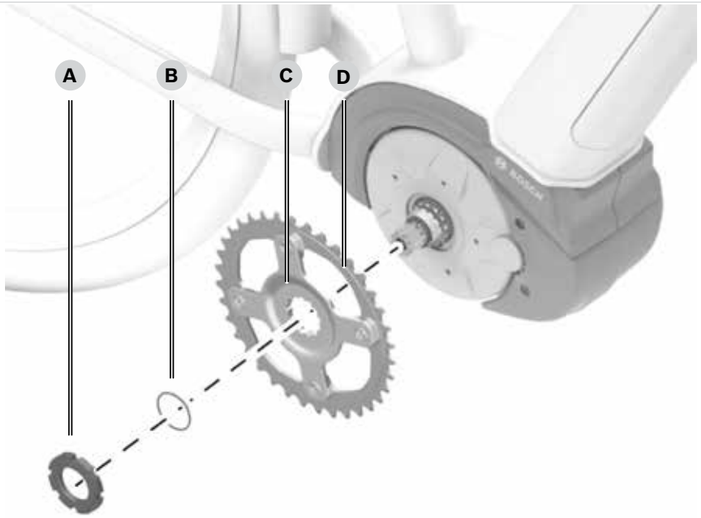
Tightening torques

- PowerPack mount on the rack: according to manufacturer's specifications

Spare parts

- Stop in the PowerPack mount **1.270.014.018**

Removing Drive Unit (BDU310/350)



Work steps

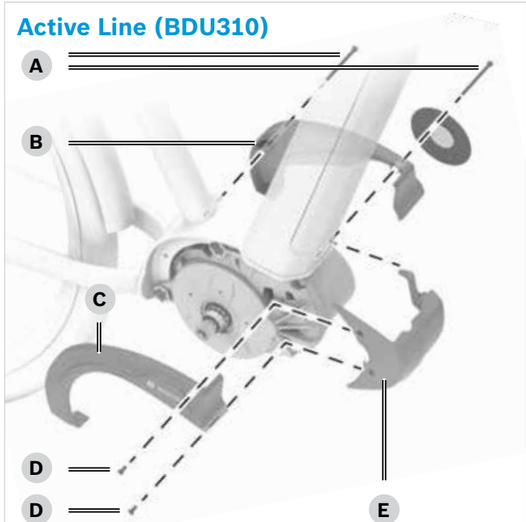
Loosening chainring from the spider

1. Remove the crank arms
2. Block the rear wheel, e.g. secure the brake lever with a cable tie or similar
3. Use the lockring tool to unscrew the spider nut (A) As it has a left-hand thread, turn it to the right
4. Loosen the brake lever again
5. Remove the chain
6. Remove the O-ring (B) and carefully check it for damage. Only reuse O-rings if they are intact
7. Remove the chainring (D) together with the mounted spider (C)

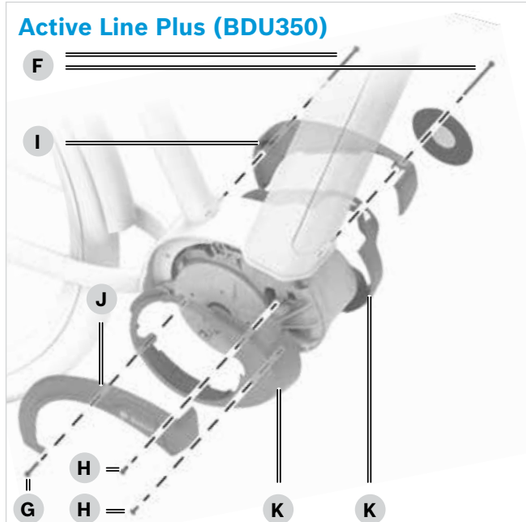
Tool

- Allen key size 8
- Standard crank-puller
- Lockring tool **0.275.009.003**, available from dealer online stores

Active Line (BDU310)



Active Line Plus (BDU350)



Work steps

Remove the design cover

Active Line (BDU310):

1. Remove the two screws (A)
2. Remove both the left (B) and right (C) design covers
3. Remove the two screws (D) and remove the front piece (E)

Active Line Plus (BDU350):

1. Loosen two screws (F) and remove the top left design cover (I)
2. Loosen a screw (G) and remove the bottom left design cover (K)
3. Loosen two screws (H) and remove the right hand design covers (J, K)

Disconnect the cable connections on the Drive Unit

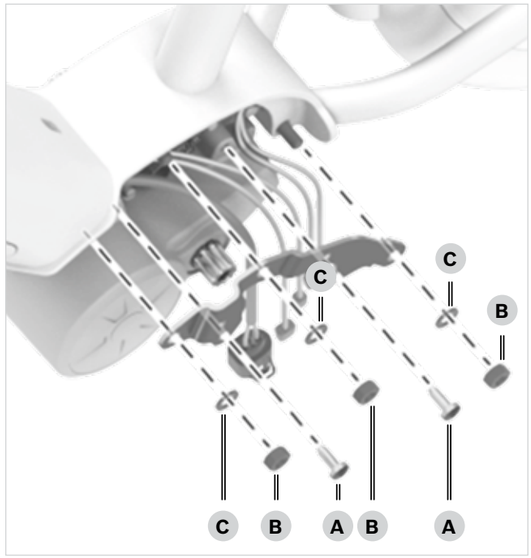
- Remove the cable ties
- Carefully detach all cables using an electronics-suitable flat nose pliers (M). The connector plug on the battery has a locking hook (L). Make sure to use a screwdriver to pry it up by 1–2 mm

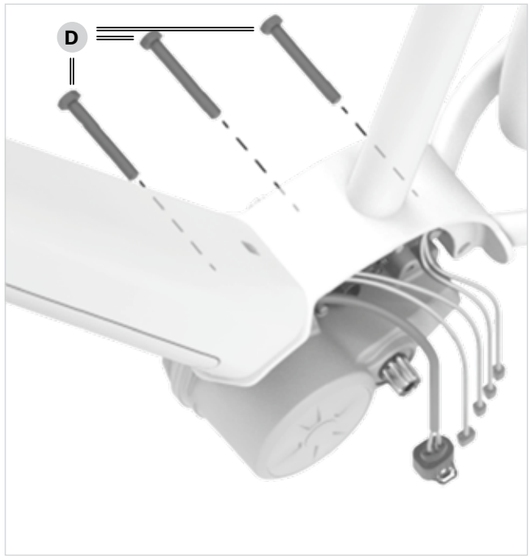
Do not damage the plug and cable! Never pull the cable directly!

Tool

- Torx T20
- Side cutters
- Small slot-headed screwdriver
- Electronics-suitable flat nose pliers

Removing Drive Unit (BDU310/350)





Work steps

Remove the Drive Unit

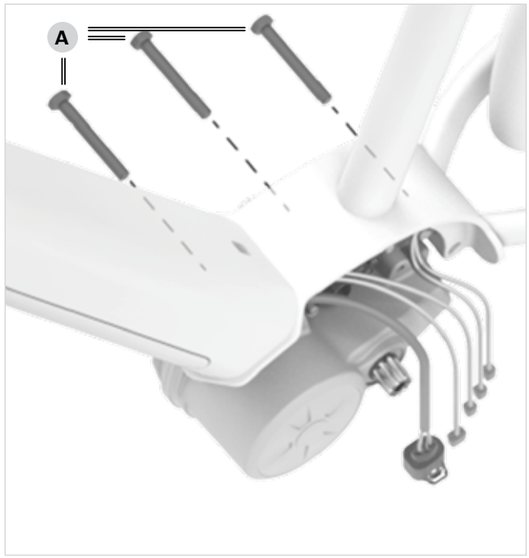
1. Check that all cables are disconnected. Pull out all cables as far as possible from the frame interface
2. Remove the two screws (A)
3. Loosen three nuts (B) and remove the shims (C)
4. Unscrew the three hexagon bolts (D) and pull them from the frame interface along with the Drive Unit

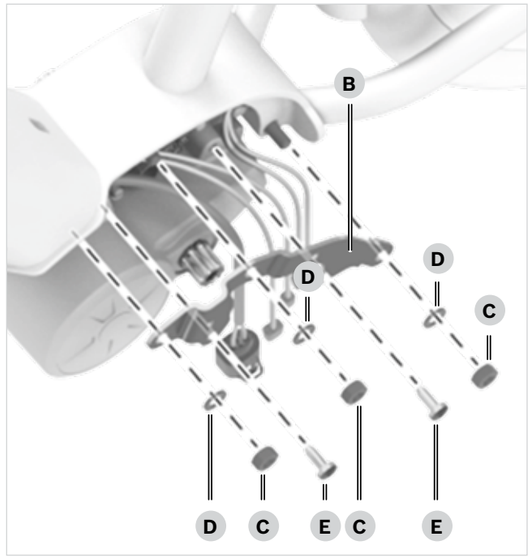
Make sure to secure the Drive Unit so it cannot fall

Tool

- Torx T30
- Hexagonal socket wrench insert size SW 13

Install the Drive Unit (BDU310/350)





Work steps

Insert the Drive Unit

1. Insert all cables as far as possible into the frame interface
2. Mount the Drive Unit including three hexagon bolts M8 x 60 (A) on the frame interface

Make sure that no cables are pinched

Fasten the Drive Unit with screws

1. Insert the mounting plate (B) in such a way that the cables can pass underneath and are not trapped
2. Lightly screw on the three nuts (C) with shims (D), but do not tighten them
3. Screw down the mounting plate on the Drive Unit with two screws (E) (M6x16). Note the torques!
4. Tighten three nuts (C) to secure the Drive Unit on the frame interface. Note the torques!

Connect the cable connections

1. Fix excess cable lengths using cable ties. Use the holes in the mounting plate (B) for this purpose
2. Connect the cable connections. Plugs have latching lugs (K). Make sure that these point in the right direction

You should feel them engage. Plugs are colour coded and mechanically coded and can be attached almost without any force. Do not apply force!

Latching lug on plug for front light

Tool

- Torx T30
- Hexagonal socket wrench insert size SW 13
- Torque wrench

Tightening torques

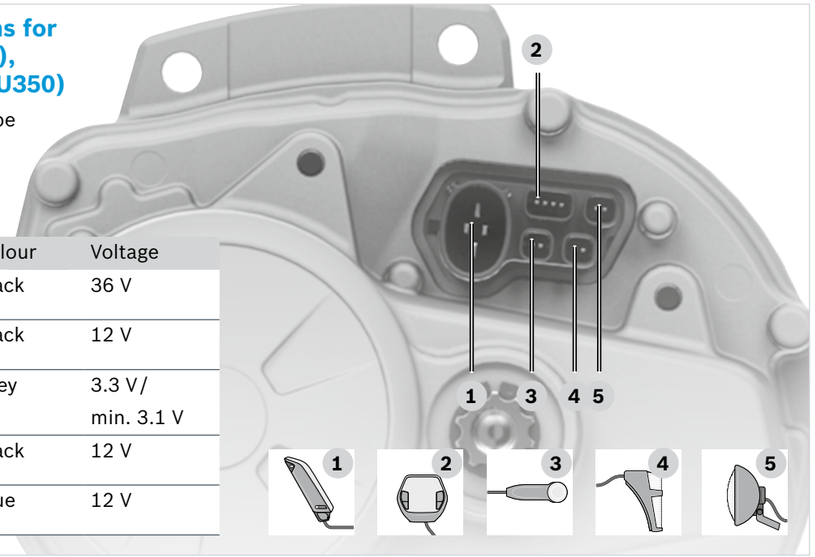
- Drive Unit on the frame interface: **28–30 Nm**
- Mounting plate on the Drive Unit:
  - Initial assembly (self-tapping): **13–15 Nm**
  - Subsequent assemblies (thread already exists): **9–11 Nm**

- New Drive Units do not include threads in the mounting for the mounting plate screws. The threads must be produced using self-tapping screws
- Always make sure that the screws are correctly seated and that the specified tightening torque is used

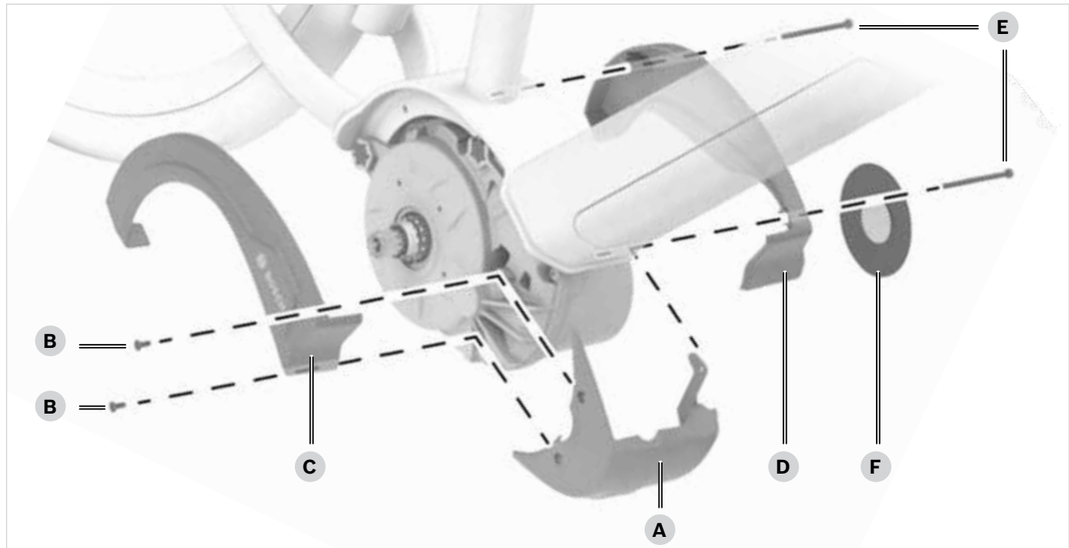
Install the Drive Unit (BDU310/350)

Electrical connections for Active Line (BDU310), Active Line Plus (BDU350)

The Drive Unit can be damaged if a plug is connected incorrectly.



Pos.	Connection	Colour	Voltage
1	Battery	Black	36 V
2	Display	Black	12 V
3	Speed sensor	Grey	3.3 V/ min. 3.1 V
4	Rear light	Black	12 V
5	Front lamp	Blue	12 V



Work steps

Connection for bicycle lighting

1. Only connect DC headlamps without a parking light function

   Matching DC headlights and tail lights are available from, e.g. Axa, Busch & Müller, Lupine, Spanninga, Supernova and Trelock

2. Observe the current rating:
   - Output power for lighting: 9 W at 6 V, 18 W at 12 V, max. 1500 mA
   - Distribution of the output current to the front and rear light as required
3. Remove the blanking plugs on the slots to connect the lighting cable. It is not necessary to occupy both lighting slots
   - Do not remove the blanking plugs from the slots if the light connections are **not** used
4. Enable the power supply via the DiagnosticTool (see p. 132)

Original Bosch eBike lighting cables are available from Bosch eBike service partners

Note on eShift wiring

- The electronic gear shifting system is powered by the battery, hence the power cable from the battery to the Drive Unit is a Y-cable (available as a Bosch spare part)

Y cables are used solely for the eShift power supply. If they are connected to other components, all warranty claims will be rendered void

Work steps

Installing the Active Line (BDU310) design cover

1. Place the front piece (A) on the Drive Unit and screw onto the housing using two M4 x 10 screws (B)
2. Place the design cover (C, D) on the Drive Unit and move into position without pressure. Pay attention that both parts engage into each other correctly
3. Screw together with two M4 x 55 screws (E)
4. Glue on the Bosch logo cover (F) if necessary
   - The gluing surface must be clean and free of grease
   - Pay attention to the installation position: the lettering must be positioned horizontally
   - Firmly press the cover onto the adhesive surfaces at room temperature (> 18° C) for at least 10 seconds

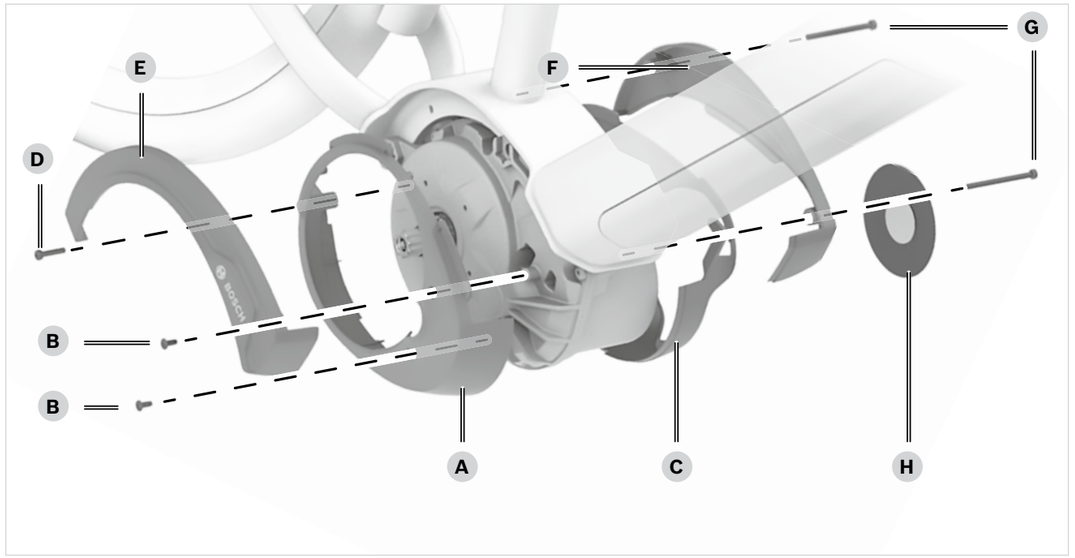
Tool

- Torx T20
- Torque wrench

Tightening torques

- Front piece on housing
  - Initial assembly (self-tapping): **3 Nm**
  - Subsequent assembly: **2 Nm**
- Design cover: **1 Nm**

Install the Drive Unit (BDU310/350)



Work steps

Install the Active Line Plus (BDU350) design cover

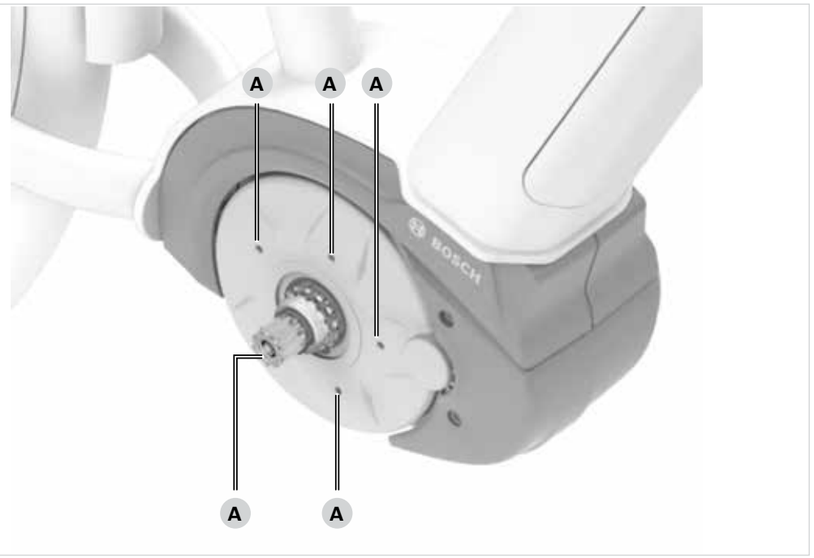
1. Place the right-side lower design cover (A) on the Drive Unit and screw onto the housing using two M4 x 10 screws (B)
2. Attach the lower left design cover (C). Make sure that all parts engage correctly
3. Screw on the two design covers using an M4 x 20 screw (D)
4. Place on the right-side upper design cover (E) and clip into the lower design cover (A).
5. Attach the left-side upper design cover (F) and screw on using two M4 x 55 screws (G)
6. Glue on the Bosch logo cover (H) if necessary
   - The gluing surface must be clean and free of grease
   - Pay attention to the installation position: The lettering must be positioned horizontally
   - Firmly press the cover onto the adhesive surfaces at room temperature (> 18° C) for at least 10 seconds

Tool

- Torx T20
- Torque wrench

Tightening torques

- Lower design cover on housing
  - Initial assembly (self-tapping): **3 Nm**
  - Subsequent assembly: **2 Nm**
- Top design cover: **1 Nm**



Work steps

Mounting a chain guard adapter (optional)

- Available from bike manufacturers

1. Secure the adapter (A) at the screw-on points provided using up to five screws
2. Use M4 x 10 self-tapping screws (length may deviate depending on the chain guard manufacturer).

Only use original screws from the chain guard manufacturer.

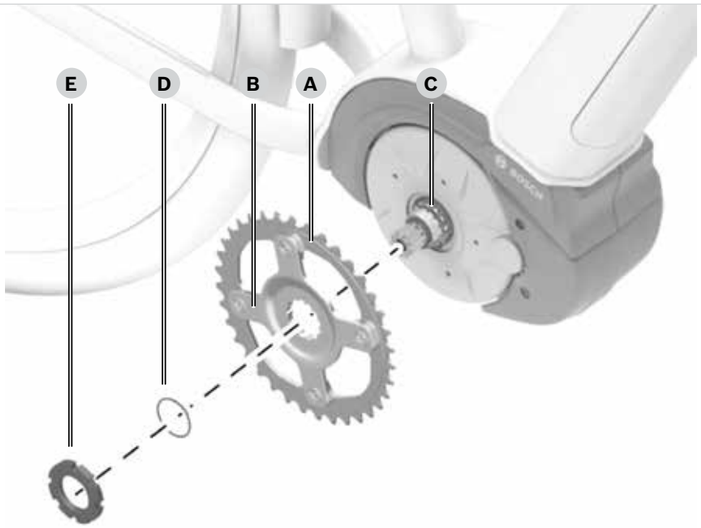
Tool

- Torx T20
- Torque wrench

Tightening torques

Chain protection adapter on the Drive Unit: **according to manufacturer's specifications**

Install the Drive Unit (BDU310/350)



Work steps

Mounting the spider on the Drive Unit

1. Mount the left-side crank arm. To do this, grease the bottom bracket shaft and then tighten bolt M10 x 1. Tighten using a torque wrench
2. Press chainring (A) along with the mounted spider (B) onto the lightly greased interlock (C). The spider must be on the side facing away from the bike
3. Slide the O-ring (D) on as far as the spider. Only use O-rings if they are intact.
4. Grease the cleaned lockring threads and tighten the lock-ring. The lettering on the lock-ring must be visible
   - The lockring has a left-hand thread, so tighten it to the left with the lockring tool
   - Hold it back with the left crank
5. Grease the right-side bottom bracket shaft and mount the crank arm with the crank bolt M10 x 1

Tool

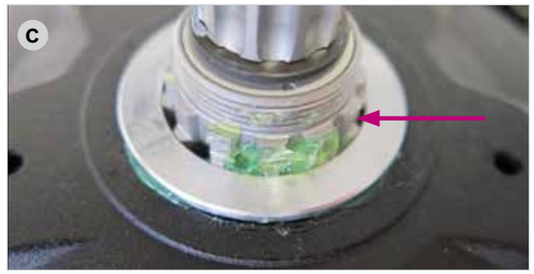
- Allen key size 8
- Torque wrench
- Lockring tool (**0.275.009.003**, available from dealer online stores)
- Bearing grease and brush

Tightening torques

- Lock ring: **25-30 Nm**
- Crank arms on bottom bracket shaft: **according to manufacturer's specifications**

Retrofit and maintenance of bearing protection ring BDU 3xx

NEW



Work steps

A bearing protection ring was introduced in the factory in April 2018 to increase the robustness of the Active Line / Active Line Plus Drive Units (BDU3xx). For retrofitting, the ring is available as a spare part

Install the bearing protection ring

1. Remove the right crank
2. Remove the spider with chainring and O-ring (left-hand thread!)
3. Carefully clean the area in front of the bearing and chainring spider with a brush/cloth and/or a gentle jet of compressed air (A). DO NOT use cleaning agents!
4. Evenly apply bearing protection all around the bearing (B)
5. Press on the bearing protection ring and twist it onto the motor shaft (see arrow) so that bearing protection grease is evenly distributed (C)
6. Remove any excess grease (D).

   If no grease emerges, then you have not applied enough! Carefully loosen the cover ring again and apply a little more grease (D)
7. Attach the spider with chainring and push on the O-ring, then tighten the spider nut (left-hand thread!)
8. Attach the crank according to manufacturer's specifications
9. Make a note of the upgrade in the customer documentation

Bearing protection ring maintenance

As a maintenance measure on the Drive Unit it is advisable to replace the contaminated grease on the bearing protection ring. Use the recommended bearing protection grease

1. Steps 1 and 2 are as described in the left hand column
2. Tip up the ring by using your fingertip to place gentle pressure on the outside edge and remove it
3. Use a lint-free cloth to remove grease and dirt from the ring
4. Steps 3 to 8 are as described in the left hand column

Tool

- Allen key size 8
- Standard crank-puller
- Lockring tool (**0.275.009.003**, available from dealer online stores)
- Torque wrench
- Brush/cloth, possibly compressed air

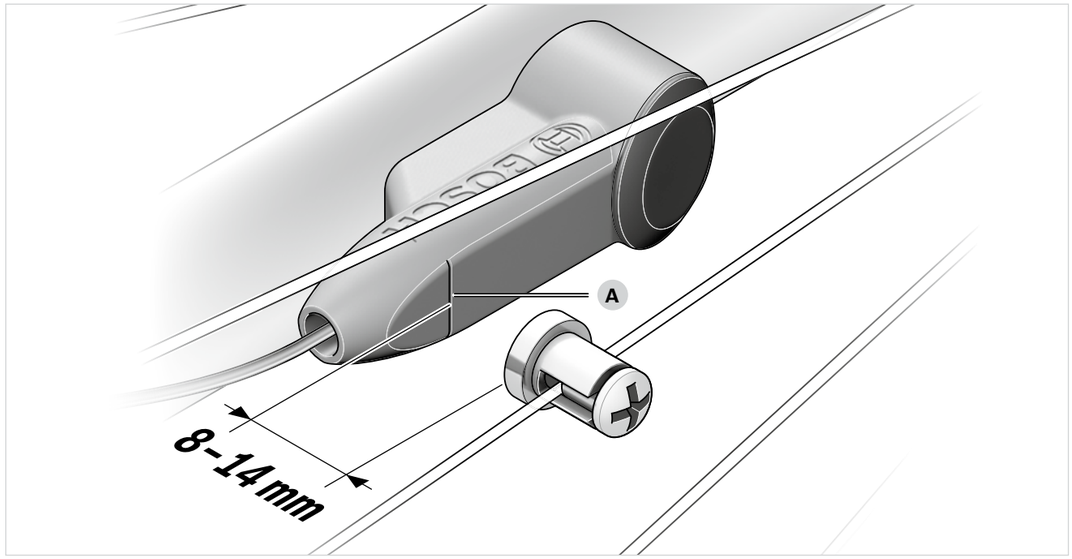
Tightening torques

- Spider nut: **25 –30 Nm**
- Crank arms on bottom bracket shaft: **according to manufacturer's specifications**

Spare parts

- 8 bearing protection rings and 20 ml bearing protection grease **1.270.020.150** (available from dealer online stores)

Install a speed sensor



Work steps

Install the speed sensor and spoke magnet

1. Screw the sensor into the frame thread provided. Push on the protective cap
2. Attach the magnet to the spoke:
   - Installation position: in parallel opposite the marking (A)
   - Optimum clearance: 8–14 mm (due to risk of multiple signals or distortion of the rear wheel)
   - Range of the magnet: 5–17 mm
3. If necessary readjust the sensor with additional spacers

Tool

- Torx T20
- Phillips screwdriver size PH02
- Torque wrench

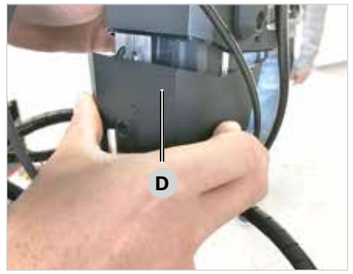
Tightening torques

- Sensor on frame: **3 Nm**
- Spoke magnet: **1 Nm**

Spare parts

When replacing the spoke magnet only use an original Bosch spare part (**1.270.015.931**). Standard bike computer magnets do not have sufficient magnetic strength.

Remove an ABS control unit



Work steps

Remove the front housing

1. Unscrew two side screws, left (A) and right (B)
2. Remove the front housing

Remove the rear housing

1. Loosen the screw on the back (C)
2. Remove the rear housing (D)

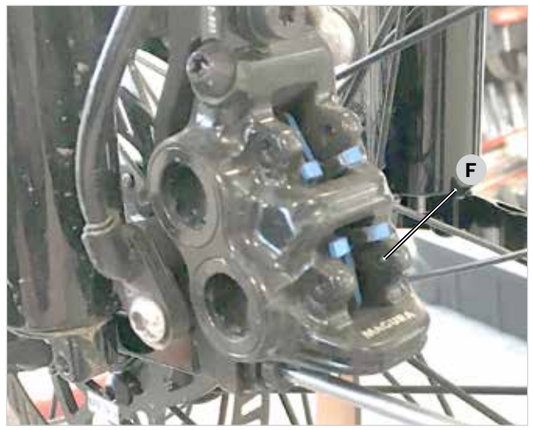
The housing parts are locked together

Remove the brake lever and brake calliper

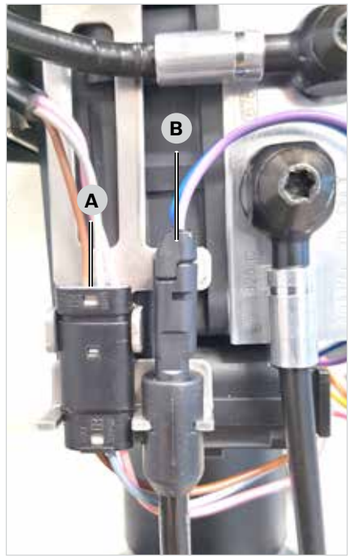
1. If necessary release the control unit on the handlebar and push it to the side slightly
2. Remove the brake lever (E, one-piece clamp)
3. Remove the screws on the brake calliper (F) and take off the brake calliper

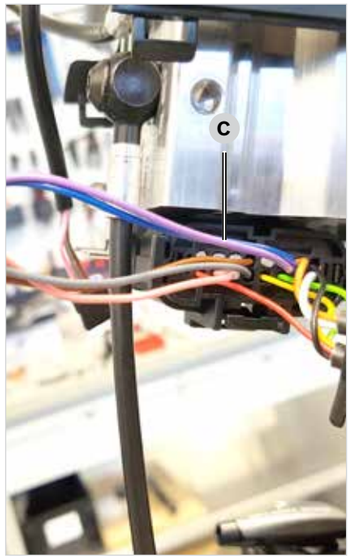
Tool

- Allen key size 3
- Torx T20
- Torx T25
- Torx T30



Remove an ABS control unit





Work steps

Loosen the plug

1. Disconnect the control light (A) plug
2. Disconnect the front ABS wheel speed sensor plug (B)
3. Remove the 16-pin plug (C) by pressing the locking connection

Remove the control unit

1. Remove the screws (D) on the top of the housing
2. Loosen the control unit from the mount

Tool

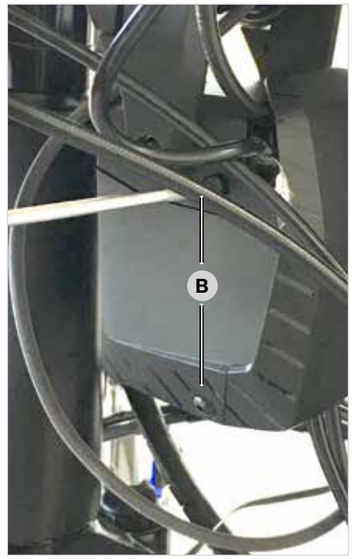
- Torx T30

Spare parts

When replacing the control unit, order an ABS service kit with the correct specification

Do not send in any housing parts or mounts!

Remove the ABS control light



Work steps

Remove the front housing and disconnect the plug

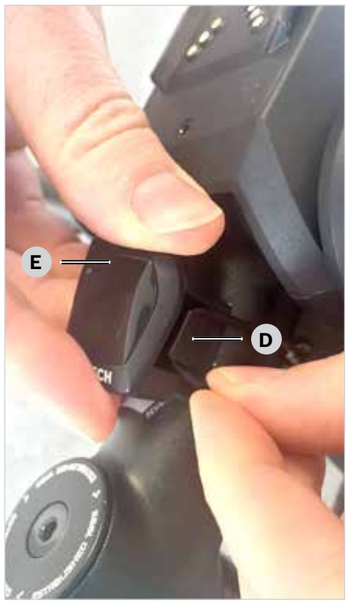
1. Unscrew two side screws, left (A) and right (B)
2. Remove the front housing
3. Disconnect the control light (C) plug

Remove the control light to replace it

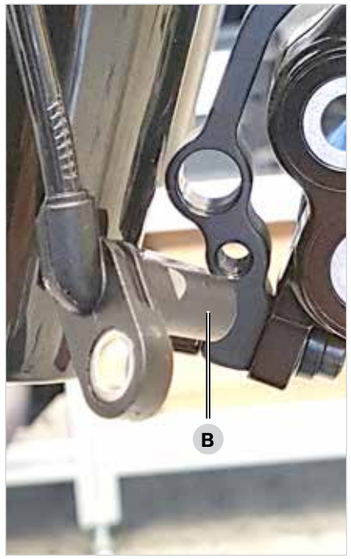
1. Loosen the O ring (D)
2. Remove the control light (E)
3. Thread the cable out from under the on-board computer mount

Tool

- Allen key size 3
- Torx T20
- Torx T25
- Torx T30



Remove ABS wheel speed sensors



Work steps

Remove the front speed sensor

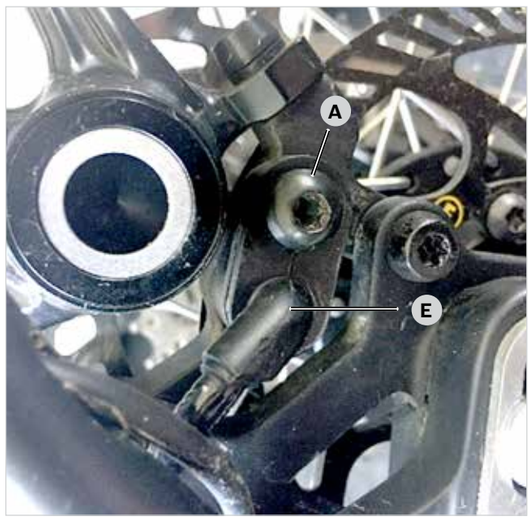
1. Release screw (A) and remove the speed sensor (B)
2. Remove any cable ties on the frame
3. Disconnect the plug on the control unit (see p 228)

Remove the rear speed sensor

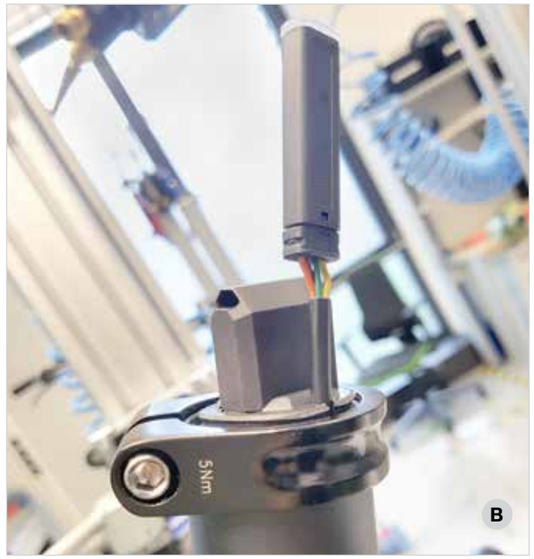
1. If necessary remove the Drive Unit (see p. 216 ff)
2. Disconnect the rear wheel speed sensor connector (C) from the cable harness
3. Release screw (D) and remove the speed sensor (E)
4. Remove any cable ties on the frame

Tool

- Torx T25



Remove the Bosch Component Connector and sensor disc



Work steps

Remove the Component Connector

Depending on the installation situation/space available:

- **Option 1:** Remove the Component Connector via the motor frame interface (A)
- **Option 2:** Remove the Component Connector from the top of the saddle tube (B)
- Other attachment positions are possible

Release plug connections

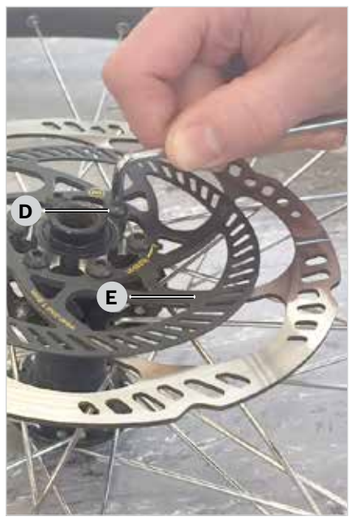
1. Detach Component Connector plug-in connectors (C)

Remove the sensor disc if necessary

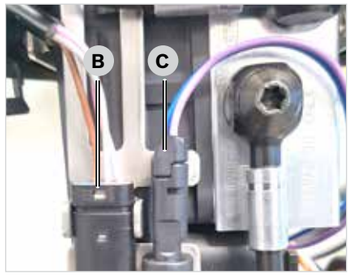
1. Remove the running wheel
2. Loosen the screws (D) and unscrew
3. Remove the sensor disc (E)

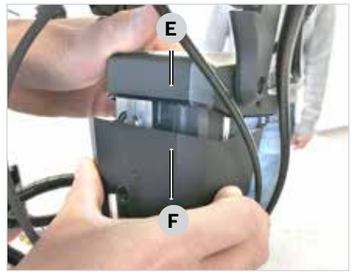
Tool

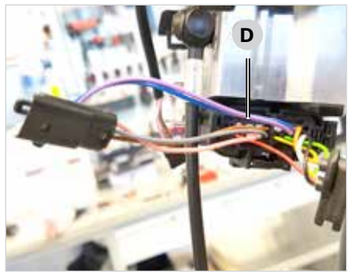
- Torx T25



Install an ABS control unit







Work steps

Fit the control unit on the mount

1. Insert the control unit from below into the mount
2. Screw in and tighten the M6 x 12 screws (A)

Connect the plug

1. Connect the plug for the control light (B) and insert it into the mount
2. Connect the plug of the front wheel speed sensor (C) and insert it into the mount
3. Connect the 16-pin plug (D)

Install the rear housing

- Push up the lower, rear housing section (F) from the bottom to the top and tighten it with an M6 x 12 screw (G)

The two housing parts must lock together

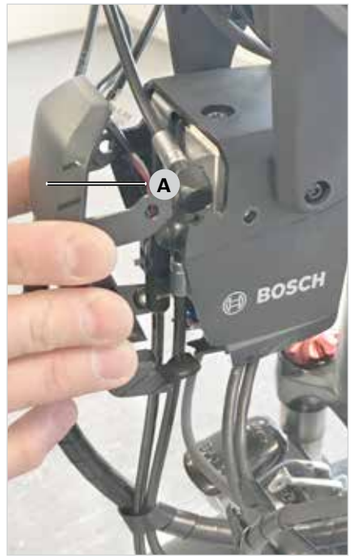
Tool

- Torx T30
- Torque wrench

Tightening torques

- Rear housing section on the mount: **1 Nm**

Install an ABS control unit



Work steps

Install the front housing

1. Attach the front housing (A) horizontally
2. Secure with four M4 x 7.5 screws (B, C), left and right

Screw down the ABS housing

1. Position the ABS housing correctly and screw in the M4 x 14 (D) screws by means of clamps in the ABS housing
2. Place the ABS control unit in a vertical position (tolerance ±10°)
3. If necessary tighten the M4 x 14 screws (D) on the clamps

After you have replaced the ABS control unit or ABS wheel speed sensor, you must perform a functional check with the Diagnostic-Tool (see p. 136)

Tool

- Torx T20
- Torx T30
- Torque wrench

Tightening torques

- Front housing section on ABS housing: **1 Nm**
- ABS control unit on the mount: **3 Nm**

Install an ABS control unit

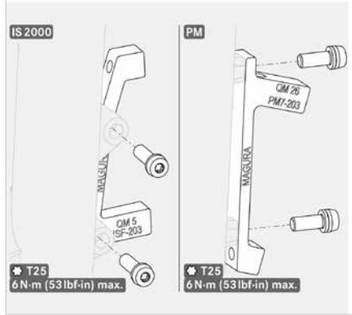
Work steps

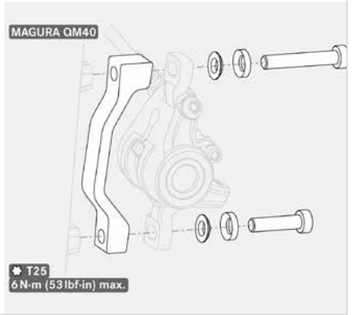
Push on the brake lever and position the brake calliper

1. Push on the brake lever (A)
2. Push on and install the handlebar grip
3. Guide the brake calliper along the fork and let it hang down without installing it (B)

Install the brake calliper and brake lever

1. Push the original Magura bolts through the brake calliper and adapter and screw them to the brake mount (C)
2. Push on the brake lever (A), align it and secure it





Tool

- Torx T25
- Torque wrench

Tightening torques

- Brake lever on the handlebar: **4 Nm**
- Brake calliper on the brake mount: **6 Nm**

Install a Bosch Component Connector

Connection 1: eShift cable
Connection 2: ABS
Connection 3: Dummy plug

Work steps

Connect the plug-in connectors

1. Note the bicycle manufacturer's original attachment position
2. Connect the Component Connector plug-in connectors (A)

- It is only possible to connect the Component Connector to the eBike ABS using the supplied plug adapters and the eShift cable
- The dummy plug must also be closed off with one of the adapters and additionally with the blanking plug

Install the front wheel speed sensor

Work steps

Install a speed sensor

1. Insert the sensor (A) and Insert the spacer into the mount (B) from outside
2. Screw the bolt M6 x 20 (C) into the adapter for the calliper mounting

Check the sensor clearance

1. Use a feeler gauge to check the distance between the sensor (A) and the sensor disc (D). Target: ≤ 1.0 mm
2. Adjust with 0.2 mm shims (DIN 988 - 6 x 12 x 0.2) as necessary
   - Between the adapter and spacer or
   - Between the sensor and spacer

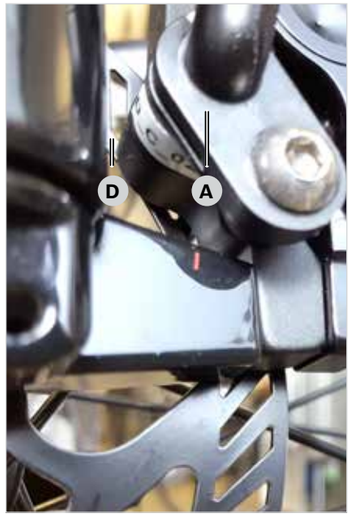
Caution: only use a maximum of 2 shims

Tool

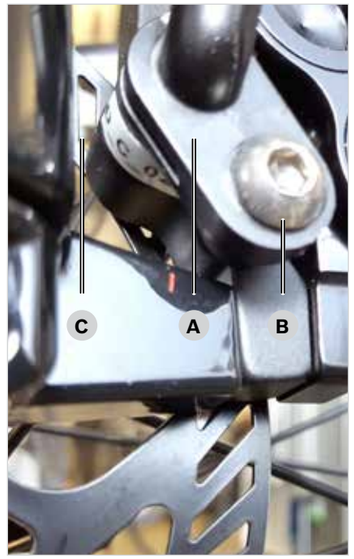
- Torx T25
- Feeler gauge
- Torque wrench

Tightening torques

- Bolt in the adapter for the calliper mounting: **6 Nm**



Install the rear wheel speed sensor



Work steps

Install a sensor

1. Insert the sensor (A) and spacer in the mount from outside
2. Screw the bolt (B) into the adapter for the calliper mounting

Check the sensor clearance

1. Use a feeler gauge to check the distance between the sensor (A) and the sensor disc (C). Target: ≤ 1.0 mm
2. Adjust with 0.2 mm shims (DIN 988 - 6 x 12 x 0.2) as necessary
   - Between the adapter and spacer or
   - Between the sensor and spacer

Caution: only use a maximum of 2 shims

Install a plug

1. Lay the cable along the frame to the Drive Unit
2. Connect the speed sensor connector (D) to the cable harness
3. Continue installing the Drive Unit

After you have replaced the ABS control unit or ABS wheel speed sensor, you must perform a functional check with the Diagnostic-Tool (see p. 136)

Tool

- Torx T25
- Feeler gauge
- Torque wrench

Tightening torques

- Bolt in the adapter for the calliper mounting: **6 Nm**

Install the front and rear ABS sensor disc

Work steps

Install the sensor disc

1. Position the sensor disc (A) on brake disc
2. Tighten original Magura screws with Magura torques (B)
   – Note the sequence of the screws!
3. Install a running wheel

Tool

- Torx T25
- Torque wrench

Tightening torques

- Sensor disc on brake disc: **max. 4 Nm**

Tightening Torques and Tool

Components	Tool	Tightening torque
Drive Unit		
Drive Unit BDU310/350 on the frame interface	Hexagonal socket wrench insert size 13	28–30 Nm
Mounting plate on the Drive Unit	Torx T30	Initial assembly (self-tapping): 13-15 Nm Subsequent assemblies (thread already exists): 9-11 Nm
Chain protection adapter on the Drive Unit	Torx T20	according to manufacturer's specifications
Spider nut on Drive Unit BDU310/350	Lock Ring Tool	25-30 Nm
Design cover	Torx T20	1 Nm
Front piece of design cover on housing (Active Line BDU310/350)	Torx T20	Initial assembly (self-tapping): 3 Nm Subsequent assemblies (thread already exists): 2 Nm
Cable guard (Performance Line CX)	Torx T20	1 Nm
Crank arms on bottom bracket shaft	Allen key size 8	according to manufacturer's specifications
Speed sensor		
Sensor on frame	Torx T20	3 Nm
Spoke Magnet	Phillips screwdriver size PH02	1 Nm
PowerTube		
Aluminium plate on the L-shaped mount	Torx T25	5 Nm
Mount system on L-shaped mount/U-shaped mount	Torx T25	5 Nm
Lock on threaded flange	Torx T20	4 Nm
Rack battery		
Lock cover on the key cylinder	Torx T15	2 Nm
Frame battery		
Mount adapter on frame	Torx T25	4 Nm
Mount casing	Torx T15	2 Nm
Lock on frame	Allen key size 4	4–5 Nm
Lock cover on the lock	Torx T15	2 Nm

Tightening Torques and Tool

Components	Tool	Tightening torque
On-Board Computer and Control Unit		
Clamping the mount on the handlebar	Allen key size 3	1 Nm
Fastening the on-board computer to the mount	Phillips screwdriver size PH02	Intuvia, Nyon: 1 Nm, Kiox: 0.5 Nm
Kiox: Mount on stem (Ahead mount)	depending on the screw on the Ahead mount	according to the specifications of the Ahead mount manufacturer
Clamping the control unit on the handlebar	Hexagonal socket, Intuvia, Nyon: Size 3; Kiox: Size 2.5	1 Nm
Mounting plate on the mount	Allen key size 2.5	1 Nm
Cable box on the mounting plate	Allen key size 2.5	should be loosely tightened by hand
Control unit cable on bicycle on-board computer mount	Phillips screwdriver size PH00	should be loosely tightened by hand
ABS		
ABS housing sections on the mount/ABS housing	Torx T20 (front) Torx T30 (rear)	1 Nm
ABS control unit on the mount	Torx T30	3 Nm
Brake lever on the handlebar	Torx T25	4 Nm
Brake calliper on the brake mount	Allen key size 3	6 Nm
Wheel speed sensors front/rear on calliper mount adapter	Torx T25 Feeler gauge (installation)	6 Nm
Front/rear sensor disc on brake disc	Torx T25	max. 4 Nm

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