Bosch eBike Systems

Training 2013

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Welcome!

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Overview

- Robert Bosch GmbH
- Bosch eBike Systems
- Innovations 2013
  - Intuvia bicycle computer with control unit
  - Simplified and ergonomic operation
  - Charger
  - Battery
- Drive and control
- PowerPack (battery)
  - Charging
  - Storage
  - Winter operation
  - Transport and shipping
  - Disposal
- Bosch eBike service
- Installing/removing eBike components
- eBike diagnostics with the diagnostics tool
  - Old and new diagnostics kit
  - Configuration, updates and diagnostics reports
  - Reference error codes
- Troubleshooting
  - Useful tips for difficult cases

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Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

Drive and control

PowerPack (battery)

Bosch eBike service

Installing/removing eBike components

eBike diagnostics with the diagnostics tool

Troubleshooting

1

Robert Bosch

The entrepreneur

- “Never forget your humanity, and respect human dignity in your dealings with others.”
- “I don't count so much because I am wealthy, I am wealthy because I count so much!”

This is not the only reason why Robert Bosch was referred to by his entrepreneurial contemporaries as the “Red Bosch”, as he also made social history.

Robert Bosch
*1861, † 1942

Robert Bosch GmbH

- Founded in 1886 as the “Workshop for Precision Mechanics and Electrical Engineering” in Stuttgart.
- The company employs about 312,000 people worldwide, 43,000 of them in research and development
- 51 Billion € in sales revenues (2011)
- The largest limited company (GmbH) in the world – owned by the Robert-Bosch-Stiftung
- Bosch is one of the most innovative technology companies worldwide
- Bosch invested more than 30 Billion € in research and development over the last decade.
- Innovations that make life safer, more comfortable and more environmentally sustainable – **Technology for life**

Three business sectors and divisions

Automotive technology	Industrial technology	Consumer goods and building technology
 1	 2	 3

Experience and competence

Automotive technology	Industrial technology	Consumer goods and building technology
 1	 2	 3
For example: Electric motors from Bosch for hybrid drives	For example: Packaging machines	For example: Hammer drill with integrated dust suction
➔ About 59 % of overall Bosch sales ➔ Injection technology, power steering, alternative drive systems, driving safety systems, etc.	➔ Drive and control technologies, packaging and process technology, solar technology	➔ Power tools, safety and communication products and services, domestic appliances, thermo technology

BOSCH

Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

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Bosch eBike service

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1

Target groups of Bosch eBike Systems

BOSCH

Our OEM partners for model year 2013

More than 40 brands and 30 manufacturers

The list of our OEM partners is expanding continuously.

D = Speed, Germany only

CH = Speed, Switzerland

BOSCH

Riding pleasure with *Cruise* and *Speed*

1

Customer benefits
- Sets the standard in terms of efficiency and torque
- A steam hammer in all applications
- Optimum handling due to its low weight and low centre of gravity
- Efficient and reliable temperature monitoring

2

Cruise
- Assistance speed 25 km/h
- Max. output 500 W
- Nominal output 250 W
- Max. torque 50 Nm
- Weight < 4 kg

Speed
- Assistance speed 45 km/h
- Max. output 500 W
- Nominal output 350 W
- Max. torque 50 Nm
- Weight < 4 kg
- Identical frame interface and design as the 25 km/h version

Speed Version up to 45 km/h

What you need to know about 45 km/h eBikes (legal situation in Germany)

- Necessary:
  - Class M driving license if born after 01 April 1965 (minimum age: 15 years old)
  - Insurance plate, no private third-party insurance cover
  - Operating license
- No child trailers and seats
- Same blood-alcohol limit as with motor bikes (0.5 ‰)
- The motor limits the speed at 45 km/h. Otherwise the eBike would be classified as a light motorcycle requiring a driving license and registration.

Speed Version up to 45 km/h

- Helmet is mandatory: A “suitable” helmet must be worn.

- Bicycle lanes:
  - Can be used in urban areas only when permitted for mopeds, allowed outside urban areas
  - The ban applies for all long-distance cycling paths, forest tracks, for pedestrian zones where cyclists are permitted and bicycle parking facilities
  - Travelling in the opposite direction on one-way streets is not permitted

Robert Bosch GmbH

Bosch eBike Systems

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Troubleshooting

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BOSCH

Overview

Control unit

NEW

(Mounted on left handlebar side)

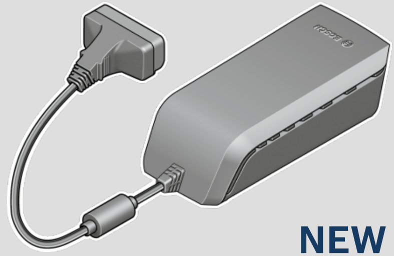
1

Bicycle computer Intuvia

NEW

2

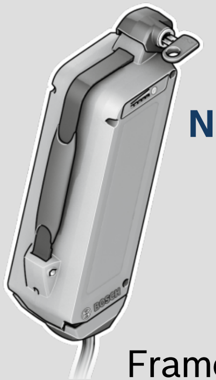
Charger



NEW

3

Battery



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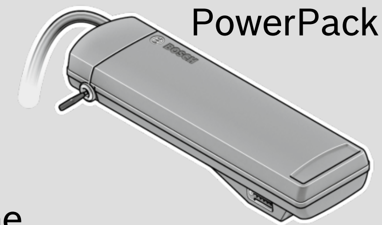


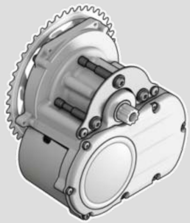
2 battery capacities
PowerPack 300
PowerPack 400

Frame

Rack type (back carrier)

4

Drive Unit



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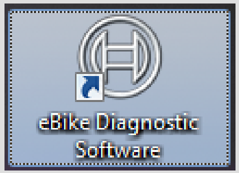
(includes the motor and control electronics)

Diagnostics kit



NEW

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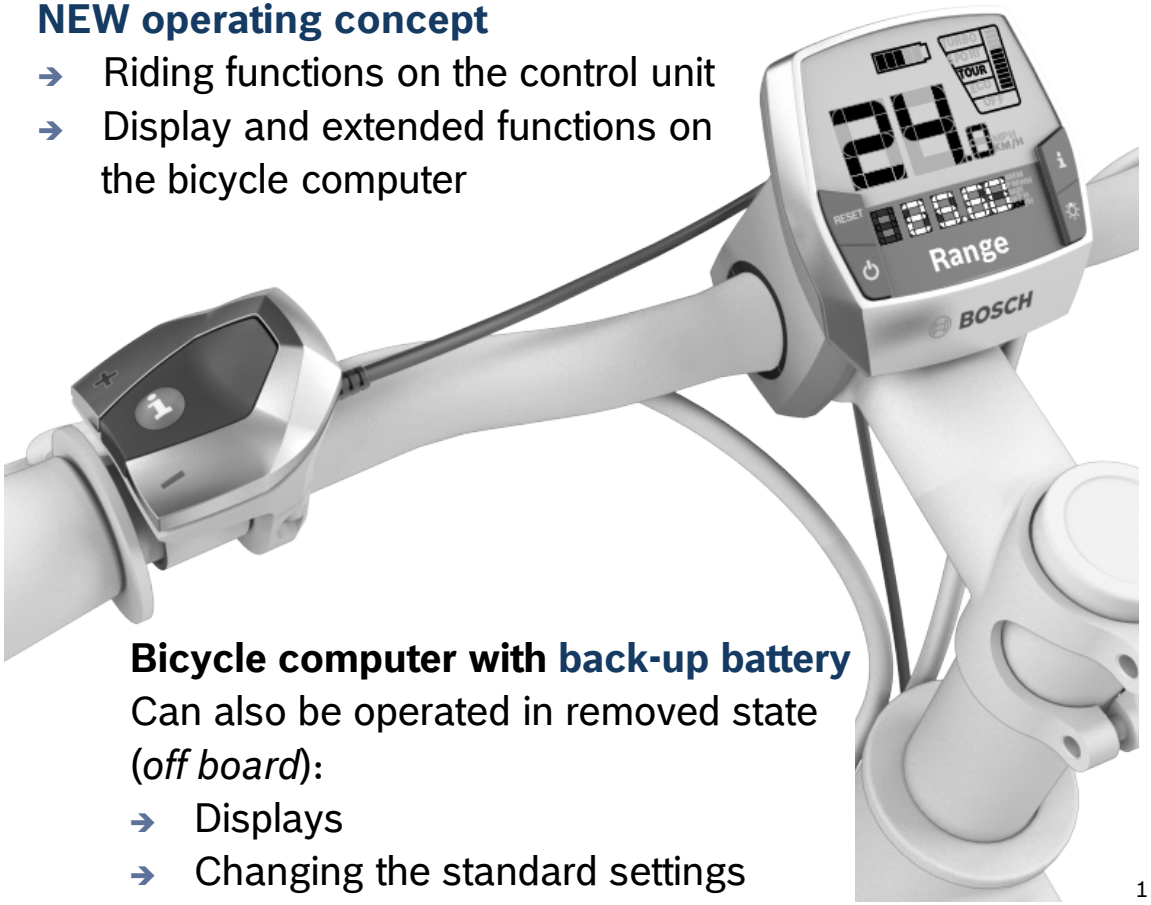
NEW 2013: Intuvia bicycle computer with control unit

NEW operating concept

- Riding functions on the control unit
- Display and extended functions on the bicycle computer



Bicycle computer with back-up battery
Can also be operated in removed state (*off board*):

- Displays
- Changing the standard settings

1

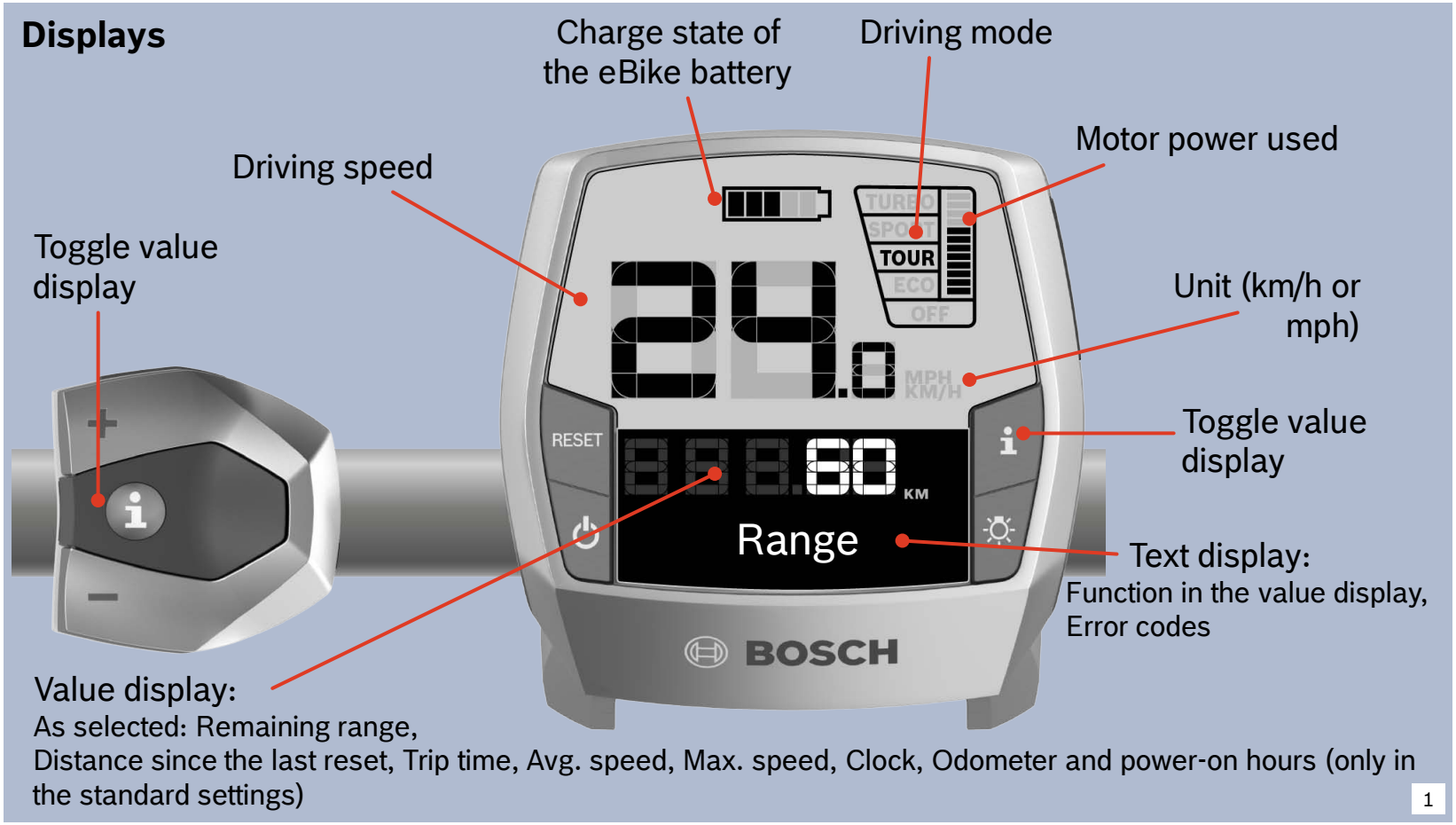
NEW functions

- Walk assistance
- USB port

Compatibility

- **Intuvia can be retrofitted** on Bosch eBike Systems of model year 2011 and 2012 (software update necessary)
- Walking assistance only possible with systems from model year 2013

Intuvia bicycle computer with control unit



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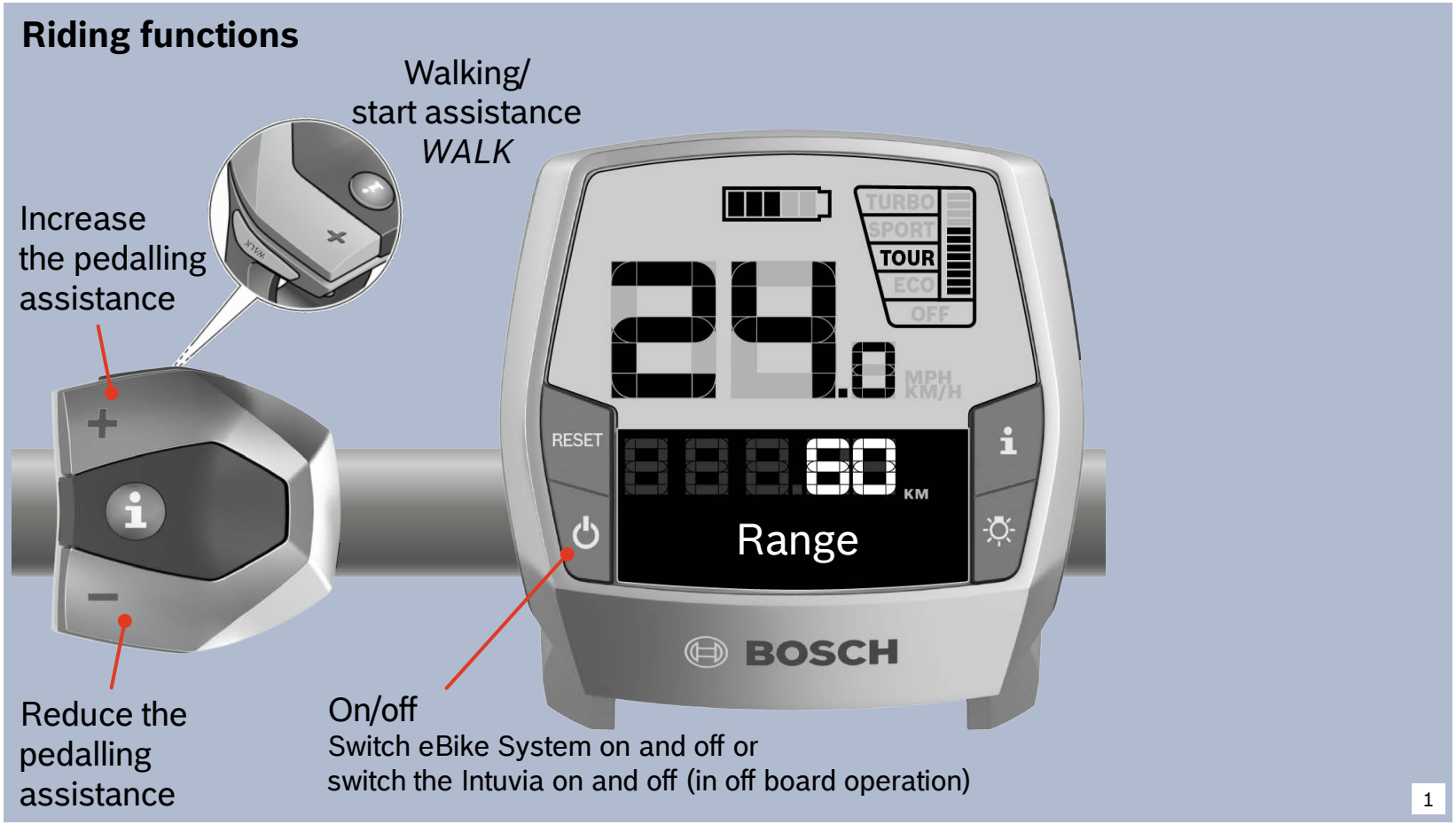
Intuvia bicycle computer with control unit



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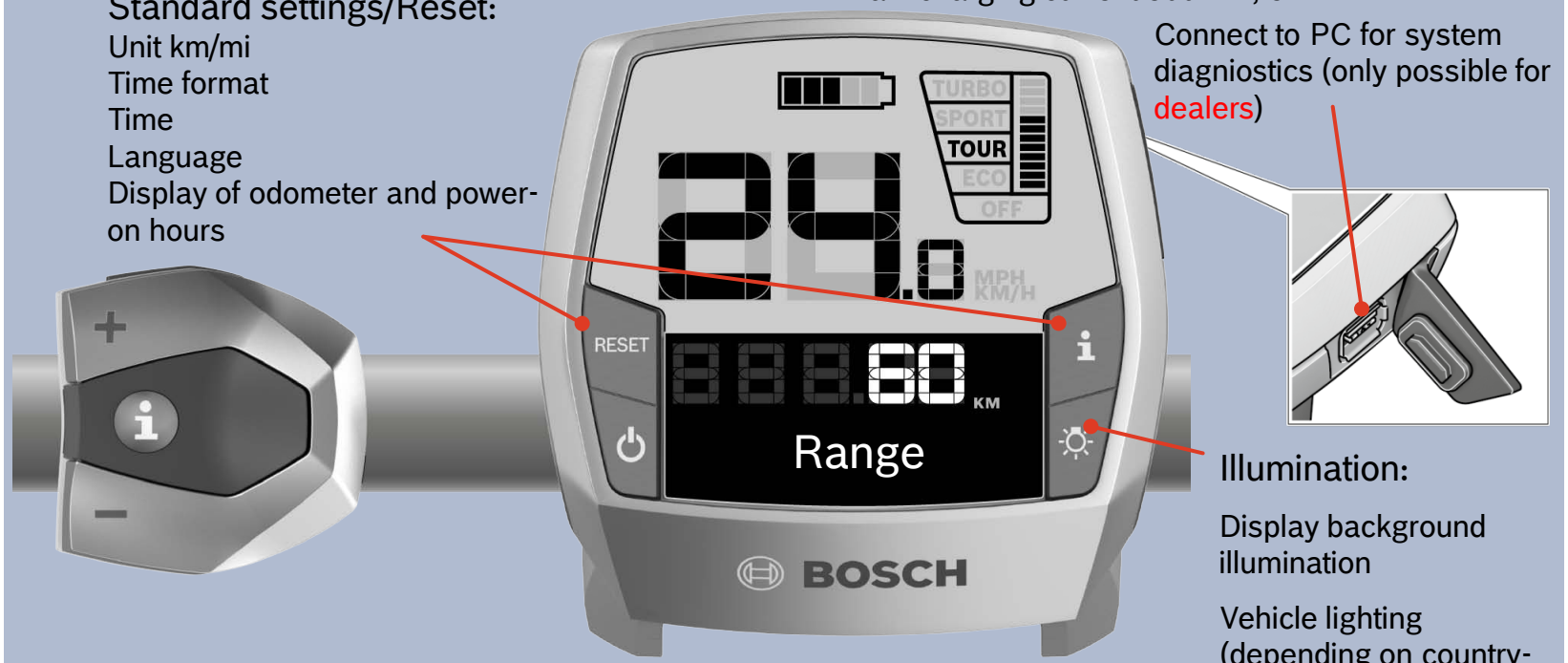
Intuvia bicycle computer with control unit

Extended functions

Standard settings/Reset:
Unit km/mi
Time format
Time
Language
Display of odometer and power-on hours

USB Micro A socket:
Charge suitable devices (e.g. Navigation device), max. charging current 500 mA, 5 V

Connect to PC for system diagnostics (only possible for dealers)



Illumination:
Display background illumination

Vehicle lighting (depending on country-specific regulations)

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Intuvia is compatible with KLICKfix solutions

Example: Handlebar adapter KLICKfix *MultiClip E*

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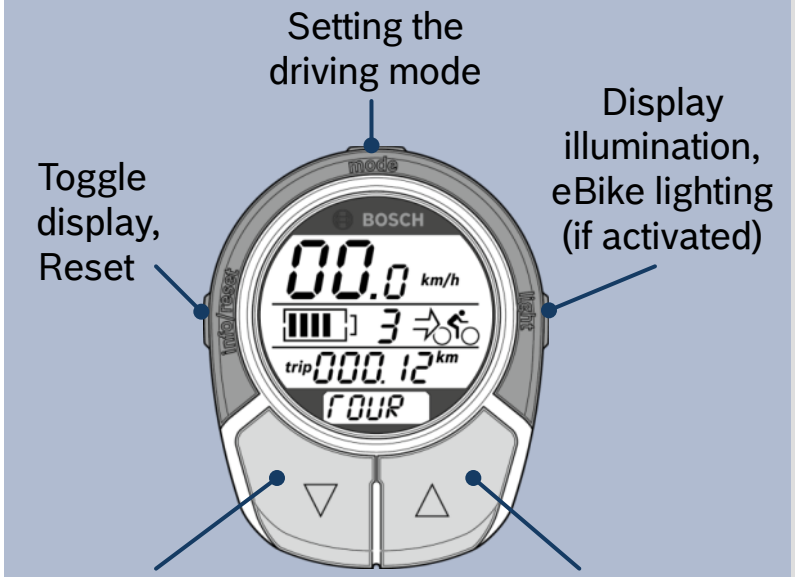
Bicycle computer (HMI) model years 2011/2012

Operating buttons



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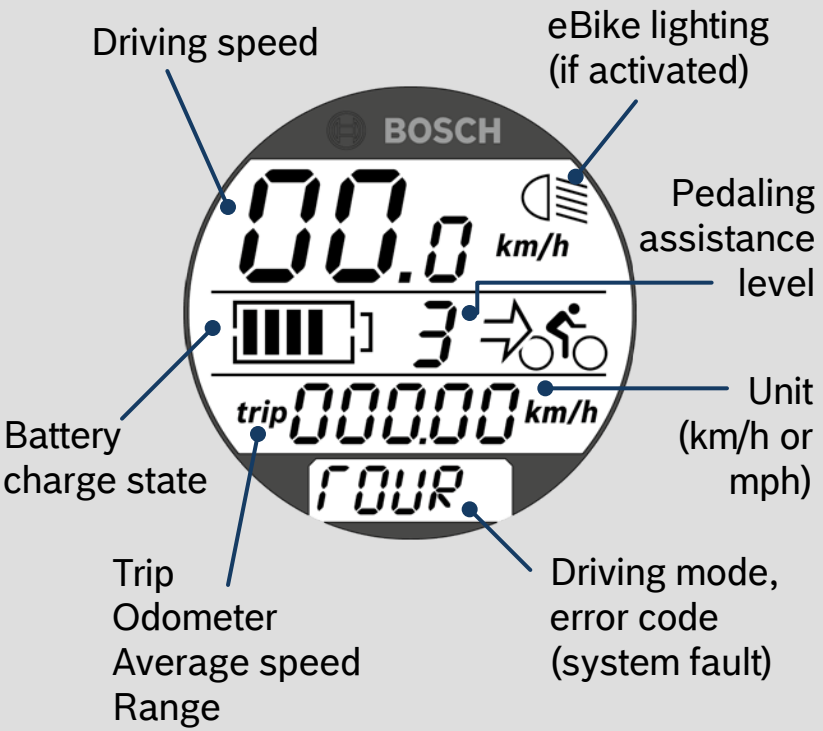
Displays



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Intuvia and HMI in comparison

Model year 2013
Intuvia

1

Model years 2011/2012
HMI

2

Driving mode	Driving mode and pedaling assistance level
ECO	ECO 1
TOUR	TOUR 2
SPORT	SPORT 2
TURBO	SPEED 3

Switch on and off on the battery

Switch on

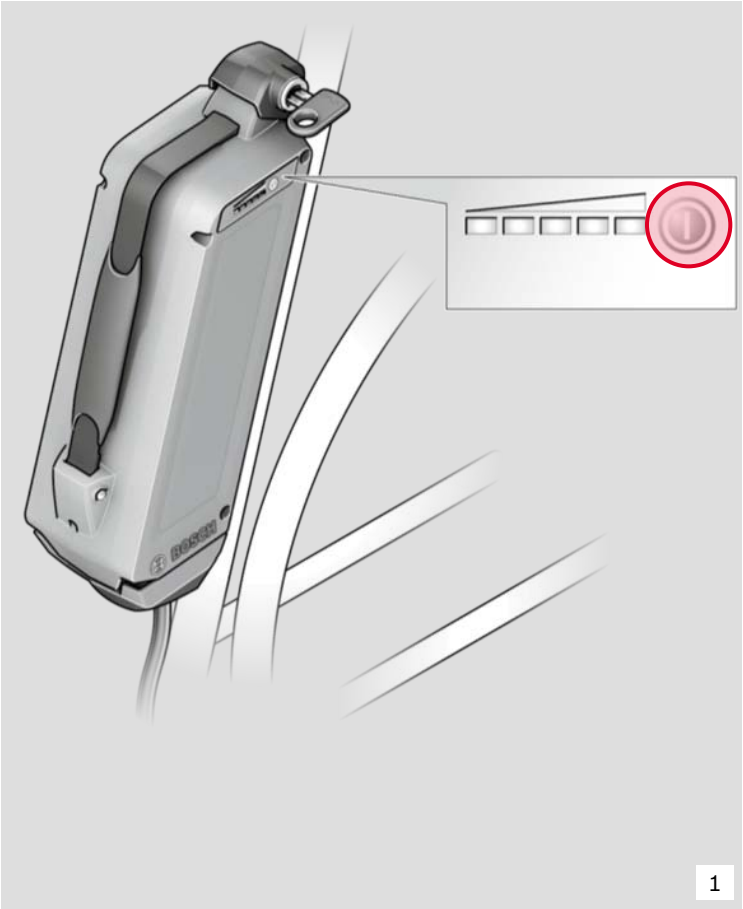
- ➔ Ensure that no force is acting on the pedals. (system calibrates itself at switch on).
- ➔ Press the *On/Off* button on the battery.
  - Advantage: No unintended pedal operation when switching on

Shutting down

- ➔ Press the *On/Off* button on the battery.
  - Advantage: Lowest self-discharge (no external standby current consumption)
  - The system can always be switched off on the battery, independently of how it has been switched on.

Automatic shutting down

- ➔ If the battery is discharged or
- ➔ after 10 min. standstill.



NEW: Switch on and off with the bicycle computer Intuvia

Switch on

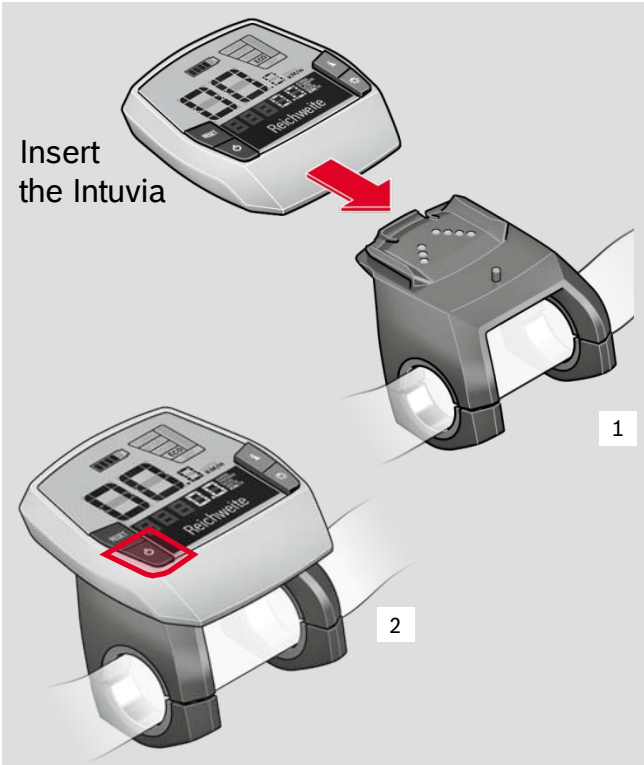
- Ensure that no force is acting on the pedals.
- Insert Intuvia from the front into the mount and press button *On/Off*.
- If the Intuvia is activated in off board operation, when it is placed in the mount, the system is automatically switched on.
- If the system is accidentally switched on when the pedals are operated:
  - An error message will appear on the display: *Release pedal*
  - Release the pedals and press the *On/Off* button again.

Shutting down

- Remove the Intuvia or press button *On/Off*.

Automatic shutting down

- If the battery is discharged or after 10 min. standstill



If the Intuvia is on the bicycle, it does not need to be removed to switch it on and then reinserted in the mount.

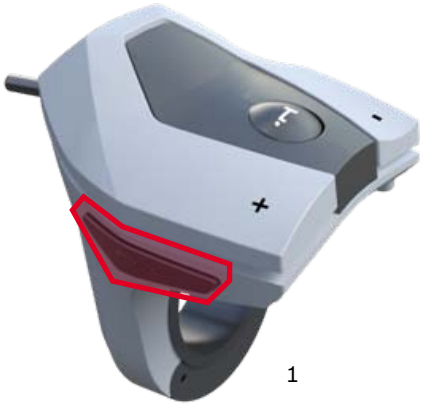
NEW: Walk assistance (function *Walk*)

Walk assistance with *Cruise*

- Speed dependent on selected gear
  - High gear: 6 km/h
  - Low gear: 1–3 km/h

Start assistance with *Speed*

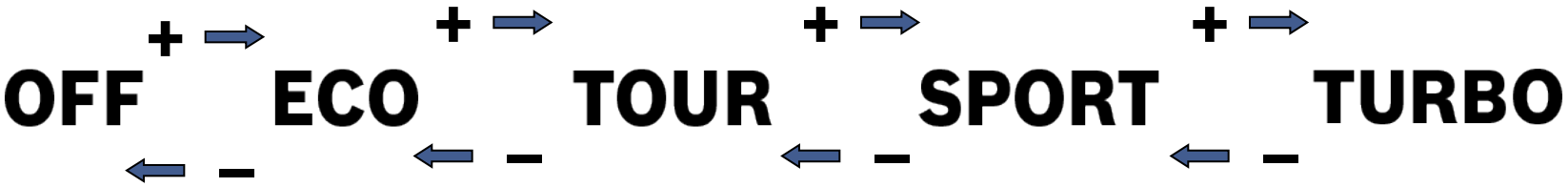
- Up to max. 18 km/h



- All Bosch eBike Systems from model year 2013 feature walk assistance.
- Retrofitting on existing vehicles of model years 2011/2012 is not possible.

Drive modes – Overview

- Characteristics of the assistance function:
  smooth and unnoticeable or
  powerfull and sporty
- The walking assistance can be activated independently of the currently set drive mode on the control unit
- The drive mode is selected with buttons **+** and **–**.



The driving modes

Off
The drive is switched off, but Intuvia and all its functions are available.

1

Eco
Effective power with maximum efficiency for maximum range.

2

Tour
Constant assistance for trips with longer range.

3

Sport
- Immediate power assist for sport riding
- Optimum performance on a hill

4

Turbo
- Maximum, powerful assistance even at higher pedalling frequency
- For ambitious riders on long uphill stretches

5

NEW: Charger

Characteristics

- More compact than the previous model
- 200 g lighter
- One of the fastest chargers on the market:
  - 2.5 h charge time for PowerPack 300
  - 3.5 h charge time for PowerPack 400
- A fan is no longer necessary
- Only a single charging stage
  - charging current 4 A
  - quick and quiet (without fan)
- Downwards compatible to Bosch eBike systems of model years 2011/12

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Customer benefits

- Easier to transport, e.g. on a cycling tour
- Short charging times
- Easy to take along
- Simple to operate
- Improper operation impossible
- Also easy to operate for foreign trips (within the EU)
- All existing customers can enjoy the benefits of the new charger.

NEW: PowerPack 300 and PowerPack 400

Technical data

PowerPack 300/400	
Voltage: 36 V	
Weight: 2.5 kg +/- 100 g	
PowerPack 300	**PowerPack 400**
CAPACITY At least: 8.2 Ah/300 Wh after 500 full charging cycles: at least 220 Wh	CAPACITY At least: 11.0 Ah/400 Wh after 500 full charging cycles: at least 240 Wh

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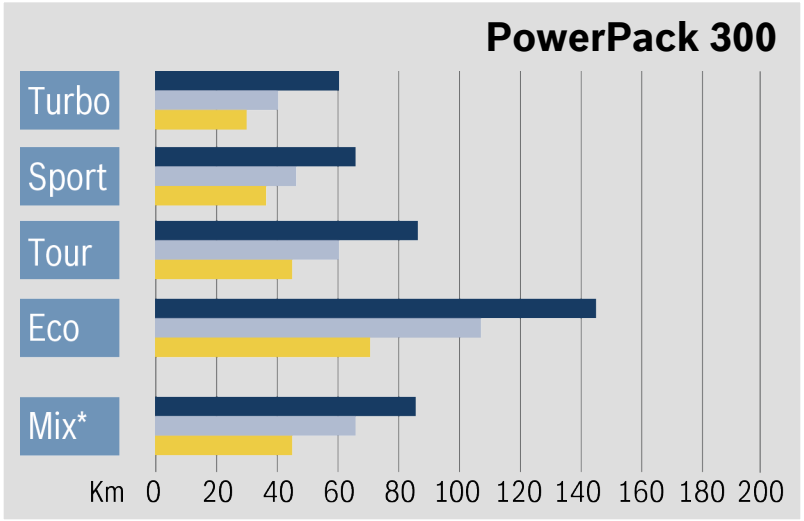
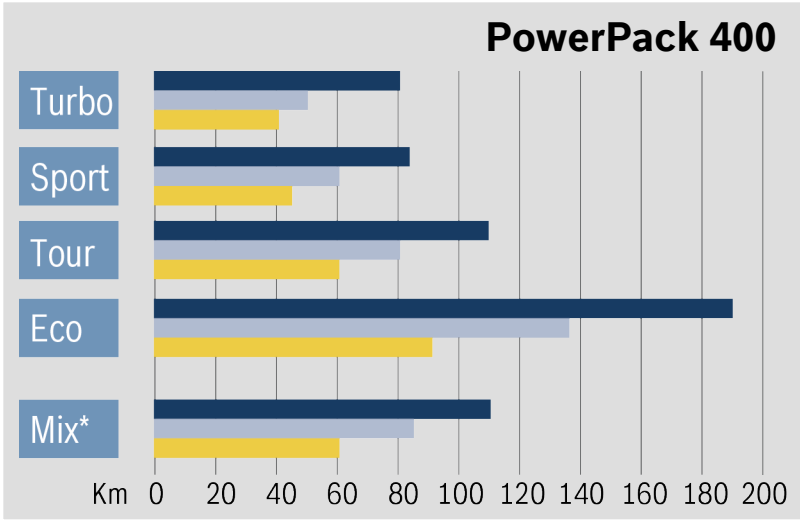
Customer benefits

- More range:
  30 % (PowerPack 400) more than with model year 2012
- Low weight
  Bosch batteries are among the lightest on the market.
- Fully compatible with Bosch eBike Systems 2011/2012
- Long service life

Ratio of motor assistance – Range *Cruise*





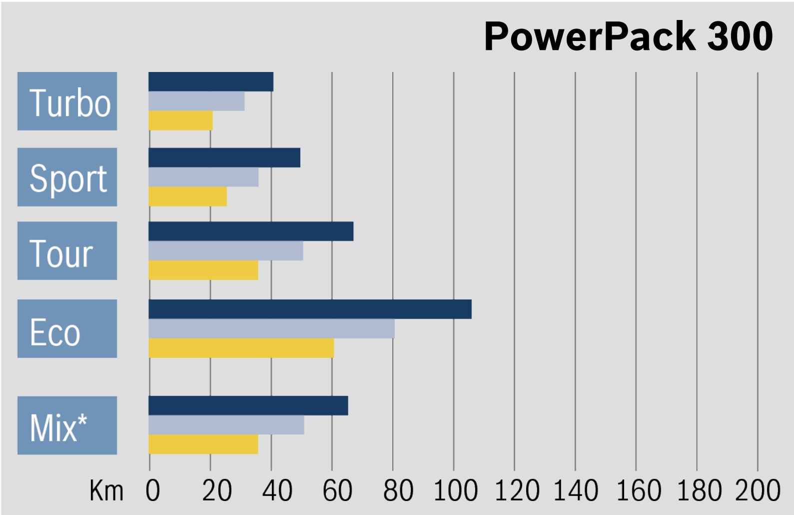
= Ideal conditions: flat terrain, average speed 20 km/h, no wind, 20 °C, rider always changes gear at correct time

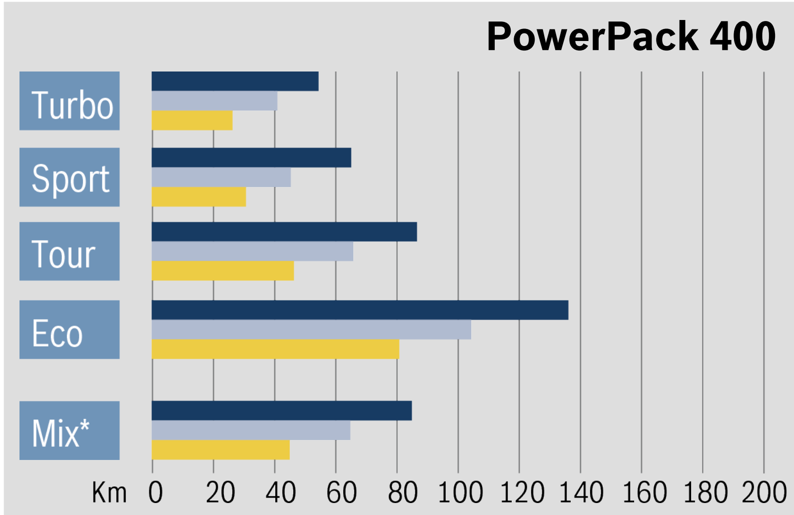
= Good conditions: light hilly terrain, average speed 22 km/h, slight headwind, 10–20 °C, good rider gear change response

= Suboptimal conditions: Terrain with long and steep inclines, average speed 25 km/h, occasionally strong headwind, < 10 °C, relatively inefficient (bicycle components, gear change)

* Average from equal use of all four driving modes.

Ratio of motor assistance – Range *Speed*





- (dark blue) = Ideal conditions: flat terrain, average speed 20 km/h, no wind, 20 °C, rider always changes gear at correct time
- (light blue) = Good conditions: light hilly terrain, average speed 25 km/h, slight headwind, 10–20 °C, good rider gear change response
- (yellow) = Suboptimal conditions: Terrain with long and steep inclines, average speed 30 km/h, occasionally strong headwind, < 10 °C, relatively inefficient (bicycle components, gear change)

* Average from equal use of all four driving modes.

Efficiency beats “tank capacity”

Competition battery capacities

- [Manufacturer A]: 624 Wh
- [Manufacturer B]: 670 Wh
- Bosch eBike System 2013: 300/400 Wh

What does the customer expect?

- There are frequently questions concerning the Wh, even if fairly limited in terms of its meaningfulness (compare to megapixel inflation with digital cameras).

Actual customer benefits

- Range
- Charging time

What does the Bosch eBike System offer?

- Maximum system efficiency (centre-mounted motor in conjunction with a sophisticated control)
- Ensuring long, practical ranges
- Should it be necessary to recharge now and then:
  - Light, compact charger
  - Very short charging times

Maximilian Semsch covered 16000 km in six months around Australia on his eBike powered by Bosch.

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Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

Drive and control

PowerPack (battery)

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eBike diagnostics with the diagnostics tool

Troubleshooting

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BOSCH

Drive Unit

Customer benefits

- Center mounted motor
  - Facilitates a short wheel base and low centre of gravity
  - Minimal installation effort when having a flat tyre
  - Free choice of shifting systems
  - Short cable routing
- Interaction with the mechanical gearing (torque converter)
  - Maximum efficiency on inclines
  - Motor does not overheat
- Compact and robust with integrated stone chip protection
- Powerful, highly-efficient motor
  - Motor technology originates from the automotive field


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- Assistance torque acts directly on the bracket shaft, i.e. no drive sprocket acting on the drive section
- Low weight

Splash-water protection

The drive unit is splash-water protected (IP54)

- Splash water from different directions does not damage the drive unit.
- Dust penetration in quantities that can cause the function to be affected is not a problem.


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Control technology

Integrated electronic control

- The control is integrated into the motor casing (not in the Intuvia bicycle computer)
- CAN Bus technology
- Efficient and reliable temperature monitoring

Measurement of the riders requirements

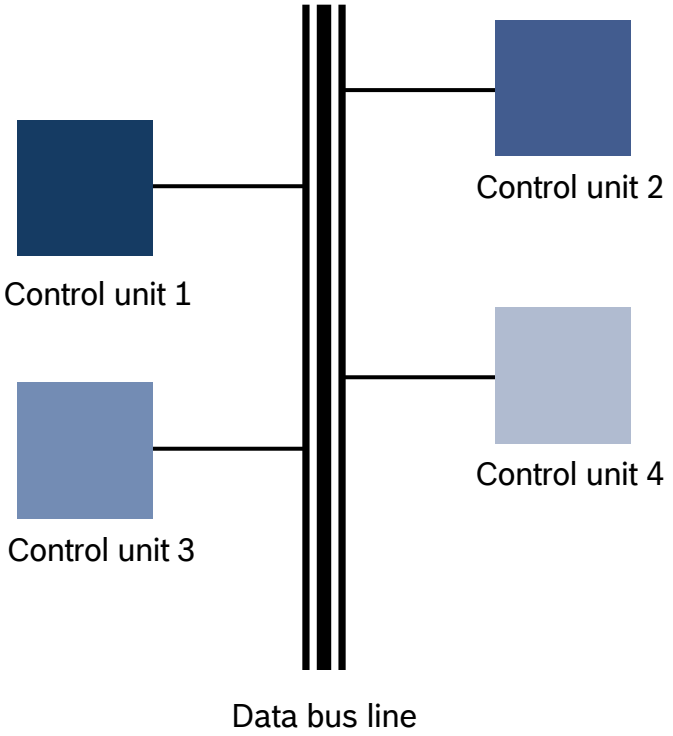
- Measurement 100 times/second
- Direct measurement via 3 sensors
  - Torque (pedaling force)
  - Pedalling frequency
  - Speed

Customer benefits

- No unintended, premature action of the power assistance and no continued operation when pedaling is discontinued.

1

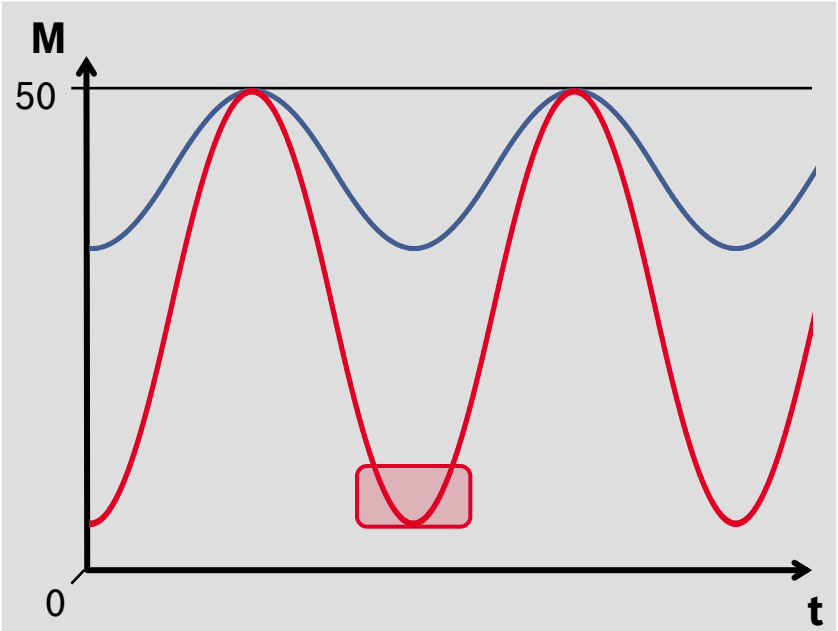
CAN Bus technology



- Connected devices can exchange data.
- Data transfer similar to a telephone conference.
- Participants (control device) speak their information (data) into the system, the other participants “listen in” and decide if they can use the data.
- Process with transfer, troubleshooting, correction and acknowledgement are precisely defined in the CAN protocol.

Back

Motor assistance with Derailleur gear and hub gear



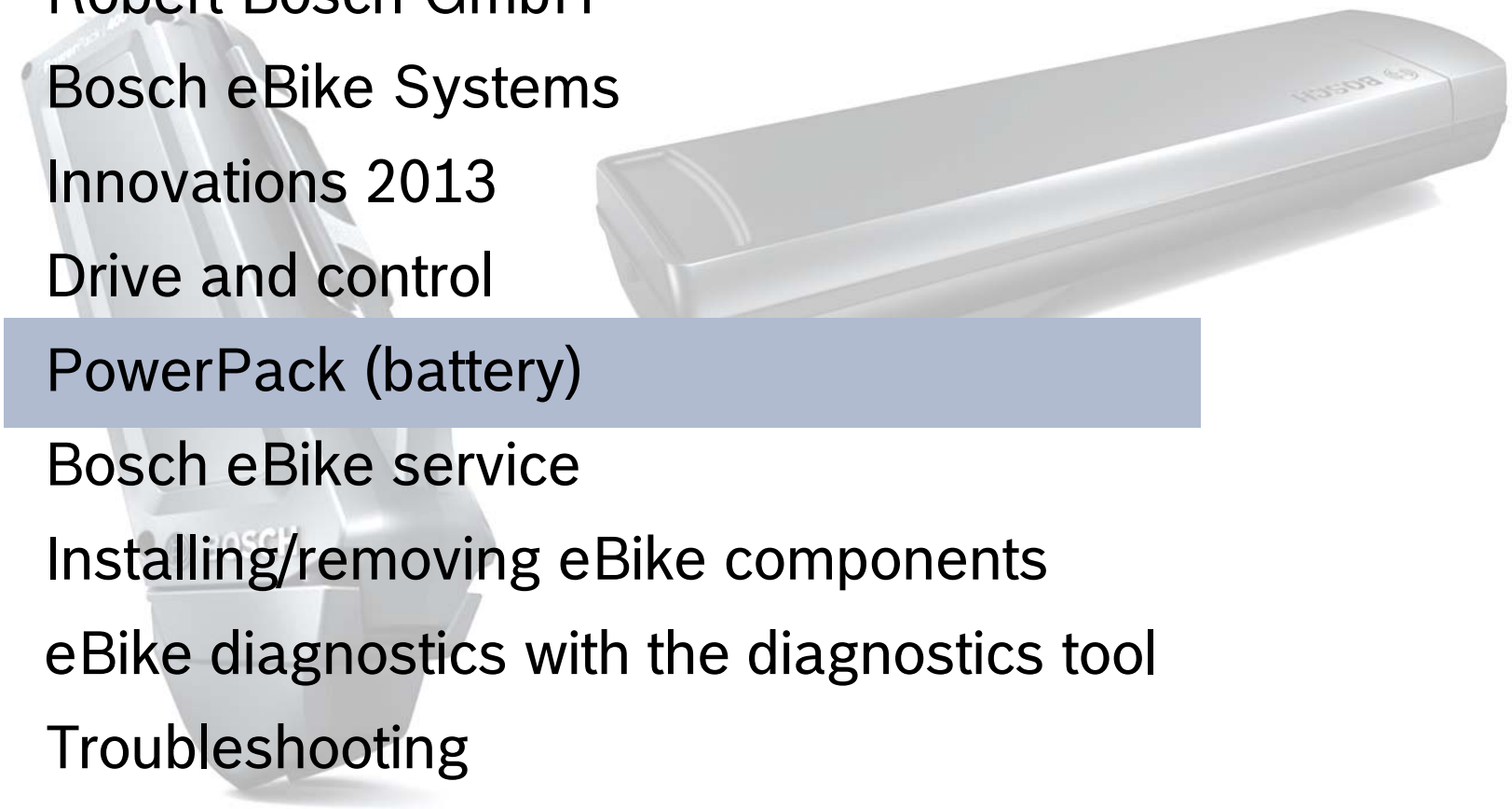
- The motor assistance acts directly on the BB-axle /chain ring

- Maximum support torque

Hub gear:	Derailleur gear:

50 Nm	50 Nm

M = motor assistance in Nm
t = time (of the represented period is for approx. 2.5 rotations)
Motor assistance characteristic with Derailleur gear
Motor assistance characteristic with hub gear
Time window for gear change with hub gear



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Highest quality for your safety

Bosch Battery Management System (BMS)

- Permanent monitoring:
  - Voltage
  - Current
  - Temperature
  - Charge state
- Integrated emergency shutdown (active BMS)

Quality

- Use of high-quality cells from technologically leading cell manufacturers
- Higher capacity for the same weight

Comprehensive qualification tests

- UN transportation test: Safety and simplified transport
- Bosch internal tests on the function, service life and durability
- Additionally tested at Velotech for durability (fatigue strength)

Charging

Partial charging and full charging

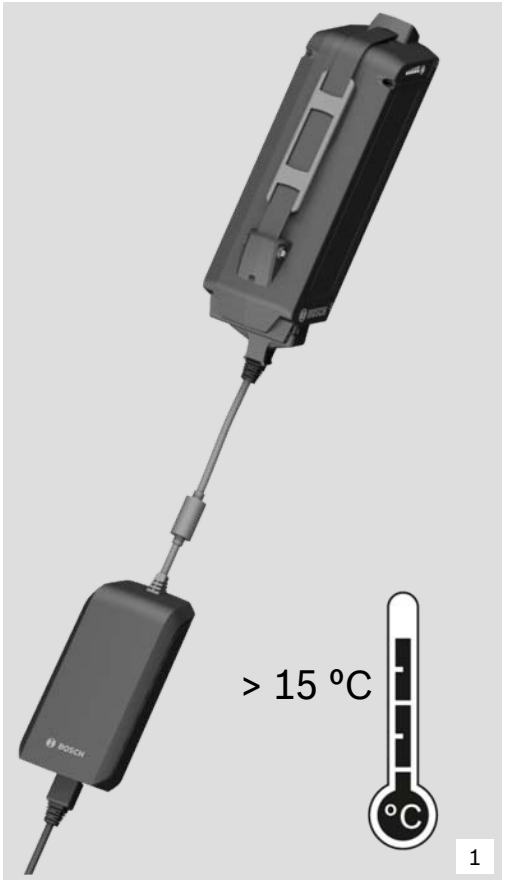
- Bosch batteries do not have a memory effect and can therefore be partially charged as often as required. Occasional complete discharge is not necessary.
- An interruption of the charging process does not damage the battery.
- Guaranteed service life: 500 full charging cycles
- Full charging cycle:
  - added partial charging cycles
  - e.g. 2 × 50 % = 1 full charging cycle (or 3 × 33 %)

The battery should be fully charged for an extended tour, even if it is still partly charged.

Charging

Please note when charging

- Remove the battery from the eBike. Charging on the bike is not possible.
- Charge battery preferably at room temperature (> 15 °C).
- Charging at ambient temperature < 0 °C is not possible.
- Connect the battery to the charger and plug in the mains plug (any sequence).



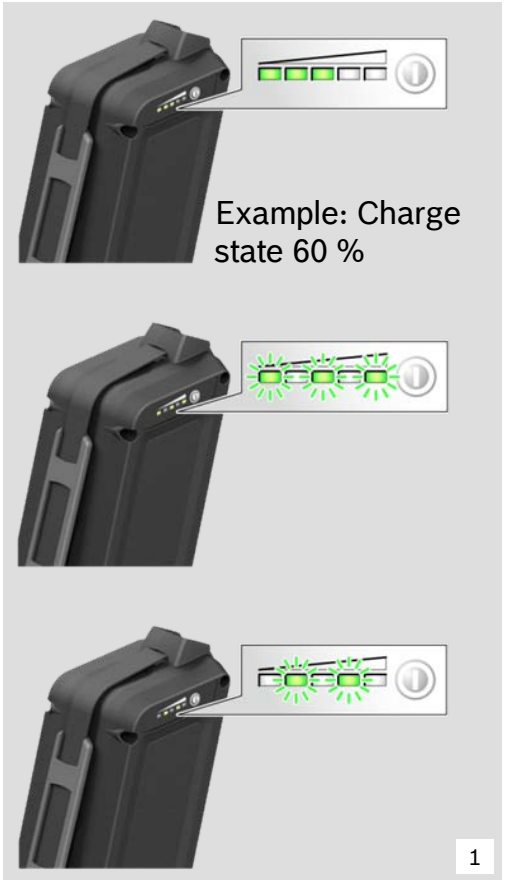
Charging

Monitoring the charge state with the LEDs on the battery

- Every LED corresponds to 20 % of the battery capacity.
- A flashing LED indicates charging of the next 20 %.
- All LEDs will light up when the battery is fully charged.

NEW: Error display on battery:

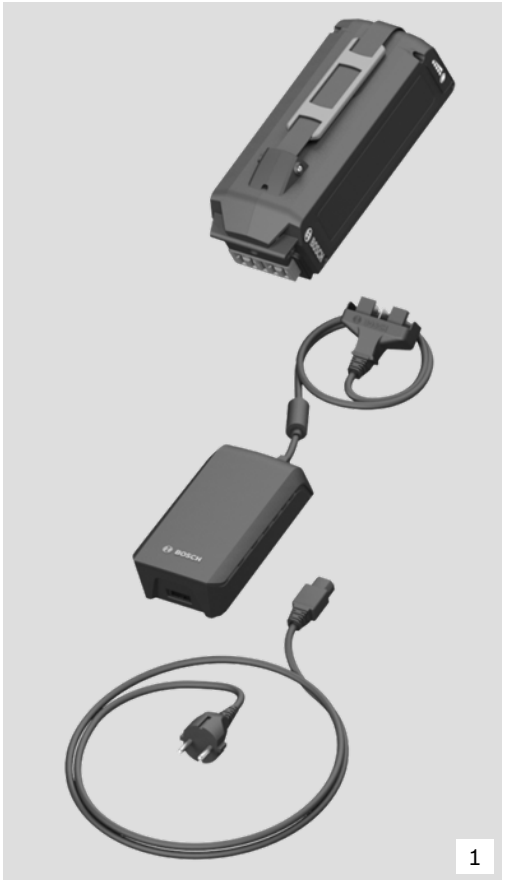
- LED 1, 3 and 5 flash, when the ambient temperature is too cold (< 0 °C) or too warm (> 50 °C).
- If an electronic fault occurs, LED 2 and 4 flash.
  The system switches itself off (flashing and shutdown also during a tour).



Charging

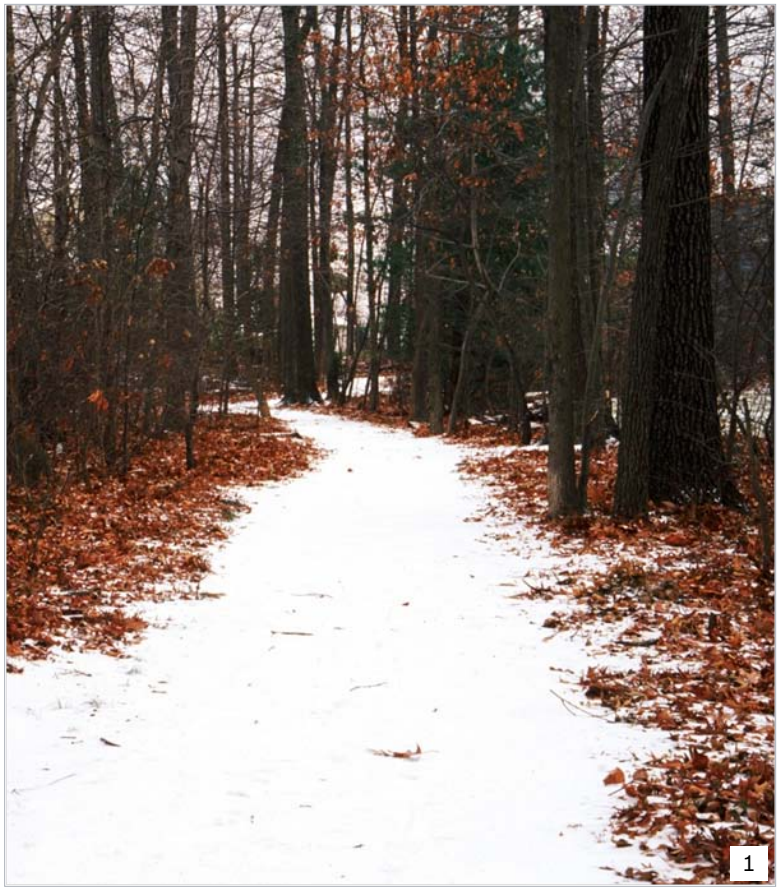
After charging

- Charger switches off automatically when the battery is fully charged.
- Remove the battery from the charger and unplug the charger.
- If the battery remains connected to the charger after it is fully charged:
  - Trickle charging is activated in regular intervals.
  - Unnecessary power consumption.
  - Trickle charging is not necessary when storing the battery (e.g. for the winter).



Winter operation

- Remove the battery after each journey.
- With external temperatures below 15 °C, the battery should be stored in the house. Pay attention to the cold nights in spring and autumn.
- Install the fully charged battery on the bike shortly before starting the journey.
- At temperatures under 15 °C, the batteries should be stored at home. Battery Management System prevents charging at temperatures < 0 °C
  (LEDs 1, 3 and 5 flash)



Storage

Ideal for a long service life

- Room temperature (approx. 20 °C)
- Avoid low temperatures and heat (e.g. during the summer months, do not store in a car parked in the sun)
- Dry environment

With longer storage times (over the winter)

- Optimum charge state: 50–60 %
- Storage in the charge state *empty* (28 V) for one year is possible

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Commercial storage

Storage at the bicycle dealers

- Building insurance coverage may need to be changed (Building fire protection classification D)
- For items in the shop window: Bosch offers dummy batteries as accessories for shop windows subject to intense sunshine

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Care and maintenance

Only required care measures

- Clean and grease the connector pole (terminal grease, technical vaseline)

Please note

- Exchange faulty batteries. This also applies to functional batteries with a damaged casing.
- **Do not attempt a repair.**
- **Do not open the battery.**
- Remove the battery from the mount before all work on the eBike.

Damaged batteries

A damaged battery can leak or catch fire

- Provide a fire-proof, metal box filled with sand at a dry, covered location outdoors for damaged batteries.

1

If the battery burns or emits smoke

- Place the battery in the outdoors metal box filled with sand and cover it with sand.
- Do not inhale the smoke (highly toxic).

2

Transport

Customer (private user)

- Always remove the battery when transporting the eBike with a car.
- The battery can be transported on the street without any further restrictions (in a car, bus, etc.)

Dealers (commercial transport)

- When transporting, e.g. to an event, the valid regulations must be observed.

It is necessary to pay more attention when transporting eBikes than normal bicycles.

Commercial transport

Legal situation in Germany:

- **GGBefG**: Gefahrgutbeförderungsgesetz (*Carriage of Hazardous Goods Act*)
- **GGVSEB**: Gefahrgutverordnung Straße, Eisenbahn und Binnenschifffahrt (*Ordinance on the Transport of Dangerous Goods by Road, Rail and Inland Waterways*)
- **ADR**: European Agreement concerning the International Carriage of Dangerous Goods by Road

Sources (Germany)

- GGBefG: www.gesetze-im-internet.de/bundesrecht/gefahrgutg/gesamt.pdf
- GGVSEB: www.gesetze-im-internet.de/bundesrecht/ggvseb/gesamt.pdf
- ADR: www.bmvbs.de/cae/servlet/contentblob/60542/publicationFile/31543/adr-2011.pdf

Transport types

Individual batteries

- Battery poles are recessed and thus protected against short circuit.
- Each battery requires a hazardous goods carton with hazardous goods marking as well as a hazardous goods transportation certificate.

eBike transport

- A battery-powered vehicle with installed battery is not classified as hazardous goods.
- When transporting several eBikes (e.g. for and event):
  - Leave the batteries in the eBikes.
  - Secure the batteries with adhesive tape (protection against damage and short circuit).

1

Packaging

- Only use specially approved packaging.
- Battery specific packaging can be ordered from the Bosch Service Hotline.

- Undamaged, used packaging can be reused as often as required.

1

- The packaging must be provided on at least one side with the following inscription and markings:
  - UN number (number defined by the United Nations for the transport materials concerned)
  - Hazard label: black-white stripes, 10 × 10 cm, class 9
  - Packaging code (UN approval)

Shipping designation	UN No.
Lithium ion batteries	UN3480

Responsibilities with hazardous goods transport

Duties and responsibilities

- ADR and GGVSEB define the duties and responsibilities for all concerned in transporting hazardous materials:
  - Sender (and, if required, the client)
  - Packager
  - Loader
  - Carrier (Vehicle driver)
  - Filler
  - Unloader
  - Recipient

Hazardous materials instruction

- All persons involved in the carriage of hazardous materials must receive regular training (at least every 2 years).
- The training is undertaken by the hazardous materials representative or an external training company (e.g. Bosch eBike, chamber of commerce).

Shipping dangerous materials

Separate hazardous materials from other goods to be shipped

- ➔ Do not send the battery together with other shipped goods (e.g. drive unit).
- ➔ Always send the batteries separately in a marked hazardous goods carton.

➔ Not all package couriers will transport hazardous materials.

- UPS will not accept any hazardous materials*
- Shipping batteries is possible with GLS*

1

2

* = examples apply for Germany

Waste disposal and recycling

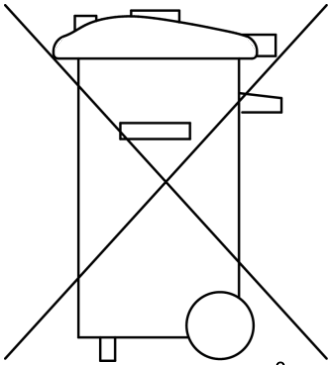
Metal and plastic components

- Bring to the local recycling center
- Legal situation:
  - Kreislaufwirtschafts- und Abfallgesetz (KrW-/AbfG) – *Recycling and Waste Management Act*

1

Electrical components

- Bring to the local recycling center
- Legal situation:
  - Directive on waste electrical and electronic equipment (WEEE)
  - Elektro- und Elektronikgerätegesetz (ElektroG) – *Electrical and Electronic Equipment Act*



2

Batteries and rechargeable batteries

- Bring to the battery collection center
- Legal situation: Batteries Directive 2006/66/EC
  Batteriegesetz (BattG) - *Battery act*

BOSCH

Disposal of batteries from electrical cycles

Common Recycling System of Batteries (GRS)

- Free for all Bosch eBike dealers
- Green collection containers
- For lithium batteries:
  - Specially marked collection containers
  - Label “Only for Lithium ion batteries from electrical vehicles”
- Protect the batteries against short circuit and damage, e.g. in the original packaging

1

GRS BATTERIEN
GEMEINSAMES
RÜCKNAHME
SYSTEM

2

Registration and further information:
http://www.grs-batterien.de

Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

Drive and control

PowerPack (battery)

Bosch eBike service

Installing/removing eBike components

eBike diagnostics with the diagnostics tool

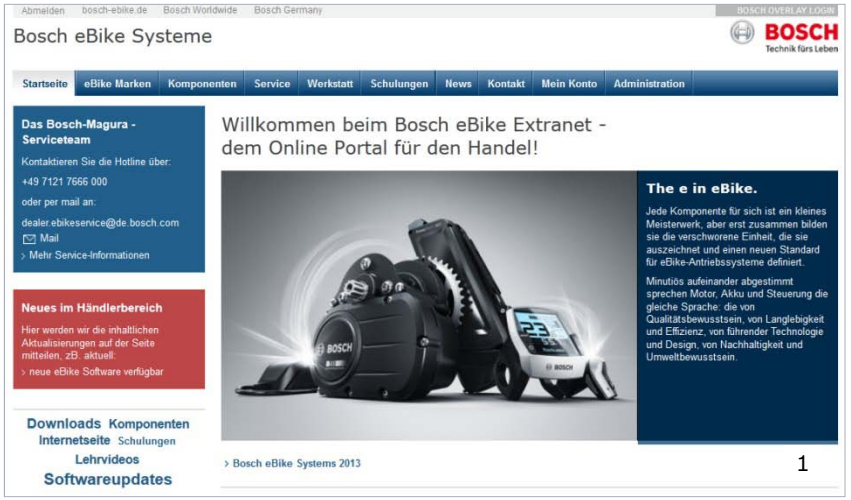
Troubleshooting

1

Dealer contact to Bosch eBike Service

Exclusive dealer portal on the Internet

- http://ebike.bosch.com
- Workshop videos, software updates, technical FAQ's, training schedules, downloads, return order for defective components and lots more.
- Registration required



Service Hotline for dealers

- +49 7121 7666 000
- Mo. – Fr. from 08:00 h to 17:00 h
- Languages: German, English, French, Dutch*, Spanish*
  (*= limited availability)

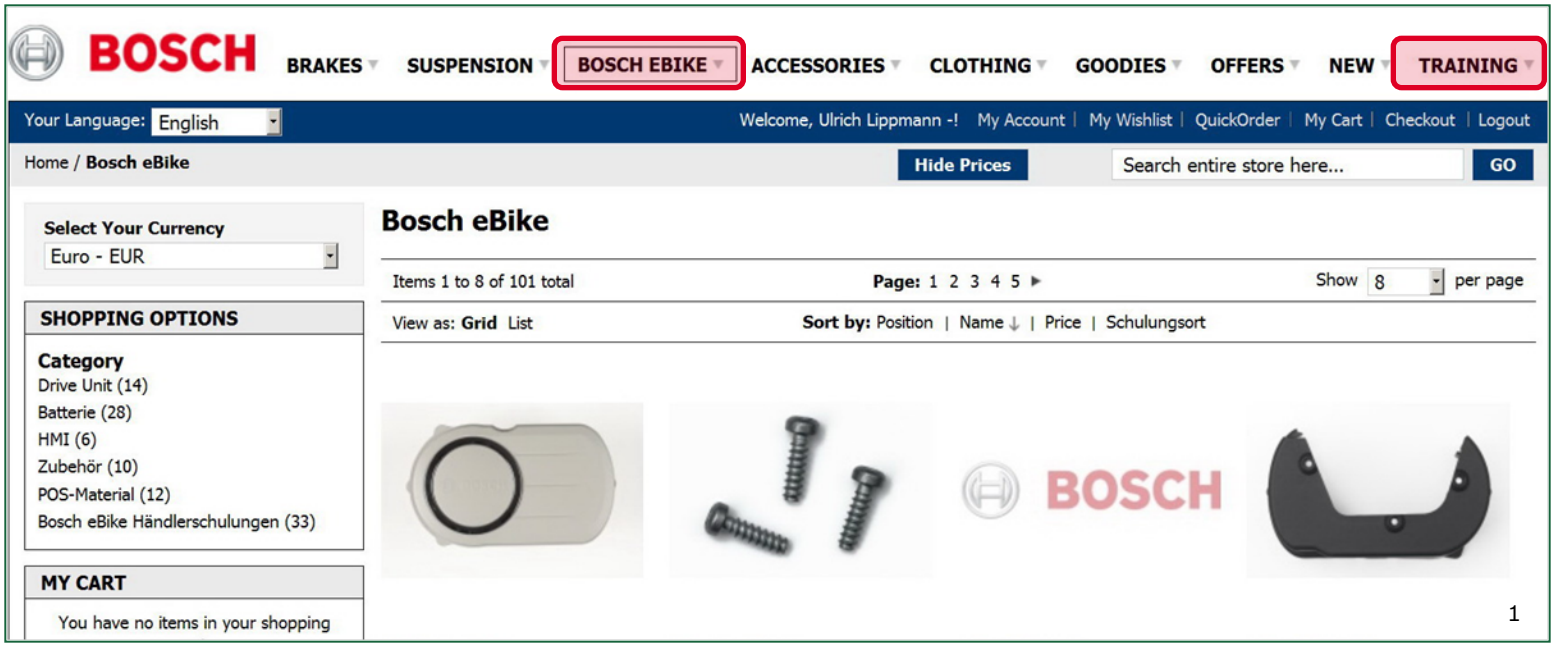
E-mail

dealer.ebikeservice@de.bosch.com

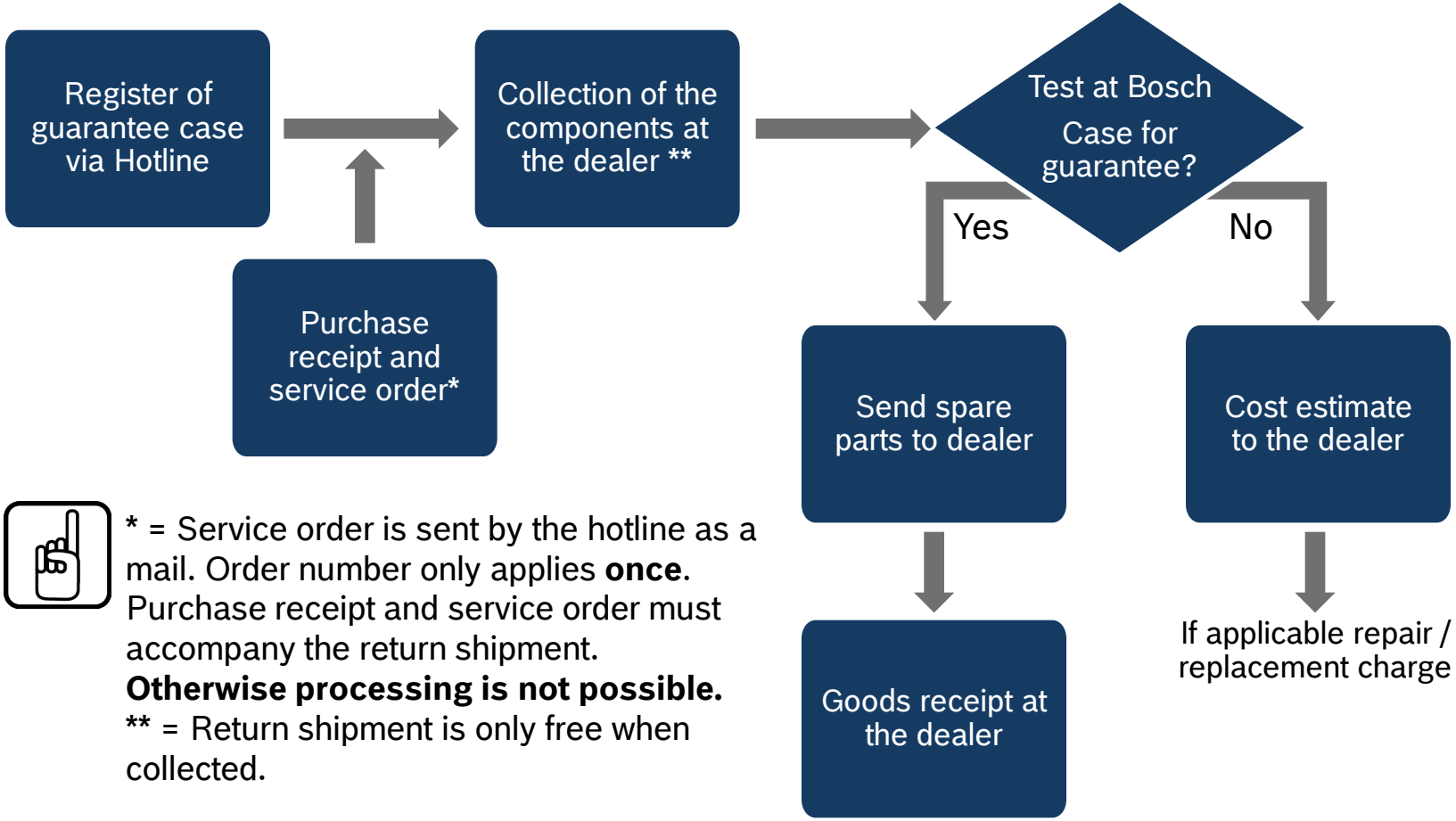
Dealer contact to Bosch eBike Service

Ordering spare parts and tools

- www.bosch-ebike.de/webshop
- Registration required
  - Login data of the Magura online shop
- Spare parts and tools in the Bosch eBike category
- Register for training under the category training



Guarantee procedure



* = Service order is sent by the hotline as a mail. Order number only applies **once**. Purchase receipt and service order must accompany the return shipment.
Otherwise processing is not possible.
** = Return shipment is only free when collected.

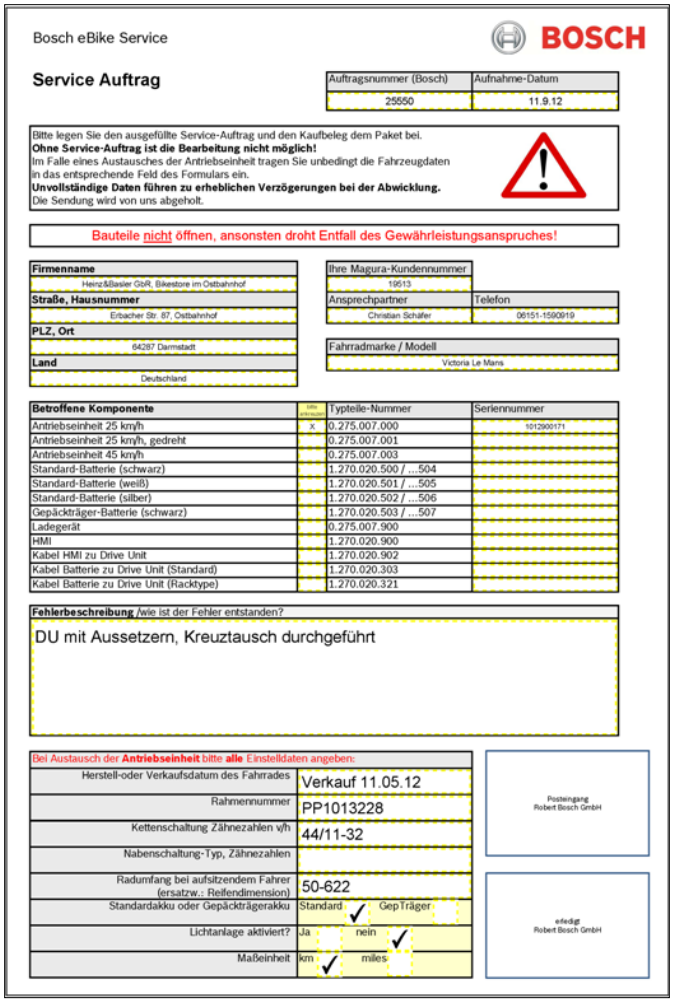
Service order

Required details

- Order number
- Customer number
- Telephone number
- Contact partner
- All necessary vehicle data

Please note:

- Every component subject to a claim requires a separate order.
- Hazardous materials (battery) must be collected separately from the other components.
- Pooling is possible for collections.
  Example: 2 batteries collected together
  - just 1 shipping carton, but
  - 2 service orders required



Bosch eBike Service

BOSCH

Service Auftrag

Auftragsnummer (Bosch)	Aufnahme-Datum
25550	11.9.12

Bitte legen Sie den ausgefüllte Service-Auftrag und den Kaufbeleg dem Paket bei.
Ohne Service-Auftrag ist die Bearbeitung nicht möglich!
Im Falle eines Austausches der Antriebseinheit tragen Sie unbedingt die Fahrzeugdaten in das entsprechende Feld des Formulars ein.
Unvollständige Daten führen zu erheblichen Verzögerungen bei der Abwicklung.
Die Sendung wird von uns abgeholt.

Bauteile nicht öffnen, ansonsten droht Entfall des Gewährleistungsanspruches!

Firmenname	Heinz&Basler GbR, Bikestore im Ostbahnhof
Straße, Hausnummer	Erbacher Str. 87, Ostbahnhof
PLZ, Ort	64287 Darmstadt
Land	Deutschland

Ihre Magura-Kundennummer	19513
Ansprechpartner	Christian Schäfer
Telefon	06151-1590919
Fahrradmarke / Modell	Victoria Le Mans

Betroffene Komponente	Liste anhaken	Typteile-Nummer	Seriennummer
Antriebseinheit 25 km/h	x	0.275.007.000	101290171
Antriebseinheit 25 km/h, gedreht		0.275.007.001	
Antriebseinheit 45 km/h		0.275.007.003	
Standard-Batterie (schwarz)		1.270.020.500 / ...504	
Standard-Batterie (weiß)		1.270.020.501 / ...505	
Standard-Batterie (silber)		1.270.020.502 / ...506	
Gepäckträger-Batterie (schwarz)		1.270.020.503 / ...507	
Ladegerät		0.275.007.900	
HMI		1.270.020.900	
Kabel HMI zu Drive Unit		1.270.020.902	
Kabel Batterie zu Drive Unit (Standard)		1.270.020.303	
Kabel Batterie zu Drive Unit (Racktype)		1.270.020.321	

Fehlerbeschreibung /wie ist der Fehler entstanden?
DU mit Aussetzern, Kreuztausch durchgeführt

Bei Austausch der **Antriebseinheit** bitte **alle** Einstelldaten angeben:

Herstell-oder Verkaufsdatum des Fahrrades	Verkauf 11.05.12
Rahmennummer	PP1013228
Kettenschaltung Zähnezahlen v/h	44/11-32
Nabenschaltung-Typ, Zähnezahlen	
Radumfang bei aufsitzendem Fahrer (ersatzw.: Reifendimension)	50-622
Standardakku oder Gepäckträgerakku	Standard ✓ GepTräger
Lichtanlage aktiviert?	Ja nein ✓
Maßeinheit	km ✓ miles

Posteingang Robert Bosch GmbH

erledigt Robert Bosch GmbH

Advertising and promotional support

- Bosch offers the committed dealer a selection of attractive advertising materials.
- Available via www.bosch-ebike.de/webshop

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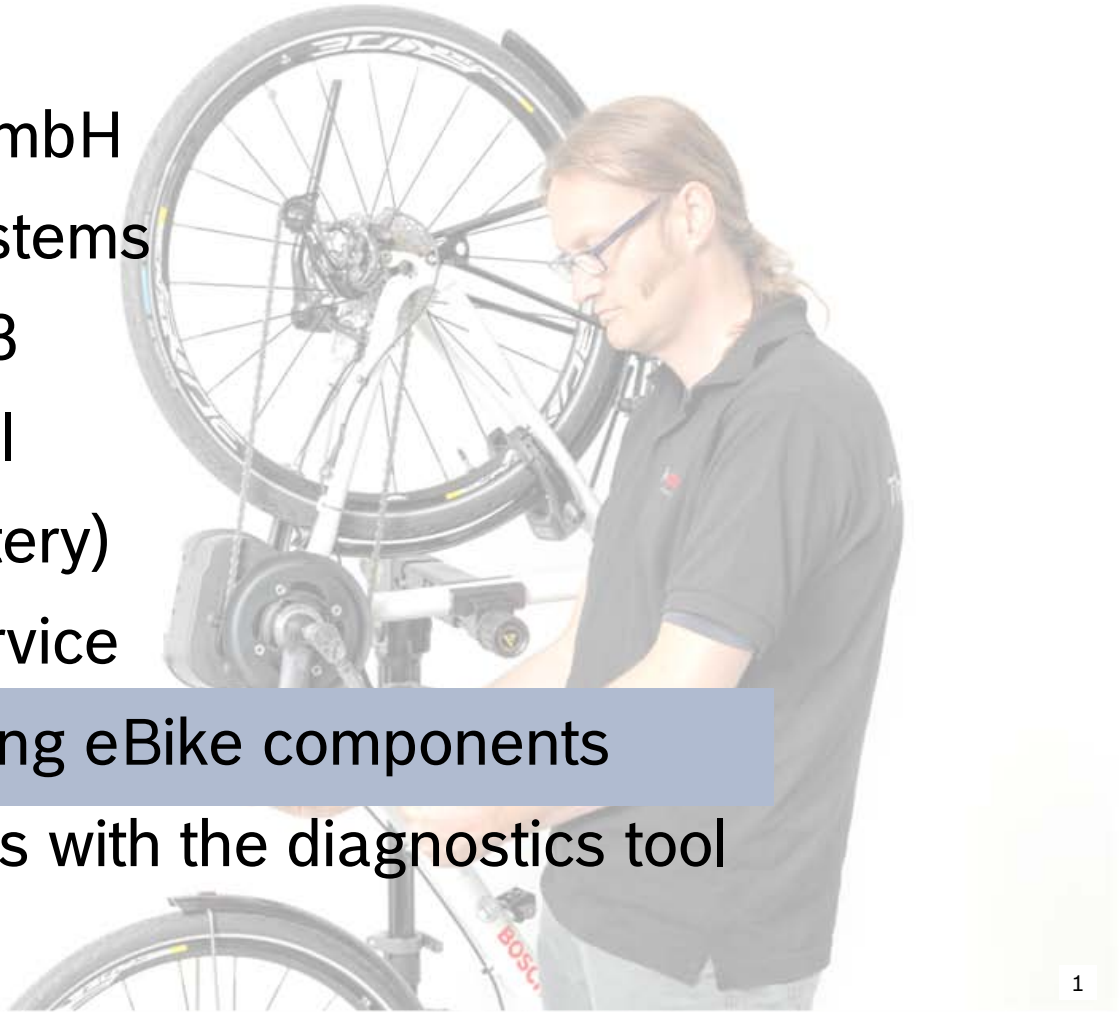


Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

Drive and control

PowerPack (battery)

Bosch eBike Service

Installing/removing eBike components

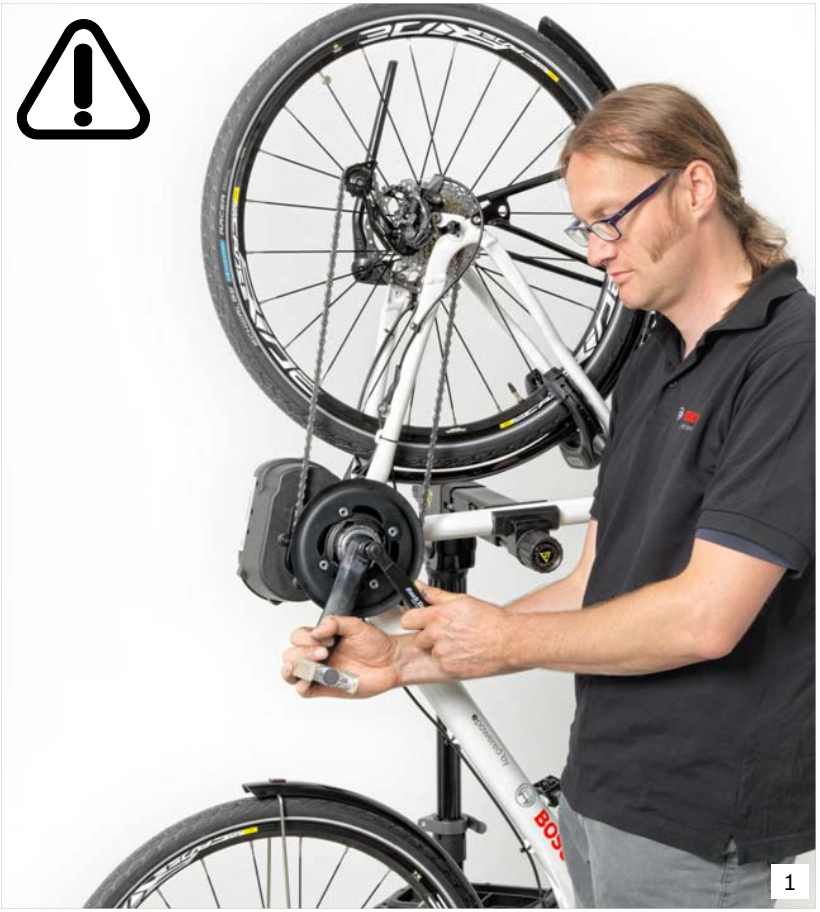
eBike diagnostics with the diagnostics tool

Troubleshooting

1

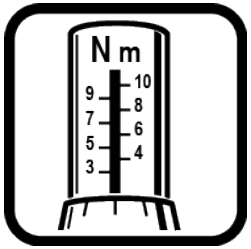
Please note

- Remove the battery from the mount before working on the eBike.
- Do not use grease for the expansion sleeves (drive unit fixing)
- When original Bosch screws are used no additional screw fixing is required.
- Do not use a hammer or magnetic tools in the vicinity of the drive unit. The torque sensor can be damaged.
- Treat the battery terminals with terminal grease or other acid and silicon-free grease



Tightening torques

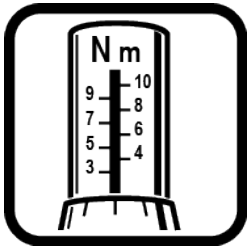
Drive unit	Tool	Tightening torque
Expansion sleeve	Torx T40	25–30 Nm, grease-free
Drive unit on frame M6	Torx T30	8 -10 Nm
Spider on chainwheel	Allen key size 5	5–8 Nm (Aluminium) 8–12 Nm (steel) + threadlock medium
Lock ring on chainwheel spider (CAUTION: Left-hand thread!)	Spider-Tool	40 Nm (Aluminium) 30 Nm (Plastic)
Crank arms on bracket shaft	Allen key size 8	50–55 Nm (depending on the manufacturer)
Stone chip protection	Torx T20	1 -1.5 Nm,
Chain protection adapter on the motor housing	Depending on screw type	2–3 Nm + threadlock medium



Subject to equipment changes and errors excepted!

Tightening torques

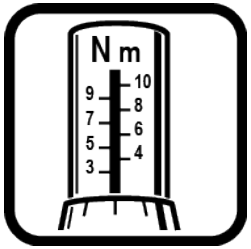
Speed sensor	Tool	Tightening torque
Sensor on frame	Torx T15	3 Nm
Spoke magnet	Phillips screwdriver size PH2	3 Nm
Rack type battery	**Tool**	**Tightening torque**
Mount casing (lower section on upper section)	Torx T10	2 Nm
Battery holder on back carrier cross member	Allen key size 4	3 Nm
Frame battery	**Tool**	**Tightening torque**
Mount adapter on frame	Torx T25	4 Nm
Mount casing	Torx T10	3 Nm
Key cylinder (not a spare part from Bosch)	Torx T20	1 Nm



Subject to equipment changes and errors excepted!

Tightening torques

Bicycle computer and control unit	Tool	Tightening torque
Bicycle computer mount clamp on the handlebars (Intuvia and HMI)	Allen key size 3	1 Nm
Bicycle computer fixing on mount (M3 × 8, Intuvia)	Phillips	1 Nm
Central HMI mount screw (HMI)	Allen key size 5	1 Nm
Control unit clamping to handlebars (Intuvia)	Allen key size 3	1 Nm
Control unit cable on bicycle computer mount (Intuvia)	Phillips screwdriver size PH00	0.1 Nm



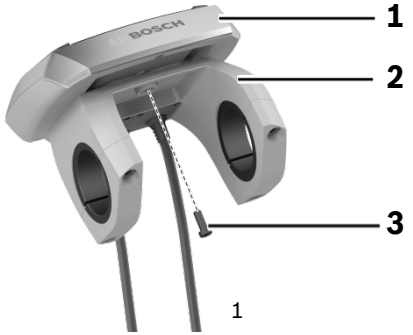
Subject to equipment changes and errors excepted!

Bicycle computer Intuvia

Fix the Intuvia permanently to the mount (optional)

➔ Only on customer request: Plug Intuvia (1) onto the mount (2) and fix it with the blocking screw (3) (M3 × 8).

- Do not use a longer screw for any reason.
- The blocking screw is no longer accessible after the mount is attached to the handlebars.



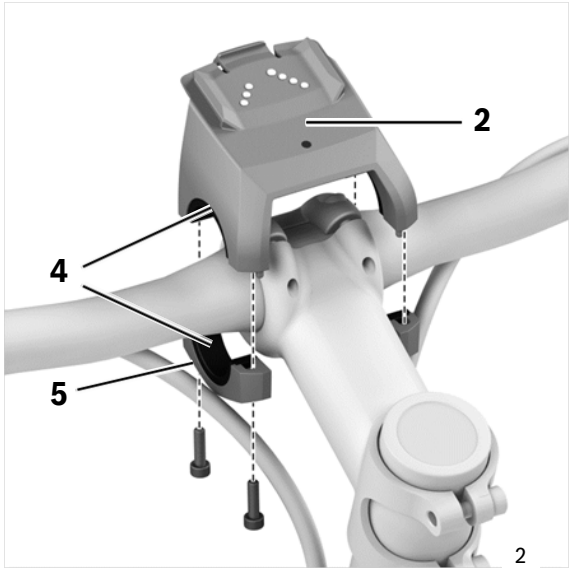
1

Mounting the mount

➔ Position the mount (2) on the handlebars.

➔ The handlebars clamp is designed for Ø 31.8 mm handlebars.
With handlebars Ø 22.2 mm and 25.4 mm:
Exchange the rubber inserts (4).

➔ Screw on the brackets (5) to the lower side of the mount.



2

- Intuvia fixing to the mount (Phillips): 1 Nm
- Clamping the mount to the handlebars (Allen key size 3) 1 Nm

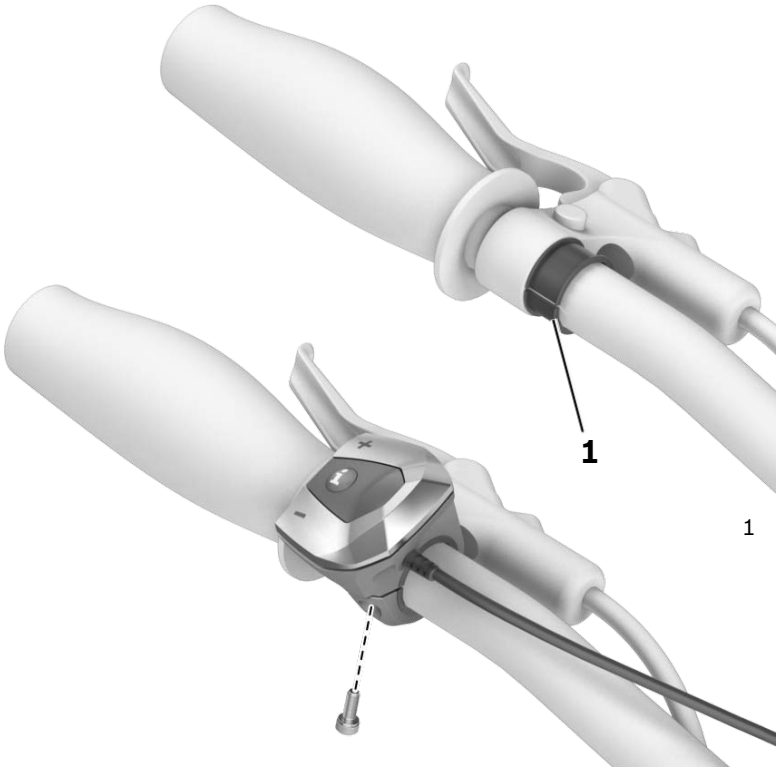
Control unit

Mounting the control unit

The control unit is intended for mounting on the left side of the handlebars.

➔ Position the rubber insert (1) to the right of the brake handle.
➔ Place the control unit on the rubber insert and screw it on tightly.

- Clamping the control unit to the handlebars (Allen key size 3) 1 Nm



1

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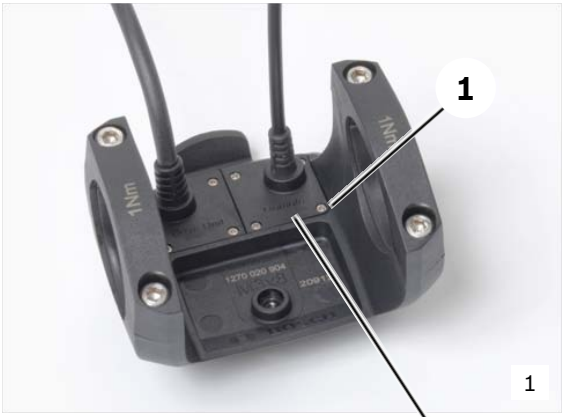
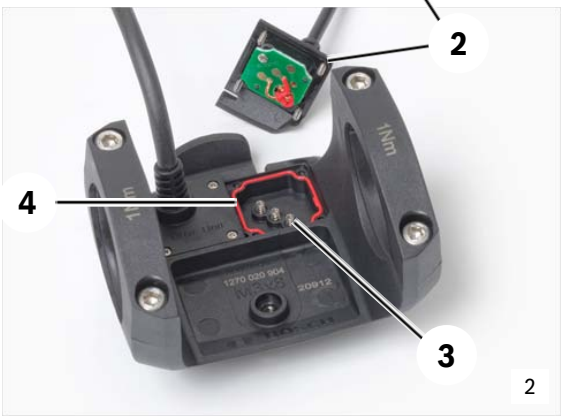
Control unit

Exchanging the control unit on the Intuvia mount

- ➔ Remove the Intuvia from the mount.
- ➔ Remove the mount.
- ➔ Carefully remove the 4 screws (1) and the contact board (2).
  Ensure that the contact springs (3) do not drop out of the mount.

- ➔ When installing the contact springs ensure that the seal (4) is in perfect condition.





- Control unit cable on bicycle computer mount (Phillips size 00): 0.1 Nm

KLICKfix Adapter Multi Clip E


1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3


4

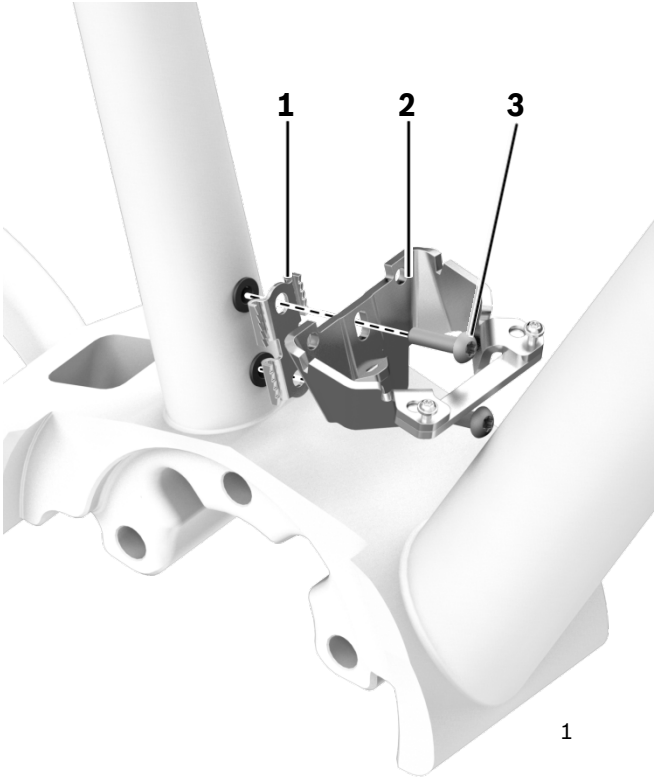
Frame battery: Mount adapter

NEW 2013

- The mount adapter is made of metal and designed as a cage. It **reinforces** the rack type battery mount.
- The new mount and mount adapter can also be installed on the vehicle model years 2011/2012.

Fitting the mount adapter

- Place the battery holder clamp (1) with the base (crimps point away from frame) onto the thread inserts in the frame.
- Attach the mount adapter (2) and screw in 2 screws (3) (Torx T25).
  - Do not tighten the screws. The mount adapter must remain mobile.

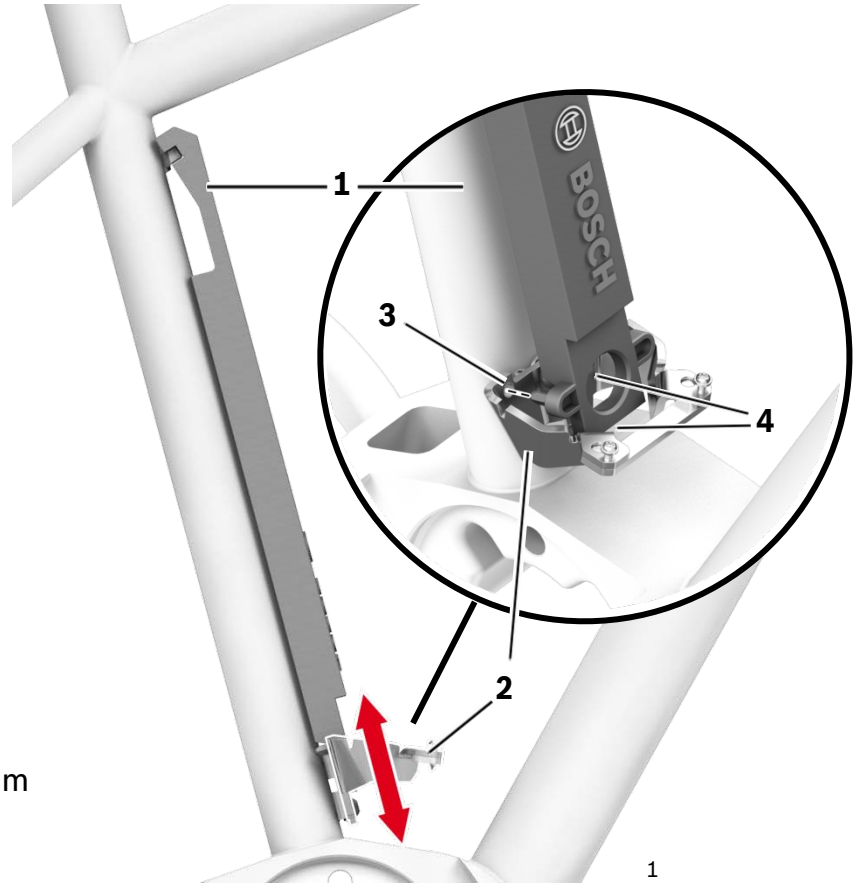


1

Frame battery: Mount adapter

Setting the mount adapter

- ➔ Place the new battery assembly gauge (1) on the top holder section (welded onto the frame).
- ➔ Offset the mount adapter (2) until the studs of the assembly gauge catch in the cut-outs (3).
- ➔ Tighten the 2 screws (4 not visible in the drawing).
- ➔ Remove the assembly gauge.



1

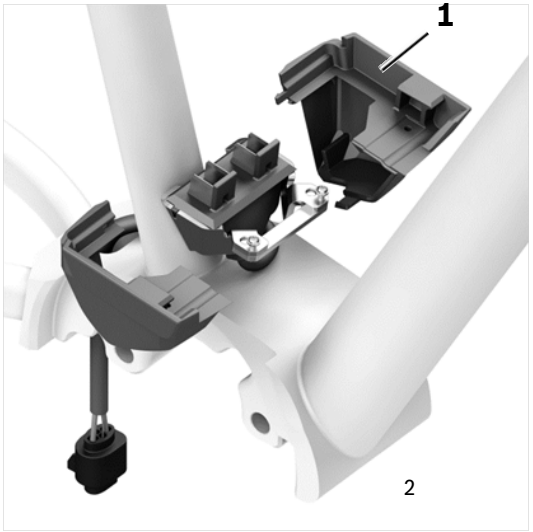
- Mount adapter on the frame (Torx T25): 4 Nm

Frame battery: Mount

Installing the battery cable and mount casing

- ➔ Thread the battery cable through the adapter section.
- ➔ Push the battery mount casing (1) right and left onto the adapter section and clip it together.
- ➔ Tighten the 2 screws (2) for the attachment of the battery mount casing.

- Mount on the adapter section (Torx T10): 3 Nm

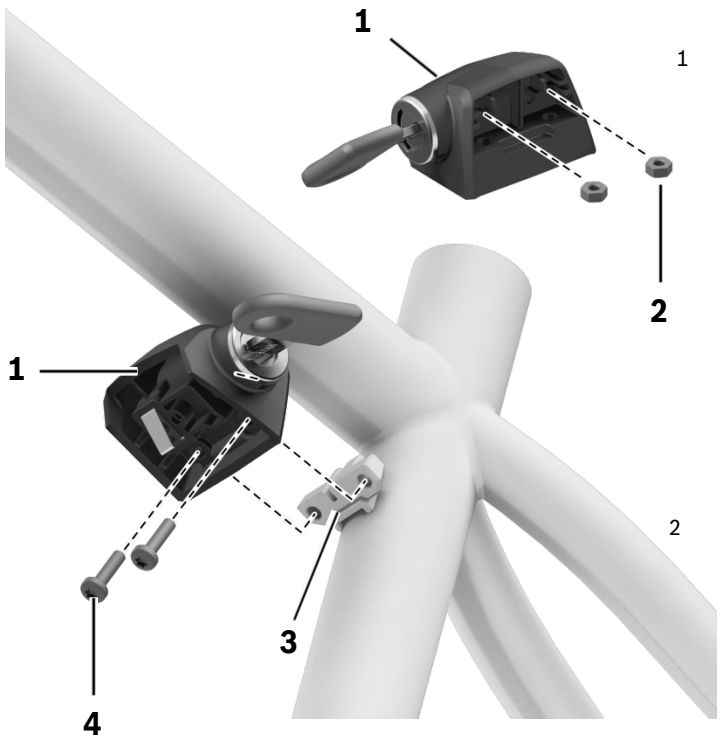


Frame battery: Key cylinder

Installing the key cylinder

Installation is easier when the frame is turned.

- ➔ Insert the nuts (2) in the cut-outs.
  - If the key cylinder (1) features threads, no nuts are necessary .
- ➔ Push on the key cylinder (1) onto the holder section (3, welded onto the frame) on the saddle post.
- ➔ Screw in the 2 screws (4).



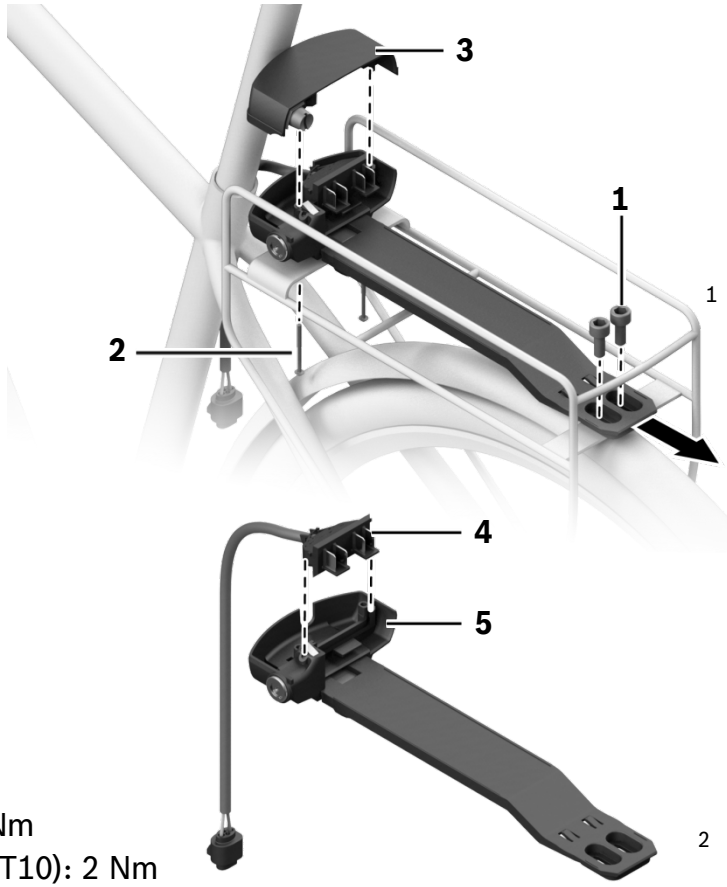
Key cylinders are only available from AXA-BASTA or ABUS.

- Key cylinder on the holder section (Torx T20): 1 Nm

Rack type battery

Removing the battery holder

- Unplug the drive cable on the drive unit (described in chapter drive unit).
- Loosen the 2 screws (1) on the rear traverse of the carrier.
- Remove the 2 screws (2), remove the upper section (3).
- Remove the connector (4) with cable from the lower section (5).
- Release the latch and lower section from the rail and remove them.



Pay attention to the correct coding A/B of the connector (4) when reassembling.

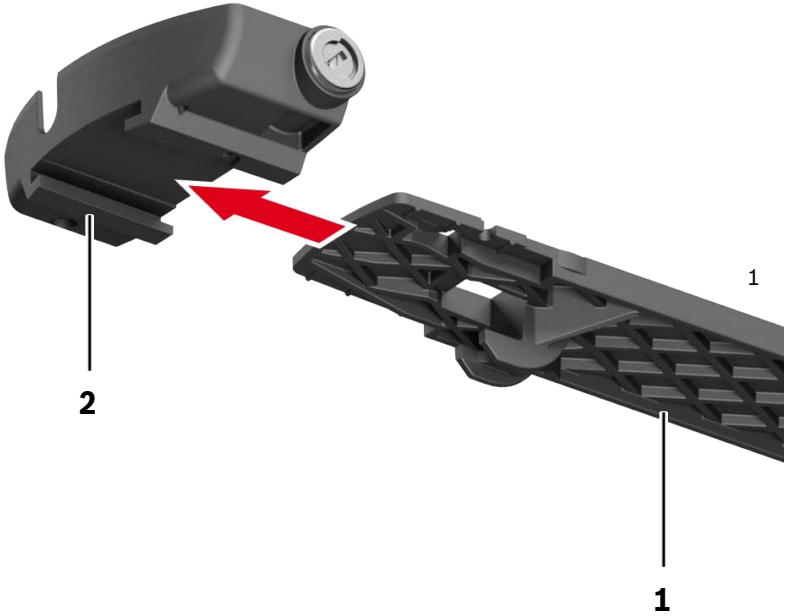
- Battery holder on the traverse (Allen key size 4): 3 Nm
- Mount casing (lower section on upper section, Torx T10): 2 Nm

Rack type battery

Installing the mount casing

Mount casing, connector element and key cylinder can be pre-installed.

➔ Push the rail (1) into the lower section (2) until the end stop. Latching (“click”) for orientation purposes.



Lower sections incl. key cylinders are only available from AXA-BASTA or ABUS.

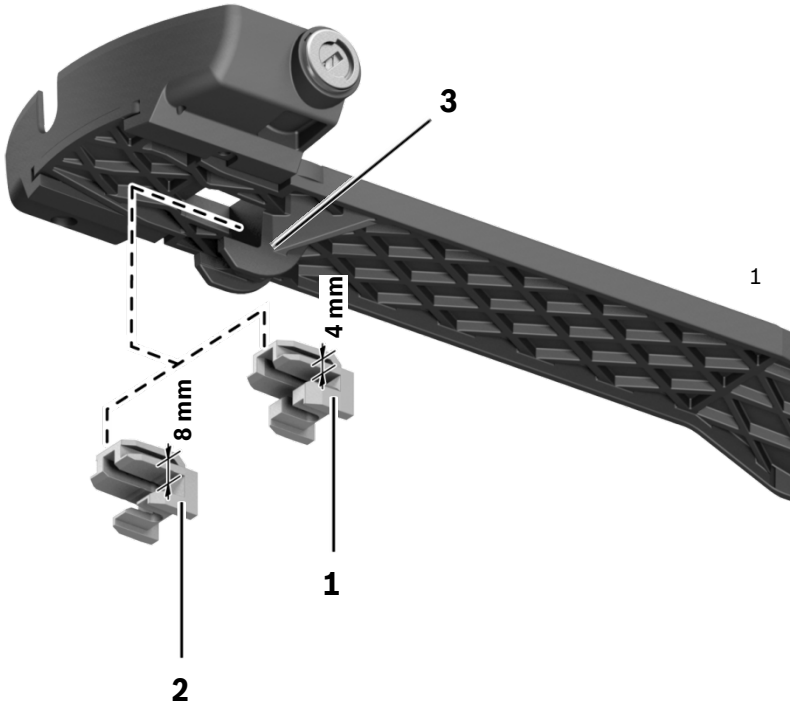
Rack type battery

Mounting the guide rail adapters on the battery support rail

➔ Place the guide rail adapters (1 or 2) into the hooks on the rail (3).

- Depending on the diameter of the back carrier struts:
  4 mm or 8 mm

Suitable back carriers are available from Hebie, Pletscher, Racktime and Curana.



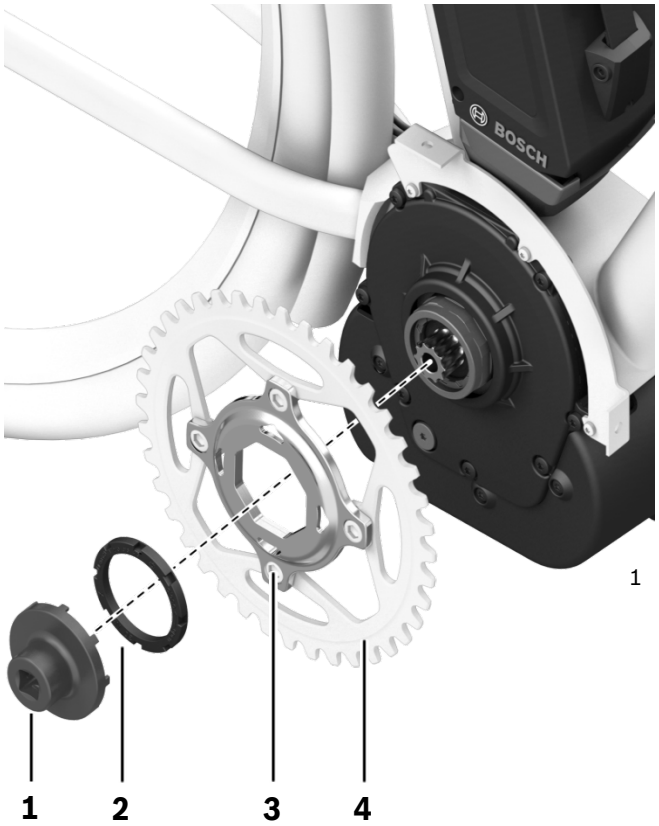
Drive unit

Removing the chain wheel

- Remove the crank arms (Allen key size 8, ISIS crank-puller).
- Block the rear wheel.

Tip: Clamp the brake lever with Velcro.

- Unscrew the lock ring (2) with the Spider-Tool (1).
  Caution: Left-hand thread!
- Remove the chain.
- Remove chain wheel crank (spider 3) together with the chain wheel:
  - Take the chain wheel with both hands and pull it out by moving back and forth.
  - Prise off the spider with a long lever (e.g. pedal wrench) from the housing.
  - Do not use a hammer! The torque sensor can be destroyed.



Prise off the spider from the housing

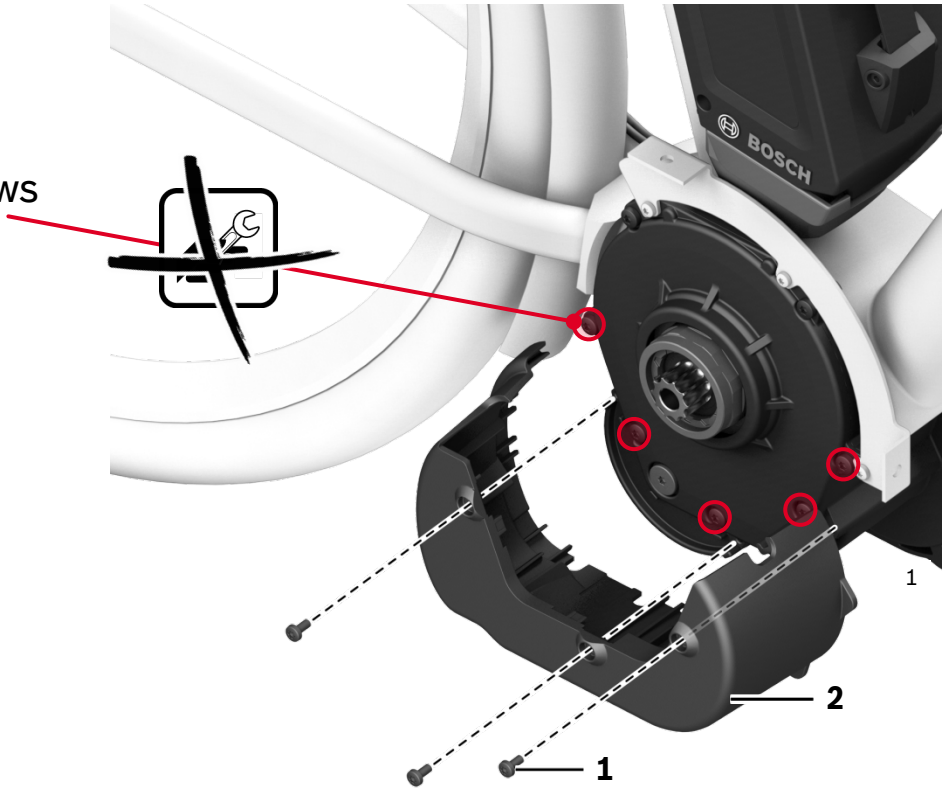
Drive unit

Removing the stone chip protection

- Remove 3 screws (1) (Torx T20).

Ensure that you do not inadvertently remove the screws of the motor casing.

- Pull the stone chip protection (2) forwards.



Drive unit

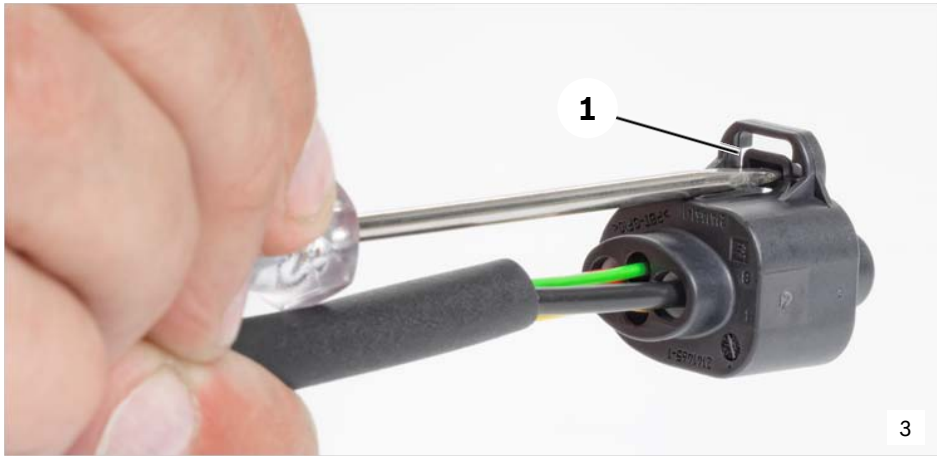
Disconnecting the cable connections on the drive unit

➔ Unplug all cables.

- The connector to the battery has a locking hook (1). Prise it off by 1–2 mm with a screwdriver.
- Damage is possible of the locking hook is not disengaged before dismounting.

Model year 2013

Model years 2011/2012



Drive unit

Do not damage the plug and cable!

- Always remove the plugs using your fingers or a long nose pliers.
- Never pull the cable directly!

Drive unit

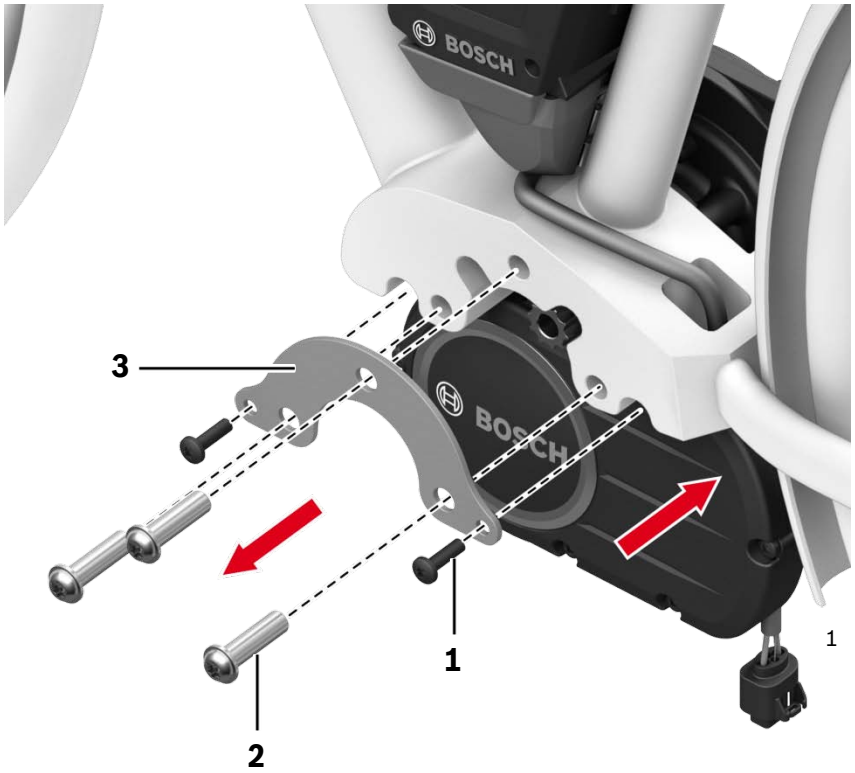
Removing the drive unit

- Loosen and remove the fixing screws (1 – Torx T30, 2 – Torx T40) and mounting plate (3).
- Pull the drive in the direction of motion to the right from the frame.

- Dispose of the 3 expansion sleeves (2).

- The expansion sleeves can not be reused!
- New expansion sleeves are supplied with each motor.

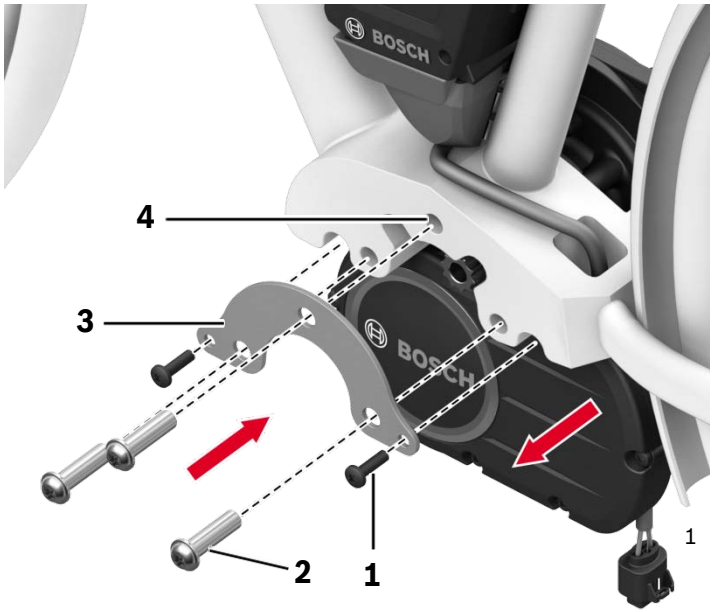
- Please retain all the rest of the components!



Drive unit

Installing the drive unit

- ➔ Lightly grease the attachment points on the bicycle frame.
- The threads of the stud bolts (4, not visible in the drawing) must be kept free of grease (threadlock lacquer).
- ➔ Install the motor on the right of the frame in the direction of motion.
- ➔ Insert the fixing screws:
  First of all M6 screws (1), then screw on the expansion sleeves (2) together with the mounting plate (3).
- Always use new expansion sleeves and install them free of grease!
- ➔ Tighten the M6 bolts (1) first.
- ➔ Then tighten the expansion sleeves (2)



- Fixing screws M6 (Torx T30): 8 - 10 Nm
- Expansion sleeves (Torx T40): 25 - 30 Nm

Drive unit

Cable connections

- Treat all connectors with contact spray and the fins of the battery holder with terminal grease.
- Observe the installation orientation of the connector: Orientation pins point away from the motor.
- Plug in the plug without force.
- Observe the connector coding and colours!

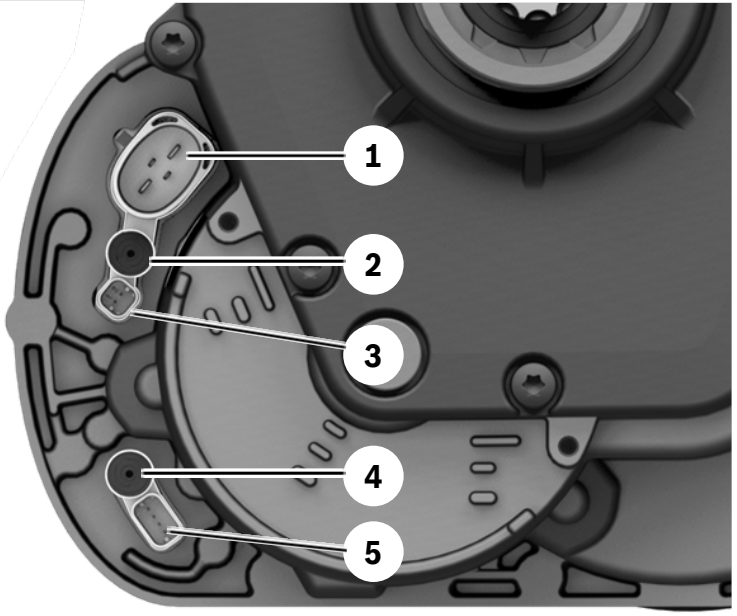
1


2

Drive unit

Connections

Pos.	Connection	Color	Voltage/Current
1	Battery	Black	36 V
2	Rear light	Black	6 V / max. 50 mA
3	Speed sensor	Grey	5 V
4	Front lamp	Blue	6 V / max. 450 mA
5	Intuvia/HMI	Black	12 V



1

Drive unit

Light connections

If the light connections are not used:

➔ Do not remove the blanking plugs from the slots.

Legal situation in Germany: According to § 67 StVZO operation of the lighting system via the battery is not permissible.

Suitable DC headlight and rear lights are available, for example, from: Busch & Müller, Trelock, Spanninga, Philips, Axa, Supernova

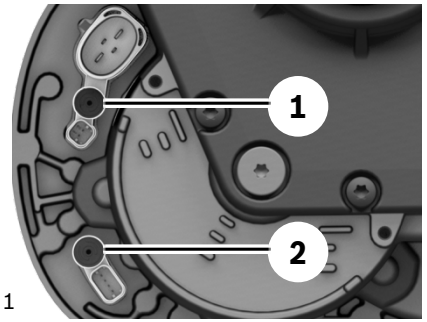
When retrofitting the bicycle lighting to the drive unit:

➔ Only connect DC lamps without a parking light function.

➔ Observe the current rating: The current output must be high enough.

➔ Remove the blanking plugs on the slots to connect the lighting cable.

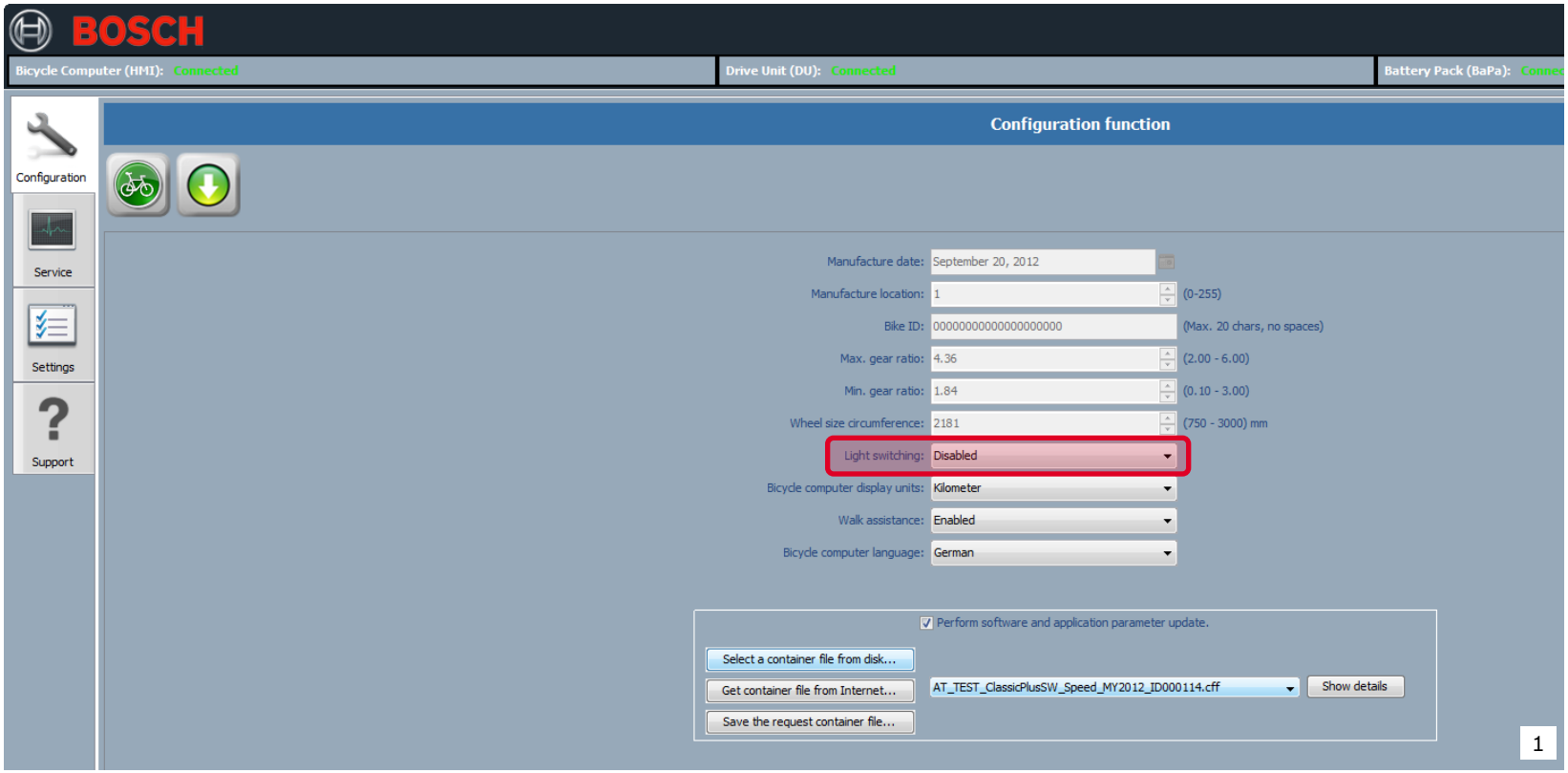
➔ Activating the current supply via diagnostics tool.



1

Pos.	Connection	Color	Voltage/Current
1	Rear light	Black	6 V / max. 50 mA
2	Front lamp	Blue	6 V / max. 450 mA

Activating the current supply via diagnostics tool

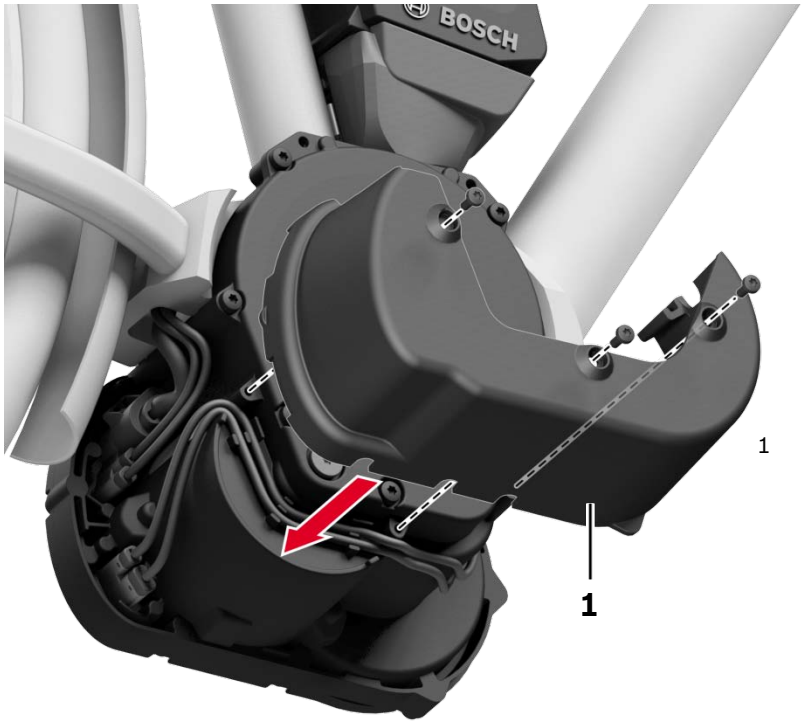


Back

Drive unit

Cable routing and stone chip protection

- ➔ Excessive cable can be fixed with cable ties or fixed in the cable channels provided (depending on the version).
- ➔ Install the stone chip protection (1).
  - For this purpose, lay the cable in the guides provided and ensure that they are not jammed.



- Stone chip protection on the motor casing (Torx T20): 1–1.5 Nm

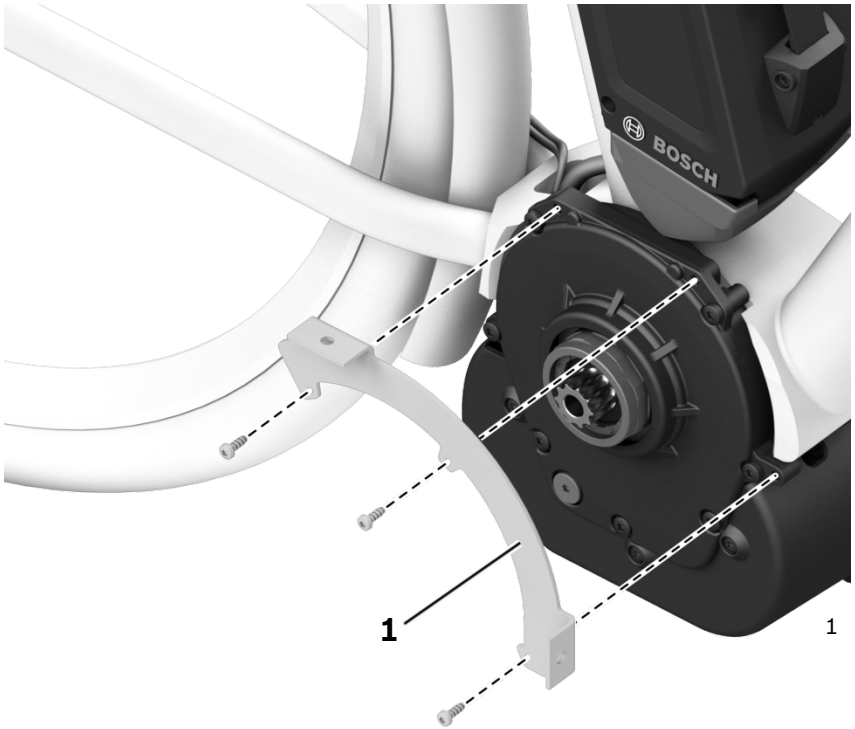
Drive unit

Installing the chain protection adapter (option)

➔ An adapter (1) is required to install the chain protection:

- Adapter (not included in scope of delivery, available from bicycle manufacturer)
- Screws (3 pcs, not included in scope of delivery)

➔ Apply the chain protection adapter to the screw points and screw on tightly.



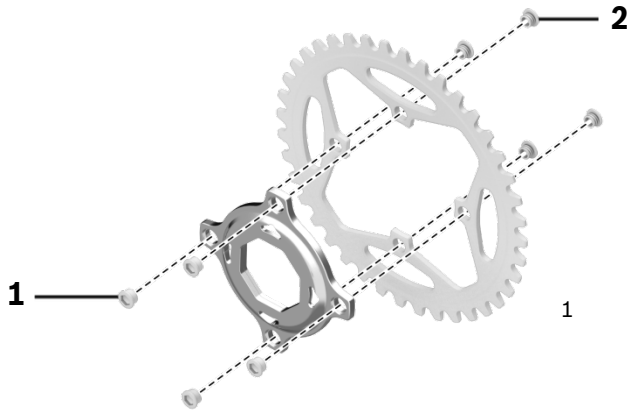
1

- Chain protection adapter on the motor housing:
  2-3 Nm + threadlock medium

Drive unit

Reassembling the chain wheel and chain wheel crank

- ➔ Assemble the chain wheel crank (spider) and chain wheel before installation on the drive unit.
- ➔ Pay attention to the correct length of the chain wheel screws (1). They may not protrude internally over the sleeve nuts (2)!
- ➔ Screw together evenly in a criss-cross pattern.



Availability of spider, chain wheel (bolt circle ∅: 104 mm), chain protection disc, chain wheel screws and chain guide from bicycle or component manufacturers.

- ➔ Steel chain wheel or high-strength aluminium recommended.
- ➔ On model years 2011/12 avoid a chain ratio of 1: 1 (can cause an error message)

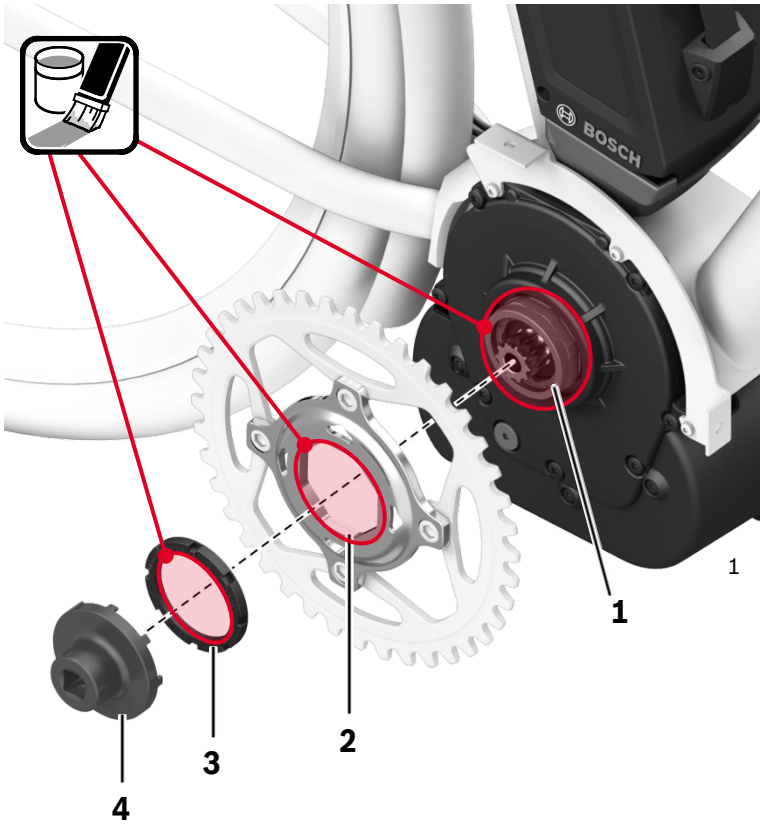
- Spider on the chain wheel (Allen key size 5)
  Aluminium: 5–8 Nm, steel: 8–12 Nm
  + threadlock medium

Drive unit

Installing the chain wheel and crankshaft

- Apply a light grease coating to the Spider mount (2) and fine threads on the motor housing (1).
- Insert the spider with chain wheel onto the drive unit.
- Apply a light coat of grease (3) to the locking ring (Aluminium version only).
- Screw on the lock ring (3) with the Spider-Tool (4).
  Caution: Left-hand thread!
- Grease the bracket shaft.
- Mount the crank arms.

- Lock ring: 40 Nm (30 Nm for plastic)
- Crank arms on the bracket shaft (Allen key size 8): 50-55 Nm

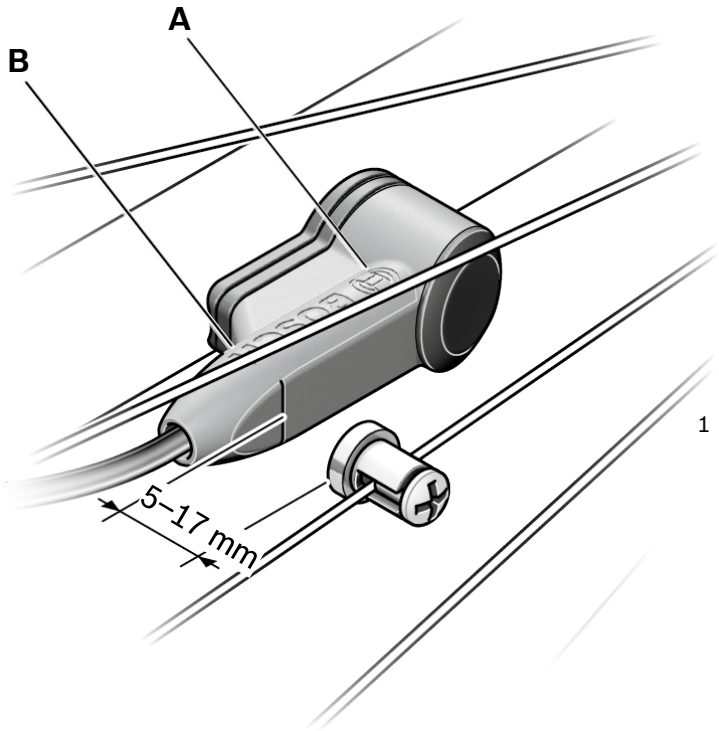


Speed sensor

- ➔ Screw the sensor into the frame thread provided. Push on the cap cover.
- ➔ Attach the magnet to the spoke:

- Optimum installation position of the magnets on the active area of the sensor: Pos. A (Bosch logo) or B (“H” in Bosch).
- Magnetic sensor spacing: 5–17 mm If required, align the sensor with additional spacers.

- When replacing the spoke magnets: **Use only original Bosch spare parts.** Conventional bicycle computer magnets do not have a sufficiently strong magnetic field strength.



- Sensor on the frame (Torx T15): 3 Nm
- Spoke magnet (Phillips size PH2): 3 Nm

Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

Drive and control

PowerPack (battery)

Bosch eBike Service

Installing/removing eBike components

eBike diagnostics with the diagnostics tool

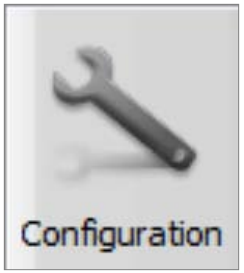
Troubleshooting

1

Functional range

eBike system configuration

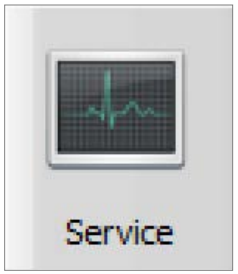
- Read the actual state and configuration data
  - Drive unit
  - Battery
  - Intuvia
- Change the configuration (e.g. when connecting the bicycle lighting to the drive unit).



1

Service

- Read error codes (if available)
  - Drive unit
  - Battery
  - Intuvia
- Generate a complete system diagnostics report incl. bicycle parameters.
- Delete the error log.

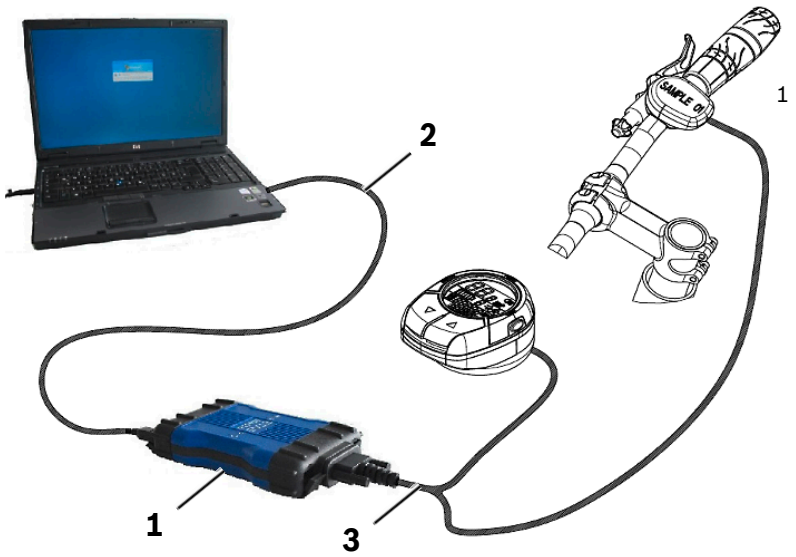


2

Scope of delivery

Diagnostics kit model years 2011/2012

- Diagnostics device VCI (1)
  Vehicle Communication Interface
- USB cable to the PC (2)
- Connection cable to the HMI (3)
- Installation CD
  (incl. operating manual)
- Installation short overview



System requirements

- Operating system: Windows 7, Vista, XP
- Browser:
  - Internet Explorer 6.0 or higher
  - Mozilla Firefox 2.0 or higher
- Adobe Flash (Plug-In) 10 or higher

The diagnostics kit VCI is required for existing bicycles of model years 2011/2012 (with HMI).

Scope of delivery

Model year 2013

- Installations CD (1) incl. operating manual (Download of the installation software is also possible)
- Dongle (2)
- USB cable (3, standard USB A-micro B)
- Installation short overview

1

The diagnostics kit model year 2013 is necessary for vehicles with bicycle computer Intuvia.

eBike diagnostics kit 2013 for dealers

System requirements

- Operating system: Windows 7, Vista, XP
- Java 6 or higher (Plug In)
- Internet browser is no longer required.

1

Ordering

- About the service hotline
- Refer to the previous Bosch eBike training

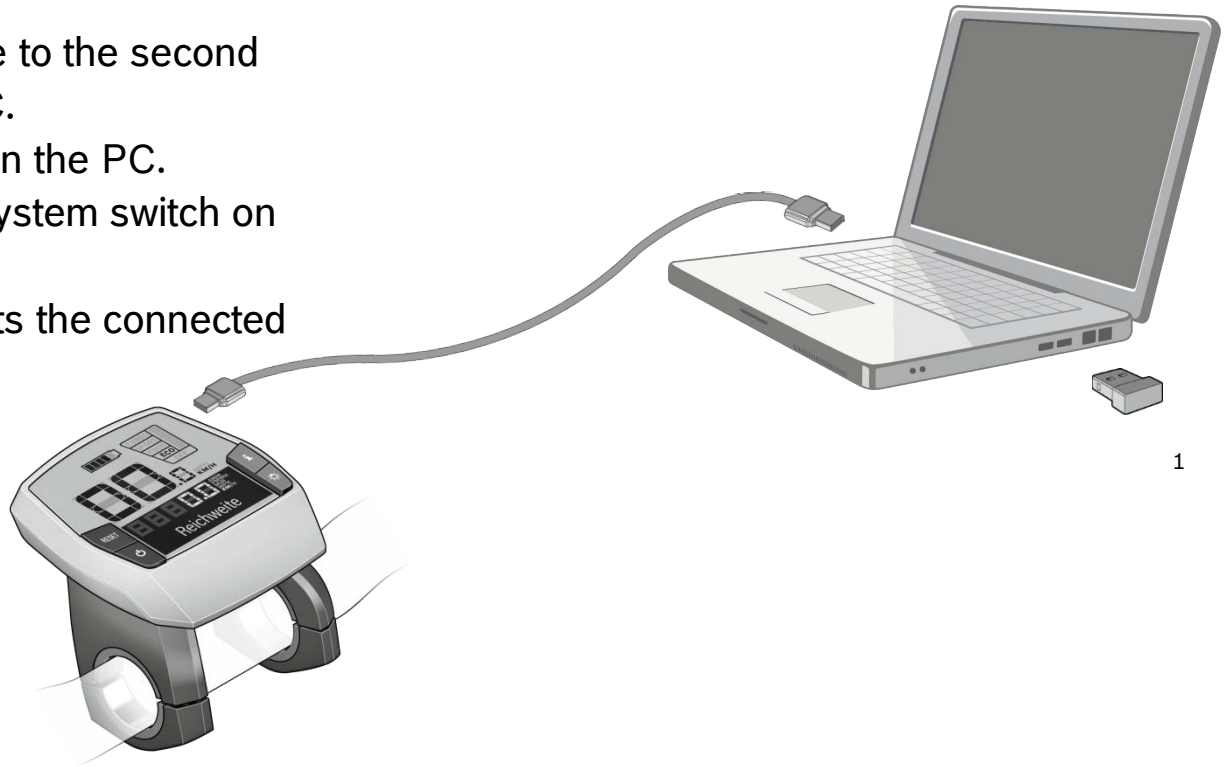
Installation

- Connect the Dongle
- Open the application on the accompanying CD and follow the instructions.

Preparation for eBike diagnostics

Connect the diagnostics device

- Connect the Intuvia to the PC via the USB cable.
- Connect the Dongle to the second USB port on the PC.
- Start the software on the PC.
- Intuvia and eBike system switch on automatically.
- The software detects the connected devices.



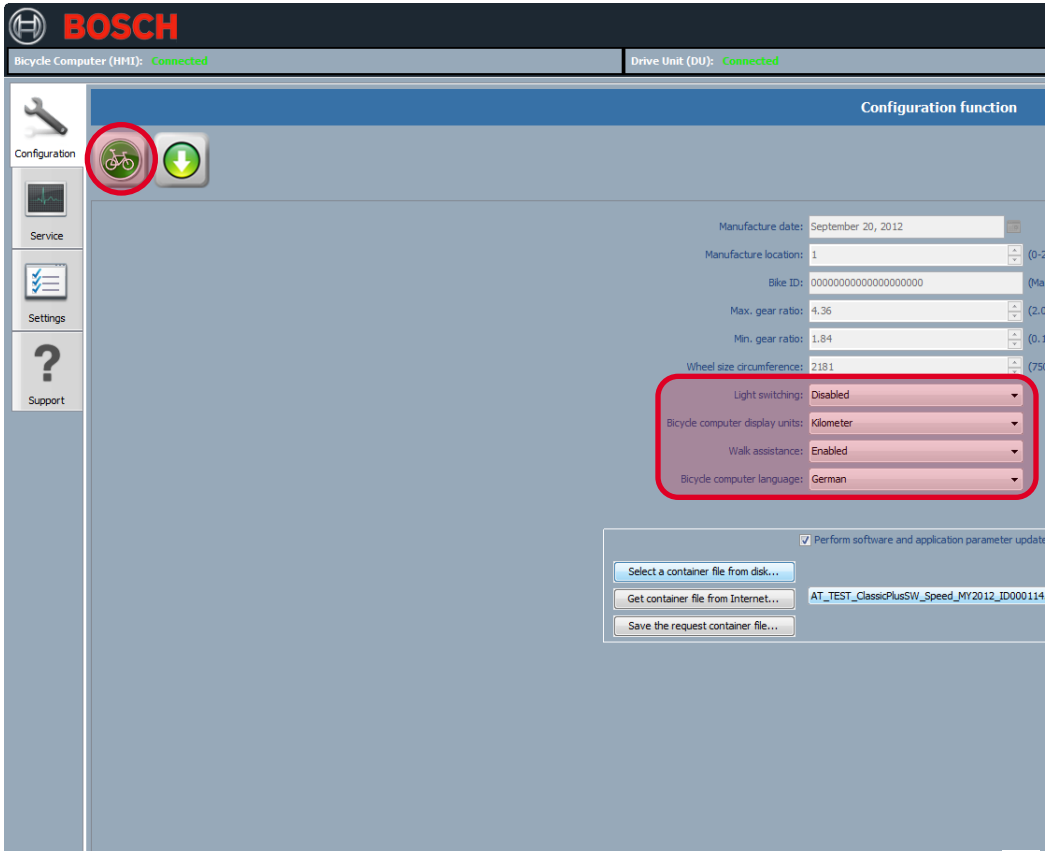
1

eBike System configuration data

Read out the configuration data

The configuration data of the eBike are read automatically.

- ➔ If this does not happen automatically: Click on the *Bicycle* symbol.
- ➔ Data which can be changed by the dealer:
  - Power supply to the bicycle lighting
  - km/miles
  - Walk assistance
  - Language
- ➔ The other fields are not accessible for the dealers.



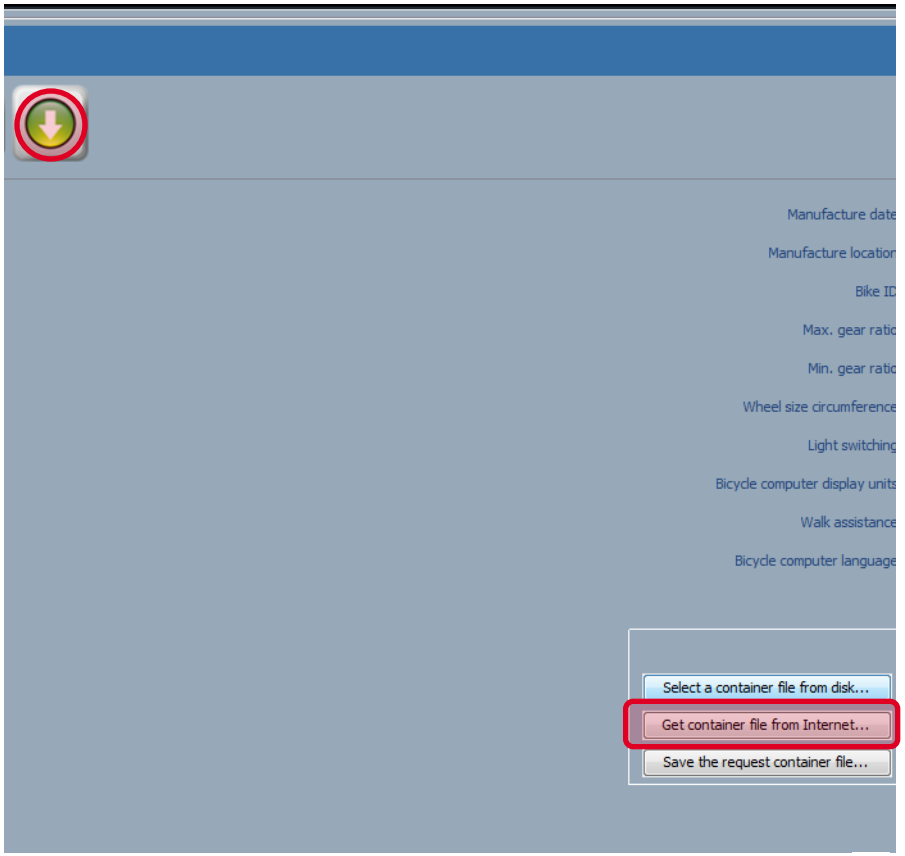
1

Update the eBike system software

Downloading a software update from the Internet

- ➔ Ensure that the diagnostics PC is connected to the Internet.
- ➔ Click on the *Container from the Internet* button. (The software package is referred to as a *container*).
- ➔ If a software update is available:
  - Container will be downloaded
  - Container can be saved on the PC (specify the storage location)

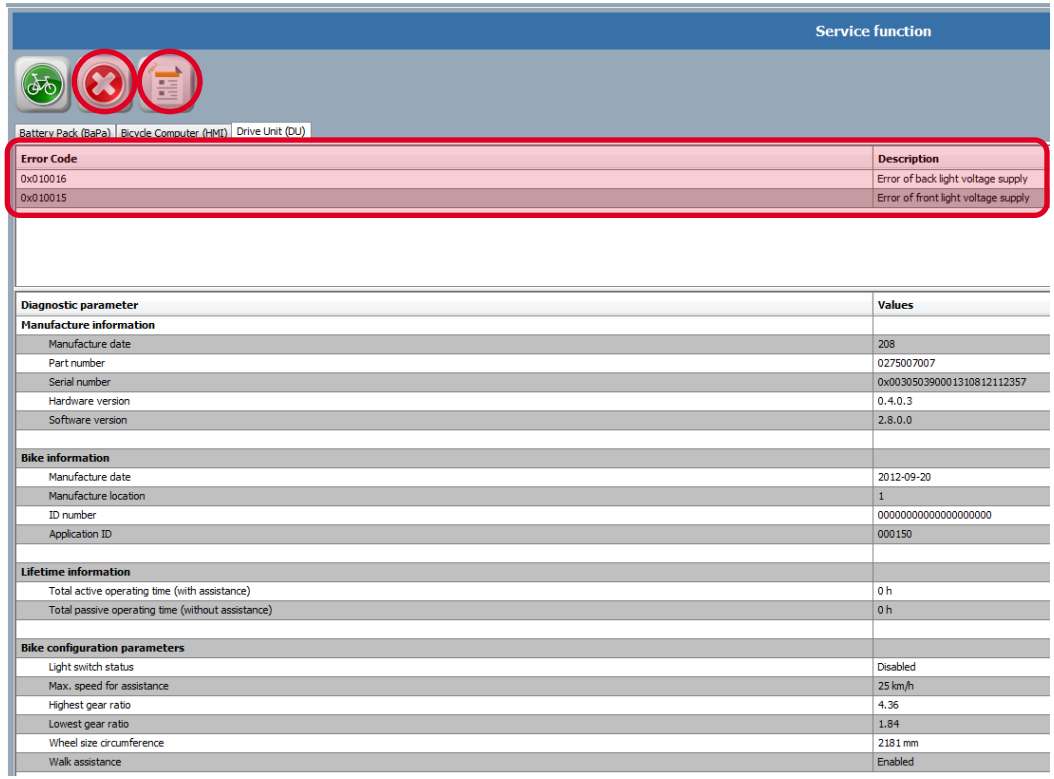
  or
  - Upload the container to the vehicle.



1

Read out the error messages

- Error messages are shown at the top
- Print out the diagnostics report or save it before the error messages are deleted from memory.
- Press the *Delete* button to delete the error messages.



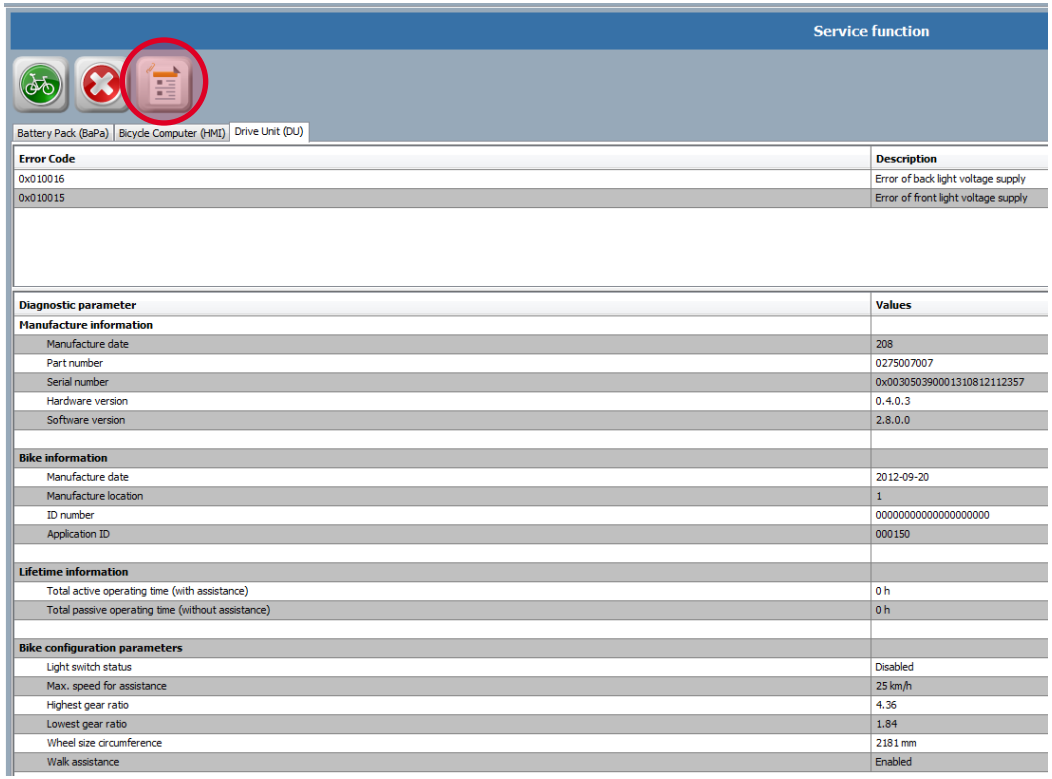
Error Code	Description
0x010016	Error of back light voltage supply
0x010015	Error of front light voltage supply

Diagnostic parameter	Values
Manufacture information	
Manufacture date	208
Part number	0275007007
Serial number	0x00305039000131081211235 7
Hardware version	0.4.0.3
Software version	2.8.0.0
Bike information	
Manufacture date	2012-09-20
Manufacture location	1
ID number	00000000000000000000
Application ID	000150
Lifetime information	
Total active operating time (with assistance)	0 h
Total passive operating time (without assistance)	0 h
Bike configuration parameters	
Light switch status	Disabled
Max. speed for assistance	25 km/h
Highest gear ratio	4.36
Lowest gear ratio	1.84
Wheel size circumference	2181 mm
Walk assistance	Enabled

1

Creating a diagnostics report

- Click the *Report* button.
- Save the report file on the PC.
  - Define the storage location.
  - Supplement the file extension *.rtf* if it is not generated automatically.
- Open and format the report file (*.rtf).



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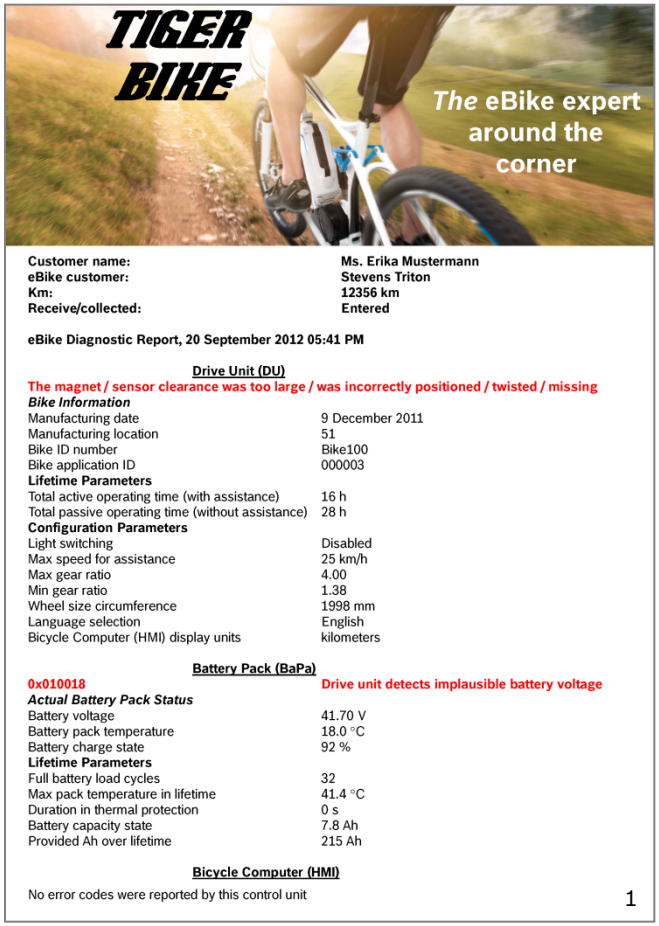
Light switch status	Disabled
Max. speed for assistance	25 km/h
Highest gear ratio	4.36
Lowest gear ratio	1.84
Wheel size circumference	2181 mm
Walk assistance	Enabled

1

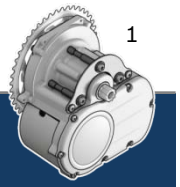
Formatting the diagnostics report

- Report file can, e.g. be formatted with programs *Microsoft Word* or *OpenOffice Writer*.

- Design an appealing layout with header and dealer logo, customer name, km driven, bicycle type etc. as a template.
- Copy the contents of the diagnostics report into this template
- Supplement with any highlighting or explanations.
- Delete details which are not required.

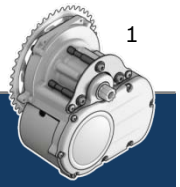


Error codes – Drive unit



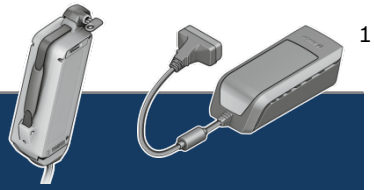
Error code in diagnostic tool	Error code on HMI or Intuvia	Error description, Remedy
0x01 00 01	100	Internal fault on the drive unit. Print the error report, delete the error code and restart the system. Perform a test run. Replace the drive unit if the problem persists.
	101	Communication problems between drive unit and other system components. Check the wiring and contacts. Replace the drive unit if the problem persists.
0x01 00 12	105	Temperature in the drive unit has exceeded the permissible highest value. Switch off the system and wait at least an hour until the temperature has been reduced to a normal level. Replace the drive unit if the problem persists.
0x01 00 14	104	Problem with the voltage supply of the bicycle computer. Check the connect and wiring.
0x01 00 15 0x01 00 16	103	Problem with the power supply of front or rear lights (only when the bicycle lighting is connected to the drive unit). Check the connection and wiring of front light (15) or rear light (16).
0x01 00 17	102	Problem on speed sensor. Check the installation, wiring and contacts of the sensor.

Error codes – Drive unit



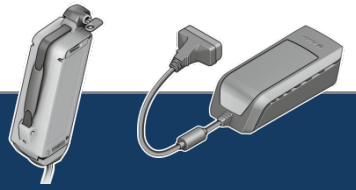
Error code in diagnostic tool	Error code on HMI or Intuvia	Error description, Remedy
0x42 20 10	422	Communication problems between drive unit and other system components. Check the wiring and contacts. Replace the bicycle computer if the problem persists.

Error codes – Battery


1

Error code in diagnostic tool	Error code on HMI or Intuvia	Error description, Remedy
0x02 00 02 0x02 00 13 0x02 00 0F	200	Error in battery: Overcurrent (13), electronics (02) or short-circuit (0F). Replace the battery.
0x02 00 05 0x02 00 22 0x02 00 23	203	CAN communication problems between battery and other system components. Check the wiring and contacts. Also possible: Battery was removed without switching off the system beforehand. Replace the battery if the problem persists.
0x02 00 12 0x02 00 17	201	Temperature in the battery has exceeded the permissible highest value. Switch off the system and wait at least an hour until the temperature has been reduced to a normal level. Replace the battery if the problem persists.
0x02 00 19	202	Temperature in the batery has dropped below the permissible lowest value. Switch off the system and wait at least an hour until the temperature of the battery has been raised to a normal level. Replace the battery if the problem persists.
0x02 00 20	204	Battery management system has detected an incorrect charging current. Replace the charger. Use only the original charger for charging the battery. Replace the battery if the problem persists.

Error codes – Battery


1

Error code in diagnostic tool	Error code on HMI or Intuvia	Error description, Remedy
0x42 30 11	423	Communication problem between battery and other system components. Check the wiring and contacts.

Error codes – Operating elements

1

Error code in diagnostic tool	Error code on the Intuvia	Error description, Remedy
0x41 00 15	410	Error on the buttons. Print the error report, delete the error code and restart the system. Check whether the buttons are blocked. Replace the Intuvia if the problem persists.
0x41 40 14	414	Error on the control unit. Print the error report, delete the error code and restart the system. Check the wiring and contacts. Replace the control unit and Intuvia mount, if problem persists.
0x41 80 16	418	Error on the buttons of the control unit. Print the error report, delete the error code and restart the system. Check whether the buttons are blocked. Replace the control unit if the problem persists.
0x42 40 12	424	CAN communication problem. Check the wiring and contacts. Use another Intuvia and Intuvia mount as a test if problem persists.
0x43 00 13	430	Discharge the buffer battery in the Intuvia. Put the Intuvia in the mount and switch on the Bosch eBike system on the battery. The buffer battery is charged via the battery. Replace the Intuvia if the problem persists.

Error codes – Operating elements

1

Error code in diagnostic tool	Error code on the Intuvia	Error description, Remedy
0x49 00 17	490	Internal fault on the Intuvia. Print the error report, delete the error code and restart the system. Check whether the buttons are blocked. Use another Intuvia as a test if problem persists.
0x4A 50 16	No display	Internal fault on the Intuvia. Print the error report, delete the error code and restart the system. Check whether the buttons are blocked. Use another Intuvia as a test if problem persists.
0x4A 50 18	No display	USB communication problem. Print the error report, delete the error code and restart the system. Check whether the buttons are blocked. Use another Intuvia as a test if problem persists.

Error codes – HMI (model year 2011/12)

1

Error code in diagnostic tool	Error code on the HMI	Error description, Remedy
0x00 00 02 0x00 00 03 0x00 00 04 0x00 00 05 0x00 00 06 0x00 00 07	002	Check whether the buttons are blocked. Replace the HMI if the problem persists.
0x00 00 08	003	Communication problems between HMI and other components. Check the wiring and contacts. Replace the HMI if the problem persists.
0x00 00 11	001	Internal fault on the HMI. Replace the HMI.

Robert Bosch GmbH

Bosch eBike Systems

Innovations 2013

Drive and control

PowerPack (battery)

Bosch eBike Service

Installing/removing eBike components

eBike diagnostics with the diagnostics tool

Troubleshooting

1

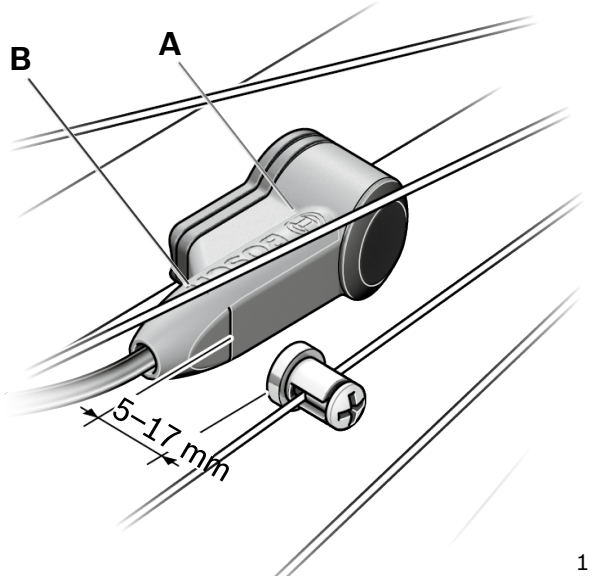
Error on the drive unit.

Error

- Speed sensor error
- Error code 102

Possible causes

- Incorrect magnet installation:
  - Distance to sensor too large
  - Incorrect installation position
- Not an original spoke magnet
- Lack of rigidity of bicycle rear chainstay or rear wheel, torsion during operation.
- Non-permissible gearing ratio (1: 1)
- Cable open circuit
- Connector not plugged into drive unit
- Insufficient power supply
  - Voltage on socket of drive unit 5 V



1

Correct installation position of the magnet:
On the level of the Bosch logos (A) or the “H” in BOSCH (B)

Measure the voltage on the speed sensor socket

Error on the drive unit.

Error

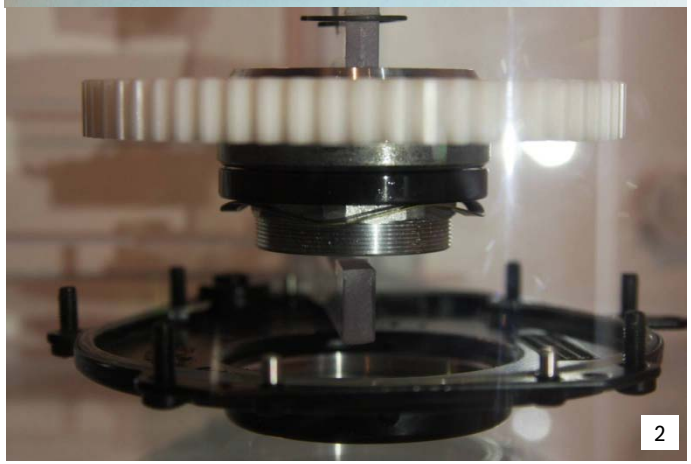
- Creaking or squeaking noises when pedaling (once per rotation).

Remedy

- Grease the floating bearing on the right bottom bracket side (see next page).
- Check the tightness of the crank spider, crankshaft, pedals and tighten if necessary.
- Loosen the fixing screws and expansion sleeves on the drive unit and retighten them.
- Apply a light coating of grease between the contact surfaces and frame.

Do not open the motor for any reason!
The images are simply intended to show the cause of the fault.


1


2

Error on the drive unit.

Greasing the floating bearing

- Tilt the bicycle to the side.
- Use a thick oil, e.g. Cyclon Bike Care, Eurotech Neoval MTO 300.
- Allow the lubricant to act for approx. **30 min** with the tilted bicycle.
- Push the axle from the left side in the direction of the axis.
- After installing the spider, ride a short distance with high torque.


1

- Grease the floating bearing with every service.

Error on battery:

Error

- Battery has too much play in the mount and rattles.

Remedy – Frame battery

- Set the mount spacing with the battery assembly gauge.
- If the rubber buffer is missing:
  - Replace by an adhesive buffer (*Tacklebox*).

1

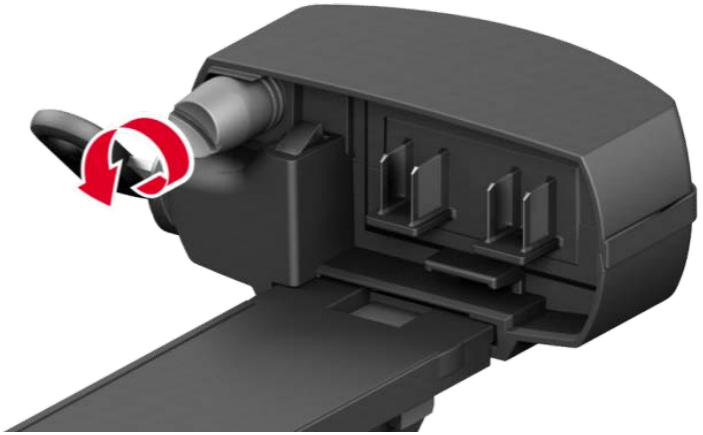
Error on battery:

Remedy – Back carrier battery

- Horizontal: Unscrew the limit buffer.
- Vertical (model years 2011/2012): Glue on the spacer pad (*Tacklebox*).
- **NEW 2013:** The battery support rail with 2 spring action clips prevent vertical play of the battery in the mount.

Check before return to customer

- Battery must sit snugly in the mount.



1

2

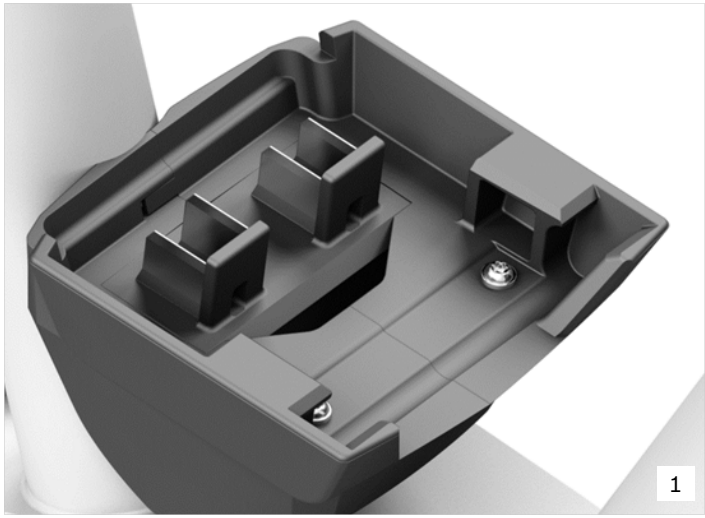
Error on battery:

Error

- Moisture in the battery connector section
- This affects bicycles manufactured before 1 November 2011.
- Determine the manufacturing date via diagnostics software.
  - Specified, e.g. 101: January 2011

201_ Year (single digit)

Month (double digit)



Battery connector section for the frame battery

Battery Pack (BaPa)

Manufacturing Information	
Manufacturing date	**110**
Hardware version	0.6.0.0
Software version	2.5.1.0
Actual Battery Pack Status	
Battery voltage	41.70 V
Battery pack temperature	21.4 °C
Battery charge state	98 %

Extract from a diagnostics report

Error on battery:

Remedy

- Clean the contacts with brake cleaner or alcohol.
- Apply glue with sealing action on the lower side of the contacts (Loctite 290).
- Allow to act for about 3 hours at room temperature.
- Mount the battery and check the function.
- Document the measures in customer files.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2

Error on the bicycle computer HMI (model year 2011/12)

Error

- Implausible range data with a new bicycle
- Constantly changing range data with a bicycle already in use

Remedy

- Update the eBike system software.

1

Range data

The calculation of the remaining range is based on the driving style of the last 100 seconds (mode, energy consumption). It can vary from rider to rider (riders weight, tyre pressure, pedaling action, etc.)

Error on the bicycle computer HMI (model year 2011/12)

Error

- Defective display
- System switches off after 2 seconds.

Remedy

- Clean the contact surface on the mount.
- Check the wiring.
- Check the contacts on the lower side: The contacts must clearly protrude.
- Recessed contacts should be lifted with a very fine knife and lubricated with penetrating oil (e.g. WD40, Caramba).
- Do not open the bicycle computer for any reason!
- Replace the bicycle computer if the problem persists.

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Chain guide

Error

- Chain suck or chain drop

Remedy

- Fit a chain guide.
  Not available as an accessory from Bosch eBike Systems; can be obtained from the bicycle manufacturer.
- Fit the chain guide to the chain protection adapter.

Diagnostics tool only indicates low battery capacity

Error

- Diagnostics software indicates that the battery capacity < 8 Ah, even though the battery is almost new.

1

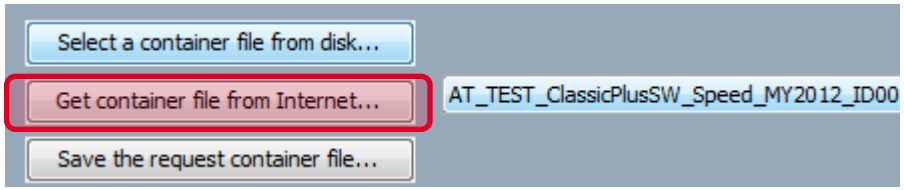
Remedy

- Software update (to model year 2013)
- Empty the battery fully approx. 10 times and charge fully under correct ambient conditions.

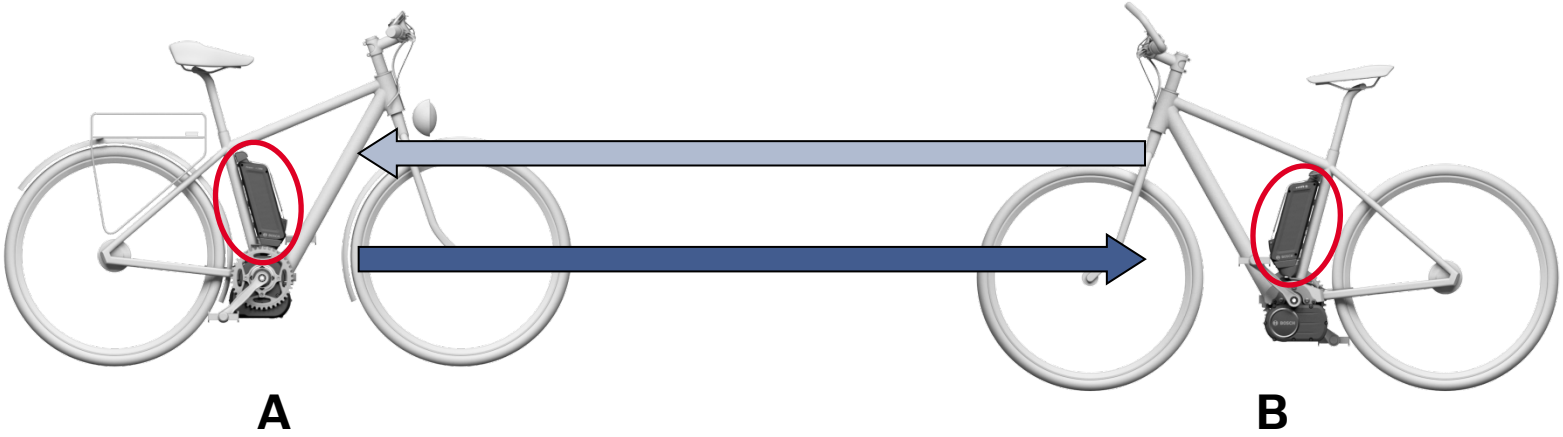
Battery Pack (BaPa)

0x020005 CAN communication problem - battery pack error

Manufacturing Information	
Manufacturing date	203
Hardware version	0.6.0.0
Software version	2.5.1.0
Actual Battery Pack Status	
Battery voltage	41.70 V
Battery pack temperature	21.4 °C
Battery charge state	98 %
Lifetime Parameters	
Full battery load cycles	**27**
Max pack temperature in lifetime	23.7 °C
Duration in thermal protection	0 s
Battery capacity state	**7.2 Ah**
Provided Ah over lifetime	3 Ah



Interchange in the event of a fault



1

- Keep a second Bosch eBike available, e.g. a new bicycle.
- Check the contacts on both bicycle computers beforehand.
- Remove the components concerned (e.g. battery) from the eBike **A** and fit/use on eBike **B**.
- Install the functioning components from eBike **B** in eBike **A**.
- It is thus possible to determine whether the components are the cause of the fault.

1

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