

BAFANG

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BAFANG

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DEALER MANUAL

# MAX Drive System



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# IMPORTANT NOTICE

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- The Dealer Manual is to be used by professional e-bike mechanics. Dealers who have not received training on electric bicycle assembly shall not attempt to assemble parts and components by following the Dealer Manual.
- If in doubt about any part of the manual, do not attempt to install the product. Please consult the local sales office or an electric bicycle dealer for help.
- Make sure you read all of the installation manuals delivered with the product.
- Do not disassemble or modify the product unless specified by the Dealer Manual.
- The Dealer Manual is available on our website ([www.szbaf.com](http://www.szbaf.com)).
- The dealer shall observe the laws and regulations of the region, the state and the country where the product is sold.

**Make sure you have read this Dealer Manual carefully in order to use the product properly.**

# FOR YOUR SAFETY

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## **When installing this product, be sure to follow the instructions given in the manual!**

It is recommended that you use only genuine BAFANG parts at all times. Serious injury may result if loose or faulty bolts and nuts suddenly come off.

If the product is improperly adjusted, accidents and serious injury can occur.

- When performing maintenance operations (for example parts replacement), be sure to wear goggles or eye protection.
- Please refer to the website [www.szbf.com](http://www.szbf.com) or contact the dealer for information on the product not covered by this manual.
- Keep this Dealer Manual in a safe place for later reference.

## **Inform the purchaser about the following issues:**

- Giving too much of your attention to the e-bike display while riding can lead to an accident.
- It is important to check that the wheels are properly fitted to the bicycle before commencing riding. If the wheels are not securely attached fixed serious injury may result.
- When riding a pedal-assisted electric bicycle, you should be fully familiar with the starting-off characteristics of the e-bike before riding it. If the e-bike starts off suddenly, accidents may result.
- It is important to turn on the lights when riding in the evening and at night.

## **Instructions on e-bike installation and maintenance**

- When cabling the product or installing the parts onto the e-bike, be sure to disconnect the battery. Not doing so may result in electric shock.
- When installing this product, be sure to follow the instructions given in the manual. If bolts and nuts are not tightened correctly or if the product is damaged, the e-bike may suddenly fall over and serious injury may result.
- The frequency of maintenance will vary depending on the usage of the e-bike. The chain should be cleaned periodically using an appropriate chain cleaner. Do not use alkaline or acidic cleaning agents to remove rust under any circumstances. If such cleaning agents are used, they may damage the chain and serious injury may result.

# NOTE

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## Important information for the purchaser:

- Please follow instructions given in the manual for your riding safety.
- Examine the battery charger regularly for damage, especially the cable, plug and housing. If the battery charger is damaged, it must not be used until it has been repaired.
- Please follow the guidance given by the safety supervisor or the instructions indicated in the manual when using the product. This product is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or persons lacking experience and knowledge in using the product.
- Do not allow children to play near the product.
- Please consult the nearest dealer for any errors or problems.
- Do not modify the system. Doing so may lead to malfunction of the system.
- For information on product installation and adjustment, please consult your dealer.
- The product is designed to be fully waterproof to withstand wet weather riding conditions. However, do not deliberately immerse it in water.
- Do not clean the bicycle with a high-pressure water spray. If water gets into any of the components, operation problems or rusting may result.
- When transporting the product on a car in wet weather, remove the battery and put it in a safe place to stop it from getting wet due to the rain.
- Handle the product carefully and avoid subjecting it to any strong shocks.
- Some important information given in this manual may also be found on the product labels.
- When buying a spare key for the battery, be sure to provide the number on the battery key. Please write down the number and keep it in a safe place.
- Use a wrung-out damp cloth to clean the battery and the plastic housing.
- For any questions regarding the maintenance and use of the product, please contact your dealer.
- Normal wear and tear due to normal use and aging is not within our scope of quality guarantee.
- Please contact the seller for software updates. The newest information on software is available on the official Bafang website: [www.szbaf.com](http://www.szbaf.com).

# 1 DRIVE UNIT (MM G33.350)

## 1.1 Advantages

- Use of torque measurement, pedal-assist speed measurement and wheel-speed measurement; the system has a dual feedback protection of the speed signals to ensure safety and reliability of the system
- High starting torque, maximum torque of more than 80 Nm, especially suitable for hill climbing
- High efficiency, low power consumption, longer range
- Low noise, smooth operation

## 1.2 Scope of Application

The drive unit works properly in the following environmental conditions:

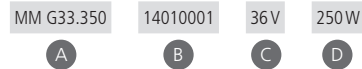
- Ambient temperature: -20 to + 55°C ;
- Relative humidity: 15–95 % RH;



The function of the product is impaired by the presence of any major caustic gas, any medium that affects the product's electrical insulation properties or any high-intensity magnetic field.

## 1.3 Product Naming Protocol

There is a badge on the housing, showing information as follows:

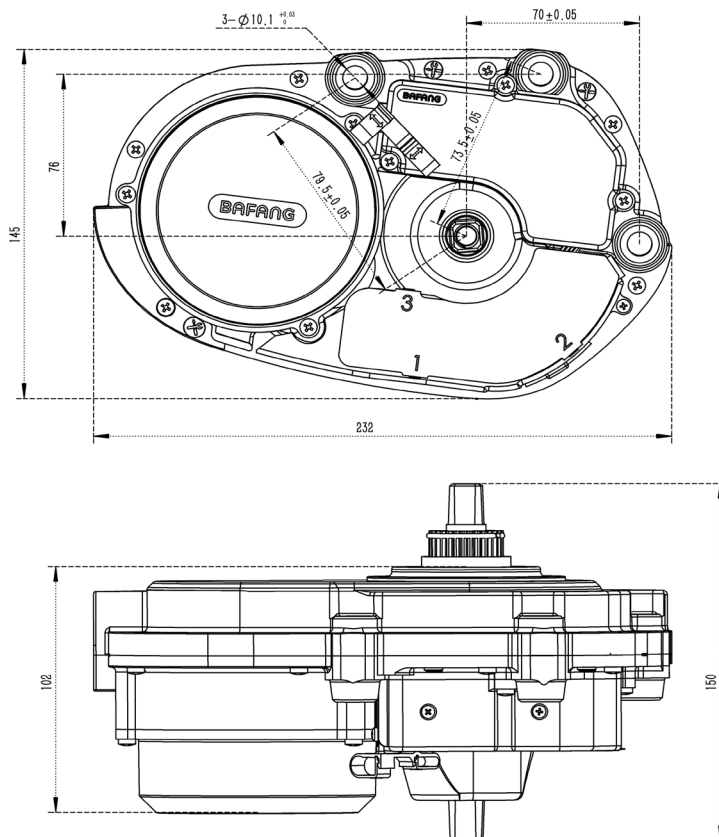


- A** MM G33.350 Name of the drive unit
- B** 1401 Date of production, January 2014 in this example; 0001 Production serial number, ranging from 0000 to 9999; 0001 is the production serial number of the first motor
- C** 36V Rated voltage suitable for 36V drive systems
- D** 250W Rated motor power

## 1.4 Main Technical Parameters

|                               |                                                                                                                                |     |           |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|-----------|
| Rated voltage (DCV)           | 36                                                                                                                             | /   | 43        |
| Rated power (W)               | 250                                                                                                                            | 350 | / 250 350 |
| Rated efficiency (%)          | ≥ 80%                                                                                                                          |     |           |
| Rated rotating speed (rpm)    | 100 ± 5                                                                                                                        |     |           |
| Maximum torque (Nm)           | ≥ 80                                                                                                                           |     |           |
| Chain wheel                   | 36T (recommended), 38T (optional), 42T (optional)                                                                              |     |           |
| Optional chain guard          | full chain guard / P-shaped chain guard                                                                                        |     |           |
| Weight (Kg)                   | 3.9                                                                                                                            |     |           |
| Sensors                       | pedal assist speed sensor, pedal assist torque sensor and bicycle wheel speed sensor and temperature sensor                    |     |           |
| Noise (dB)                    | < 55                                                                                                                           |     |           |
| Working environment           | -20°C~55°C                                                                                                                     |     |           |
| Dust-proof/ water-proof grade | IP 66                                                                                                                          |     |           |
| Certification                 | CE ROHS/ EN14766/ EN14764/ REACH                                                                                               |     |           |
| Functions                     | Light function: DC 500mA/6V headlight & rearlight<br>Optional functions: Bluetooth module, gear sensor, reprogramming function |     |           |

## 1.5 Drive Unit Structure and Dimensions



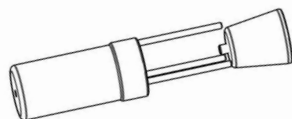
## 2 SYSTEM INSTALLATION

### 2.1 List of Tools to be used

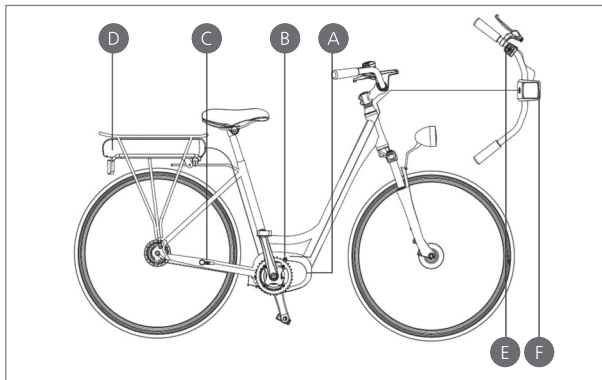
| Components   | Use of the Tools                                                      | Tools                                                                                                                                                                                   |
|--------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display      | To tighten M3 & M4 screws                                             |   Internal hex wrench |
| Drive Unit   | To fix the chain wheel retaining ring                                 | Special tool                                                                                                                                                                            |
|              | To remove the chain wheel retaining ring                              |  Plier for the retaining ring                                                                          |
|              | To tighten M4 screws on the chain guard                               |  Cross screwdriver                                                                                     |
|              | To fasten M6 bolts and nuts onto the frame adapter and the drive unit |  Internal hexagonal wrench                                                                             |
| Speed Sensor | To fasten M8 screws on the crank mounting                             |  Internal hexagonal wrench                                                                             |
|              | To install the iron magnet                                            |  Straight slot screwdriver                                                                           |
|              | To tighten M5 screws of the speed sensor                              |  Phillips screwdriver                                                                                |
| Battery      | To fasten the battery plate onto the carrier using M5 screws          |  Internal hex wrench                                                                                 |

The tool used to install the retaining ring onto the hub

Tool code (GZ-MM G31-5025)

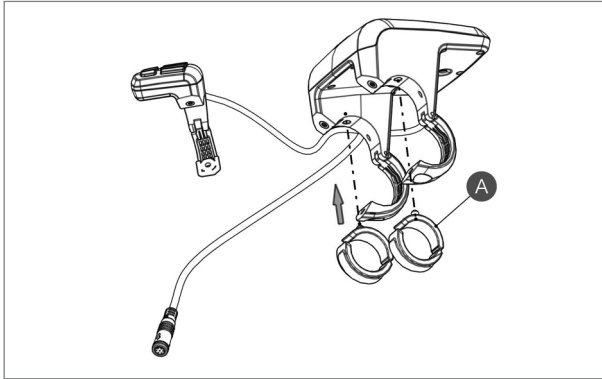


## 2.2 Component Names



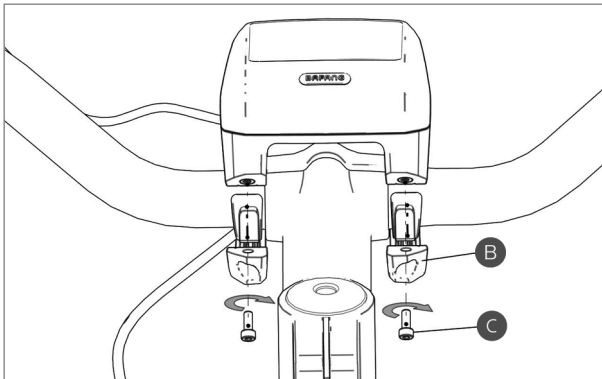
- A Drive unit
- B Front chain wheel
- C External speed sensor
- D Battery
- E Auxiliary keypad
- F Display

## 2.3 Display Installation (DP C01.RS232.7)



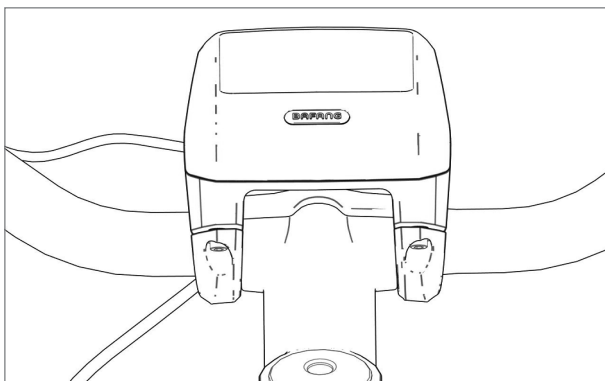
One or two rubber clamping rings may be needed depending on the diameter of the handlebar (the applicable handlebar specifications are  $\varnothing 22.2$ ,  $\varnothing 25.4$  and  $\varnothing 31.8$ ). Open the left or right display clamp, and insert one or two clamping rings into the right position of the display clamp as shown in the picture above.

- A** Rubber clamping ring  
(whose inner diameter is  
 $\varnothing 22.2$  or  $\varnothing 25.4$ )  
2316020400007  
2316020400008  
Left and right display  
clamps for the  $\varnothing 22.2$   
handlebar:  
Left clamp  
-2316020400017  
Right clamp  
-2316020400018  
Left and right display  
clamps for the  $\varnothing 25.4$   
handlebar:  
Left clamp  
-2316020400007  
Right clamp  
-2316020400008



- B** display clamp
- C** hex socket head cap  
screws M4×8

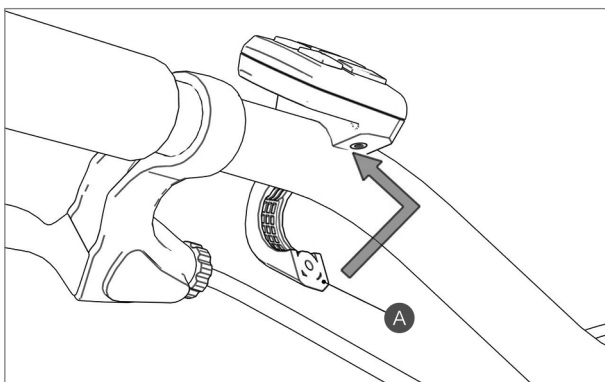
Insert the clamping ring(s) to each of the two display clamps and mount them onto the handlebar. Use an internal hex wrench to fasten the left and right clamps onto the handlebar.



Adjust the angle of the display so that you can easily see the display screen when riding. After the angle has been adjusted, tighten the screws to the specified torque.

Tightening torque: 1 Nm

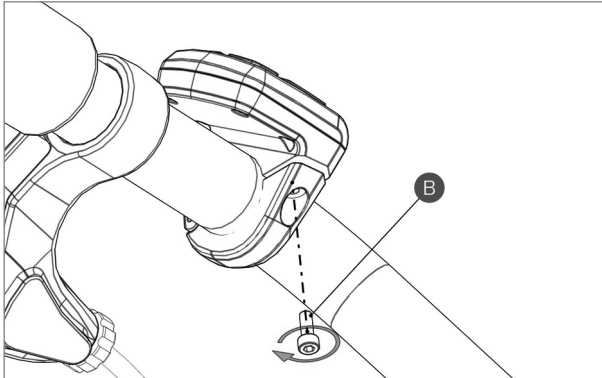
## 2.4 Auxiliary Keypad Installation



**A** keypad clamp

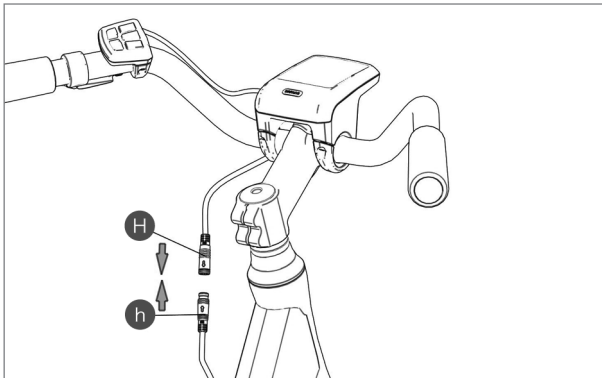
Open the auxiliary keypad and assemble it onto a position that is easy for operation. Adjust the angle of the auxiliary keypad to ensure that the keypad is easy to see during riding.

(Applicable to the handlebar whose external diameter is Ø22.2mm)



- B** hex socket head cap screw M3×8

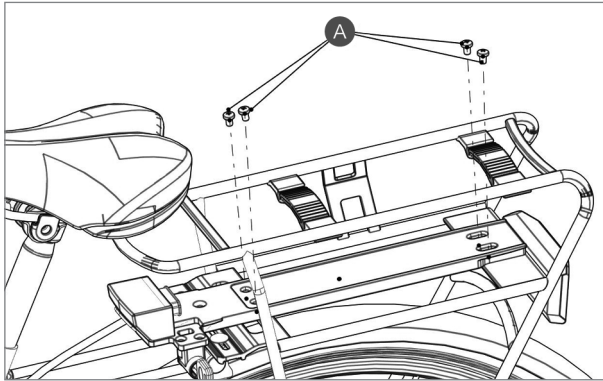
Fix the keypad onto the handlebar with a screw. Then tighten the fixing screw with an internal hex wrench.  
Tightening torque: 1 Nm



- H** female connector at the display  
**h** male connector at the EB-BUS

Match the female connector at the display with the male connector at the EB-BUS as shown in the picture above.

## 2.5 Battery Rail Installation

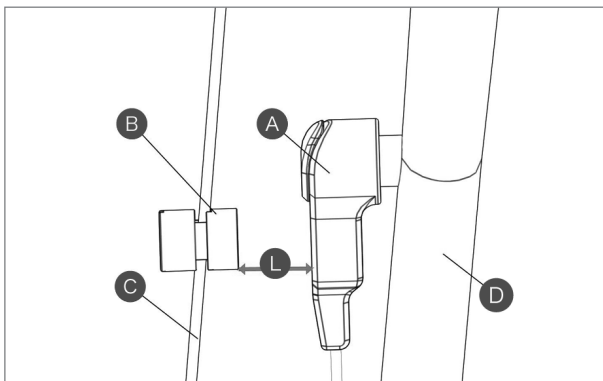


- A** hex socket head cap screw (M5)

Align the mounting holes of the carrier with the mounting holes of the battery rail. Fasten the battery rail onto the battery carrier with hex socket head screws (M5).

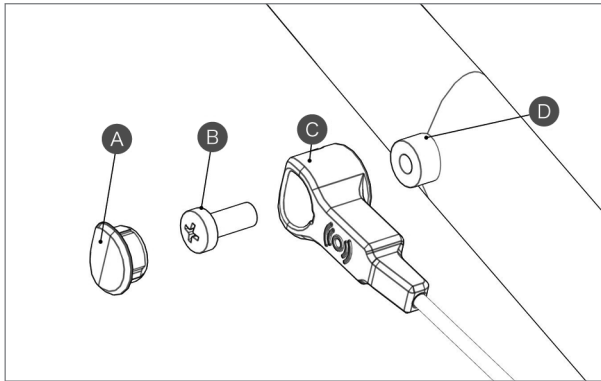
Tightening torque: 2 Nm

## 2.6 External Speed Sensor Installation SR SD02.01



- A** external speed sensor  
**B** magnet unit  
**C** spoke  
**D** chain stay

Before installing the speed sensor, please make sure the gap between the speed sensor and the magnetic unit is between 5 and 25 mm.

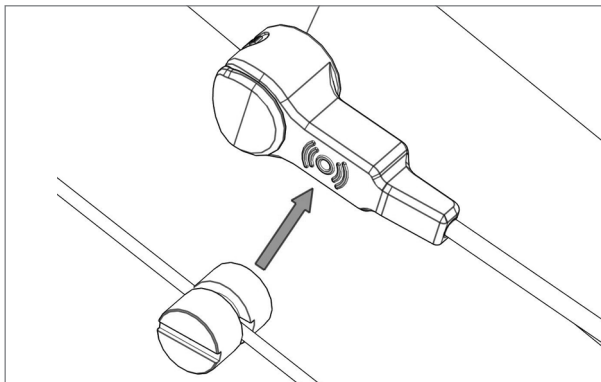


- A Dust cap  
2301030000003
- B mounting bolt M5×12
- C external speed sensor
- D sensor bracket (chain stay boss)

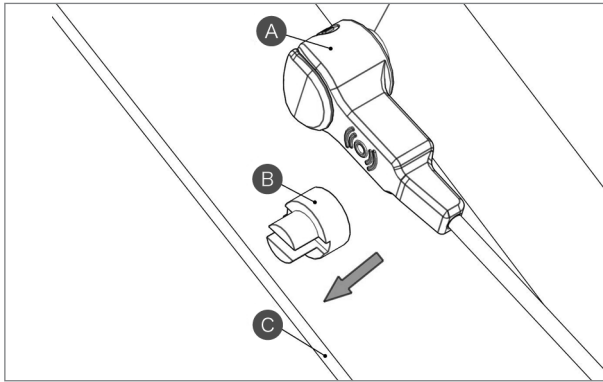
If the gap is within the specified range, use the mounting bolt to fix the speed sensor.

If the gap is more than 25 mm, please put spacers between the sensor and the chain stay boss to reduce this gap.

Tightening torque: 1.5–2 Nm

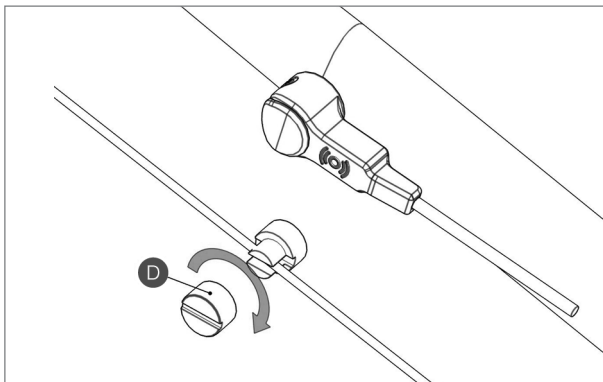


Arrange the speed sensor and the magnet unit as shown in the picture above. When installing the magnet unit, make sure its center is aligned with the center of the speed sensor's induction zone.



- A** external speed sensor
- B** magnet unit  
PS01010702/  
2308040000001
- C** spoke

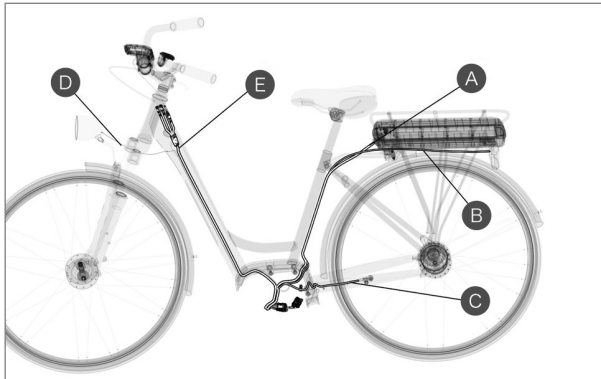
Arrange the speed sensor and the magnet unit as shown by the picture above. Mount the magnet unit onto the spoke.



- 
- D** Mounting nut of the  
magnet  
PS01010701/  
2327000000003

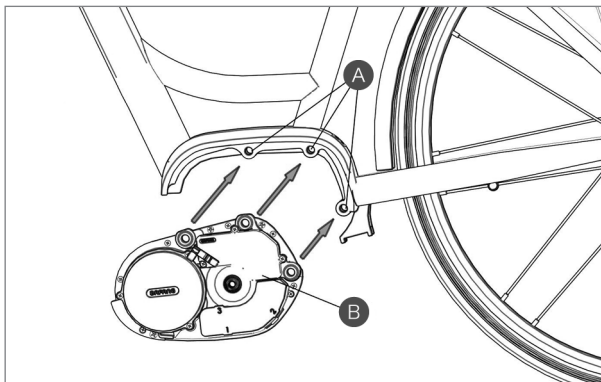
Tighten up the mounting nut with a straight slot screwdriver. Tightening torque: 1.5–2 Nm

## 2.7 Drive Unit Installation



- A battery cable
- B taillight cable
- C external speed sensor cable
- D headlight cable
- E EB-BUS

Cables should be arranged in advance according to the e-bike type and the cabling system before installing the drive unit.

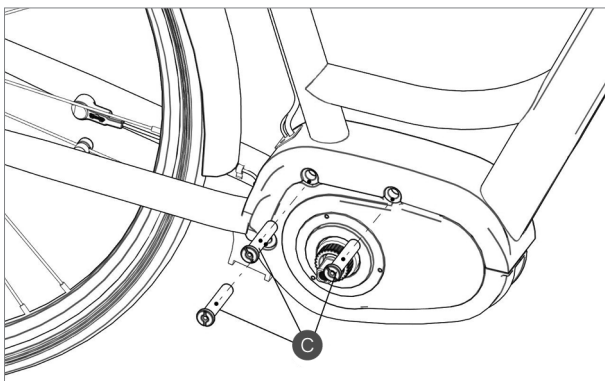


- A mounting holes
- B drive unit  
MM G33.350

Align the three mounting holes of the drive unit with the mounting holes in the bike frame.

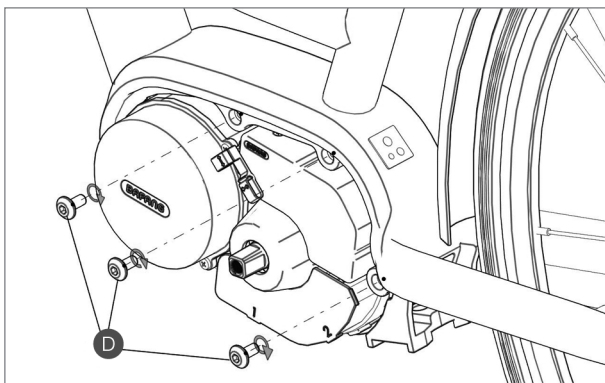


Pay attention to the outgoing directions of the cables. Please note that the cables should not be squeezed by the drive unit.



- C** M6 nuts  
1401080000101

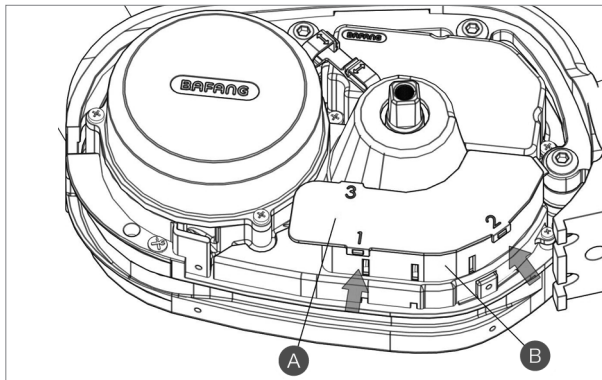
Insert, from the right, special M6 nuts into the mounting holes in the bike frame and the drive unit.



- D** M6 bolts  
1401080000099

Insert, from the left, the M6 bolts into the bike frame so that they will come to contact with the nuts. Tighten bolts onto nuts to the specified torque.

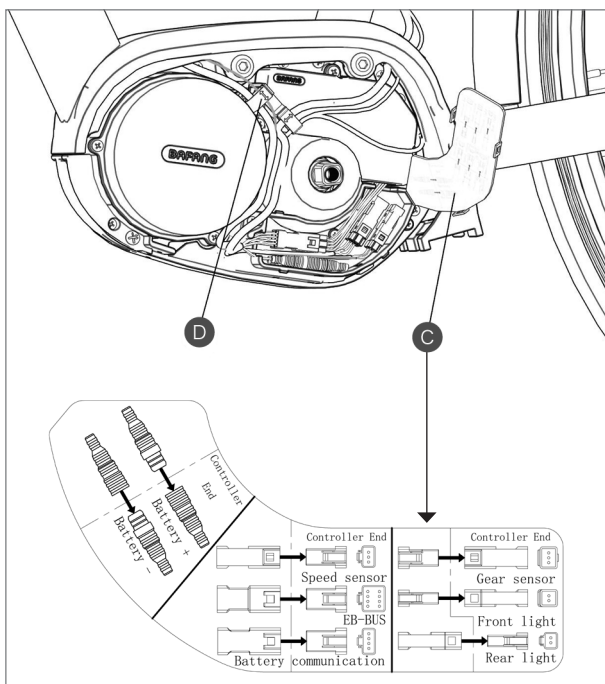
Tightening torque: 18–20 Nm



- A upper cover of the connector box
- B connector box body

Open the connector box and get ready to link female connectors with male connectors.

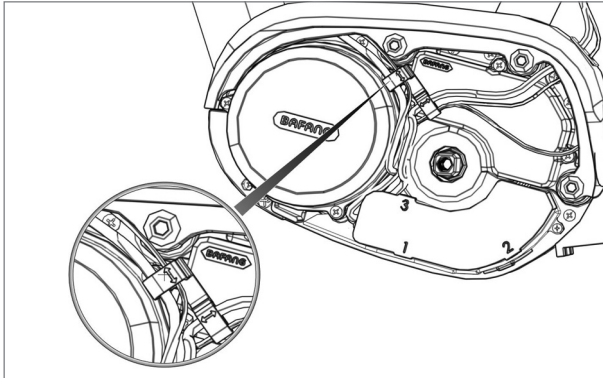
Push the lower part of each of the male buckles on the connector box body (in the direction as show by the arrows in the picture above) to release the female buckles on the upper cover. Push the upper cover in the direction of moving towards Buckle 3 to fully open the upper cover.



- C** cabling layout  
2307070000001
- D** cable clips  
1401300000001

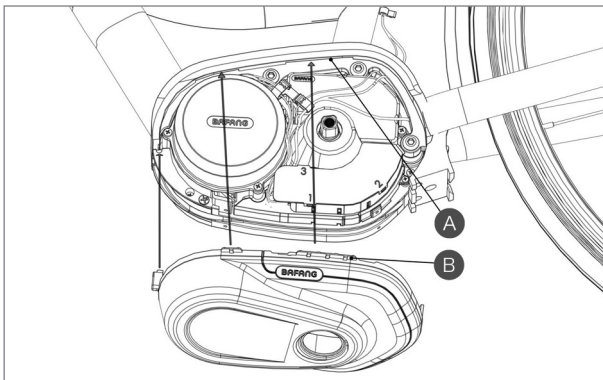
Open the connector box, link all cables to the drive unit and fix all connectors in the connector box according to the cabling diagram printed on the upper cover of the connector box (see C in the picture above).

After matching all male connectors with female connectors, cover the connector box with the upper cover and thread the cables through cable clips (D in the picture above) following the principle of "thin cables on top and thick cables below" to ensure that the cables are neatly arranged.



The picture above shows how the drive unit looks after cabling.

Please note that all cables must thread through the cable clips after going out of the connector box.



- A frame adapter
- B drive unit cover  
1333000000001

Push the buckle on the drive unit cover into the slot on the frame adapter.

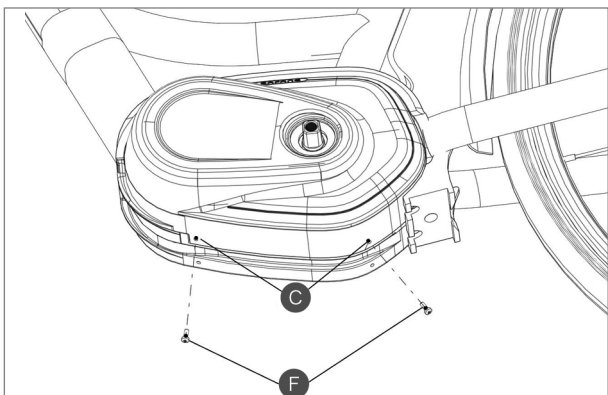


Figure 1

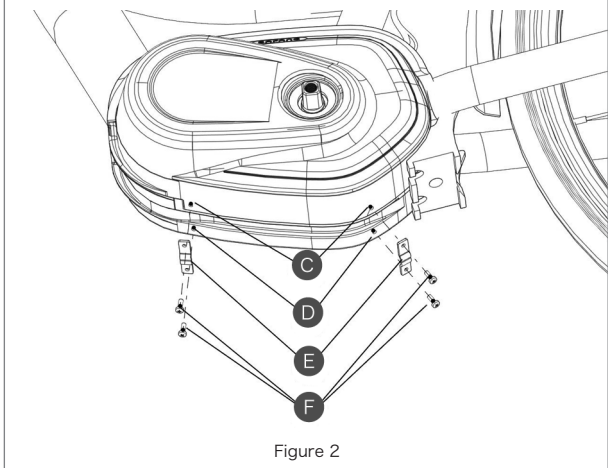


Figure 2



- C** screw holes on the drive unit's cover
- D** end cover on the right
- E** cable gatherer  
1401150100005
- F** cross head screw assembly M3×8  
1401020000127

Make sure that the cover is securely clicked into place. Screw the cover tightly onto the drive unit (see Figure 1). If brake cables and gear cables are to be routed under the drive unit, bind **E** together with a cable gatherer, see Figure 2).

Tightening torque: 1 Nm

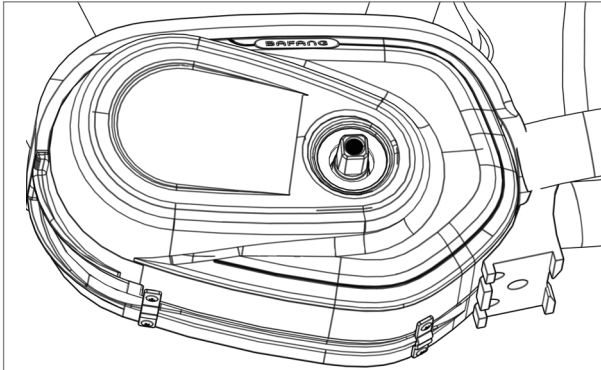


Figure 3

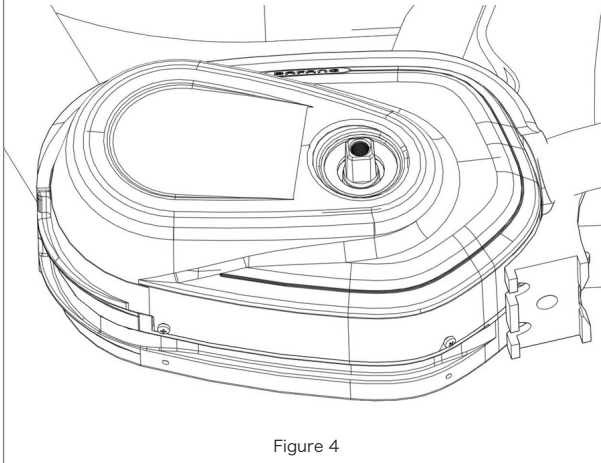


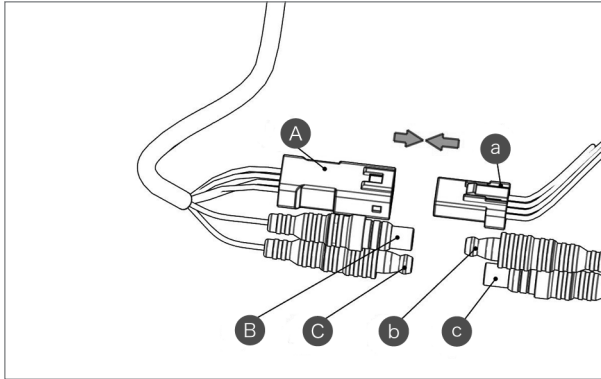
Figure 4

Figures above show how the drive unit looks like when the drive unit cover has been affixed.

Brake cables and gear cables can either be arranged in the channel at the bottom of the drive unit (see Figure 3 where cable gatherers are provided) or within the inner space of the frame adapter (see Figure 4 where no cable gatherers are provided).

## 3 SYSTEM CABLING

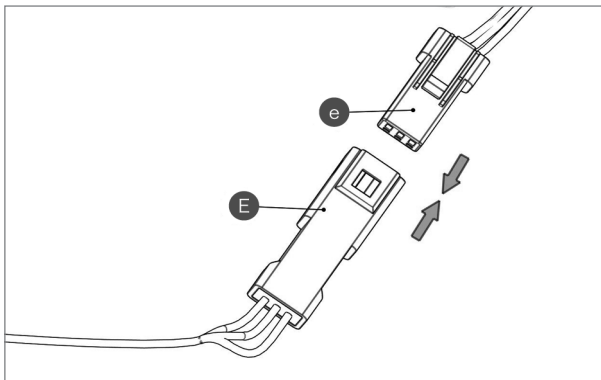
### 3.1 Connection of the Battery Cable to the Drive Unit



The power bus, which is made up of a positive battery cable, a negative battery cable and battery communication cables, is connected to the battery cables at the drive unit.

- A** female connector for the communication cables at the battery
- a** male connector for the communication cables at the drive unit
- B** female connector for the positive cable at the battery
- b** male connector for the negative cable at the drive unit
- C** male connector for the negative cable at the battery
- c** female connector for the negative cable at the drive unit

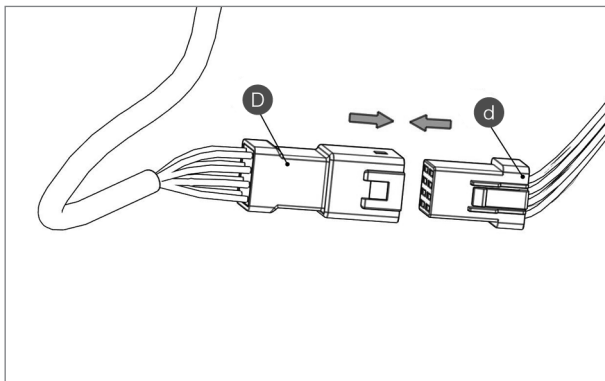
### 3.2 Connection of the Speed Sensor to the Drive Unit



- E** male connector at the speed sensor
- e** female connector at the drive unit for connection to the speed sensor

Link the male connector at the external speed-detecting sensor to the female connector for the external speed-detecting sensor cable at the drive unit.

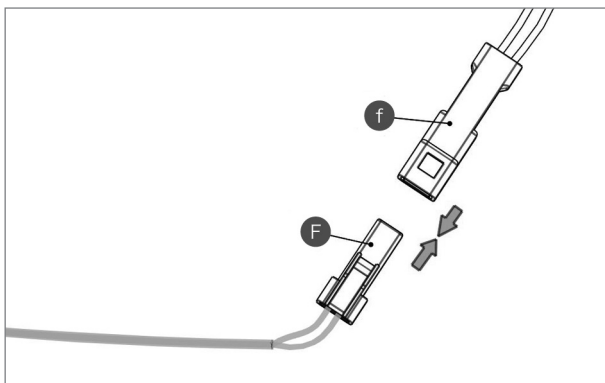
### 3.3 Connection of the EB-BUS to the Drive Unit



- Ⓓ male connector at the EB-BUS 2105020000099
- Ⓓ female connector at the drive unit for connection to the EB-BUS

Link the EB-BUS cable to the EB-BUS connector at the drive unit.

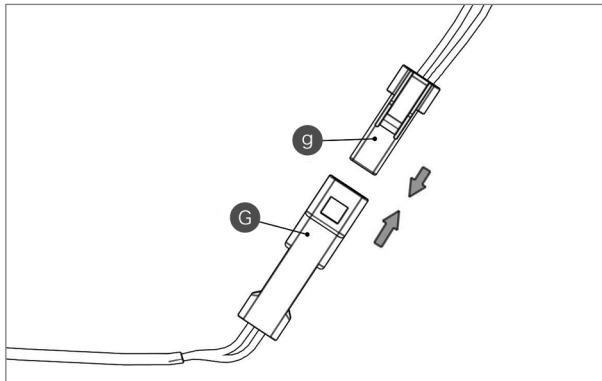
### 3.4 Connection of the Headlight Cable to the Drive Unit



- Ⓕ female connector at the headlight cable
- Ⓕ male connector for the headlight at the drive unit

Link the headlight cable to the connector for the headlight at the drive unit.

### 3.5 Connection of the Headlight to the Drive Unit

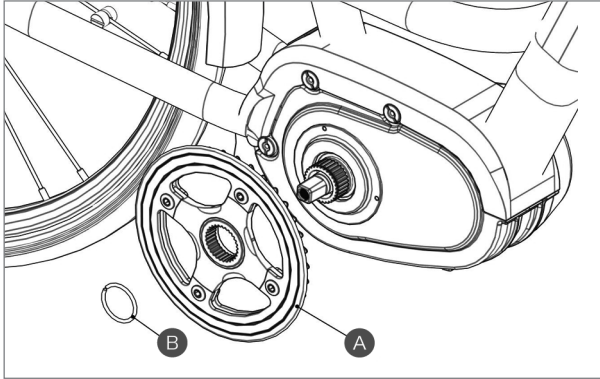


- G female connector at the headlight cable
- g male connector for the headlight at the drive unit

Link the headlight cable to the connector at the drive unit.

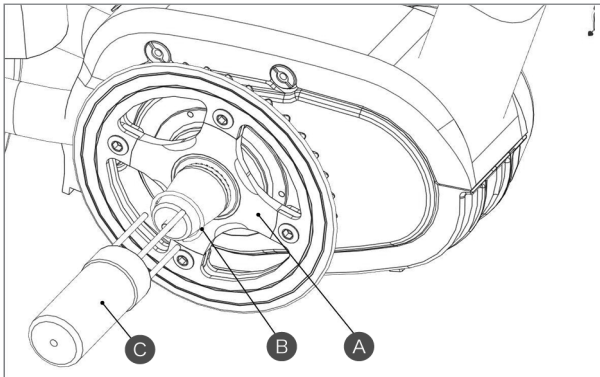
## 4 CHAIN GUARD INSTALLATION

### 4.1 Installation of the Front Chainwheel (without a chain guard)



- A** chain wheel
- B** retaining ring  
1401010000026

Put the front chain wheel onto the spline shaft of the drive unit.

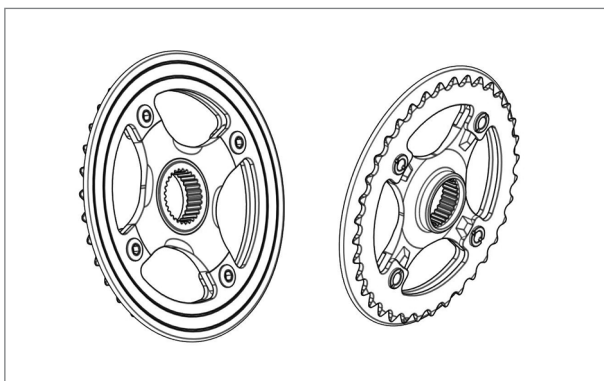


- B** retaining ring
- C** a special tool used to install the retaining ring onto the hub  
Tool code:  
GZ-MM G31-5025

Use a special tool to fix the retaining ring onto the spline shaft.



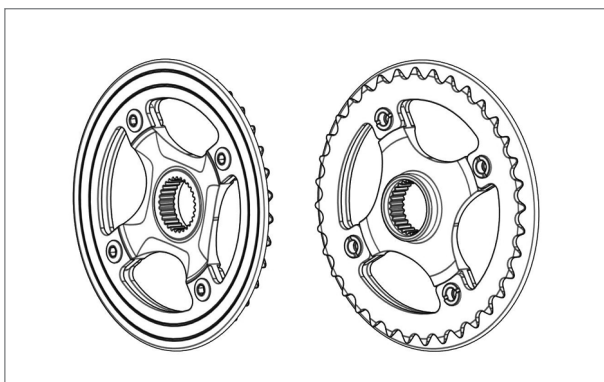
A used retaining ring must be replaced.



integratable chain wheel guard  
1325020000002

Chain Line: 48 mm, Preferably 36/38 T

Applicable to a city bike, which is equipped with an internal gearshift system (not a full chain guard).



integratable chain wheel guard  
1325020000002

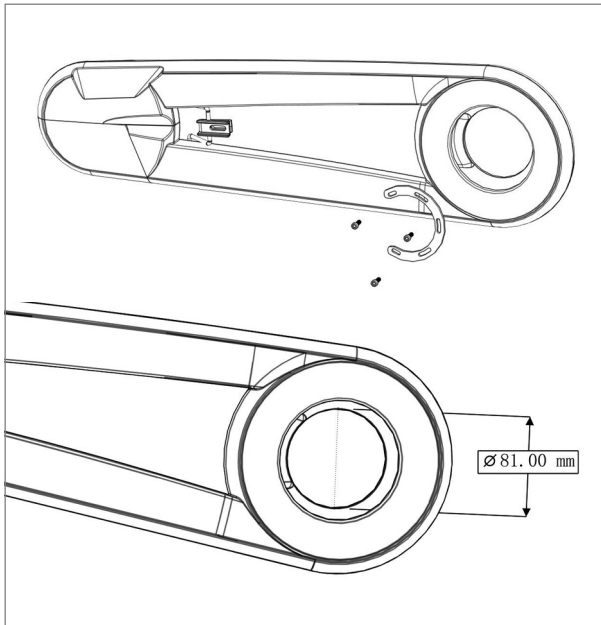
Chain Line: 48 mm, Preferably 36/38 T

Applicable to a city or mountain bike with an external gearshift system.

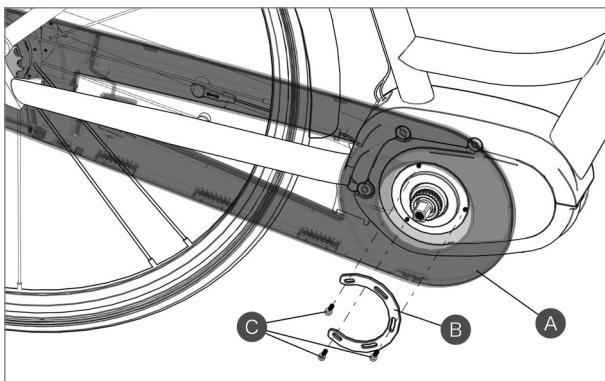
## 4.2 Chain Guard Installation (optional)



Installation of a full chain guard



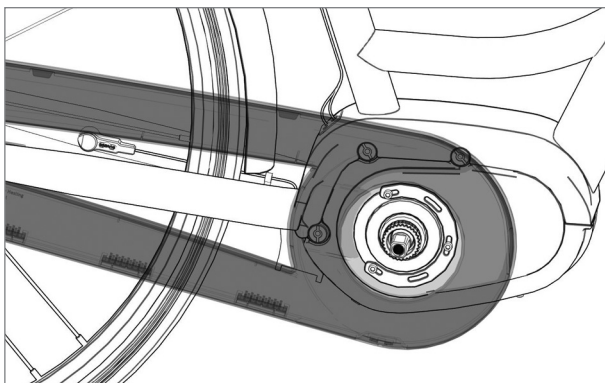
A chain guard binder plate and screws are necessary for installing a full chain guard.

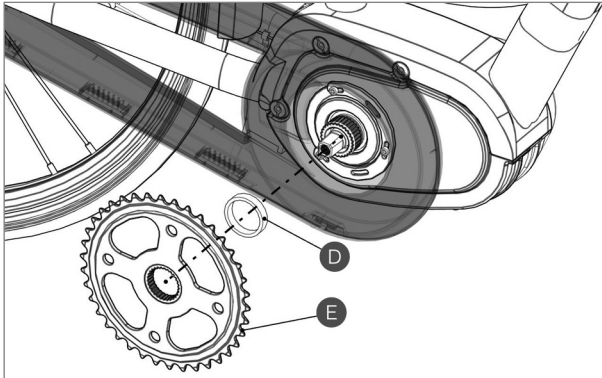


- A full chain guard
- B binder plate  
1401150100004
- C screws M4  
1401020000111

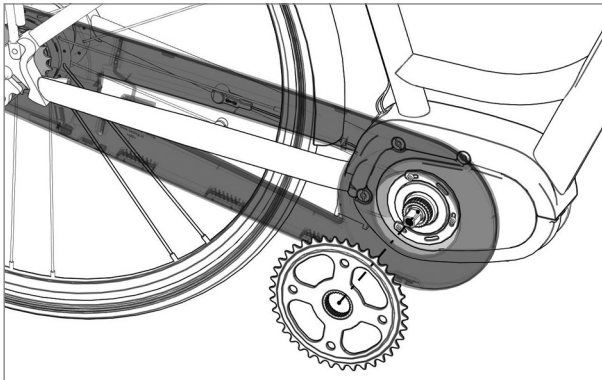
Open the full chain guard and adjust it by following the instruction book. Make sure the outer wall of the full chain guard is aligned with the boss on the outer side of the drive unit. Then press the inner wall of the full chain guard onto the binder plate and fasten them with screws.

Tightening torque: 2 Nm





- D bushing
- E chain wheel  
1325020000001

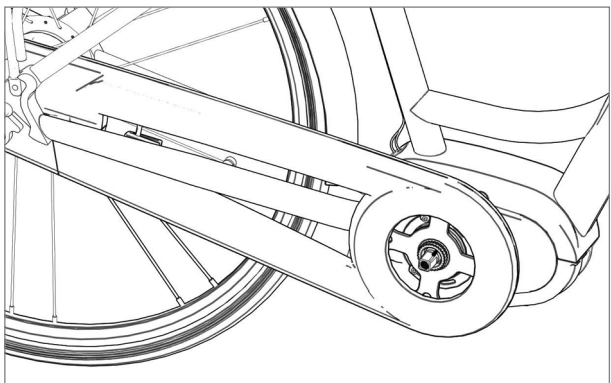


Install the chain wheel.

Chain Line: 48 mm

Preferably 36/38 T

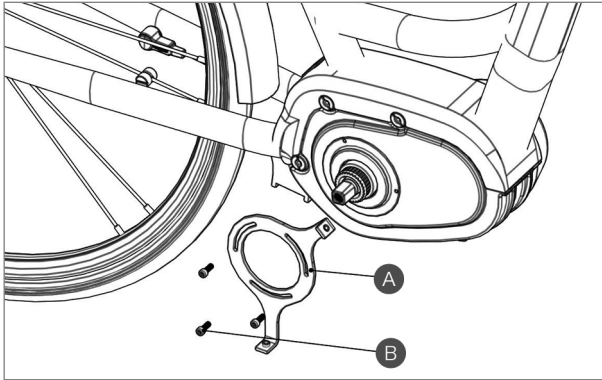
Applicable to a city bike, which is equipped with an internal gearshift system and a full chain guard.



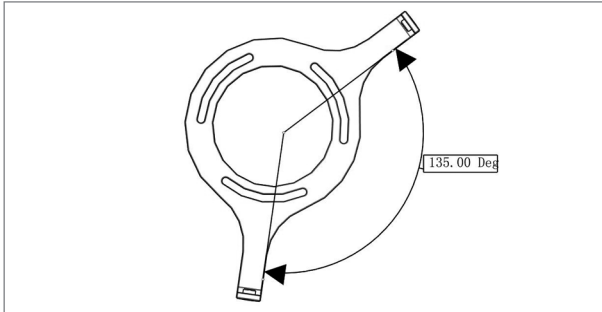
Refer to the chain guard instruction book and install the chain guard after the chain wheel has been installed.



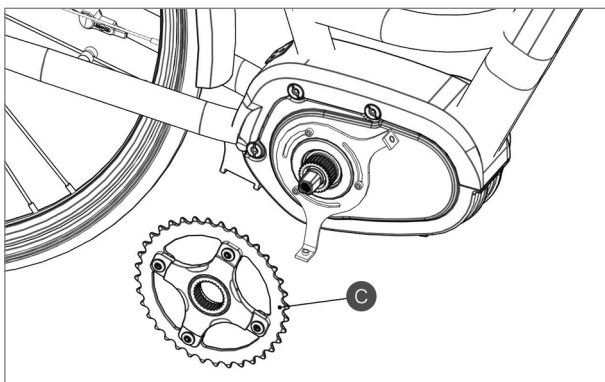
Not all full chain guards are compatible with the MAX drive unit.

 Installation of the p-shaped (semi) chain guard

- A p-shaped chain guard bracket  
1401220200003
- B screws M4  
1401020000111



Position the p-shaped chain guard bracket and fasten it onto the drive unit with screws.  
Tightening torque: 2 Nm



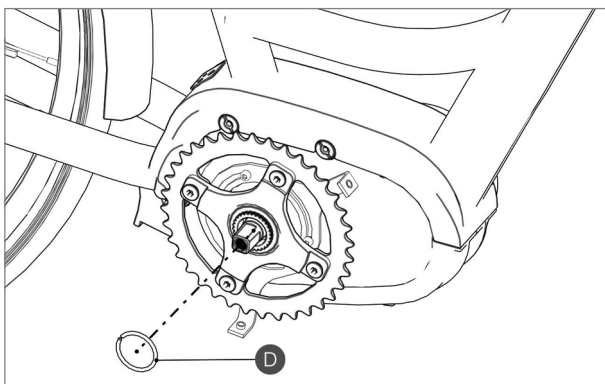
**C** CL-45 mm chain wheel  
module 132502000000

Install the chain wheel in the appropriate position.

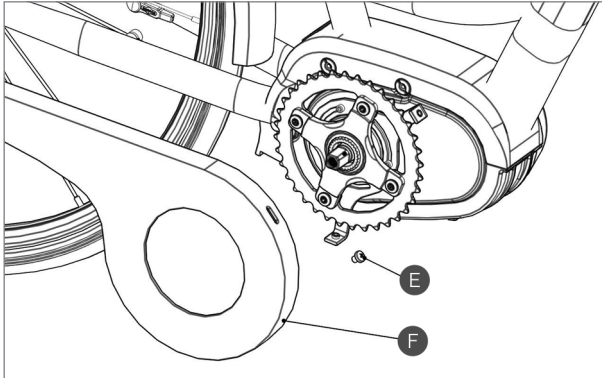
Chain Line: 45 mm

Preferably 36 / 38 T

Applicable to a city bike with an internal gearshift system and a semi chain guard.

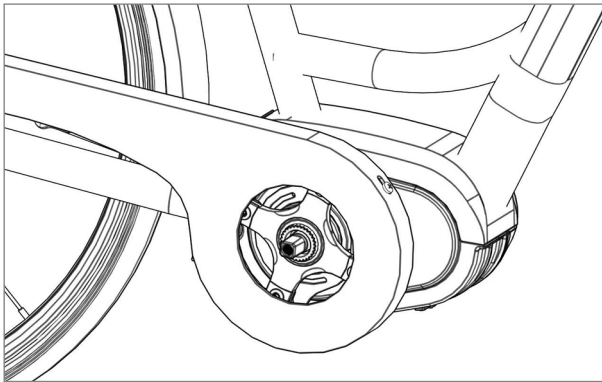


Fix the chain wheel onto the drive unit.



- E screw M5
- F p-shaped chain guard

Install the p-shaped chain guard as shown in the drawing.



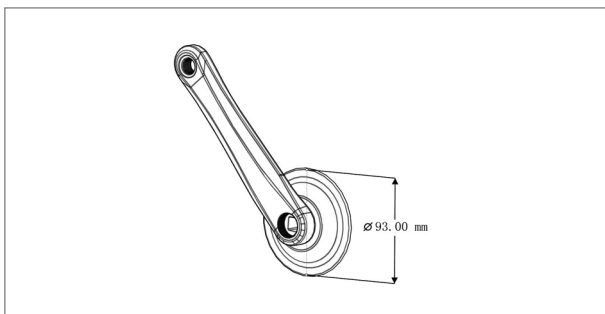
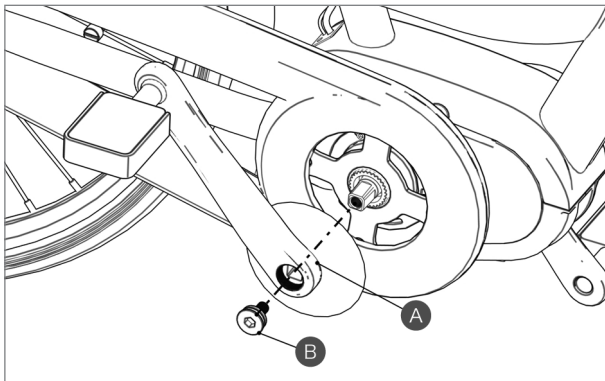
The drawing above shows the mounted p-shaped chain guard.

**i** Not all p-shaped chain guards are compatible with the MAX drive unit.

## 4.3 Crank Installation



Installation of the crank with a chain guard

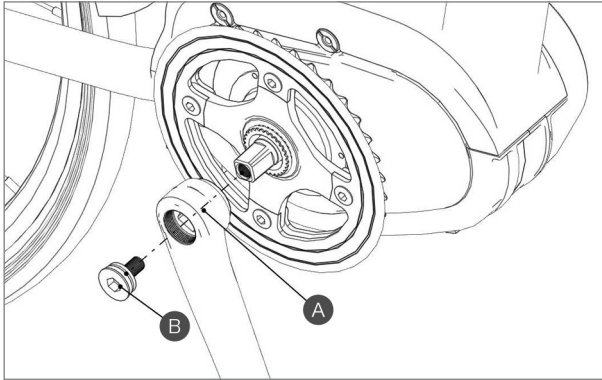


- A right straight crank with a cap 1327040000001  
left straight crank 1327020000001
- B screws M8 for mounting the crank 1401020000109



Different right cranks are used depending on the chain guard.

Fasten the right crank onto the bottom bracket on the right with a screw M8. Install the left crank in the same way.  
Torque: 35 – 40 Nm

 Installation of the crank without a chain guard

- A right straight crank  
1327010000001  
left straight crank  
1327020000001
- B screws M8 for mounting  
the crank  
1401020000109

Fasten the right crank onto the bottom bracket on the right with a screw M8.  
Install the left crank in the same way.

Torque: 35 – 40 Nm

# 5 BATTERY (BT C01.690)

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## Precautions

- If any liquid leaking from the battery gets into your eyes, rinse immediately with clean water (e.g. tap water). Seek medical advice immediately; otherwise the battery liquid may damage your eyes.
- Do not recharge the battery in places with high humidity or outdoors. Doing so may result in electric shock.
- Do not insert the plug while it is wet. Plug and socket need to be dry, otherwise electric shocks may result.
- If the battery does not become fully charged after 6 hours, unplug the battery from the outlet immediately and stop charging. Not doing so may cause overheating, rupture, or ignition of the battery.
- Do not use the battery if it has any noticeable damage. Doing so may cause rupture, overheating or malfunction.
- The battery may only be used in the temperature ranges states below. Do not use the battery in temperatures outside these ranges. If the battery is used or stored in temperatures outside these ranges, fire, injury or malfunction may occur.
  1. Temperature for discharging:  $-10^{\circ}\text{C}$  to  $50^{\circ}\text{C}$
  2. Temperature for charging:  $0^{\circ}\text{C}$  to  $40^{\circ}\text{C}$

## Danger

- Do not deform, modify or disassemble the battery. Do not apply solder directly to the battery. Doing so may cause leakage, overheating, rupture or ignition of the battery.
- Do not leave the battery near sources of heat (e.g. heaters). Do not heat the battery or throw it into a fire. Doing so may cause rupture or ignition of the battery.
- Do not subject the battery to strong shocks or throw it. If this is not observed, overheating, rupture or ignition of the battery may occur.
- Do not immerse the battery into fresh water or seawater, and do not allow the battery terminals to get wet. Doing so may cause overheating, rupture or ignition of the battery.
- Only use the specified charger. Not doing so may cause overheating, bursting, or ignition of the battery. Observe the components during the specified charging conditions when charging the battery.
- Do not short-circuit the discharge port with metal, or else it may cause overheating, rupture or ignition of the battery.
- Do not leave the battery in a place exposed to direct sunlight, inside a vehicle on a hot day or in other hot places. Doing so may result in battery leakage.
- If any leaked fluid gets on your skin or clothes, wash it off immediately with clean water. The leaked fluid may damage your skin.
- Store the battery in a safe place out of the reach of children and pets.

## 5.1 Using the Battery Properly

**The battery can be charged at any time no matter how much power is left. However, in the following cases, the battery needs to be fully charged. Make sure you use the specified charger to charge the battery.**

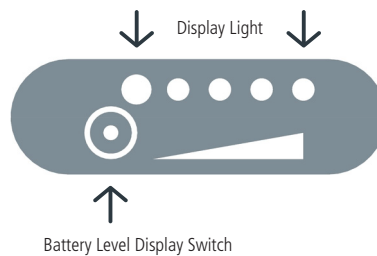
- The battery is usually not fully charged for the convenience of transport. Make sure the battery is fully charged before using the battery.
- If it is not intended to use the battery for a long time, make sure the e-bike battery is charged before storage and that is charged at least once every twelve months thereafter. Do not leave the battery completely discharged.
- Once you have begun to use the battery, please have it charged at least once every two weeks.



If the battery is completely discharged, charge it as soon as possible. If you do not charge the battery, it will be damaged.

## 5.2 Charging the Battery

- When using the battery for the first time, check that the battery has not run low in transport or storage.
- If it not intended to use the battery for a long time, charge the battery regularly to avoid excessive battery discharge.
- Please charge the battery as soon as possible before it runs out; over-discharge can cause permanent damage to the battery.
- No matter how much power is left, the battery can be charged at any time. However, the specified charger must be used to avoid overcharge of the battery.



## 5.3 Battery Capacity Display



Press the battery level display switch lightly. The lights indicating the remaining battery capacity will appear:

| Battery Capacity Display | Remaining Battery Capacity |
|--------------------------|----------------------------|
|                          | < 10 %                     |
|                          | 11~30 %                    |
|                          | 31~50 %                    |
|                          | 51~70 %                    |
|                          | 71~90 %                    |
|                          | 91~100 %                   |

- Light on
- Light off

## 5.4 Battery Health Indication

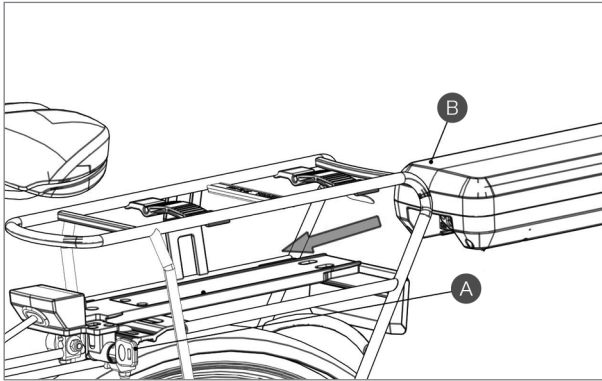


Press the battery level display switch for one second. The battery health will be indicated as follows:

| Battery Health Indication | Battery Health Condition |
|---------------------------|--------------------------|
|                           | < 40 %                   |
|                           | 41~50 %                  |
|                           | 51~60 %                  |
|                           | 61~70 %                  |
|                           | 71~80 %                  |
|                           | 81~100 %                 |

- Light on
- Light off

## 5.5 Battery Installation



- A battery pack lock
- B battery

Insert the battery pack from the tail of the carrier onto the rail. Push it to the front until you hear it snap into place in the battery pack lock.



Please make sure the battery pack is locked to prevent the battery from becoming detached while riding.

## 6 DISPLAY (DP C01.RS232.7)

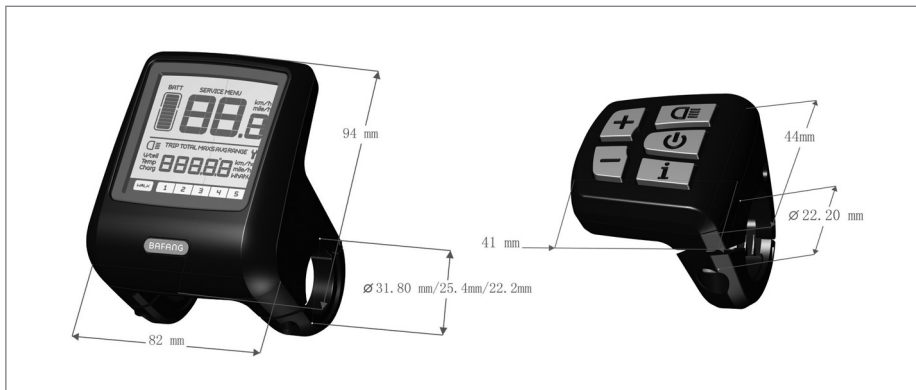
### 6.1 Specifications and Parameters of the Display

- 36 V / 48 V Power Supply;
- Rated Current: 10 mA
- Maximum Operating Current: 30 mA
- Power-off Leakage Current: < 1uA
- Operating Current Supplied to the Controller: 50 mA
- Operation Temperature: -18 ~ 60 °C
- Storage Temperature: -30 ~ 70 °C
- Waterproof Grade: IP65
- Storage Humidity: 30 % – 70 %

### 6.2 Appearance and Dimensions

#### 6.2.1 Materials and Dimensions

- The shell is made of PC. The liquid crystal display is made of hardened PMMA.

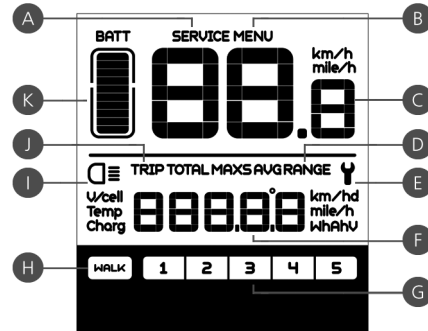


## 6.3 Function Overview and Key Definitions

### 6.3.1 Function Overview

- Use of a two-way serial communication protocol, simple operation of the display via the external 5-key keypad.
- Speed display: displaying the real-time speed as SPEED, the maximum speed as MAXS and the average speed as AVG.
- km or mile: The user can choose between km and mile.
- Intelligent battery level indication: With an optimization algorithm, a stable display of the battery level is ensured, and the problem of fluctuant battery level indication common with other displays is avoided.
- Automatic light-sensitive lights: The headlight, taillight and display light will be automatically turned on/ off depending on lighting conditions.
- 5 levels off display backlighting: Different levels
- 5-Level-Support: setting power Levels 1 to 5
- Trip distance indication: The maximum distance displayed is 99999. Single-trip distances TRIP or the total distance TOTAL can be displayed.
- Display of error messages
- Walk assistance
- Settings: Various parameters, e.g. mode, wheel diameter, speed limit etc., can be set on the computer via a communication cable. See the setting
- Maintenance warning (this function can be deactivated): Maintenance warning information is displayed based on battery charge cycles and riding distance. The display automatically estimates the battery life and gives warnings when the number of charge cycles exceeds the set value. A warning will also be displayed when the accumulated total riding distance exceeds the set value.

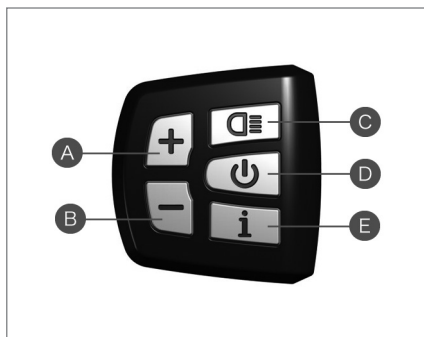
### 6.3.2 Information on the Display



- A Maintenance warning: When there is a need for maintenance the symbol **SERVICE** will be displayed (riding distance or the number of battery charge cycles exceed the set value, function can be deactivated)
- B Menu
- C Speed display: display of the speed, km/h or mph
- D Speed mode: average speed (AVG km/h), maximum speed (MAXS km/h)
- E Error display: When a fault is detected the symbol **Y** will be displayed.
- F Distance indication: display of the distance depending on the setting.
- G Level indication: The chosen level 1–5 will be displayed; if there is no numeric display, it means that there is no assistance (by the motor). If the rider is walking and pushing the e-bike, **WALK** will be displayed.
- H Walk assistance
- I Headlight indication: only shows when headlight or backlight are on
- J Headlight/Tail Light indicator
- K Battery level indicator

- J Distance mode: display of the single-trip distance TRIP and the total distance TOTAL
- K Battery level: 10-segment battery indication; the voltage that each segment represents can be customized

### 6.3.3 Key Definitions



- A up
- B down
- C headlight
- D on/off
- E mode

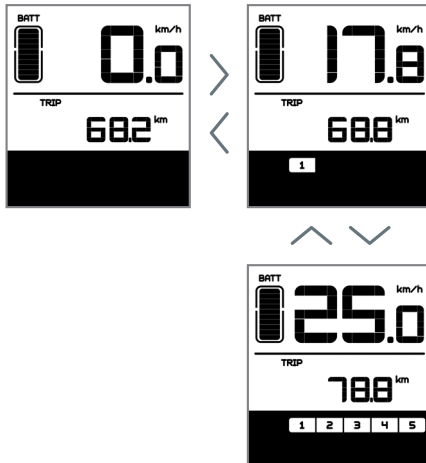
## 6.4 Normal Operation

### 6.4.1 On/Off Switch

Turn on the device. Press and hold  for 2 seconds to power on the display. Press and hold  again for 2 seconds to power off the display. If the bike is not used, after 5 minutes (time can be set) the display will be automatically turned off.

### 6.4.2 Assist Mode Selection

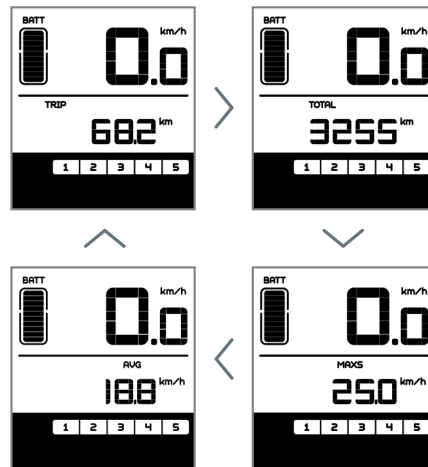
In the manual gearshift mode, press the  or  to choose the desired level of support by the motor. The lowest level is Level 1, the highest Level 5. When the display is on, the default mode is Level 1. When there is no numeric mode display, there is no power assistance.



Selecting the level for motor assistance

### 6.4.3 Switch between Distance Mode and Speed Mode

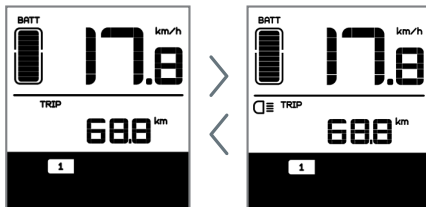
Briefly press  to switch between distance and speed. Single-trip distance (TRIP km) → total distance (TOTAL km) → maximum speed (MAXS km/h) → average riding speed (AVG km/h) are displayed in successive order.



Switching between displays

#### 6.4.4 Headlight/ Display Backlight Switch

Press  for 2 seconds. The backlight of the display as well as the headlight and taillight will be turned on. Press  again for 2 seconds to power off the display backlight/headlight/taillight. (If the display is turned on in a dark environment, the display backlight/headlight/taillight will be turned on automatically. If the display backlight/headlight/taillight are turned off manually, they also need to be turned on manually afterwards).



Display backlight, headlight and taillight

**There are 5 levels of backlight brightness that can be selected by the user.**

#### 6.4.5 Walk Assistance

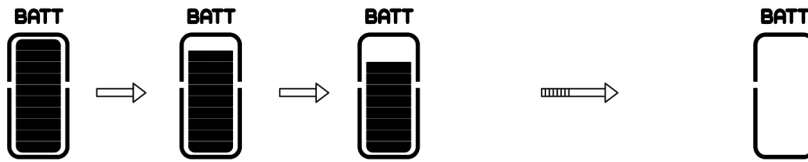
Press  for 2 seconds. The e-bike enters the walk assistance mode, and the symbol WALK is displayed. Once the key  is released, the e-bike will exit the walk assistance mode.



Switch between power assistance and walk assistance mode

#### 6.4.6 Battery Status Indication

When the battery status is normal, a certain number of the battery LCD segments as well as the border light up according to the actual quantity of charge. If all of the 10 segments will black out with the border blinking, the battery needs to be charged immediately.



Battery status indication

| Number of Segments | Charge in Percentage | Number of Segments | Charge in Percentage | Number of Segments | Charge in Percentage |
|--------------------|----------------------|--------------------|----------------------|--------------------|----------------------|
| 10                 | $\geq 90\%$          | 6                  | $50\% \leq C < 60\%$ | 2                  | $15\% \leq C < 25\%$ |
| 9                  | $80\% \leq C < 90\%$ | 5                  | $45\% \leq C < 50\%$ | 1                  | $5\% \leq C < 15\%$  |
| 8                  | $70\% \leq C < 80\%$ | 4                  | $35\% \leq C < 45\%$ | border blinking    | $C < 5\%$            |
| 7                  | $60\% \leq C < 70\%$ | 3                  | $25\% \leq C < 35\%$ |                    |                      |

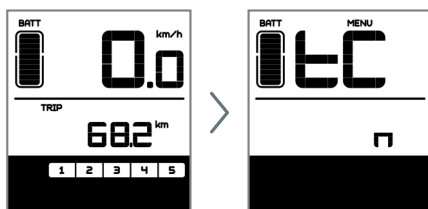
## 6.5 Parameter Setting

### 6.5.1 Items to be Set:

- 1 > Data reset
- 2 > km/mile
- 3 > Light sensitivity
- 4 > Display backlight brightness
- 5 > Automatic off time
- 6 > Maintenance warning settings
- 7 > Input of the password
- 8 > Wheel diameter selection
- 9 > Setting speed limit

### 6.5.2 Setting Preparation

When the display is active, press **i** twice (interval < 0.3 seconds). The system will enter the MENU parameter setting state, in which the display parameters can be set. Press **i** twice again (interval < 0.3 seconds) to return to the main menu.



Menu for entering the parameter settings

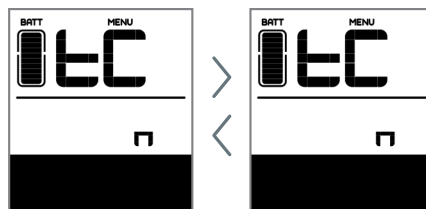
In the parameter setting state, when the parameter you want to set begins to flash, press **+**/**-** to adjust the parameter value. Briefly press **i** to switch between the parameters to be set. Press **i** twice (interval < 0.3 seconds) to exit the submenu.

If no operation is performed for 10 seconds, the display will return to the normal riding display.

### 6.5.3 Data Reset

Press **i** twice (interval < 0.3 seconds) – the display enters the MENU state. In the speed field tC is displayed. If you press **+**, a y is also displayed. Now all temporary data, e.g. maximum speed (MAXS), average speed (AVG) and single-trip distance (TRIP) can be cleared. Briefly press **i** (< 0.3 seconds) to enter the km/mile setting interface.

If the user does not reset the data, the single trip distance and the accumulated total riding time will be automatically cleared when the accumulated total riding time exceeds 99 hours and 59 minutes.

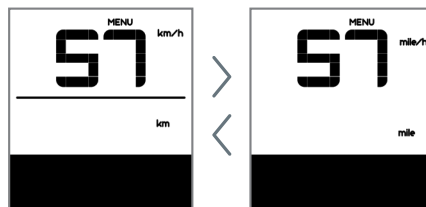


**The data will not be cleared when the display's light-sensing function is set to 0 or when it is switched off.**

### 6.5.4 km/mile

When the speed field displays S7, press **+**/**-** to switch between km/h and mph, or to set km or mile.

After this setting, briefly press **i** (< 0.3 seconds) to enter the setting interface of light sensitivity.



### 6.5.5 Light Sensitivity

When the speed field displays bL0, use  /  to choose a figure between 0 and 5. The higher the chosen figure, the higher the light sensitivity.

After this setting, briefly press  (< 0.3 seconds) to enter the setting interface of backlight brightness.



### 6.5.6 Display Backlight Brightness

When the speed field displays bL1, press  /  to choose a figure between 1 and 5. The figure 1 represents the lowest brightness while 5 indicates the highest display backlight brightness.

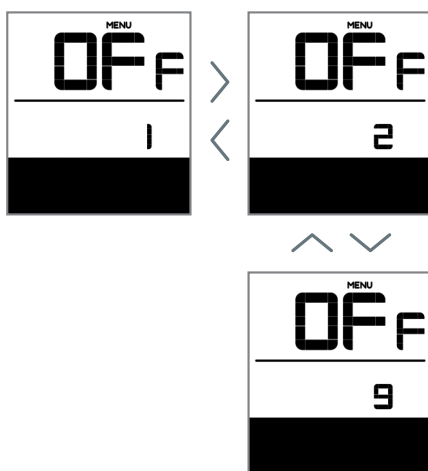
After this setting, briefly press  (< 0.3 seconds) to enter the setting interface of automatic off time.



### 6.5.7 Automatic Off Time

When the speed field displays OFF, press / to choose a figure between 1 and 9. The figures indicate the minutes that it takes to automatically shut down the display.

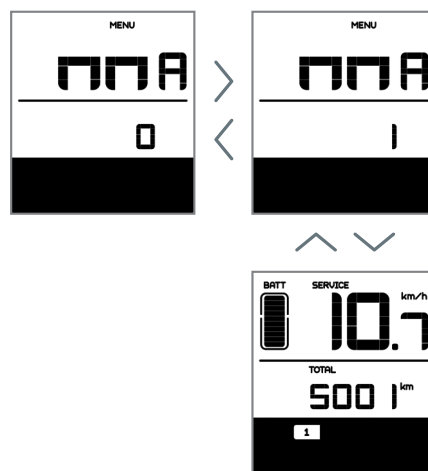
After this setting, briefly press (< 0.3 seconds) to enter the setting interface of maintenance warning.



### 6.5.8 Maintenance Warning (can be deactivated)

When the speed field displays nnA, press / to choose either 0 or 1. 0 disables the function while 1 enables it.

After this setting, briefly press (< 0.3 seconds) to enter the setting interface of password input.



#### Maintenance Warning Setting

The display will prompt maintenance necessity based on such information as the accumulated riding distance and the battery charge cycles.

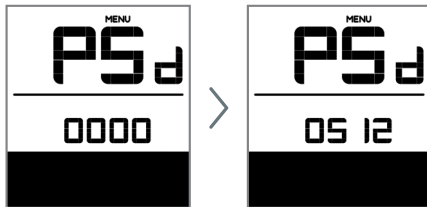
- When the accumulated total riding distance exceeds 5,000 km (can be customized by the manufacturer), the display will show the symbol **SERVICE**. When the display is started up, the sign for accumulated riding distance will flash for 4 seconds, indicating that maintenance is necessary.
- When the number of battery charge cycles exceeds 100 (can be customized by the manufacturer), the display will show the symbol **SERVICE**. When the display is started up, the sign for battery will

flash for 4 seconds, indicating that maintenance is necessary.

- The maintenance alert function can be disabled: settings → maintenance alert (MA) → maintenance alert (MA) → 0. (Maintenance alert can also be set via a computer. This requires a USB connection. See also the parameter setting instructions).

### 6.5.9 Further Settings: Password Setting

When the speed field displays PSd, it is a prompt to enter a password. Press / to set the four-figure password (using digits 0 to 9). Briefly press to switch between the single digits of the password. The default password is "0512". Briefly press to switch between the single digits of the password. The default password is "0512". Briefly press to confirm your setting. If the set password is wrong, the system automatically returns to the previous interface. If the set password is correct, the system will switch to the setting of the wheel diameter.



### 6.5.10 Wheel Diameter Selection

When the speed position displays Wd, press / to select the correct wheel diameter: 16/18/20/ 22/24/26, 700c, 28/29. The measurements are in inches. A wrong wheel diameter can lead to speed anomalies.

After this setting, briefly press (< 0.3 seconds) to enter the setting interface of speed limit.



### 6.5.11 Speed Limit Setting

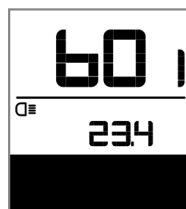
When the speed field displays SPL, the distance field displays the value of the speed limit. Press  /  ( < 0.3 seconds) to enter the menu of battery communication.



### 6.5.12 Battery Communication

The speed field displays b01 and the distance field displays the speed limit. Press  (< 0.3 seconds) to see the other information in sequence. After this setting, press  twice (< 0.3 seconds) to exit the menu.

- Only when communication has been established between the battery and the controller the following information will be displayed, otherwise the display will only show " - - - ".



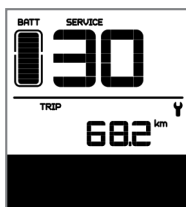
### 6.5.13 Information on the battery menu

| Information Displayed<br>in the Speed Field | Explanation                   |
|---------------------------------------------|-------------------------------|
| b01                                         | current temperature           |
| b02                                         | maximum temperature           |
| b03                                         | lowest temperature            |
| b04                                         | total voltage                 |
| b05                                         | current                       |
| b06                                         | average current               |
| b07                                         | remaining capacity            |
| b08                                         | full capacity                 |
| b09                                         | relative state of charge      |
| b10                                         | absolute state of charge      |
| b11                                         | charge/discharge cycle        |
| b12                                         | longest period without charge |
| b13                                         | period since last charge      |
| d01                                         | voltage cell 1                |
| d02                                         | voltage cell 1                |
| .....                                       | .....                         |
| dn                                          | voltage cell n                |

## 6.6 Error Code Definitions

The MAX-C966 display can show e-bike faults. When a fault is detected, the icon  will be displayed. In the speed field one of the following error codes will be displayed:

| Error Code | Error Description                     | Error-shooting Method                       |
|------------|---------------------------------------|---------------------------------------------|
| "03"       | Brake enabled                         | Check whether a brake cable is stuck        |
| "04"       | The throttle has not returned home    | Check if throttle has returned home         |
| "05"       | Throttle fault                        | Check the throttle                          |
| "06"       | Low voltage protection                | Check the battery voltage                   |
| "07"       | Overvoltage protection                | Check the battery voltage                   |
| "08"       | Motor hall signal cable fault         | Check the motor module                      |
| "09"       | Motor phase cable fault               | Check the motor module                      |
| "11"       | Controller temperature sensor failure | Check the controller                        |
| "12"       | Current sensor failure                | Check the controller                        |
| "13"       | Battery temperature fault             | Check the battery                           |
| "21"       | Speed sensor fault                    | Check installation position of speed sensor |
| "22"       | BMS communication fault               | Replace the battery                         |
| "30"       | Communication fault                   | Check the controller connection             |



Error display

## 7 LIST OF MATERIALS

### 7.1 Display Unit - DP C01.RS232.7

#### 7.1.1 Display Accessories

| Name                                      |                           | Material No.  | Quantity | Specification |
|-------------------------------------------|---------------------------|---------------|----------|---------------|
| Ø 22.2 rubber clamping ring<br>(optional) | left display clamp        | 2316020400017 | 1        | Ø 22.2        |
|                                           | right display clamp       | 2316020400018 | 1        |               |
| Ø 25.4 rubber clamping ring<br>(optional) | left display clamp        | 2316020400007 | 1        | Ø 25.4        |
|                                           | right display clamp       | 2316020400008 | 1        |               |
|                                           | hex socket head cap screw |               | 1        | M3×8          |
|                                           | hex socket head cap screw |               | 2        | M4×8          |

### 7.2 Drive Unit - MM G33.350

#### 7.2.1 Drive Unit Accessories

| Name          | Material No.  | Quantity | Specification |
|---------------|---------------|----------|---------------|
| Connector box | 1401080000097 | 1        |               |
| Cable clip    | 1401300000001 | 1        |               |
| M6 nut        | 1401080000101 | 3        | M6            |
| M6 bolt       | 1401080000099 | 3        | M6            |

### 7.2.2 Motor Cover Accessories

| Name                           | Material No.  | Quantity | Specification |
|--------------------------------|---------------|----------|---------------|
| Motor cover                    | 1333000000001 | 1        |               |
| Cable gatherer                 | 1401150100005 | 2        |               |
| cross head screw assembly M3×8 | 1401020000127 | 2        | M3×8          |

### 7.2.3 Chain Guard Assembly Module

| Name                             | Material No.  | Quantity | Specification |
|----------------------------------|---------------|----------|---------------|
| Full chain guard binder plate    | 1401150100004 | 1        |               |
| P-shaped chain guard holder      | 1401220200003 | 1        |               |
| M4 cross recessed pan head screw | 1401020000111 |          | M4×8          |

### 7.2.4 Chain Wheel Module

| Name                            | Material No.  | Quantity | Specification |
|---------------------------------|---------------|----------|---------------|
| Chain wheel Module A            | 1325020000001 |          | CL-49 mm/38 T |
| Chain wheel Module B (optional) | 1325020000002 |          | CL-45 mm/38 T |
| Chain wheel Module C (optional) | 1325020000003 |          | CL-48 mm/38 T |

### 7.2.5 Crank Components

| Name                              | Material No.  | Quantity | Specification |
|-----------------------------------|---------------|----------|---------------|
| Right straight crank with a cover | 1327040000001 | 1        | 170 mm        |
| Right straight crank (optional)   | 1327010000001 | 1        | 170 mm        |
| Left straight crank               | 1327020000001 | 1        | 170 mm        |
| Crank mounting screws             | 1401020000109 | 2        | M8            |

## 7.3 Cables

| Name                    | Material No. | Quantity | Specification      |
|-------------------------|--------------|----------|--------------------|
| Integrated cables       |              | 1        | according to order |
| Speed sensor components |              | 1        | according to order |
| Battery cable           |              | 1        | according to order |
| Headlight cable         |              | 1        | according to order |
| Taillight cable         |              | 1        | according to order |

## 8 SERVICE AND WARRANTY POLICY

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Suzhou Bafang Motor Science-Technology Co., Ltd (hereinafter referred to as the BAFANG) guarantees: During the warranty period, BAFANG gives warranty for products bought from BAFANG or dealers, as long as the reclamation concerns quality defects caused by the material or manufacture. (This only applies to BAFANG complete drive systems; BAFANG component parts are not covered by the warranty.)

### Warranty Period and Scope

The warranty period starts from the date of leaving factory. It is 30 months for motors, and 18 months for controllers, displays, sensors and other electrical components.

The following faults are not covered by the warranty:

- Damage, failure and/or loss caused by refitting, neglect or improper maintenance, use for competition or commercial purposes; incorrect or improper use or accidents
- Damage, failure and/or loss due to transport by the purchaser
- Damage, failure and/or loss on/of the product caused by improper installation, adjustment or repair
- Damage, failure and/or loss not caused by the material or manufacture, but by incorrect use by the purchaser
- Damage, failure and/or loss to the exterior of the product that does not affect its function
- Damage, failure and/or loss caused by repair or installation undertaken by repair bases or dealers unauthorized by BAFANG
- Damage, failure or loss caused by normal wear and tear

BAFANG reserves the right to repair or replace faulty components, and is only obliged to repair or replace them.

If bike manufacturers or dealers encounter quality issues when using or selling BAFANG products, they can report the purchase order number and serial number of the product to BAFANG service department, who will check whether the products are under warranty or not. For products under warranty, BAFANG will provide free repair or give a replacement. If a repair is necessary after the expiry of the warranty period, BAFANG will invoice component parts, labor cost and shipping. If the BAFANG system needs repairing on a bike, please contact the bike manufacturer or dealer directly.

If this warranty statement is against a current law at the place of business of the dealer, the legislation currently in force shall prevail. BAFANG reserves the right to modify the terms without prior announcement.

For more information, please visit the company website: [www.szbf.com](http://www.szbf.com)

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