



## DEALER MANUAL

# H400 Drive System

### Original instruction manual

Read carefully before use. Keep for later reference.


BF-DM-5-H400-1-EN-PRINT, November 2019


# SYMBOL INSTRUCTION


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If you see the following symbols there is always a possibility of danger.

The warning symbols are as follows:

 **Note:** This symbol indicates information about how to use the product and highlights specific parts of the User's Guide that are important.

 **Caution:** This symbol warns against misuse of the products that can lead to it being damaged or polluting the environment.

 **Danger:** This symbol indicates possible health and safety hazards that may arise, if certain measures are not taken into consideration.

 **User Manual:** Please read the manual before using the pedelec. If you are not sure about any of the topics in the manual, please contact your retailer for assistance.

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# 1 GUIDE

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## 1.1 Quick start

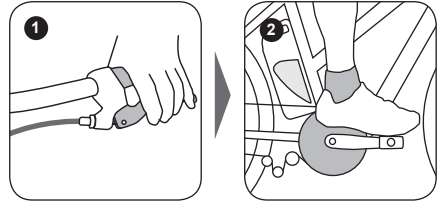
**i** This section provides important information and instructions that will allow you to use your pedelec in a safe manner. First, please read the safety instructions to find out about the legal regulations that apply to you.

**!** **Perform all safety checks in accordance with the "Before each trip" section.**

- Fully charge the battery.
- Make sure the battery is securely locked.
- Please make sure your pedelec is adapted to your needs.
- To start the system, press and hold the "⏻" button on the control panel for 3 seconds.
- Select the support level.

**!** **The pedelec is now ready for operation.**

**i** Always press the brakes of your pedelec before placing your foot on the pedal! The motor starts assisting as soon as you start pedaling. Without the correct procedure, the pedelec can suddenly start, which can lead to injuries.



**!** Practice using the pedelec in a quiet and safe environment. It is important to learn the characteristics of the pedelec before you drive on public roads.

**!** Please also take note of additional user manuals that you received when you bought your pedelec.


## 1.2 Before Each Ride

**i** Do not try to ride the bike if you think that your pedelec might be defected. Before the first ride, please make sure that the retailer has checked the complete bike before handing it over to you. It is also recommended to have all components of the bike checked regularly, especially if you ride on a regular basis. If you mistreat the pedelec, it can lead to accidents and injuries.

**i** Please check the pedelec after an accident or if your pedelec has fallen over.

# 2 IMPORTANT NOTICE

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 Be sure to follow the instructions in the manual when using this product.

- If you are lending your pedelec to third parties, please give them the instruction manual along with the pedelec.
- Read the instruction manual carefully and keep it in a safe place, for future reference.

## 2.1 For Your Safety

- This product is not suitable for people with physical, sensory or mental disabilities, or children and adults without the necessary experience. Otherwise, the pedelec must be used under the supervision of the guardian responsible for their safety.
- The use of the pedelec is not suitable for children under 14 years of age.
- Before driving, make sure you are familiar with the original features of the pedelec.
- For safety reasons, do not try to focus too much on the display of the pedelec whilst driving. This can be distracting, which can lead to sudden accidents.
- Regularly check the battery charger for damage. Inspect cables, plugs and housings. If damage is detected, do not use the charger until it has been checked or repaired.
- Do not change the system without authorization, otherwise errors may occur which may result in an accident. Also, this can void the warranty.
- This product is waterproof for all types of weather. However, it is strongly recommended not to intentionally submerge the product in water or clean it with a steam jet.


## 2.2 Pedelec modifications are prohibited


 Do not change the pedelec drive system in any way shape or form. Any operation of the pedelec to improve performance or speed can cause legal problems and make the operation of the pedelec unsafe for use. Also, this can void the warranty.


### Legal Implications:

- Before using the pedelec, familiarize yourself with the applicable laws and regulations, as well as with the road traffic code in your Country of origin.
- The performance and warranty of the pedelec are regulated by the manufacturer.





## 2.3 Installation and Maintenance

 Make sure that the charger is disconnected from the mains before removing from the pedelec. Remove the battery before working on/maintaining the pedelec. Otherwise, it can lead to serious injuries and electric shocks.


 After a fall or accident, the electrical components may be damaged. If you notice damage to the battery, remove the battery immediately, place it in a safe location and contact your retailer.

 Do not replace components, remove or open modules unless you are performing operations described in this Manual. If you have any questions about your system or components, please contact your authorized retailer first. If the battery charger, cable or components are defected or worn out, the components must be replaced. Please use the manufacturer's original


spare parts. Otherwise, the warranty will be void. The use of non-original or incorrect spare parts may cause the pedelec to malfunction. If the product has a defect, please contact your retailer for a replacement part. The authorized retailer can only use the original spare parts from Bafang for maintenance.


-  Do not use no high-pressure water jet or submerge in water to clean pedelec. This can cause water to enter into the electrical components or the drive system and short circuit or damage the system.
-  Dispose of the pedelec/battery according to the rules and regulations of your country's origin. For more information please contact an authorized recycling center or your retailer.
-  Depending on riding conditions and the frequency of use, the service interval may vary. Please keep in mind that the chain should be regularly treated with a suitable chain spray. Under no circumstances should an alkaline or acidic detergent be used to remove rust. When this detergent is used, it can damage the chain or other parts of the pedelec resulting in injury or damage.
-  Only trained personnel can maintain or repair the product.
  - Remove the battery during transport and store the battery in a safe and dry place.
  - Use this product carefully to allow a long service life.
  - It is advised to write down the battery key number and keep it safe, in case of damage or loss.
  - Natural wear and aging of the system is common after a period of time.

## 2.4 Laws and Regulations

-  Please observe the relevant road traffic rules and regulations of your country.

Before driving on public roads, please read the applicable countries regulations carefully. The use of pedelecs on public roads must comply with local regulations. Contact your local road traffic authority for more information.



-  Incorrect operation of the drive system, battery, charger or drive components can result in injuries. In this case, the manufacturer may refuse liability for the damage caused. Unauthorized changes to the pedelec system can lead to criminal offences, such as a change of the speed limit.



-  Please note the following information:

- Please ensure that the light sensor is in working order, before setting off.
- Please ensure that the braking system is operational before setting off.

# 3 VEHICLE TRANSPORT

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-  Remove the battery during transport and store the battery in a safe and dry place.
-  Do not transport a battery without the correct procedure. Batteries are subject to hazard group 9 and are subject to a separate transport regulation. Please contact an authorized retailer or freight service provider. The battery can be damaged, burned or even explode if handled incorrectly.

-  When transporting the pedelec by train, the relevant laws and regulations must be complied with. Before using public transport, please find out which means of transport are suitable for transporting the pedelec. It is recommended to remove the battery from the pedelec before transport.
-  When transporting your pedelec, first Remove the battery and keep it in a safe place so it does not move whilst driving. When transporting your pedelec please be sure to use a pedelec carrier.

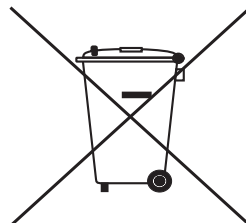
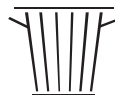
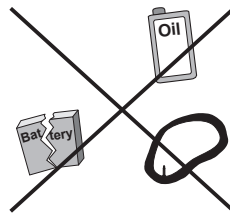
# 4 ENVIRONMENTAL TIPS AND HANDLING REQUIREMENTS

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General cleaning and maintenance: take environmental aspects into consideration when maintaining and cleaning the pedelec. The product and detergents should be biodegradable. Use these products at any time just, please make sure that no cleaning agent does not get into the sewage.

## The battery

Battery used in the pedelec is subject to the Battery Ordinance and may only be disposed of in accordance with the applicable regulations.



# 5 GUARANTY

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**i** All warranty and guarantee conditions are subject to applicable laws and regulations from your brand.

The condition for warranty and guarantee claims is that the instructions for the system are followed carefully.

Liability for material defects does not include normal aging or wear and tear.

## **Warranty and warranty exclusions:**

- Modification, manipulation or improper repair of the product.
- Improper use of the product.
- Damage caused by inconvenience, misuse, negligence, incorrect installation, improper repair, incorrect maintenance or improper use.
- Modifications of the surface structure.
- Damage caused by improper transport or storage caused by the buyer.
- Damage caused by force majeure.
- Removal or alterations of serial number, plates or product markings.

# 6 DEALER MANUAL FOR H400 (FM G320.250.R)

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# 6.1 INTRODUCTION

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- **Product Model**

FM G320.250.R

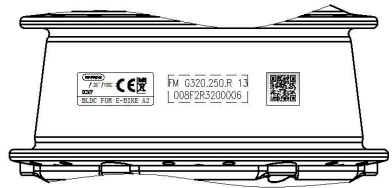
- **Scope**



Applies only to electrically powered pedelecs developed or licensed by Bafang. It is suitable for city and trekking bikes, which have been developed for road use. The engine is not suitable for sport competitions.

- **Identification**

The following graphic, is the identification numbers of the product, which are shown on the housing:



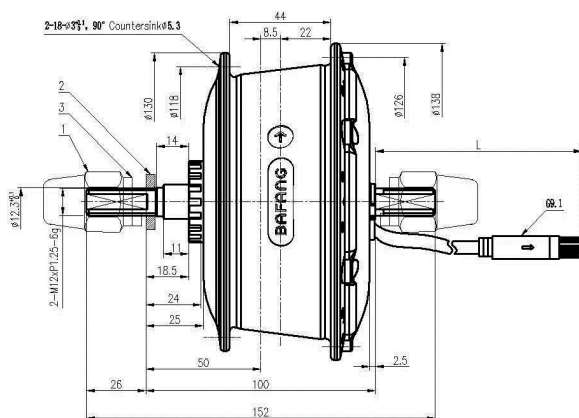
**Note:** Content in the label is important information about this product. Please do not remove the information from the motor.

## 6.2 SPECIFICATIONS

Motor model: FM G320.250.R

Rated power (W)	250
Rated voltage (V)	36 / 43
Waterproof	IP65
Certification	CE / ROHS / REACH
Outdoor Temperatures	-20 °C~45 °C

### 6.2.1 Outline and geometric size



OLD: 100mm

Shaft length: 152mm

Motor cable length:  $L=250$ mm

### 6.2.2 Surface

Shockproof black and silver coating

### 6.2.3 Storage Information

The pedelec should be stored in a ventilated dry room. Avoid storing the pedelec near strong magnetic objects.

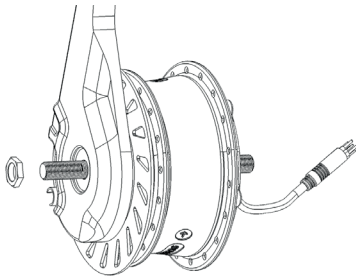
# 6.3 DRIVE UNIT INSTALLATION

## 6.3.1 List of Tools to be used

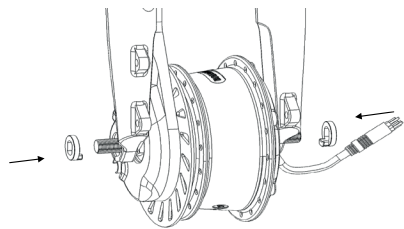
Use of the Tools	Tools
To fasten M12*4 nut on the roller brake To fasten M12 cap lock-nuts	 Open-end wrench

## 6.3.2 Motor Installation

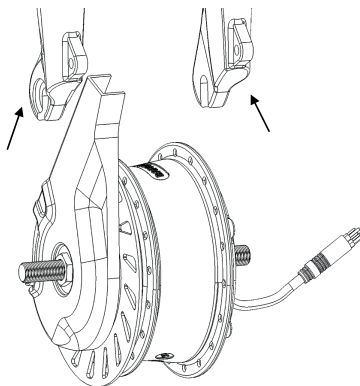
1. First install the roller brake at the non-cable outlet side of the motor. Then fasten M12\*4 nut with open-end wrench.



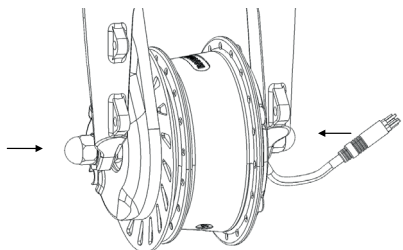
3. Mount one anti-rotation washer on both sides of the frame.



2. Insert the motor into the frame.



4. Fasten M12 cap lock-nuts with open-end wrench at both ends of the motor. Locking torque: 47-50N.m.



## 6.4 MAINTENANCE

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- Maintenance must be carried out by authorized personnel with the correct equipment.
- Do not disassemble the motor.
- Do not use thinners or other solvents to clean the components. Such substances can damage the surfaces.
- Avoid water submerging, to keep the components protected.
- Avoid using high-pressure cleaning jets.
- For prolonged storage, turn off the battery and avoid storing near heat sources.

# 7 DEALER MANUAL FOR DP C11.CAN

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## CONTENT

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# 7.1 IMPORTANT NOTICE

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- If the error information from the display cannot be corrected according to the instructions, please contact your retailer.
- The product is designed to be waterproof. It is highly recommended to avoid submerging the display under water.
- Do not clean the display with a steam jet, high-pressure cleaner or water hose.
- Please use this product with care.
- Do not use thinners or other solvents to clean the display. Such substances can damage the surfaces.
- Warranty is not included due to wear and normal use and aging.

# 7.2 INTRODUCTION OF DISPLAY

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- Model: DP C11.CAN BUS
- The housing material is PC and Acrylic, and the button material is made of silicone.
- The label marking is as follows:



-  **Note:** Please keep the QR code label attached to the display cable. The information from the Label is used for a later possible software update.

# 7.3 PRODUCT DESCRIPTION

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## 7.3.1 Specifications

- Operating temperature: -20 °C~45 °C
- Storage temperature: -20 °C~50 °C
- Waterproof: IP65
- Storage room Humidity: 30%-70% RH

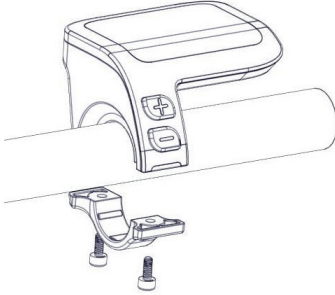
## 7.3.2 Functional Overview

- Speed display (including top speed and average speed, switching between km and miles)
- Battery capacity indicator
- Lighting control
- Brightness setting for backlight
- Walk assistance
- Indication of performance support
- Motor output power indicator
- Time display for single journeys
- Kilometer stand (including single-trip distance, total distance and remaining distance)
- Setting the support levels
- Energy consumption indicator CALORIES (Note: If the display has this function)
- Display for the remaining distance (Depends on your riding style)
- Information View (battery, controller, HMI and sensor)
- Error messages view

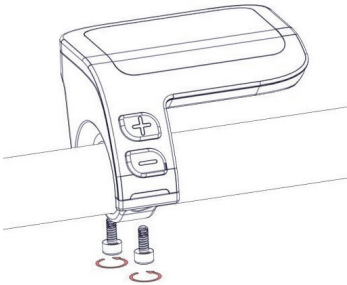
# 7.4 DISPLAY INSTALLATION

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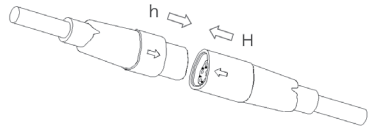
1. Remove the holding bracket from the display, and then place the display into position on the handlebar. (suitable for  $\phi$  22.2mm handlebar).



2. Now place the holding bracket on the underside of the display and tighten it into position with 2 X M1.5\*6 screws. Torque requirement: 0.5N.m.

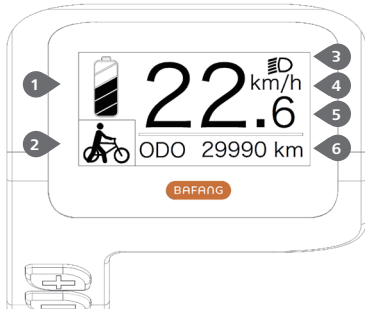



3. Now connect the Display connector to the EB-Bus connector, ensuring both connectors are kept parallel when pushing firmly together.





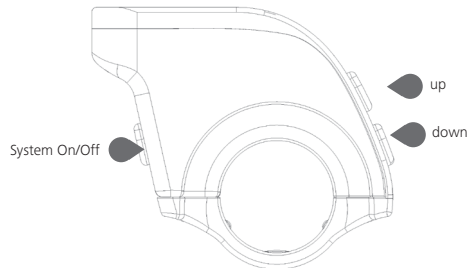
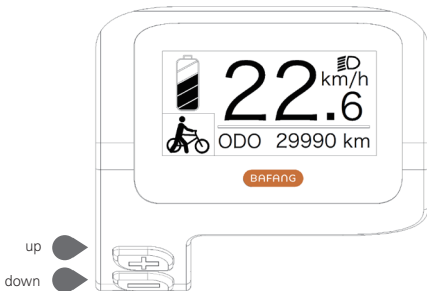
## 7.5 DISPLAY



- 1 Display of battery capacity in real time.
- 2 Support level
- 3 The display shows this symbol  , When the lights are turned on.
- 4 Unit of speed
- 5 Digital speed display
- 6 Trip: Daily kilometers (TRIP) - Total kilometers (ODO) - Top speed (MAX) - Average speed (AVG) - Remaining distance (RANGE) - Energy Consumption (CALORIES) - Output power (POWER)- Travel time (TIME).



**Service:** Please see the service section

## 7.6 KEY DEFINITION



# 7.7 NORMAL OPERATION



## 7.7.1 Switching the System ON/OFF

Press and hold  (>2S) on the display to turn on the system. Press and hold  (>2S) again to turn off the system.

If the "automatic shutdown time" is set to 5 minutes (it can be reset with the "Auto Off" function, See "**Auto Off**"), the display will automatically be turned off within the desired time when it is not in operation. If the password function is enabled, you must enter the correct password to use the system.




## 7.7.2 Selection of Support Levels

When the display is turned on, press the  or  button (<0.5S) to switch to the support level, the lowest level is 0, the highest level is 5. When the system is switched on, the support level starts in level 1. There is no support at level 0.

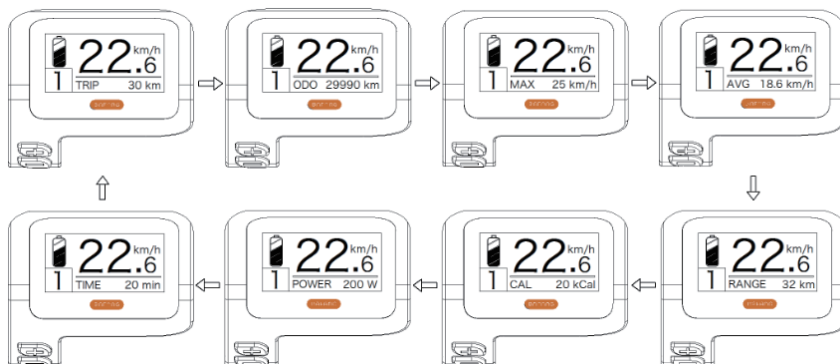
For different assist levels please see part "**Assist Mode**".



## 7.7.3 Selection mode

Briefly press the  button (<0.5s) to see the different trip modes.

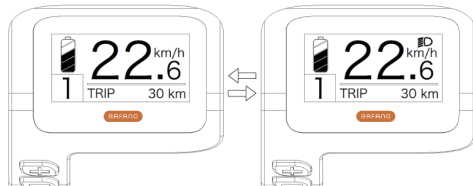
Trip: daily kilometers (TRIP) - total kilometers (ODO) - Maximum speed (MAX) - Average speed (AVG) - Remaining distance (RANGE) - Energy consumption (CALORIES) - Output power (POWER) - Travel time (TIME).



### 7.7.4 Headlights / backlighting




Hold the **+** button (>2S) to activate the headlight and taillights.

Hold the **+** button (>2S) again to turn off the headlight. The brightness of the backlight can be set in the display settings **"Brightness"**.



### 7.7.5 Walk Assistance

The Walk assistance can only be activated with a standing pedelec.

Activation: Press the **+** button until this symbol  appears. Next press and hold down the **+** button whilst the  symbol is displayed, now the Walk assistance will activate. The symbol  will blink and the pedelec moves approx. 5 km/h. After releasing the **+** button, the motor stops automatically and switches back to level 0.

The Walk assistance can only be activated with a standing pedelec.



### 7.7.6 SERVICE

The display shows "SERVICE" as soon as a certain number of kilometers or battery charges has been reached. With a mileage of more than 5000 km (or 100 charge cycles), the "SERVICE" function is displayed on the display. Every 5000 km the display "SERVICE" is displayed every time. This function can be set in the display settings.



### 7.7.7 Battery capacity indicator

The battery capacity is shown in the top left of the display. Each full bar represents a remaining capacity of the battery in a percentage.

(as shown in the diagram below):

Capacity Range	Indicator
80%-100%	
60%-80%	
40%-60%	
20%-40%	
5%-20%	
<5%	blinking

## 7.8 SETTINGS

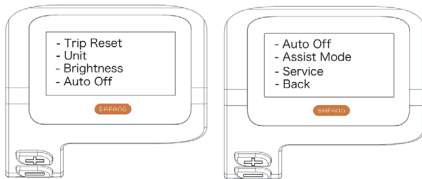
After the display is turned on, press and hold the **+** and **-** buttons (at the same time) to enter into the setting menu, By pressing the **+** or **-** button (<0.5S), you can highlight and select Display Setting, Information or Exit. Then press the **⏻** button (<0.5S) to confirm your selected option.

Or highlight "EXIT" and press the **⏻** button (<0.5S) to return to the main menu, or highlight "BACK" and press (<0.5S) the **⏻** button (<0.5S) to return to the Settings interface.



### 7.8.1 "Display Setting"

Press the **+** or **-** button (<0.5S) and highlight Display Setting, and then briefly press the **⏻** button (<0.5S) to access the following selections.



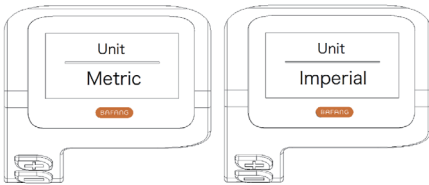
#### 7.8.1.1 "TRIP Reset" Reset mileage

Press the **+** or **-** button (<0.5S) to highlight "Trip Reset" in the Display setting menu, and then press **⏻** button (<0.5S) to select. Then with the **+** or **-** button choose between "YES" or "NO". Once you have chosen your desired selection, press the **⏻** button (<0.5S) to save and exit to the "Display setting".



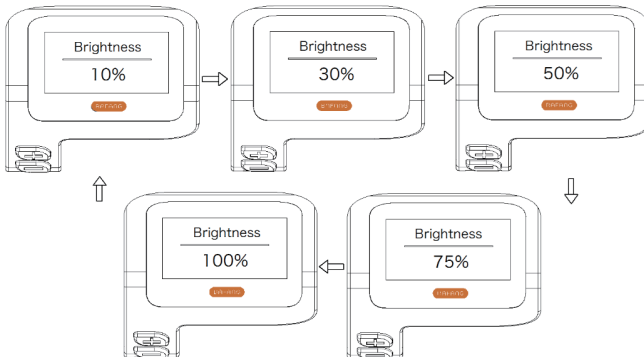
### 7.8.1.2 "Unit" Selections in km/Miles

Press the **+** or **-** button (<0.5S) to highlight "Unit" in the Display setting menu, and then press **⏻** button (<0.5S) to select. Then with the **+** or **-** button choose between "Metric" (kilometer) or "Imperial" (Miles). Once you have chosen your desired selection, press the **⏻** button (<0.5S) to save and exit to the "Display setting".



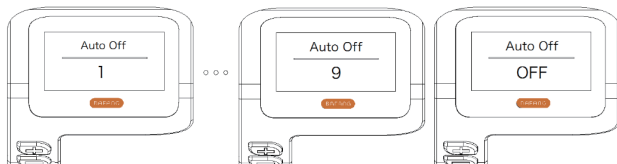
### 7.8.1.3 "Brightness" Display brightness

Press the **+** or **-** button (<0.5S) to highlight "Brightness" in the Display setting menu, and then press **⏻** button (<0.5S) to select. Then with the **+** or **-** button choose between "100%" / "75%" / "50%" / "30%" / "10%". Once you have chosen your desired selection, press the **⏻** button (<0.5S) to save and exit to the "Display setting".



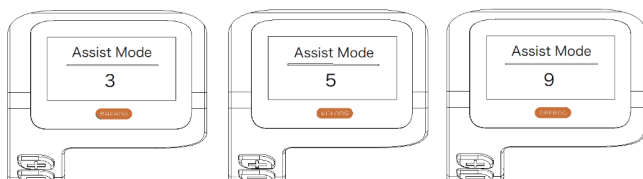
### 7.8.1.4 "Auto Off" Set Automatic system switch off time

Press the **+** or **-** button (<0.5S) to highlight "Auto Off" in the Display setting menu, and then press **⏻** button (<0.5S) to select. Then with the **+** or **-** button choose between "OFF", "9"/"8"/"7"/"6"/"5"/"4"/"3"/"2"/"1", (The numbers are measured in minutes). Once you have chosen your desired selection, press the **⏻** button (<0.5S) to save and exit to the "Display setting".



### 7.8.1.5 "Assist Mode" Set support level

Press the **+** or **-** button (<0.5S) to highlight "Max Pass" in the Display setting menu, and then press **⏻** button (<0.5S) to select. Then with the **+** or **-** button choose between "3/5/9" (the amount of support levels). Once you have chosen your desired selection, press the **⏻** button (<0.5S) to save and exit to the "Display setting".



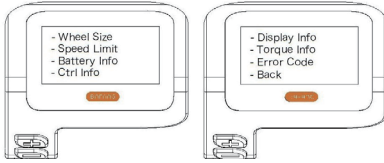
### 7.8.1.6 "Service" Switching the notification on and off

Press the **+** or **-** button (<0.5S) to highlight "Service" in the Display setting menu, and then press **⏻** button (<0.5S) to select. Then with the **+** or **-** button choose between "NO" or "YES". Once you have chosen your desired selection, press the **⏻** button (<0.5S) to save and exit to the "Display setting".



## 7.8.2 "Information"

Once the display is turned on, press and hold the **+** and **-** buttons (at the same time) to enter into the setting menu, press the **+** or **-** button (<0.5S) to select "Information", then press the **⏻** button (<0.5S) to confirm and enter into "Information".



### 7.8.2.1 Wheel Size

Press the **+** or **-** button (<0.5S) to highlight "Wheel Size", then press the **⏻** button (<0.5S) to confirm and view the wheel size. To return, press the **⏻** button (<0.5S) to exit back to the "Information".

This information cannot be changed, this is only for information, about the pedelec.



### 7.8.2.2 Speed Limit

Press the **+** or **-** button (<0.5S) to highlight "Speed Limit", then press the **⏻** button (<0.5S) to confirm and view the speed limit. To return, press the **⏻** button (<0.5S) to exit back to the "Information".

This information cannot be changed, this is only for information, about the pedelec.





### 7.8.2.3 Battery Information

Press the **+** or **-** button (<0.5S) to highlight "Battery Info", then press the **⏻** button (<0.5S) to confirm. Now press the **+** or **-** button (<0.5S) to view the contents.

To return, press the **⏻** button (<0.5S) to exit back to the "Information".

Code	Code definition	unit	Code	Code definition	unit
Hardware ver	Hardware version		b10	Absolute SOC	%
Hardware ver	Software version		b11	Cycle	times
b01	Current temperature	°C	b12	Maximum not charging time	Hour
b04	Total voltage	mV	b13	Recently not charging time	Hour
b06	Average current	mA	d00	Number of battery cell	
b07	Remaining capacity	mAh	d01	Voltage of cell 1	mV
b08	Full charge capacity	mAh	d02	Voltage of cell 2	mV
b09	Relative SOC	%	dn	Voltage of cell n	mV

NOTE: If no data is detected, "--" is displayed.

### 7.8.2.4 Controller Information

Press the **+** or **-** button (<0.5S) to highlight "Ctrl Info", then press the **⏻** button (<0.5S) to confirm. Now press the **+** or **-** button (<0.5S) to view Hardware Version or Software Version.

To return, press the **⏻** button (<0.5S) to exit back to the "Information".



### 7.8.2.5 Display Information

Press the **+** or **-** button (<0.5S) to highlight "Display Info", then press the **⏻** button (<0.5S) to confirm. Now press the **+** or **-** button (<0.5S) to view Hardware Version or Software Version.

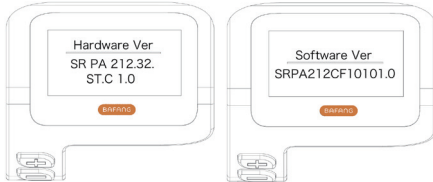
To return, press the **⏻** button (<0.5S) to exit back to the "Information".



### 7.8.2.6 Torque Information

Press the **+** or **-** button (<0.5S) to highlight "Torque Info", then press the **⏻** button (<0.5S) to confirm. Now press the **+** or **-** button (<0.5S) to view Hardware Version or Software Version.

To return, press the **⏻** button (<0.5S) to exit back to the "Information".



### 7.8.2.7 Error Code

Press the **+** or **-** button (<0.5S) to highlight "Error code", then press the **⏻** button (<0.5S) to confirm. Now press the **+** or **-** button (<0.5S) to view a list of error codes from the pedelec. It can show information for the last ten errors of the pedelec. The error code "00" means that there is no error.

To return, press the **⏻** button (<0.5S) to exit back to the "Information".



## 7.9 ERROR CODE DEFINITION



The HMI can show the faults of Pedelec. When a fault is detected, one of the following error codes will be indicated too.

**Note:** Please read carefully the description of the error code. When the error code appears, please first restart the system. If the problem is not eliminated, please contact your dealer or technical personnel.

Error	Declaration	Troubleshooting
04	The throttle is not back in its correct position.	Check the connector from the throttle is correctly connected. If this does not solve the problem, please change the throttle.
05	The throttle has fault.	<ol style="list-style-type: none"> <li>1. Check the connector and cable of the throttle are not damaged and correctly connected.</li> <li>2. Disconnect and reconnect the throttle, if still no function please change the throttle.</li> </ol>
07	Overvoltage protection	<ol style="list-style-type: none"> <li>1. Remove and re-Insert the battery to see if it resolves the problem.</li> <li>2. Using the BESST tool update the controller.</li> <li>3. Change the battery to resolve the problem.</li> </ol>
08	Error with the hall sensor signal inside the motor	<ol style="list-style-type: none"> <li>1. Check all connectors from the motor are correctly connected.</li> <li>2. If the problem still occurs, please change the motor.</li> </ol>
09	Error with the Engine phase's	Please change the motor.
10	The temperature inside the engine has reached its maximum protection value	<ol style="list-style-type: none"> <li>1. Turn off the system and allow the Pedelec to cool down.</li> <li>2. If the problem still occurs, please change the motor.</li> </ol>
11	The temperature sensor inside the motor has an error	Please change the motor.
12	Error with the current sensor in the controller	Please change the motor.

Error	Declaration	Troubleshooting
13	Error with the temperature sensor inside of the battery	<ol style="list-style-type: none"> <li>1. Check all connectors from the battery are correctly connected to the motor.</li> <li>2. If the problem still occurs, please change the Battery.</li> </ol>
14	The protection temperature inside the controller has reached its maximum protection value	<ol style="list-style-type: none"> <li>1. Allow the pedelec to cool down and restart the system.</li> <li>2. If the problem still occurs, please change the motor.</li> </ol>
15	Error with the temperature sensor inside the controller	<ol style="list-style-type: none"> <li>1. Allow the pedelec to cool down and restart the system.</li> <li>2. If the problem still occurs, Please change the motor.</li> </ol>
21	Speed sensor Error	<ol style="list-style-type: none"> <li>1. Restart the system</li> <li>2. Check that the magnet attached to the spoke is aligned with the speed sensor and that the distance is between 10 mm and 20 mm.</li> <li>3. Check that the speed sensor connector is connected correctly.</li> <li>4. Connect the pedelec to BESST, to see if there is a signal from the speed sensor.</li> <li>5. Using the BESST Tool- update the controller to see if it resolves the problem.</li> <li>6. Change the speed sensor to see if this eliminates the problem. If the problem still occurs, please change the motor.</li> </ol>
25	Torque signal Error	<ol style="list-style-type: none"> <li>1. Check that all connections are connected correctly.</li> <li>2. Please connect the pedelec to the BESST system to see if torque can be read by the BESST tool.</li> <li>3. Using the BESST Tool update the controller to see if it resolves the problem, if not please change the motor.</li> </ol>

Error	Declaration	Troubleshooting
26	Speed signal of the torque sensor has an error	<ol style="list-style-type: none"> <li>1. Check that all connections are connected correctly.</li> <li>2. Please connect the pedelec to the BESST system to see if speed signal can be read by the BESST tool.</li> <li>3. Change the Display to see if it resolves the problem.</li> <li>4. Using the BESST Tool update the controller to see if it resolves the problem, if not please change the motor.</li> </ol>
27	Overcurrent from controller	<p>Using the BESST tool update the controller. If the problem still occurs, please change the motor.</p> <ol style="list-style-type: none"> <li>1. Check all connections on the pedelec are correctly connected.</li> <li>2. Using the BESST Tool run a diagnostics test, to see if it can pinpoint the problem.</li> <li>3. Change the display to see if it resolves the problem.</li> <li>4. Change the EB-BUS cable to see if it resolves the problem.</li> <li>5. Using the BESST tool, re-update the controller software. If the problem still occurs please change the motor.</li> </ol>
30	Communication problem	<ol style="list-style-type: none"> <li>1. Check all connectors are correctly connected on the brakes.</li> <li>2. change the brakes to see if it resolves the problem.</li> <li>3. Change the display to see if it resolves the problem.</li> <li>4. Change the EB-BUS cable to see if it resolves the problem.</li> <li>5. Using the BESST tool, re-update the controller software. If the problem still occurs please change the motor.</li> </ol>
33	Brake signal has an error (If brake sensors are fitted)	<ol style="list-style-type: none"> <li>1. Check all connectors are correctly connected on the brakes.</li> <li>2. change the brakes to see if it resolves the problem.</li> </ol> <p>If problem continues Please change the motor.</p>
35	Detection circuit for 15V has an error	<p>Using the BESST tool update the controller to see if this resolves the problem If not, please change the motor.</p>
36	Detection circuit on the keypad has an error	<p>Using the BESST tool update the controller to see if this resolves the problem. If not, please change the motor.</p>

Error	Declaration	Troubleshooting
37	WDT circuit is faulty	Using the BESST tool update the controller to see if this resolves the problem. If not, please change the motor.
41	Total voltage from the battery is too high	Please change the battery.
42	Total voltage from the battery is too low	Please Charge the battery. If the problem still occurs, please change the battery.
43	Total power from the battery cells is too high	Please change the battery.
44	Voltage of the single cell is too high	Please change the battery.
45	Temperature from the battery is too high	Please let the pedelec cool down. If problem still occurs, please change the battery.
46	The temperature of the battery is too low	Please bring the battery to room temperature. If the problem still occurs, please change the battery.
47	SOC of the battery is too high	Please change the battery.
48	SOC of the battery is too low	Please change the battery.
61	Switching detection defect	1. Check the gear shifter is not jammed. 2. Please change the gear shifter.
62	Manual gearbox cannot release	Please change the motor.
71	Electronic lock is jammed	1. Using the BESST tool update the Display to see if it resolves the problem. 2. Change the display if the problem still occurs, please change the electronic lock.
81	Bluetooth module has an error	Using the BESST tool, re-update the software onto the display to see if it resolves the problem. If not, Please change the display.

# 8 DEALER MANUAL FOR BT C01.XXX.UC

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## CONTENT

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# 8.1 INSTRUCTIONS

## 8.1.1 Battery



Your pedelec can be equipped with different battery types.

(Depending on the manufacturer's configuration)

Model numbers:

BT C01.340.UC (340 W/h)

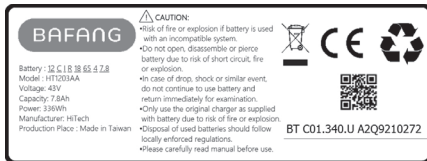
BT C01.450.UC (450 W/h)

BT C01.600.UC (600 W/h)

BT C01.750.UC (750 W/h)



Before use, read the information on the label of the battery.



Use only the original BAFANG charger to charge the battery. The battery is not fully charged when it is delivered. Please charge the battery completely before its first use and before storage.

- It is recommended to charge the battery after use. Deep discharge is harmful to the battery. Never fully discharge the battery. If the battery remains uncharged for an extended period, this will damage the capacity of the battery. The recommended storage capacity should be (60-80%).

- Do not charge the battery longer than the charging time specified in the "SPECIFICATION" table.

### 8.1.1.1 Safety instructions



It is possible for the battery to cause a fire, explosion or hazard if the battery is connected to an incompatible system. Do not open, disassemble or pierce the battery as this can lead to short circuits, fires or explosions. If the battery falls to the ground, or exposed to a blow or similar event, do not continue to use the battery take it to your retailer to examine. Use only the original charger supplied with the battery, otherwise it can lead to an explosion or permanent damage. The disposal of used batteries must be carried out at a suitable disposal point.



**The battery should always be kept out of reach of children. The use of the charger or the battery is not suitable for children.**



**Do not touch a leaking battery.**

Leaking electrolytes can seep into the skin and cause discomfort. If battery acid encounters the eyes, do not rub it! Immediately wash your eyes carefully with clean water and consult a doctor or a hospital.



**A faulty battery can lead to overheating, smoking or burning.**

When the battery gets hot keep yourself and others a safe distance away from the battery. In case of damage or heat you should avoid touching the battery. See chapter ("Environmental tips").



**Do not disassemble the battery.**

The battery contains protective components to avoid danger. Incorrect handling, such as improper disassembly, can destroy the protective functions and lead to overheating, smoke and explosion.



**Do not intentionally close the battery short.**

Never touch the plus and minus contact. Do not allow the battery to encounter metal objects. It is dangerous if the battery is short-circuited. As it can lead to overheating, smoke, explosion or burning.

**Do not heat or burn the battery.**

An overheated or ignited battery can cause battery cells to explode.

**Do not use the battery near heat sources.**

Do not use the battery near an open flame or at temperatures above 60 °C. High temperatures can cause the battery to burn or explode.

**Do not charge the battery near open fire or in direct sunlight.**

This can cause errors or internal problems inside the battery, also damaging the protective function. It can lead to abnormal chemical reactions or malfunctions that lead to overheating, smoke and explosion.

**Do not damage the battery.**

The battery must not be dropped or damaged. This can lead to overheating, smoke and explosion. Never submerge the battery in water.

**Do not charge the battery directly from the socket or a cigarette lighter in the car.**

High voltage and excessive current will damage the battery and reduce its lifespan. It can lead to overheating, smoke and explosion.

**8.1.1.2 Battery Storage**

If you do not use your pedelec for a long time, remove the battery, and charge about (60-80%) on. Store the battery separately in a suitable dry place.

- Avoid direct sunlight from the sun, as it may cause it to overheat, and cause internal problems in the battery. It can lead to abnormal chemical reactions or malfunctions that lead to overheating, smoke and explosion.

- To prevent a deep discharge, the battery is put into sleep mode after a certain time.
- Do not extend the battery to temperatures below the permissible storage temperature of -10 °C to 35 °C. Note that temperatures of about 45 °C are common near heaters, in direct sunlight or in overheated vehicle interiors.



Do not continue to use the battery if you notice that it gets hot during operation, charging or storage, develops a strong smell, changes its appearance, or is otherwise unusual. Do not continue to use the battery and have it checked by a retailer before using it again.

**8.1.1.3 Battery wear**

The battery can be charged 500 times. The battery capacity decreases during this time, thus reducing the range of the pedelec. If the range is not enough depending on the capacity of the battery may need to be replaced.

**8.1.1.4 Pedelec riding distance**

It is best to charge the battery at room temperatures and insert the battery just before the start of the journey. The discharge cycle of the battery can be affected by:

- Used pedal power
- Total weight (load and driver)
- Tire air pressure
- Headwind
- Ambient temperature
- Road/underground condition
- selected speed level
- Slope
- Battery charge level
- Age
- Remaining capacity of the battery

## 8.1.2 Charger

**i** The charger is specially designed for charging lithium-ion batteries. It is equipped with an integrated fuse and overcharging protection.



### 8.1.2.1 Battery charger Instructions

**!** Read the instructions on the external label of your charger before using the battery.



**!** To prevent the risk of electric shock, you should never open the charger. Maintenance work may only be carried out by qualified service personnel. Be sure to read the information about your charger before use! Unplug the power plug before connecting the battery to the charger or removing it from the charger.

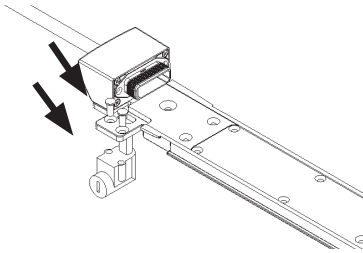
**!** Keep the charger away from children and animals. In the event of malfunction or damage, it may result in a fire or electric shock.

- The charger must not be operated by children or people with limited sensory or mental disabilities.
- Do not use your charger if it is moist or dusty.
- Avoid direct sunlight.
- Disconnect the charger from the power supply when not in use.
- Use only the original Bafang charger that came with your pedelec.
- Do not cover the charger while in use. There is the possibility of short circuits or fires.
- When cleaning the charger, unplug it from the power outlet first.
- Stop the Charge process if the charging cycle lasts longer than the length listed in the Specifications table.

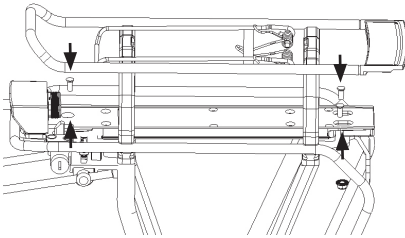
# 8.2 OPERATION

## 8.2.1 Installing the battery

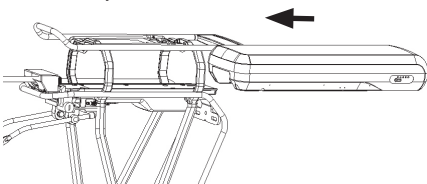
1. If you decide to use a key lock, place the lock under the battery rail, and tighten with 2 X M5\*10 screws. Tightening torque required: 3 Nm.




2. Place the battery rail in position on the luggage carrier, and with 3 X M5\*25 secure the battery rail to the luggage carrier by tightening the screws. Tightening torque requirement: 3 Nm.





3. Now slide the battery along the rail, ensuring it sits flush to the connecting part on the battery rail. (If a key lock is fitted, lock the battery into position and remove the key)




## 8.2.2 Charging the battery

 Use only the original battery charger supplied to you, as there is a risk of fire or explosion if the incorrect charger is used.

 You can charge your battery when mounted on the bike or when it is removed.

 Lithium-ion batteries are not subject to any memory effect. You can recharge your battery at any time, even after short journeys.

Charge the battery at temperatures between 0°C and 45°C (ideally at room temperature approx. 20 °C). Give your battery enough time to reach this temperature before charging.


 Before charging, read the instructions on the charger.

1. First plug the connector of the charging cable into the charging socket in the battery, then connect the charger into a wall socket.
2. As soon as the charger is connected to the power supply, a red LED will light up.



3. When charging is complete, the LED changes from red to green.



 The charging time depends on several factors. It can vary greatly depending on the temperature, age, use and capacity of the battery. For information on the charging time of your battery, see "SPECIFICATION"

When the battery is fully charged, the charging process stops automatically. Unplug the connector from the battery and then removed from the mains.

### 8.2.2.1 Safety instructions



Use only the battery charger.

Make sure you are using the correct mains voltage. The required mains voltage is indicated on the charger.

- Do not touch the power plug with wet hands. There is a risk of electric shock.
- Note: A sudden rise in temperature can cause condensation in the battery. To avoid condensation, charge the battery at the same place where it is stored.
- Before using, check that the charger, cable and plug are not damaged. Do not use the charger, if you notice any damage. There is a risk of electric shock.

- Charge the battery only in a well-ventilated room.
- Do not cover the charger/battery during charging. There is a risk of overheating, fire or explosion.
- Charge the battery in a dry place, and on a non-flammable surface.



The battery must be charged at least once every 3 months to avoid damage or destruction of the cells.






If the charging process takes longer than usual, the battery may be damaged. In this case, stop charging immediately. Have the battery and charger checked by your retailer to prevent further damage.


## Errors - Causes and Solutions

Description	Cause	Solution
The operating display does not light up.	Power plug is not correctly connected to the power supply	Check that all connectors on the charger are correctly connected to the power supply.
The charging indicator is not lit.	The battery may be malfunctioning.	Contact your retailer.
The charging indicator does not glow permanently red.	The battery may be malfunctioning.	Contact your retailer.







## 8.2.3 LED display for charging status and charging capacity

-  Press the “” button for 1 second to indicate the state of charge from the LEDs on the battery. Press the “” button for 6 seconds to indicate the capacity of the battery.

### 8.2.3.1 Sleep state

To prevent the battery from being discharged, the battery management system puts the battery into deep sleep mode. For technical reasons, no function is specified in sleep mode. Press the “” button and hold for 10 seconds to wake up from Deep Sleep mode.

#### Charge status indication

LED	LED state	SOC
	First LED blinks	$\leq 5\%$
	One LED light turns green	5–20%
	2 LED lights turn green	20–40%
	3 LED lights turn green	40–60%
	4 LED lights turn green	60–80%
	5 LED lights turn green	$\geq 80\%$

# 8.3 SPECIFICATIONS

## 8.3.1 Battery

Primary Settings	BT C01.340.UC	BT C01.450.UC	BT C01.600.UC	BT C01.750.UC
Rated voltage	43 DCV	43 DCV	43 DCV	43 DCV
Nominal Capacity	7.8Ah	10.4Ah	14Ah	17.5Ah
Rate Capacity	6.43 Ah (1C Discharge)	8.5 Ah (1C Discharge)	11.4 Ah (1C Discharge)	14.3 Ah (1C Discharge)
Power	340Wh	450Wh	600Wh	750Wh
Charging time	4.5 h with a 2 A Charger	6.5 h with a 2 A Charger	5.5 h with a 3 A Charger	6.5h with a 3 A Charger
Storage (At 35% SOC 8-10°~35 °C)	6 months	6 months	6 months	12 months
Riding Distance*	Minimum 35 km	Minimum 50 km	Minimum 65 km	Minimum 85 km
Dimensions (L*W*H)	408 * 123 * 70 mm			
Weight	3 kg	3.5 kg	3.5 kg	4 kg
Charger	Special 5P charger	Special 5P charger	Special 5P charger	Special 5P charger

\* Ideal conditions: Flat terrain, approx. 15km/h average speed, no headwind, approx. 20 °C ambient temperature, high-quality bike components, tire tread and pressure with minimal rolling resistance, experienced ebike rider(always shifts gears correctly), additional weight(excluding bike weight)<70kg.

## 8.3.2 Charger

- Operating voltage: 100 ACV–240 ACV, 47 – 63 Hz
- Rated output voltage: 49.2 V
- Output current: 2 A ± 0.2 A
- Minimum battery charge voltage: 24 ± 2 V
- Timing Protection: 15 ± 1 h
- Temperature protection: NTC < 0 ± 3 °C or NTC > 55 ± 3 °C
- AC Connector: 100 ACV-240 ACV with protective contact
- Certificate: CE, GS

# 9 DEALER MANUAL FOR SR PA152/162.32.S

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## CONTENT

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# 9.1 INTRODUCTION OF SENSOR

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**i** This is a speed sensor for the BB (bottom bracket). This high-quality and high-performance BB speed sensor is installed on electric bicycles or tricycles. The CPU processes the speed signals collected by the speed sensor by means of non-contact induction and analyzes the motor operating direction. As the speed sensor (including its PCBA) is integrated within the BB, it is protected from friction and boasts a longer service life.

- Name: BB speed sensor
- Model: SR PA152.32.S / SR PA162.32.S
- Scope: It is applicable to standard 68mm BB.

# 9.2 SPECIFICATIONS

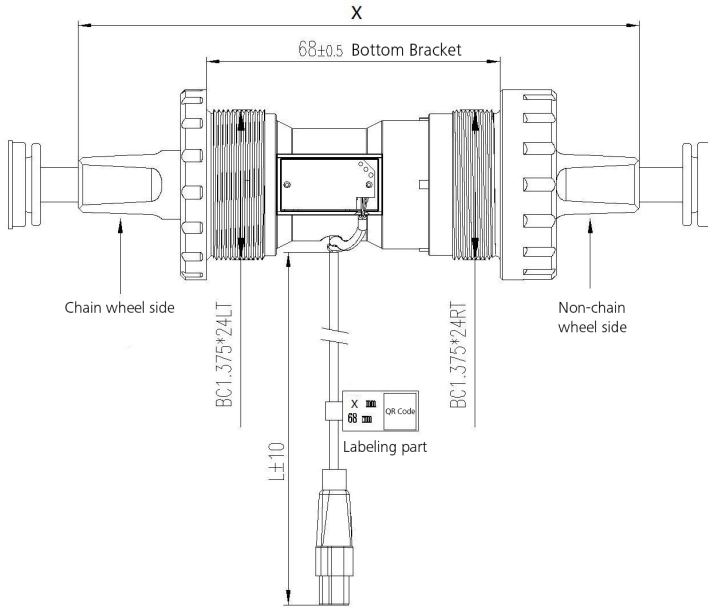
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Model: SR PA 152.32.S / SR PA 162.32.S

Rated current (mA)	< 10
The thread standard	BC1.37"*24
Outdoor Temperatures	-20 C~60 C
Shaft Length (mm)	126 / 130
Shaft standard	JIS
BB width(mm)	68
Rated voltage (V)	4.5-5.5
Impulses per revolution	32



## 9.2.1 Outline and geometric size



X: (Shaft Length of SR PA152.32.S) : 126mm

X: (Shaft Length of SR PA162.32.S) : 130mm

Connector Length(mm), Connector type: 150 G6.5.4 / 950 G6.5.4

## 9.2.2 Cautions

- The pedelec should be stored in a ventilated dry room. Avoid storing the pedelec near strong magnetic objects.
- Should not be used for a long time overload.
- Should avoid wading to use.



Do not contact magnetic materials with products (mainly axes)



It is forbidden to be knocked during product transportation and installation.



At installation and disassembly it shall be carried out in accordance with the prescribed procedures to prevent break line.

# 9.3 SENSOR INSTALLATION

## 9.3.1 List of Tools to be used

### Use of the Tools

To fasten or remove lock cap on sensor

### Tools



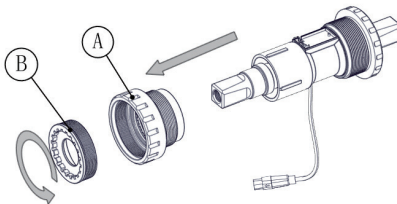
Special tools

## 9.3.2 Install Sensor

### Assemble requirements:

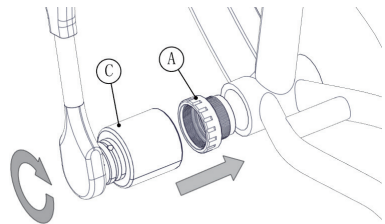
- The thread standard: BC1.37"\*24
- On Chain wheel side must be left hand thread.
- On Non-chain wheel side must be right hand thread.
- Bottom Bracket: 68mm±0.5

1. Remove left lock cap (A) of Bottom Bracket and (B) of the sensor.

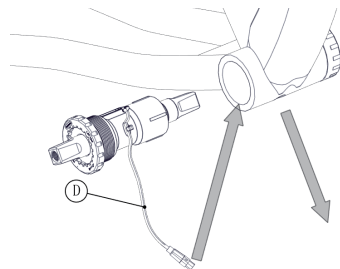


2. Check whether there are any iron chips, burrs or paint on the inner thread of the BB. If any, please check it up. Apply grease on the thread cap.

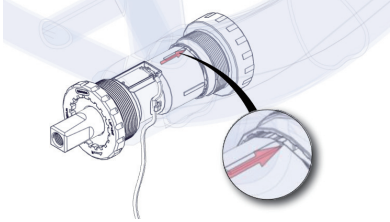
3. Screw the left lock cap (A) clockwise from non-chain wheel side into the bottom bracket first, then fasten with special tools (C). Tightening torque requirement: 30 Nm.(max)



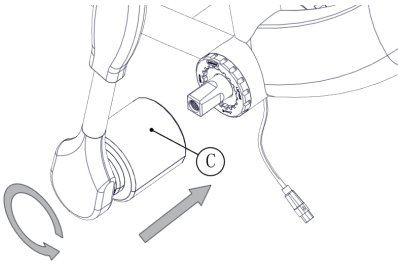
4. Push cable (D) of sensor from chain wheel side through the hole in the bottom bracket. Make sure that the cable don't slide back into the bottom bracket.



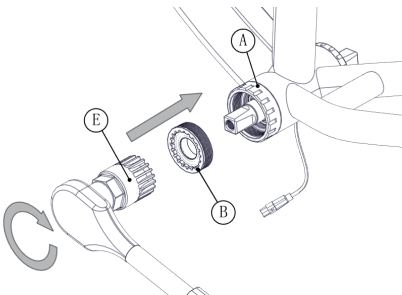
- Place sensor into the BB of frame and screw the lock cap (from chain wheel side) anticlockwise into the BB.



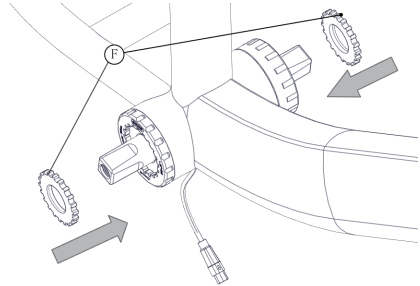
- Screw the lock cap anticlockwise into the bottom bracket and fasten with special tools (C). Tightening torque requirement: 30 Nm(max).



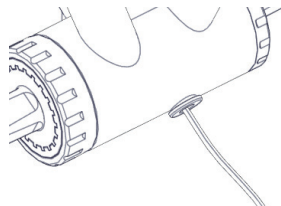
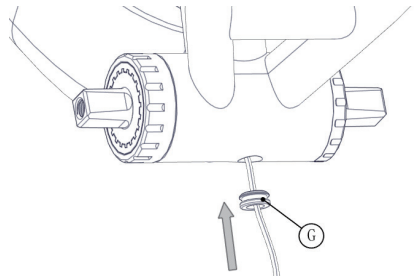
- Screw the lock cap (B) clockwise in lock cap (A) on non-chain wheel side with special tools (E). Tightening torque requirement: 8 Nm, make sure that the shaft is not loose and can be rotated flexibly.



- Put onto the dust-proof plug (F) at both sides of the shaft.



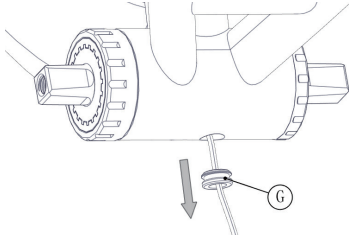
- Put the rubber ring (G) into the cable outlet hole.



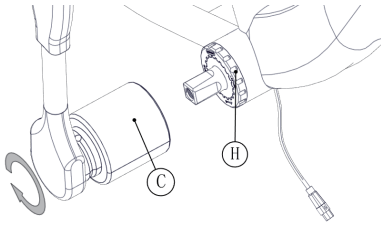
- Install the cranks onto the center shaft and screw the M8 bolt to fix the cranks.

### 9.3.3 Remove Sensor

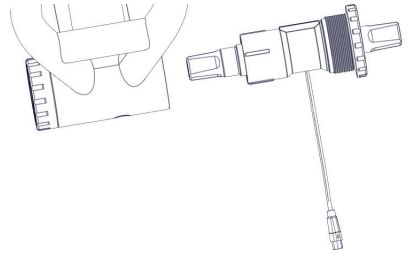
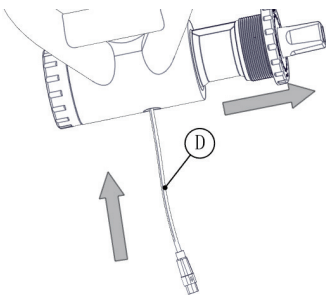
1. Remove the rubber ring (G)



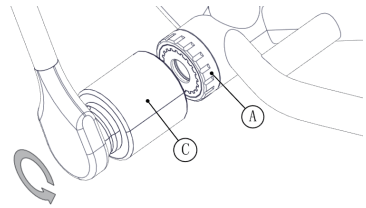
2. Screw Off the lock cap (H) with special tools (C).



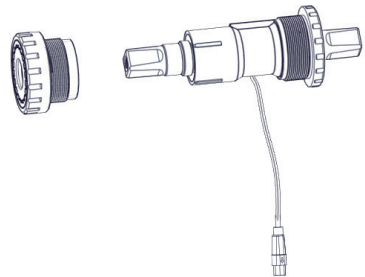
3. Push back cable (D) from the hole and remove out the sensor from frame.



4. Screw Off anticlockwise the lock cap (A) on non chain wheel side with special tools (C).



5. Finish the dismantlement.



# 7 DEALER MANUAL FOR CR S10F.350.FC

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## CONTENT

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# 7.1 INTRODUCTION

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- Model: CR S10F.350.FC

- The label marking is as follows:



**Note:** Content in the label is important information about this product. Please do not remove the information from the controller.

# 7.2 PRODUCT DESCRIPTION

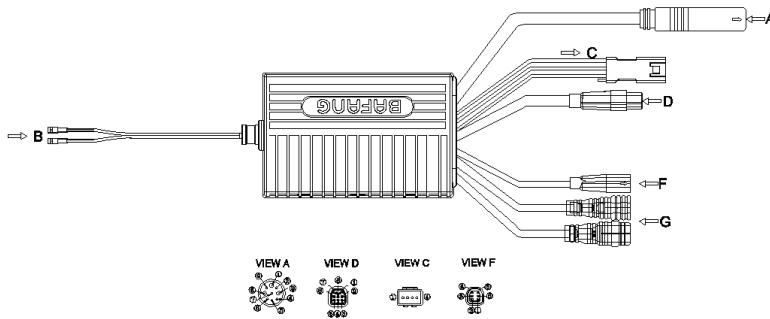
## 7.2.1 Specifications

- Rated voltage(V): 36 / 43 / 48
- Rated power (W): 250 / 350
- Waterproof: IP65
- Certification: CE / ROHS
- Outdoor Temperatures: -20 C~45 C
- Storage room humidity: 30%-70%

## 7.2.3 Functional Overview

- Communication protocol: CAN
- Communicate with battery and BMS
- Power assistant type: speed and torque
- Walk assistant
- Temperature control
- Voltage protection
- Support BESST service system

## 7.2.2 Outline and geometric size



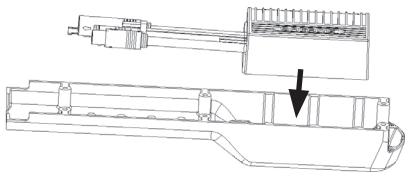
Connector	Connect to ..
A	Motor
B	Taillight
C	Communication port of Battery
D	EB-BUS
F	Sensor
G	Power port of battery

# 7.3 CONTROLLER INSTALLATION

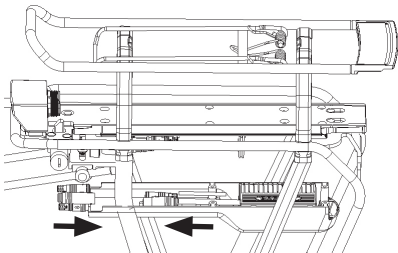
## 7.3.1 Installing the controller

**!** **Note:** This installation process only applies to the drive system with BT C01 battery.

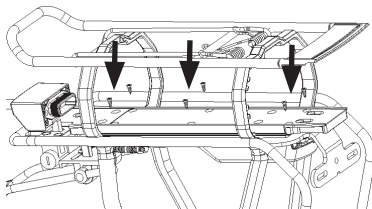
1. Place the controller in the controller holder so it sits flush.



2. Now connect all of the connectors to the controller. (EB-BUS, light connectors, speed sensor, motor extension cable, plus minus battery cables and BMS)



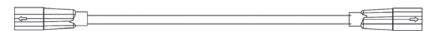
3. Position the controller holder under the battery rail, and with 6 X ST3\*19 screws tighten the controller holder to the battery rail. Tightening torque requirement: 3 Nm.



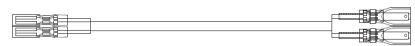
## 7.3.2 Cabling



Extension cable for motor



EB-BUS overview



Extension cable for front light



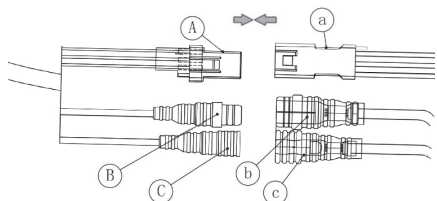
Extension cable for taillight

Wire definition of power cable from controller

Connector	Color	Function
J8545-BS-0/ 7015-BS-2	Black with white stripes	+6V
	Black	GND

### 1.1.1 Connect the battery

Link the communication cable and power cable from controller with battery.



A. The female connector of the communication cable from the battery BMS

a. The male connector of the communication cable from the controller



- B. The male connector (negative) from the battery
- b. The female connector (negative) from the controller
- C. The female connector (positive) from the battery
- c. The male connector (positive) from the controller

### 1.1.2 Connect the speed sensor

Please connect the connectors from the controller and the speed sensor together.



- D. The female connector from the speed sensor
- d. The male connector from the controller

### 1.1.3 Connect the EB-BUS

Please connect the connectors from the controller and EB-BUS cable together.



- E. The female connector from the EB-BUS cable
- e. The male connector from the controller

### 1.1.4 Connect the extension cable for motor

Please connect the connectors from the controller and extension cable from motor together



- F. The extension cable (male connector) for motor
- f. The female connector from the controller

### 1.1.5 Connect the extension light cable

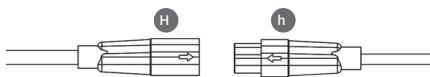
Please connect the connectors from the controller and the extension light cable together.



- G. The female connector from the controller
- g. The male connector from the extension light cable

### 1.1.6 Connect the display to the EB-BUS

Please connect the connectors from the display and EB-BUS cable together.



- H. The female connector from the EB-BUS
- h. The male connector from the controller