

Feiwei Electric Bicycle



User's Manual

EN

Table of Contents

1. Preface
2. General Description
3. Electric System
 - 3.1 Wiring diagram - (electric system)
 - 3.2 Parts identification
 - 3.2.1 Function display
 - 3.2.2 PAS
 - 3.2.3 Controller
 - 3.2.4 Motor
 - 3.2.5 Throttle
 - 3.2.6 Brakes
 - 3.2.7 Battery
4. Before You Ride
 - 4.1 Adjusting the height of the seat
 - 4.2 Adjusting the height of the handlebar-stem
 - 4.3 Lights
 - 4.4 Propping your electric bike upon its stand
 - 4.5 Precautions required prior to each use
5. Routine Maintenance
 - 5.1 Lubrication
 - 5.2 Recommended values of the nut torque
 - 5.3 Service checklist
6. Electric Bikes
 - 6.1 Folding electric bikes
 - 6.2 City electric bikes
 - 6.3 Mountain electric bikes(Mid-motor)
7. Assembly & Maintenance
 - 7.1 Tools
 - 7.2 Wheels and tires
 - 7.3 Handlebars and stem
 - 7.4 Saddle and seat post
 - 7.5 Disc brakes
 - 7.6 Derailleur
8. Display
9. Battery
10. Safety and Maintenance
 - 10.1 Safety recommendation
 - 10.2 Maintenance
11. Warranty

1.Preface

Thanks for your purchasing. This bike is an electric pedal assistant cycle(EPAC).

It equipped with pedals and a power-assisted electric motor, which can be driven by both man power and assist of electric power.

Traditional bikes are increasingly favoured by more and more people for their Zero carbon emission, saving cost on gasoline and convenient to go various road.

Besides these benefits, Electric bikes give you an option to use electric power to assist you when to go somewhere a little far or when you are tired.

By the way, considering the safety of you and other people, please put on helmet and other necessary riding protection equipment, and follow the local the traffic rules.

Before your first riding with her, please read this user guide carefully, know necessary safety knowledge, and quickly learn how to control and check a new bike.

Have a pleasant ride !



Charged up . And ready to go .

Feirui electric bicycle .

2.General Description

Part.A-folding ebike



Parts name	6.Saddle	13.Frame
1.Motor	7.Display	14.Pedal
2.Tail light	8.Handle bar	15.Crank
3.Rear rack	9.Handle stem	16.Controller
4.Rear V brake	10.Front light	17.Cick stand
5.Lithium battery	11.Front suspension fork	18.Derailleur
	12.Front disc brake	19.Rim

Part.B-folding ebike



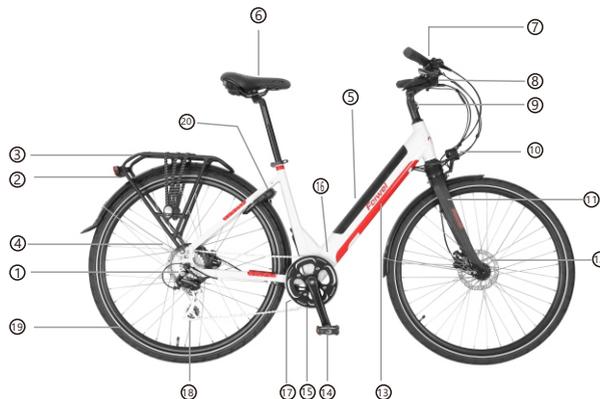
Parts name	5.Saddle	12.Frame
1.Motor	6.Display	13.Pedal
2.Tail light	7.Handle bar	14.Crank
3.Rear disc brake	8.Handle stem	15.Controller
4.Lithium battery	9.Front light	16.Cick stand
	10.Front suspension fork	17.Derailleur
	11.Front disc brake	18.Rim

Part.C-folding ebike



- | | | |
|-------------------|--------------------------|---------------|
| Parts name | 6.Saddle | 13.Frame |
| 1.Motor | 7.Display | 14.Pedal |
| 2.Tail light | 8.Handle bar | 15.Crank |
| 3.Rear rack | 9.Handle stem | 16.Controllor |
| 4.Rear disc brake | 10.Front light | 17.Kick stand |
| 5.Lithium battery | 11.Front suspension fork | 18.Derailleur |
| | 12.Front disc brake | 19.Rim |
| | | 20. |

Part.D-city ebike



- | | | |
|-------------------|--------------------------|---------------|
| Parts name | 6.Saddle | 13.Frame |
| 1.Motor | 7.Display | 14.Pedal |
| 2.Tail light | 8.Handle bar | 15.Crank |
| 3.Rear rack | 9.Handle stem | 16.Controllor |
| 4.Rear disc brake | 10.Front light | 17.Kick stand |
| 5.Lithium battery | 11.Front suspension fork | 18.Derailleur |
| | 12.Front disc brake | 19.Rim |
| | | 20.lock |

Part.-mountain ebike



Parts name

- 1.Motor
- 2.Rear disc brake
- 3.Lithium battery
- 4.Saddle

5.Display

- 6.Handle bar
- 7.Handle stem
- 8.Front suspension fork
- 9.Front disc brake
- 10.Frame

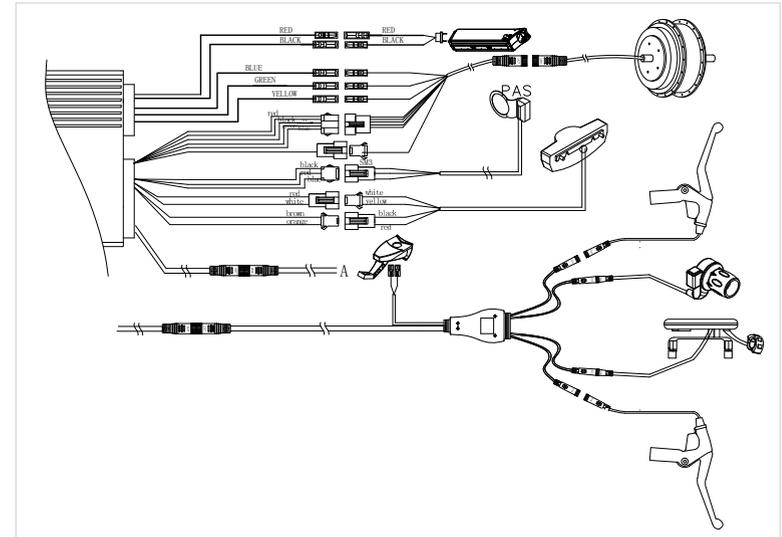
11.Pedal

- 12.Crank
- 13.Cick stand
- 14.

3.Electric System

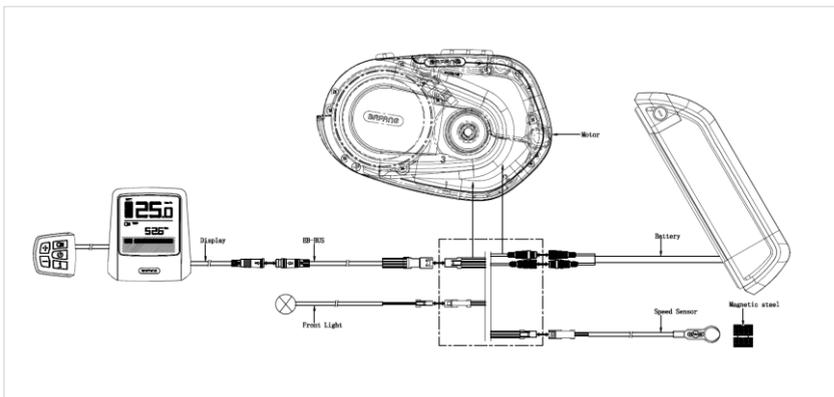
3.1 Wiring Diagram - (Electric System)

Part.A-Front/Rear Motor



Note: above the mainly wiring diagram of front/rear drive motor, there might be difference for different model or display.

Part.B-Mid-motor

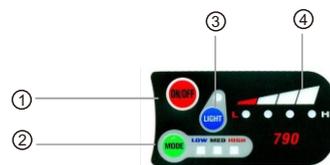


Note: above the electronic diagram of 8fun central motor, refer to 8Fun instruction for more details.

3.2 Parts identification

3.2.1 Function display

Display-LED



1. Model: ON/OFF
2. Assistance level increase (+).
Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3" simply pressing (-) or (+) button to reduction or increase pedal assistance.
3. Light: ON/OFF
4. Battery :low-high

Display-LCD-KM5S



1. Model: ON/OFF
2. Assistance level reduction (-)
3. Assistance level increase (+).
There are 5 levels of assistance, "1-2...5" simply pressing (-) or (+) button to reduction or increase pedal assistance.
4. Light: +

Display-LCD-800S



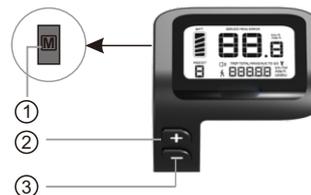
- 1.Model:ON/OFF
- 2.Assistance level increase (+).
- 3.Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3....9" simply pressing(-) or (+) button to reduction or increase pedal assistance.
- 4.Light: +

Display-LCD-450U



- 1.Model:ON/OFF
- 2.Assistance level increase (+).
- 3.Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3....9" simply pressing(-) or (+) button to reduction or increase pedal assistance.
- 4.Light: +

Display-LCD-W780



- 1.Model:ON/OFF
- 2.Assistance level increase (+).
- 3.Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3....9" simply pressing(-) or (+) button to reduction or increase pedal assistance.
- 4.Light: +

Display-LCD-W108



- 1.Model:ON/OFF
- 2.Assistance level increase (+).
- 3.Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3....9" simply pressing(-) or (+) button to reduction or increase pedal assistance.
- 4.Light: +

Mid-motor-Display

Display-LCD-DP.C10



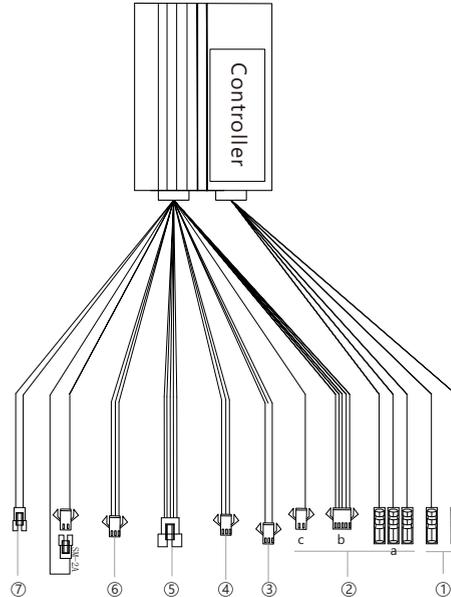
- 1.Model:ON/OFF
- 2.Assistance level increase (+).
- 3.Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3....9" simply pressing(-) or (+) button to reduction or increase pedal assistance.
- 4.Light: +

Display-LCD-DP.C07



- 1.Model:ON/OFF
- 2.Assistance level increase (+).
- 3.Assistance level reduction (-)
There are 5 levels of assistance, "1-2-3....9" simply pressing(-) or (+) button to reduction or increase pedal assistance.
- 4.Light: +

3.2.2 Controller



Specifications

- 1.Power : red:V+
black :V-
- 2.Motor : a-b-c motor
cable
- 3.Brake: brake signal GND
- 4.Throttle: 5V+ throttle
signal GND
- 5.Display: red black yellow
green blue
- 6.Sensor : red yellow blue
- 7.Front light

Note: above the wiring diagram of basic controller. There might be difference for different model or display.

3.2.3 PAS

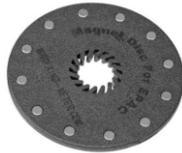
Specifications & Reliability

- . Rated Voltage : 4.5-6V (DC)
- . Current without brake : <5mA
- . Current with brake : <6mA
- . lead tension : >20N
- . Corresponding time when brake : <0.001S
- . corresponding distance : 2.3mm
- . Hall electrical life : >20M times
- . Insulation wet condition : >20M ohm
- . Insulation dry condition : >2M ohm



Connector & Cable

- . The connector can be customize
- . Red: +5V , Yellow: GND
- Blue: pulse Signal.



Note: above is specification of the sensor of double hall and 12 magnet buttons. There might be difference for different model or display.

3.2.4 Motor

Specifications

- . Wheel Diameter (inch) : 20/26/27.5/28
- . Construction : Gear drive
- . Rated Voltage : 36/48
- . NO (RPM) : 290; 250
- . Rated Power (W) : 250W
- . NT(Rpm) : 255;220
- . Max Torque : 32 N.M
- . Efficiency (%) : ≥80
- . Color : Black/Silver
- . Weight(kg) : 3.0
- . Noise Grade (dB) : <55
- . Operating Temperature : -20-45°C

Mounting Parameters

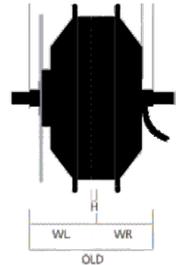
- . Brake : Disc Brake
- . Installation Widths (mm/OLD) : 100
- . Max. Housing Diameter(mm) : 134
- . Cabling Route : shaft Side , Right
- . Cable Length(mm),Connection
- . Type : 250 G9.1
- . Spoke Specification : 36H *13G

Further Specifications

- . Speed Detection Signal (Pulses/Cycle): 6
- . Reduction Ratio : 1:4.42
- Magnet Poles (2P) : 20

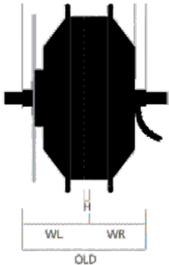
Front - Motor

SWXK6



Rear - Motor

SWX02



Specifications

- . Wheel Diameter (inch) : 26/27.5/28
- . Construction : Gear drive
- . Rated Voltage : 36/43/48
- . NO (RPM) : 325; 245
- . Rated Power (W) : 250W
- . NT(Rpm) : 290;205
- . Max Torque : 45 N.M
- . Efficiency (%) : ≥ 80
- . Color : Black/Silver
- . Weight(kg) : 3.4
- . Noise Grade (dB) : < 55
- . Operating Temperature : $-20-45^{\circ}\text{C}$

Mounting Parameters

- . Brake : Disc Brake
- . Installation Widths (mm/OLD) : 135
- . Max. Housing Diameter(mm) : 158.5
- . Cabling Route : shaft Side , Right
- . Cable Length(mm),Connection
- . Type : 250 G9.1
- . Spoke Specification : 36H *13G

Further Specifications

- . Speed Detection Signal (Pulses/Cycle): 6
- . Reduction Ratio : 1:5
- . Magnet Poles (2P) : 20

3.2.4 Throttle

Specifications



- . Model : 23X
- . Function : 3 core wires red+5V/ black negative pole/white signal
- . Material : ABS & PVC
- . Voltage : hall tube 1-4v or 4 1V
- . Structure : one switch



- . Model : 21X
- . Function : 3 core wires red+5V/ black negative pole/white signal
- . Material : ABS & PVC
- . Voltage : hall tube 1-4v or 4 1V
- . Structure : one switch



- . Model : 76X
- . Function : 3 core wires red+5V/ black negative pole/white signal
- . Material : ABS & PVC
- . Voltage : hall tube 1-4v or 4 1V
- . Structure : one switch

3.2.5 Motor

Mid - motor

Specifications

- . Wheel Diameter (inch) : 20/26/27.5/28
- . Construction : Gear drive
- . Rated Voltage : 36/43/48
- . NO (RPM) : 101/112/112
- . Rated Power (W) : 250W
- . NT(Rpm) : 92/101/103
- . Max Torque : 80 N.M
- . Pedal sensor : Speed and torque Integrated
- . Shift and standard : JIS
- . Efficiency (%) : ≥ 80
- . Color : Black/Silver
- . Weight(kg) : 3.9
- . Noise Grade (dB) : < 55
- . Operating Temperature : $-20-45^{\circ}\text{C}$

Function

- . E-bike : Yes
- . Gearsensor Function : Yes
- . Light Drive Capacity (DCV/ W) : 6 / 3(Max)

Further Specifications

- . Speed Detection Signal (Pulses/Cycle): 1
- . Reduction Ratio : 1:33.4
- . Magnet Poles (2P) : 8



Dimension A	232mm
Dimension B	145mm
Dimension C	35.8mm
Dimension D	150mm

Note: all motors above are from 8FUN, the actual model should refer to the order

3.2.6 Brakes



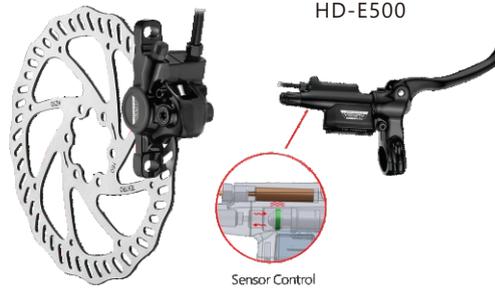
EL555-RT

EL550-RS

- ◆ Integrated Bell
- ◆ Adjustable Sensor Control Designed
- ◆ For Use With Linear Pull Brakes & Rapidfire Shifters
- ◆ For Left Hand Side Only

Specifications

- . Standard Finish : Satin Silver Lever / Black Bracket
- . Material : Cast Aluminum Lever & Bracket
- . Lever Blade : 4 Finger Lever With Kraton Rubber Grip
- . Also Available : For Use With Roller / Canti Brakes
- . Weight : EL555-RT 143 Grams / Pair
EL550-RS 119 Grams / Pair



HD-E500

Sensor Control

- . Caliper : Forged Aluminum Body . Automatic Caliper Positioning Via Front And Rear Adapters . Finish: Black
- . Pads : A10.11. High Performance Metal Ceramic Compound . Easy Replacement . Also Available : Organic Compound
- . Fluid : Non-Corrosive Mineral Oil . Excellent Heat Expansion Properties
- . Weight : Front Wheel - 327 Grams / Rear Wheel - 343 Grams (Excludes Rotor, Adapter & Mounting Bolts)

Hydraulic Disc Brake With Sensor Control Design

- ◆ Open System, Dual Piston
- ◆ Sensor Control Designed
- ◆ Easy Installation, Adjustment And Maintenance.

Specifications

- . Rotor : Light Wave Type (TR160-7), High Heat Dispersion & Heat Tolerance
Diameter : Ø160mm
Weight : 126 Grams
Also Available: Ø180mm
- . Lever : Forged Aluminum Lever / Cast Aluminum Bracket . Adjustable Angle
Reservoir Tank . Two Pieces Bracket 2.5
Finger Ball End Blade. Finish : Black

3.2.7 Battery

Battery-FR-Z1



Specifications

- . Dimension (L*W*H): 450*148*70mm
- . Nominal Voltage : 36V
- . Nominal : 8.8Ah/11Ah/14.5Ah
- . Discharge End Voltage : 2.5V-2.7V(Any single cell)
- . Over-Charge Protection : 4.2V (Any single cell) Voltage
- . Weight (Approx.) : <3.2kg
- . Charge Method : CC-CV
- . Cycle Life : 600 Cycles

Battery-EEL-mini



- . Dimension (L*W*H): 325*95*90mm
- . Nominal Voltage : 48V / 36V
- . Nominal : 8.8Ah, 11.6Ah, 14Ah / 11Ah, 14.5Ah
- . Discharge End Voltage : 2.5V-2.7V(Any single cell)
- . Over-Charge Protection : 4.2V (Any single cell) Voltage
- . Weight (Approx.) : <3.3kg
- . Charge Method : CC-CV
- . Cycle Life : 600 Cycles

Battery-FS-I



Specifications

- . Dimension (L*W*H): 380*40*90mm
- . Nominal Voltage : 36V
- . Nominal : 6.6Ah/7.8Ah/8.7Ah/10.2Ah
- . Discharge End Voltage : 2.5V-2.7V(Any single cell)
- . Over-Charge Protection : 4.2V (Any single cell) Voltage
- . Weight (Approx.) : <2kg
- . Charge Method : CC-CV
- . Cycle Life : 600 Cycles

Battery-FR-01



- . Dimension (L*W*H): 312*78*68mm
- . Nominal Voltage : 36V / 48V
- . Nominal : 10Ah, 13Ah, 14.5Ah / 10.4Ah, 11.6Ah
- . Discharge End Voltage : 2.5V-2.7V(Any single cell)
- . Over-Charge Protection : 4.2V (Any single cell) Voltage
- . Weight (Approx.) : <3.2kg
- . Charge Method : CC-CV
- . Cycle Life : 600 Cycles

4. Before you ride

4.1 Adjusting the height of the seat

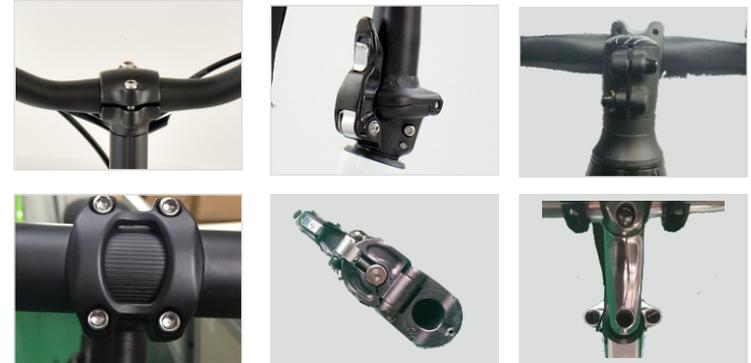
Height of your seat can be adjusted:



The insertion depth of seat post height must be exceeding the safe line !

Unlock the lever (OPEN), adjust the seat height to the desired position without ever exceeding the mark carved onto the seat's tube, lock the lever (LOCK). The seat's height must be set so that your leg is stretched out when the corresponding pedal is in the lower position. The insertion-depth of seat post height must be exceeding the safe line.

4.2 Adjusting the height of the handlebar-stem



Adjust the handlebar height by changing the handle stem angle by tool.

The recommended handlebar torque value		
Name of clamp bolts	bolt	Standard torque /N.m
Bolt for handlebar	M5	10-12 N.M
Bolt for handlebar	M4	4-6 N.M
Handle bar stem	M5	8-10 N.M
Handle bar stem	M6	10-12 N.M

4.4.3 Lights



The front and rear lights have an autonomous power supply. They are turned on and off using the switch located on each light.

Draw attention to the national legal requirements when the bicycle is to be ridden on public roads.

4.4 Propping your electric bike upon its stand



Your electric bike is equipped with a double or side stand. Always prop up your bike on its stand on a flat and stable ground surface.

2.5 Precautions required prior to each use

Verify that the brakes and the front and rear lights are all working properly. Also, check the pressure of the tyres.

On derailleur geared bicycles the rear derailleur automatically tensions the chain.

Make sure that the hinges on your bike are properly locked. Indeed, when using your bike on a regular basis, the tension of the hinges' adjustment and locking systems can change slightly. Whenever necessary, adjust the tension once again.

Please note: if you use your bike frequently, it is recommended that you inspect the state of the fork, the frame, the suspension and the fasteners. The materials and components may be subject to different reactions to usage and wear.

5. Routine maintenance

5.1 Lubrication

Frequency	Component	Lubricant	How to Lubricate
Weekly	Chain	Chain Lube or Light Oil	Brush On or Squirt
	Derailleur Pulleys	Chain Lube or Light Oil	Brush On or Squirt
	Derailleurs	Oil	Oil Can
	Brake Calipers	Oil	3 drops from oil can
	Brake Levers	Oil	2 drops from oil can
Monthly	Shift Levers	Lithium Based Grease	Disassemble
Every Six Months	Freewheel	Oil	2 squirts from oil can
	Brake Cables	Lithium Based Grease	Disassemble
Yearly	Bottom Bracket	Lithium Based Grease	Disassemble
	Pedals	Lithium Based Grease	Disassemble
	Derailleur Cables	Lithium Based Grease	Disassemble
	Wheel Bearings	Lithium Based Grease	Disassemble
	Headset	Lithium Based Grease	Disassemble
	Seat Post	Lithium Based Grease	Disassemble

5.2 Recommended values of the nut torque

Front Wheel Nuts	22-27	Newton Meters	16.2 - 19.8	ft.-lb.
Rear Wheel Nuts	24-29	Newton Meters	17.5- 21.3	ft.-lb.
Seat Binder Nut	12- 17	Newton Meters	8.8- 12.5	ft.-lb.
Seat Pillar Clamp Nut	15- 19	Newton Meters	11.0- 14.0	ft.-lb.
Brake Anchor Nut	7- 11	Newton Meters	5.1- 8.1	ft.-lb.
Handlebar Clamp Nut	17- 19	Newton Meters	12.5- 14.0	ft.-lb.
Head Stem Expander Nut	17-19	Newton Meters	12.5- 14.0	ft.-lb.
Crank Cotter Pin Nuts	9-14	Newton Meters	6.6- 10.3	ft.-lb.
Brake Centre Bolt	2-17	Newton Meters	1.5- 12.5	ft.-lb.

Note: The frequency of maintenance should increase with use in wet or dusty conditions. Do not over lubricate - remove excess lubricant to prevent dirt build up. Never use a degreaser to lubricate your chain

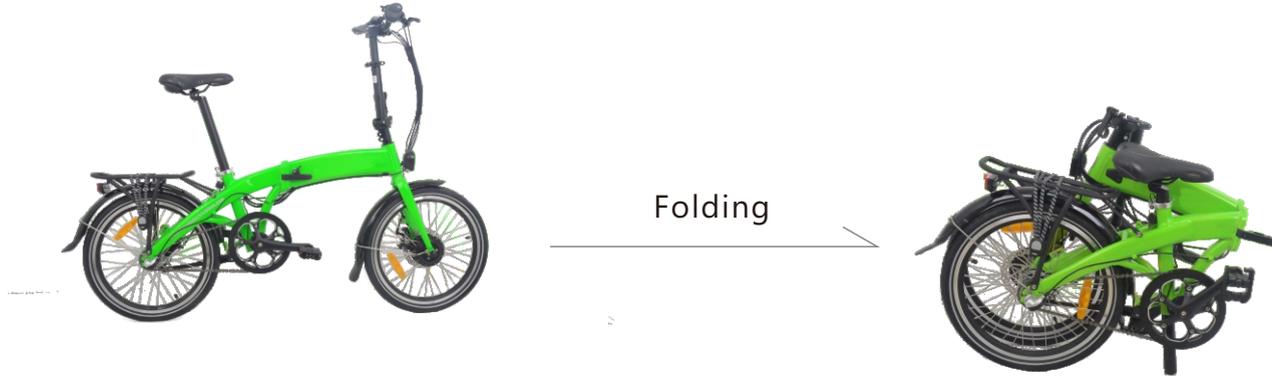
5.3 Service checklist

Frequency	Task
Before every ride	Be sure batteries are fully charged Check tire pressure Check brake operation Check wheels for loose spokes
After every ride	Be sure to fully charge batteries Quick wipe down with damp
Weekly	Lubrication as per schedule 2.6
Monthly	Inspect wires / Inspect connectors Check derailleur adjustment/Check brake adjustment Check brake and gear cable adjustment Check tire wear and pressure / Check wheels are true and spokes tight Check hub, head set and crank bearings for looseness Check pedals are tight / Check handlebars and stem are tight Check seat and seat post are tight and comfortably adjusted Check frame and fork for trueness Lubrication as per schedule 2.6 / Perform safety check
Every six months	Lubrication as per schedule 1 / Check all points as per monthly service Check and replace brake pads, if required Check chain for excess play or wear
Yearly	Lubrication as per schedule 2.6

6. Electric bikes

6.1 Folding electric bikes

In compliance with regulations, folding is done in several steps, and this will only take you a few seconds.



Folding the handlebars' shaft

Untighten the butterfly lever located at the base of the handlebars.



Folding the pedals

Push the pedals inward, and then fold them against the pedal and gear mechanism's axis.



Folding the frame

Untighten the lever and free the hinge .Remove the lever from its hinge and pull it upward.You will then hear the safety hatch release itself You can then open the hinge and fold the frame in half. Lastly, attach the fastener which keeps bikes folded.



Battery

In compliance with regulations, folding is done in several steps, and this will only take you a few seconds.



Quick-release devices

Tighten the adjusting nut by hand and move the quick release lever to the closed position. You should feel consider able resistance while moving the lever.If not, re-open and re-tighten the lever, then move it to the closed position so it is in line with the frame



Note:This bike is not designed for rough usage,such as jumps, riding up or off of pavements,and riding on unpaved roads. For your own safety, no modifications may be made to the bike.

6.2 city electric bikes



This is one of our classic models of City Bike. The design of the frame looks very simple but practical. It's widely praised by our customers for its steady, reliable and comfortable riding experience.

USB charging



The battery has a USB output port which can automatically recognize most of mobile devices and charging them safely.

Adjustable stem



This bike is equipped with an adjustable stem, it can easily change the height of the handlebar to a more suitable position.

6.3 Mountain electric bikes(Mid-motor)



Mountain electric bikes

This is one of our classic models of mountain E-bike.
Strong double triangle design frame, simple but reliable.
8Fun mid-drive motor and hydraulic disc brake provides you a powerful, silent, steady and comfortable riding experience.

Max Drive System



Mid-Motor

Powerful.Smooth.Silent.

MAX-the powerful drive system

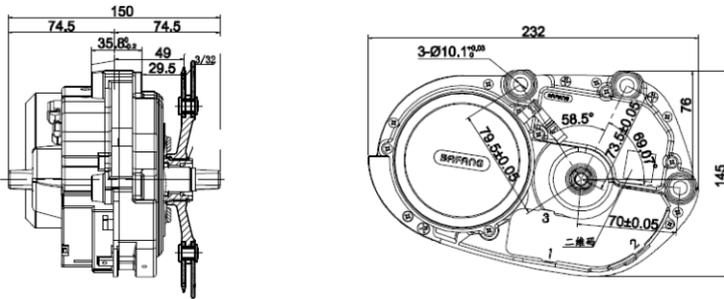
Compatible with all customary frames

Low maintenance and easy to install



The mid-drive motor constantly samples relevant information at a frequency of up to 80k Hz via a torque sensor and two speed sensors which are all highly sensitive. The resulting data on crank torque, vehicle speed and the speed of rotation of the pedals is made available to the controller, ensuring precise control of the vehicle while achieving the highest possible efficiency. The Max Drive System puts the rider in complete control. In spite of a generous power output and a maximum torque of more than 80 N.m, the motor operates in virtual silence. The modular motor design and integrated controller make disassembly easier and improve service responsiveness. This motor can be black or silver.

Dimensions

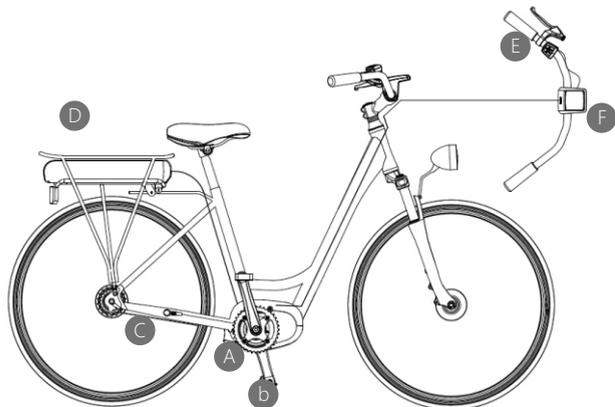


The BAFANG HMI with a high-contrast LCD display delivers all important information at a glance and can also be read in direct sunlight without difficulty. The BAFANG handlebar controller gives good feedback, is extremely robust and easy to use. The additional output can be individually controlled by five support levels. The user interface is clearly legible and intuitive to use. The HMI is compatible with the Bus system RS 232. The HMI is protected against contact and ingress of water and dirt and complies with protection class IP 65. It is available in black and silver.

Dimensions

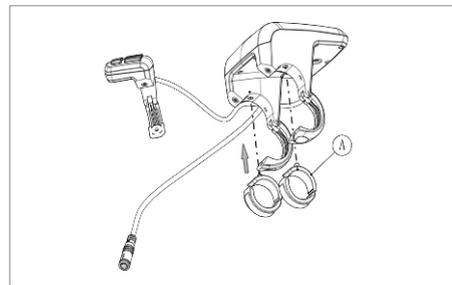


Component Names

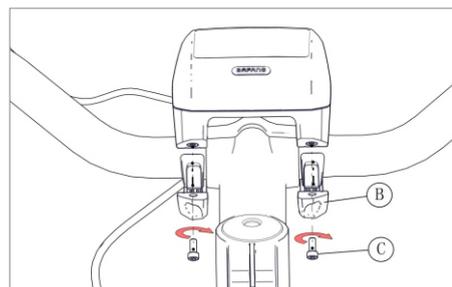


- A Drive unit
- b Front chain wheel
- C External speed sensor
- D Battery
- E Auxiliary keypad
- F Display

Display Installation (DP C01.RS232.7)



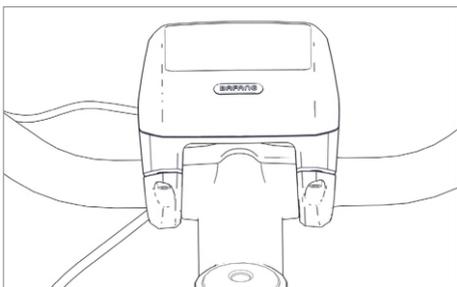
One or two rubber clamping rings may be needed depending on the diameter of the handlebar (the applicable handlebar specifications are $\varnothing 22.2$, $\varnothing 25.4$ and $\varnothing 31.8$). Open the left or right display clamp, and insert one or two clamping rings into the right position of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



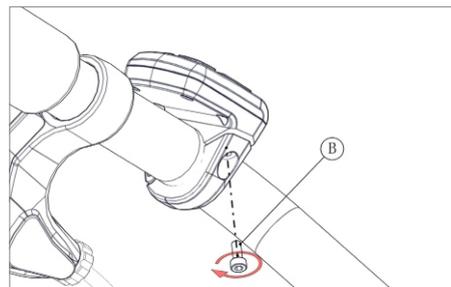
- A Rubber clamping ring (whose inner diameter is $\varnothing 22.2$ or $\varnothing 25.4$)
2316020400007
2316020400008
Left and right display clamps for the $\varnothing 22.2$ handlebar:
Left clamp -2316020400017
Right clamp -2316020400018
Left and right display clamps for the $\varnothing 25.4$ handlebar: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



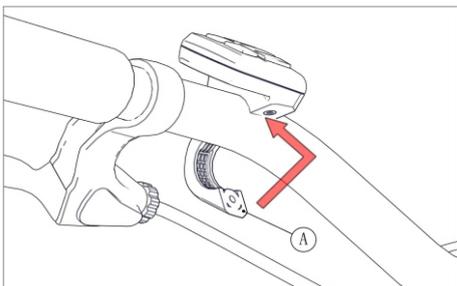
Adjust the angle of the display so that you can easily see the display screen when riding.
After the angle has been adjusted, tighten the screws to the specified torque.
Tightening torque: 1 Nm



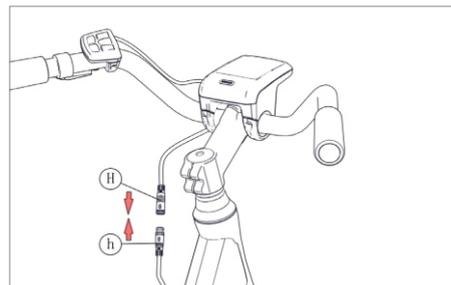
b hex socket head cap screw M3×8

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

Auxiliary Keypad Installation



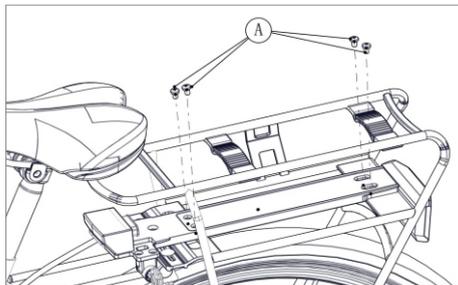
A keypad clamp



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.

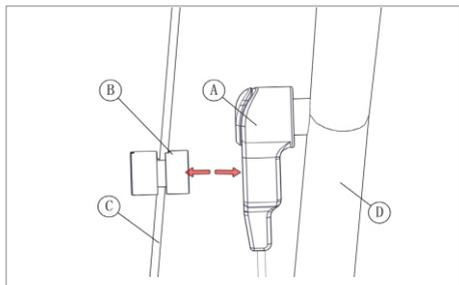
Battery Rail Installation



- A hex socket head cap screw (M5)

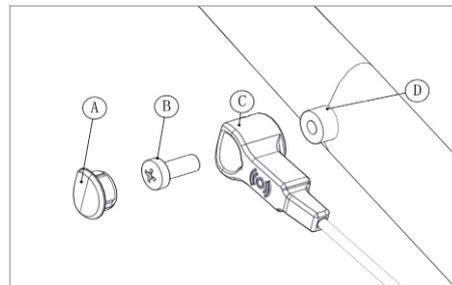
Align the mounting holes of the carrier with the mounting holes of the battery rail.
Fasten the battery rail onto the battery carrier with hex socket head screws (M5).
Tightening torque: 2 Nm

External Speed Sensor Installation



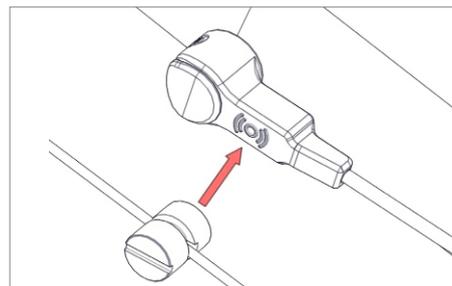
- A external speed sensor
- b magnet unit
- C spoke
- D chain stay

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

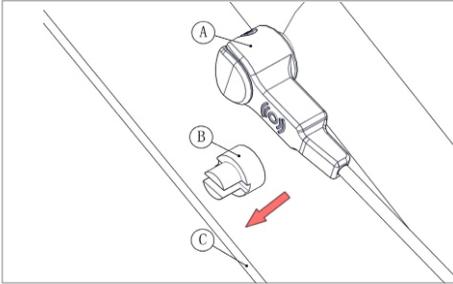


- A Dust cap
2301030000003
- b mounting bolt M5×12
- C external speed sensor
- D sensor bracket (chain stay boss)

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

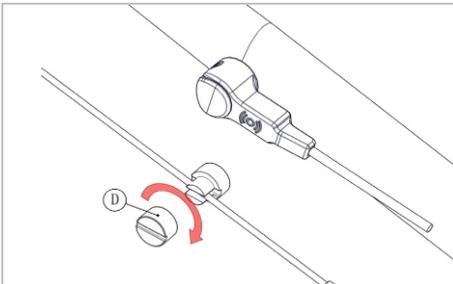


Arrange the speed sensor and the magnet unit as shown in the picture above.
When installing the magnet unit, make sure its center is aligned with the center of the speed sensor's induction zone.



- 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

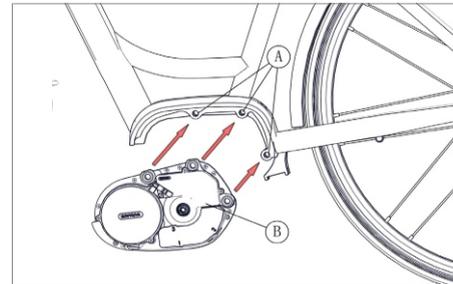
Tighten up the mounting nut with a straight slot screwdriver.
Tightening torque: 1.5 – 2 Nm

Drive Unit Installation



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

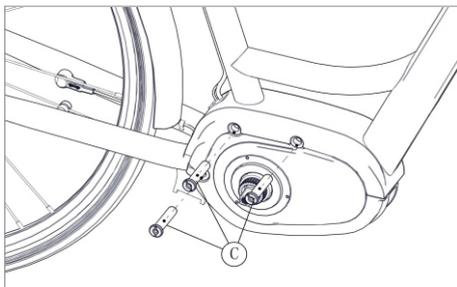
Cables should be arranged in advance according to the e-bike type and the cabling system before installing the driveunit.



- A** mounting holes
- b** drive unit
MM G33.350

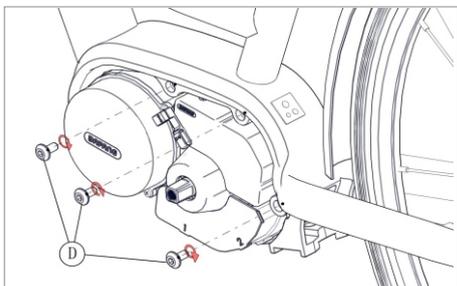
Align the three mounting holes of the drive unit with the mounting holes in the bike frame.

- i** 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

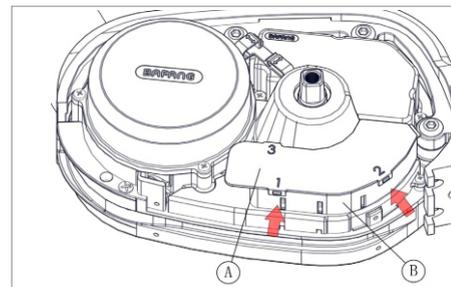
Insert, from the right, special M6 nuts into the mounting holes in the bike frame and the drive unit.



- D M6 bolts
1401080000099

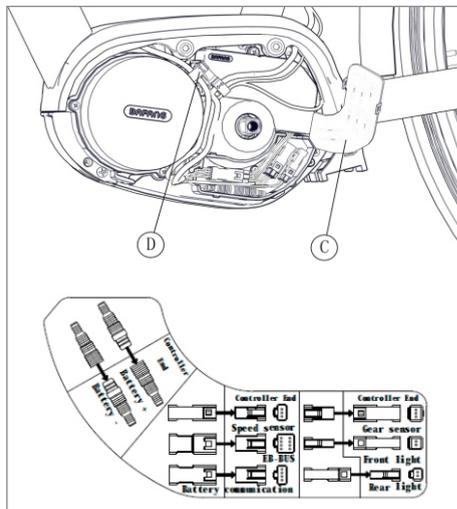
Insert, from the left, the M6 bolts into the bike frame so that they will come to contact with the nuts. Tighten bolts onto nuts to the specified torque.

Tightening torque: 18–20 Nm



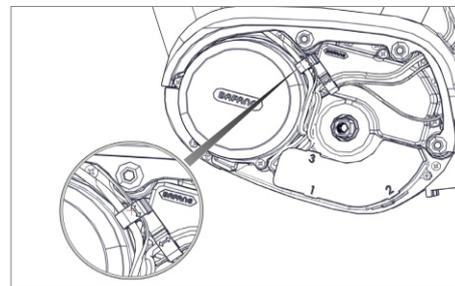
- A upper cover of the connector box
- B connector box body

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.

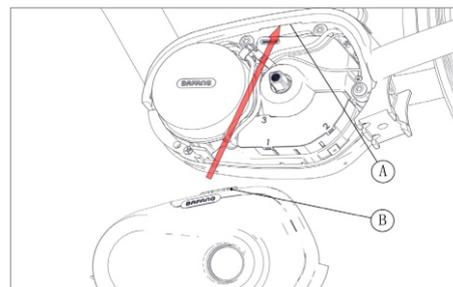


- C** cabling layout
2307070000001
- D** cable clips
1401300000001

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.

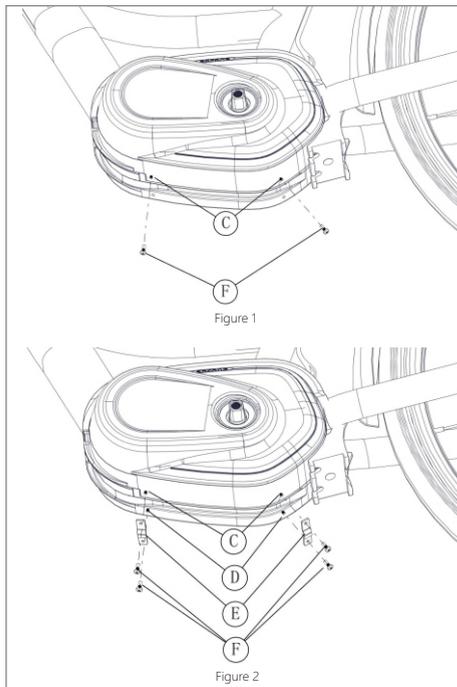


The picture above shows how the drive unit looks after cabling. Please note that all cables must thread through the cable clips after going out of the connector box.

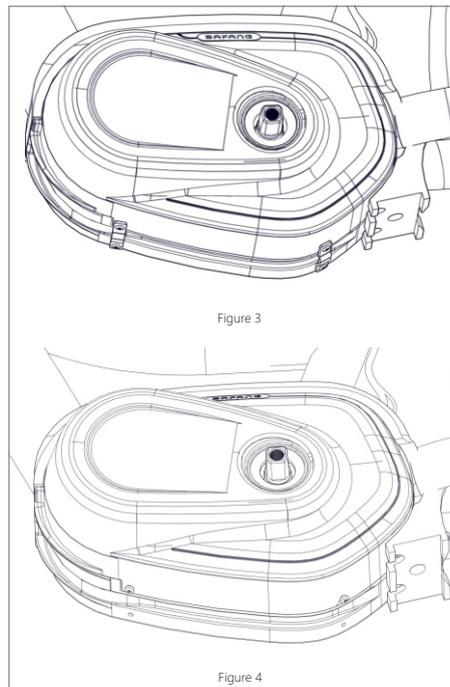


- A** frame adapter
- B** drive unit cover
1333000000001

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



- 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 them together with a cable gatherer, see Figure 2).
Tightening torque: 1 Nm

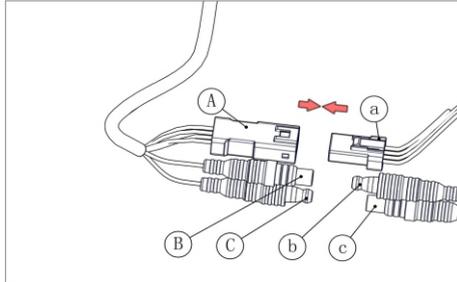
Figures above show how the drive unit looks like when the drive unit cover has been affixed. Brake cables and gear cables can either be arranged in the channel at the bottom of the drive unit (see Figure 3 where cable gatherers are provided) or within the inner space of the frame adapter (see Figure 4 where no cable gatherers are provided).

SYSTEM CABLING

Connection of the Battery Cable to 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

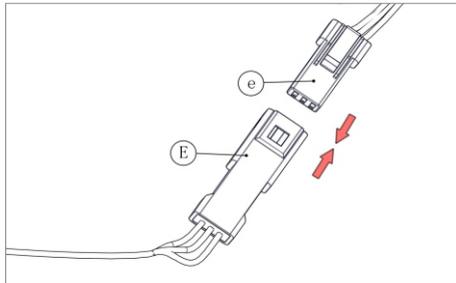
b female connector for the positive cable at the battery

C male connector for the

c female connector for the negative cable at the drive unit

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

Connection of the Speed Sensor to the Drive Unit



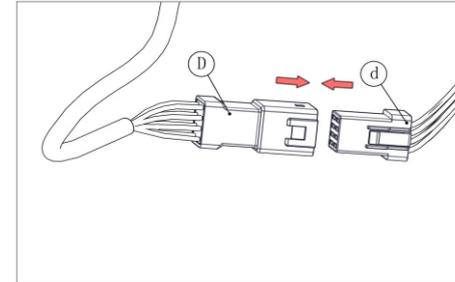
E male connector at the speed sensor

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.

Connection of the EB-BUS to the Drive Unit

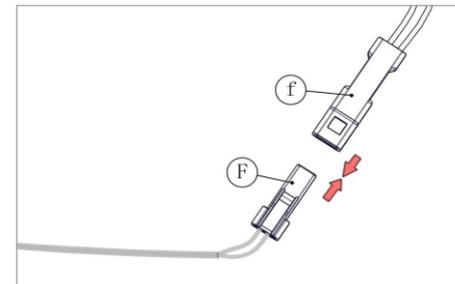


D male connector at the EB-BUS 2105020000099

d 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.

Connection of the Headlight Cable to the Drive Unit

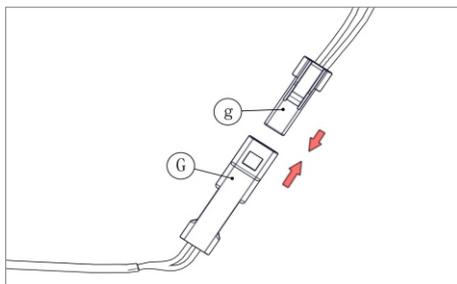


F female connector at the headlight cable

f male connector for the headlight at the drive unit

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

Connection of the Rearlight 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.

Display

Specifications and Parameters of the Display 36V / 48V Power Supply;

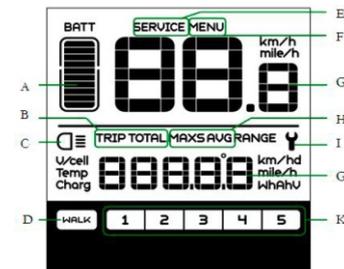
- . Maximum Operating Current: 30mA
- . Power-off Leakage Current: < 1uA
- . Operating Current Supplied to the Controller: 50mA
- . Operation Temperature: -18 ~ 60%
- . Storage Temperature: -30 ~ 70 %
- . Waterproof Grade: IP65
- . Storage Humidity: 30%–70 %

Function Overview and Key Definitions

Function Overview

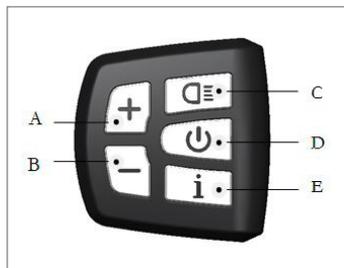
- Use of a two-way serial communication protocol, simple operation of the display via the external 5-key keypad.
- Speed display: displaying the real-time speed as SPEED, the maximum speed as MAXS and the average speed as AVG.
 - km or mile: The user can choose between km or mile.
 - Intelligent battery 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 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

Information on the Display



- 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

Key Definitions



- A "up" key
- b down
- C Headlight key
- D "on/off" key
- E "mode" key



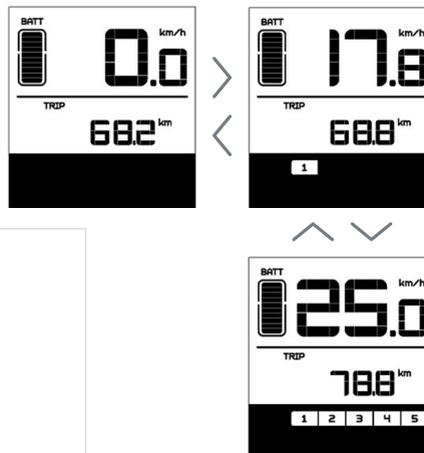
Normal Operation

On/Off Switch

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

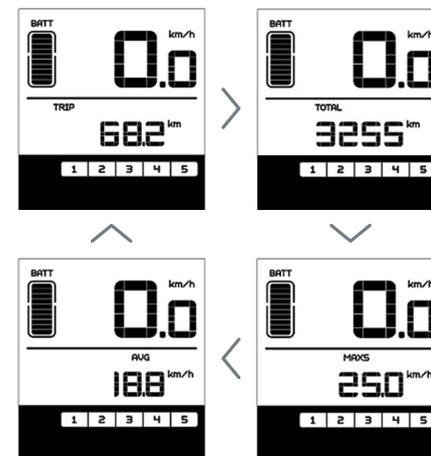
Assist Mode Selection

In the manual gearshift mode, press the key **+** 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.



Switch between Distance Mode and Speed Mode :

Briefly press **i** 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

Selecting the level for motor assistance

Headlight/ Display Backlight Switch

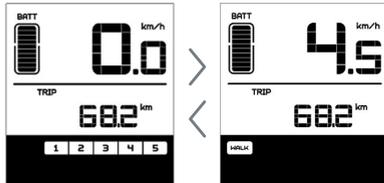
Press **☐** for 2 seconds. The backlight of the display as well as the headlight and taillight will be turned on. Press **☐** again for 2 seconds to power off the display backlight/headlight/taillight. (If the display is turned on in a dark environment, the display backlight/headlight/taillight will 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.

Walk Assistance

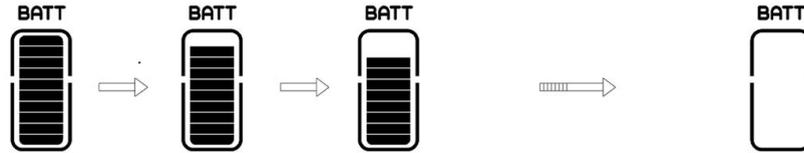
Press **☐**, for 2 seconds. The e-bike enters the walk assistance mode, and the symbol WALK is displayed. Once the key **☐**, is released, the e-bike will exit the walk assistance mode.



Switch between power assistance and walk assistance mode

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	$25\% \leq C < 35\%$		

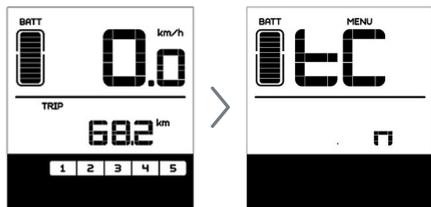
Parameter Setting

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

Setting Preparation

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



Menu for entering the parameter settings

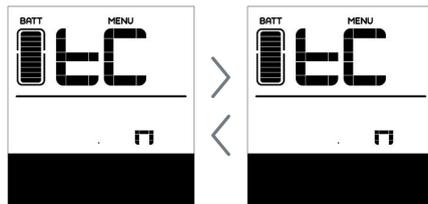
In the parameter setting state, when the parameter you want to set begins to flash, press **+**/**-** to adjust the parameter value. Briefly press the **i** to switch between the parameters to be set. Press **i** twice (interval < 0.3 seconds) to exit the submenu.

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

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.

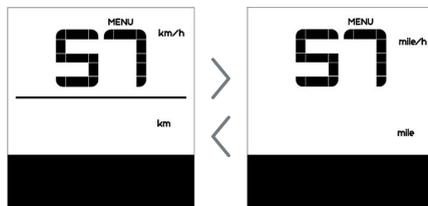
If the user does not reset the data, the single trip distance and the accumulated total riding time will be automatically cleared when the accumulated total riding time exceeds 99 hours and 59 minutes.



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

km/mile:

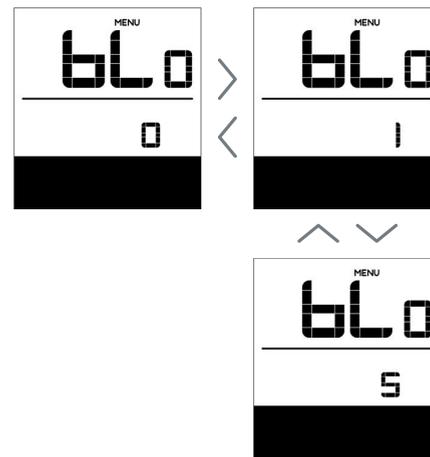
When the speed field displays S7, press **+**/**-** to switch between km/h and mph, or to set km or mile. After this setting, briefly press **i** (< 0.3 seconds) to enter the setting interface of light sensitivity.



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.

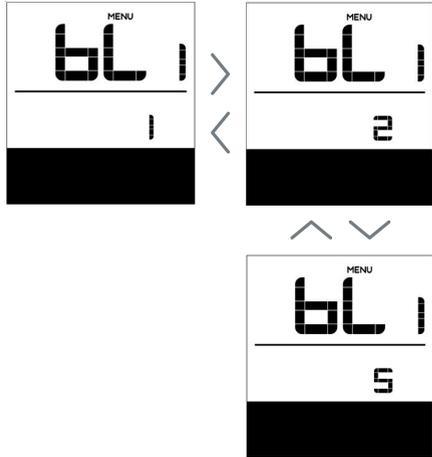
After this setting, briefly press **i** (< 0.3 seconds) to enter the setting interface of backlight brightness.



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.

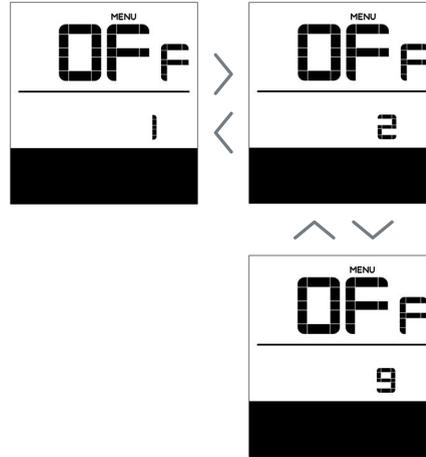
After this setting, briefly press (< 0.3 seconds) to enter the setting interface of automatic off time.



Automatic Off Time:

When the speed field displays OFF, press / to choose a figure between 1 and 9. The figures indicate the minute 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.

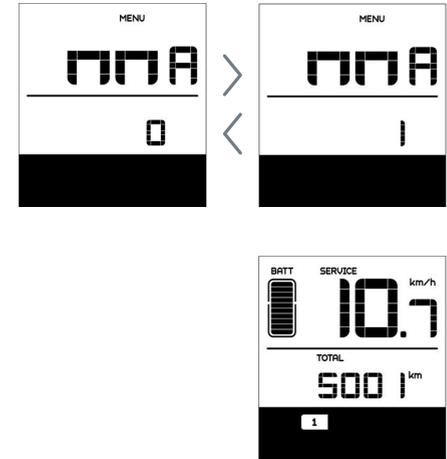


Maintenance Warning

(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.

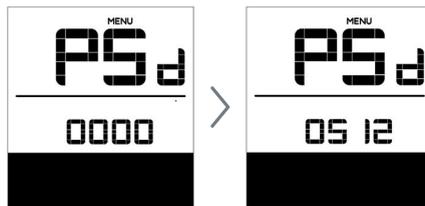
☒ When the number of battery charge cycles exceeds 100 (can be customized by the manufacturer), the display will the symbol **SERVICE.** When the display is started up, the sign for battery will

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).

Further Settings:
Password Setting:

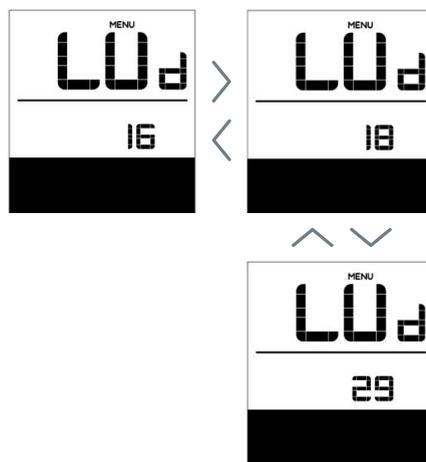
When the speed field displays PSd, it is a prompt to enter a password. Press **+**/**-** to set the four-figure password (using digits 0 to 9). Briefly press **i** to switch between the single digits of the password. The default password is "0512". Briefly press to switch between the single digits of the password. The default password is "0512". Briefly press **i** 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.



Wheel Diameter Selection:

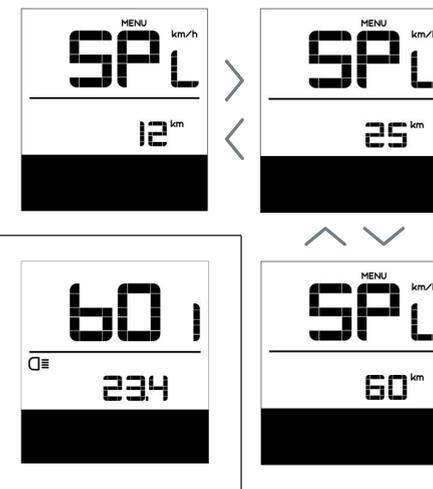
When the speed position displays Wd, press **+**/**-** to select the correct wheel diameter: 16/18/20/ 22/24/26, 700c, 28/29. The measurements are in inches. A wrong wheel diameter can lead to speed anomalies.

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



Speed Limit Setting:

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



Battery Communication:

The speed field displays b01 and the distance field displays the speed limit. Press **i** (< 0.3 seconds) to see the other information in sequence. After this setting, press **i** 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 "- - -".

Information on the battery menu:

Information Displayed 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

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



Error display

7. Assembly & Maintenance-Physics

7.1 Tools

Tools required

- 1.Open ended wrench or ring wrenches :
8mm 9mm 10mm 12mm.13mm 14mm 15mm
- 2.Open end or pedal wrench 15mm
3. Allen key wrenches : 2.5mm 3mm 4mm
5mm 6mm 8mm
4. Adjustable wrench
5. Standard flat head screwdriver
- 6.Standard Phillips head screwdriver
7. Standard slip joint pliers
8. Tire pump
9. Tube repair kit
- 10.Tire levers



Travel tools

1. Spare Tube
2. patch
- 3.Pump
- 4.Tire levers
- 5.Multi-tool
- 6.change (phone call)



7.2 Wheels and Tires

. Wheel Inspection

It is most important that wheels are kept in top condition . Properly maintaining your bicycle's wheel will help braking performance and stability when riding . Be aware of the following potential problems :

.Dirty or greasy rims :

Caution : these can render your brakes ineffective . dot not clean then with oily or greasy materials.when cleaning,use a clean rag or wash wih soapy water,rinse and air dry .Don`t ride while they`re wet.

when librica your bicyce,don`t get oil on the rim braking surfaces.

. Wheels not straight;

Lift each wheel off the ground and spin them to see if they are crooked or out of true, If wheels are not straight, they will need to be adjusted . This is quite diffcult and is best left to a bicycle repair specialist.

. Broken or loose spokes;

Check that all spokes are tight and that none are minssing or damaged.Caution:such damage can result in severe instability and possibly an accidnt if not corrected.

Again, spoke repairs are best handdled by a bicycle repair specialist.

Loose hub bearings.

Lift each wheel off the ground and try to move the wheel from side to side.

Caution: If there is movement between the axle and the hub, do not ride the bicycle. Adjustment is required.

· Axle nuts:

Check that these are tight before each ride.

· Quick release

Check that these are set to the closed position and are properly tensioned before each ride.

Caution: Maintain the closed position and the correct adjustment. Failure to do so may result in serious injury.

· Tire Inspection

Tires must be maintained properly to ensure road holding and stability. Check the following areas;

Inflation: ensure tires are inflated to pressure indicated on the sidewalls. It is better to use a tire gauge and a hand pump than a service station pump.

Caution: If unflating tires with a service station pump, take care that sudden over inflation does not cause tire to blow out.

· Bead

seating: When inflating or refitting tire, make sure that the bead is properly seated in the rim before you fully inflate the tires

tread: check that tread shows no signs of excessive wear or flat spots, and that there are no cuts or other damage. Caution: Excessively worn or damaged tires should be replaced.

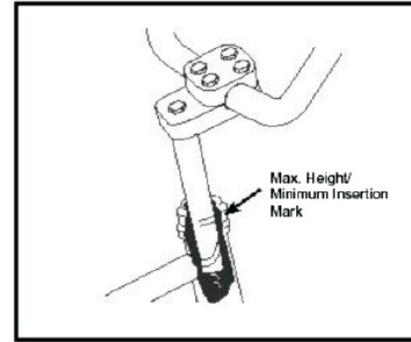
Valves: Make sure valve caps are fitted and that valves are free from dirt. A slow leak caused by the entry of the dirt can lead to a flat tire, and possibly a dangerous situation.

Handlebars and stem

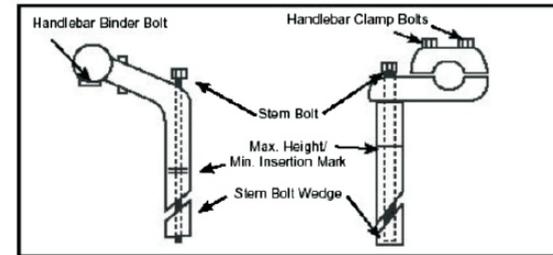
Handlebar Stem

The handlebar stem fits into the steering column and is held firmly by the action of a binder bolt and expander wedge which when tightened, binds with the inside of the fork steerer tube. When removing the stem, loosen the stem bolt or three turns then give it a tap to loosen the wedge inside.

lubricate by first wiping off any old grease and grime, then applying a thin film of grease to the handlebar clamp.



wedge that will be inserted into the frame. The height of the handlebar can be adjusted to suit your comfort preference. If the stem is removed from the steering column, you will notice a mark about 65mm up from the bottom with the words "max. height" or "minimum insertion."



Never ride a bicycle if the stem has been raised so that the max. height/ minimum insertion line can be seen.

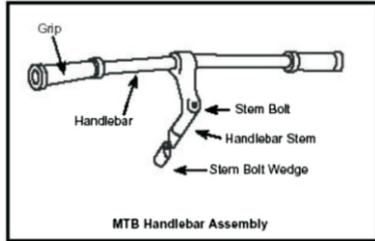


Warning: Over tightening the stem bolt or headset assembly may cause damage to the bicycle and/or injury to the rider.

When re-fitting the stem . make sure the handlebars are correctly aligned and tightened using the appropriate hex qurench or allen key .

Do not over tighten .

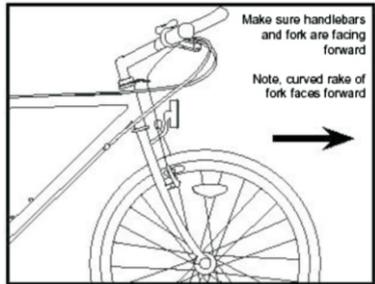
Test the security of the handlebar within the stem and the stem within the fork steerer tube by clamping thee front wheel between your knees and trying to move the handlebar up and down and from side to side .The handlebar should not move when applying turning pressure .



Handlebars

The exact positioning of the handlebar is a matter of personal comfort . For MTB bicycle the bar should be approximately horizontal with the ends pointing back and slightly up , On BMX bicycle the handlebar should remain in an approximately

upright position but can be angled back or forward slightly for comfort . On MTB and racing style bicycles the handlebar is usually tightened in the stem by a single allen key bolt or hexagonal bolt . On BMX style bicycle there may be four clamping bolts.



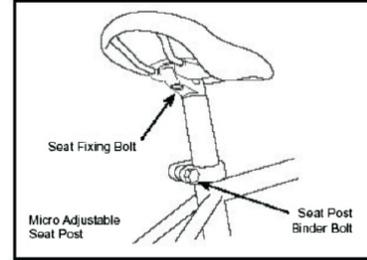
Please note that if you need too replace the fork on your bicycle at any time . Please consult a qualified bicycle technician.



Never ride unless the handlebar clamping mechanism has been securely tightened.

7.4 Saddle and Seat Post

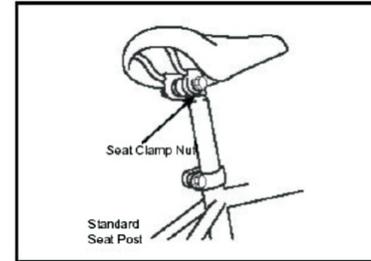
Saddle and Seat Post



The seat fixing bolt and the seat post binder bolt should be check for tightness and adjustment every month . On removing the seat post from the frame you will notice a mark about 65mm up from the bottom with the words "max . height " or " minimuminsertion " .



To avoid damage to either the seat post the frame or possibly the rider . the minimum insertion mark must be inside the frame.



Lubrication

Remove the seat post from the frame and wipe off any grease , rust or dirt. Then apply a thin film of new grease to the part that will be inserted into the frame . Re-insert , adjust and tighten the seat post in the frame .

Adjustment

As mentioned in Part 2, the seat can be adjusted in height, angle and distance from the handlebars to suit the individual rider.

Seat angle is a matter of personal preference but the most comfortable position will usually be found when the top of the seat is almost parallel to the ground, or slightly raised at the front.

The seat can also be adjusted by sliding it forward or back along the mounting rails to obtain the most comfortable reach to the handlebars.

When sitting, position the seat post into the clamp under the seat and place it in the frame without tightening. Adjust it to the desired angle and position and tighten the clamping mechanism.

There are two types of seat clamps commonly in use. The most common employs a steel clamp with hexagonal nuts on either side to tighten. The other type, known as a micro-adjustable clamp, uses a single vertically mounted Allen head fixing bolt to tighten. After fixing the seat to the desired position on the post, adjust the height to the required level and tighten the binder bolt.

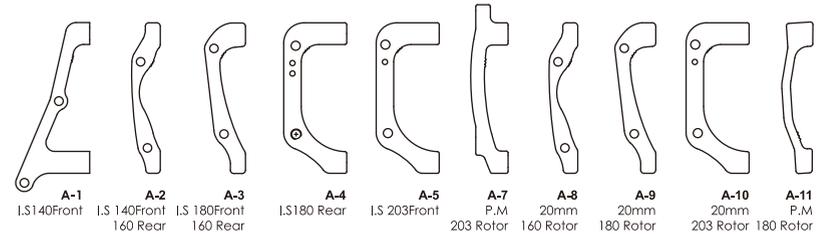
Note that the type of binder bolt may be either a hexagonal bolt or an Allen head bolt or quick release mechanism. The operation of a seat post quick release mechanism is the same as for quick release hubs.

Test the security by grasping the seat and trying to turn it sideways. If it moves, you will need to further tighten the binder bolt.

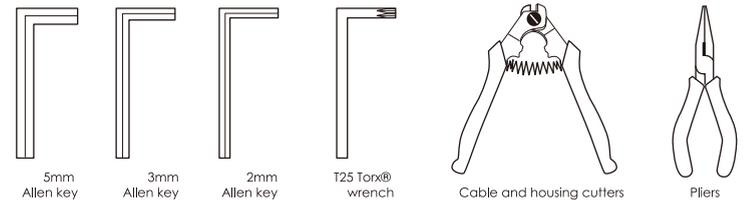
NOTE: Remember that the minimum insertion mark must be inside the frame assembly.

7.5 Disc Brakes-Tektro

ADAPTER INSTRUCCION CHART



TOOLS AND EQUIPMENT REQUIRED



INSTALLATION & ADJUSTMENT

2a

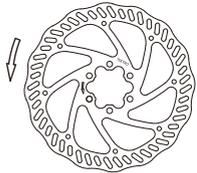
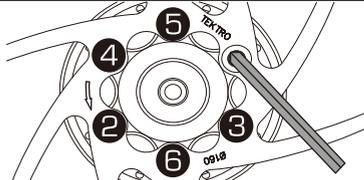


Fig.2a Rotor must rotate same direction as wheel set



Tight rotor screw by 25 Torx® wrench

2b

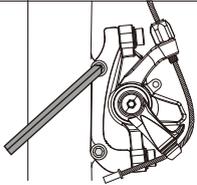


Fig.2b Adapter assembly

2c

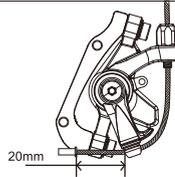


Fig.2c Cable end can not be over then 20mm

3a

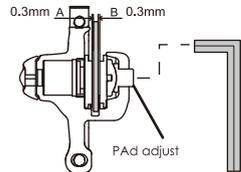
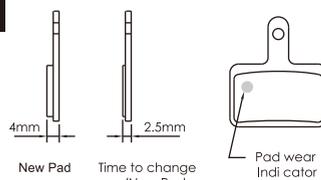


Fig.3a 0.3mm clearance between pad & rotor

3b



3c

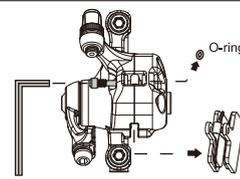


Fig.3c For Aquila / Lyra / Aries

3d

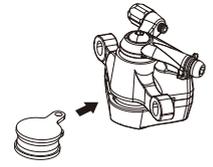


Fig.3d For Novela / Io

SECTION 1 GENERAL WARNING & CAUTIONS

Congratulations and thank you for your purchase of a Tektro mechanical disc brake. Mechanical disc brakes offer several advantages over traditional rim brakes better braking in wet, muddy or other adverse conditions, less braking power fade over extended downhill braking and the ability to continue braking even if your rim becomes bent or distorted.

Tektro mechanical disc brakes offer the following design features:

→ Quick and easy installation and adjustment of the caliper via Tektro's Automatic Caliper Centering.

→ Floating plates that ensure the pads automatically and consistently adjust to the rotor angle.

→ Pads with wear indicators.

→ Friction reducing ball & ramp actuation system.

→ Operated by standard linear pull (V-type) brakes: Model name Aquila / Novela / Aries.

→ Operated by caliper or canti brakes lever pull : Model name Lyra / Mira.

→ Rotor designed to maximize both strength and heat dissipation.

To gain full advantage of all the features of your Tektro disc brake, and to ensure safe, trouble-free riding, please read this manual thoroughly before use.

GENERAL WARNING & CAUTIONS

- Tekro MTB mechanical disc brakes are designed for use with linear pull (V-type) brake levers. Brake levers pulling less than 24 mm of cable, should not be used with Tekro mechanical disc brakes.
- Tekro Cyclocross mechanical disc brakes are designed for use with caliper or canti brake lever pull.

WARNING -

- Disc brake pads, caliper and rotor get extremely hot when used. Serious injury could result from contact with a hot brake. Care should be taken not to touch the caliper, rotor or pads while the disc brake is hot. Be sure to allow the brake to cool before trying to service it in any way.
- Read instructions thoroughly before attempting any work on a Tekro mechanical disc brake. If you have any doubts about any part of the service / operation / maintenance of a Tekro mechanical disc brake, you should seek the advice of a Tekro Service center or other qualified mechanic.
- Tekro mechanical disc brakes offer a significant increase in braking performance. Test your disc brake gradually on a flat surface until you become accustomed to the braking power. If you lend your bike to another person, make sure that they are also properly accustomed to the braking power before riding.

CAUTION -

Pads and rotor must be kept clean and free from oil/grease based contamination. If the pads become contaminated they must be discarded and replaced with new ones. A contaminated rotor should be cleaned with a detergent solution, rinsed thoroughly and dried.

NOTE - Tekro recommends the use of compression less or Kevlar® cable housing to obtain optimum performance from mechanical disc brakes.

SECTION 2 INSTALLATION & ADJUSTMENT

The caliper and rotor for the front and rear of the bike are the same. The only difference between front and rear disc brakes is which adapter should be used to mount the caliper to the bike. The adapter for the front fork is marked with an "F" and is designed to fit forks with international standard disc brake mounts. The rear adapter is marked with an "R" and is designed to fit international standard mounts. These adapters are an integral part of Tekro disc brakes. They allow the setup of the disc brake caliper to be relatively simple.

■ Mounting the rotor to the hub (See 2a)

(1) Remove the wheel from the bike. Attach the rotor to the hub with the supplied Torx® bolts and tighten with a T25 Torx® wrench. Final tightening torque: 2-4 Nm.

(2) Replace the wheel onto the bike, according to manufacturers' instructions.

Note: The rotor must be installed with the 'rotation' arrows pointing in the same direction as the forward rotation of the wheel.

■ Mounting the adapter and caliper (See 2b)

Note: Although front and rear caliper bodies are the same design, the adapter for the front is marked with an "F" and the adapter for the rear with an "R".

(1) Mount the relevant adapter to the caliper body. Insert 5 mm bolts through the two adapter slots on the body and screw into the holes on the adapter. Do not tighten yet.

(2) Mount the caliper body and adapter to the frame / fork by placing the slot in the caliper body over the rotor. The mounting holes on the adapter should be behind the frame / fork mounting holes (the hub side). Screw and tighten two 5mm Allen bolts into the upper and lower holes in the frame / fork mount. Final tightening torque 6-8 Nm.

(3) Check that the rotor is centered between the disc brake pads, and tighten the two bolts holding the caliper to the adapter. To re-adjust the caliper positioning, loosen these two bolts and slide the caliper over until it is centered on the rotor, then re-tighten the bolts. Final tightening torque 6-8 Nm.

(4) Attach the cable and housing to the brake lever according to the lever manufacturers' instructions. Route the cable along the frame / fork of the bike according to the frame / fork manufacturers' instructions. Insert the cable through the cable adjuster barrel on the caliper.

(5) Making sure that the cable housing is firmly sealed within the cable adjuster barrel, insert the end of the cable through the anchor bolt on the caliper. Take up slack in the cable, then tighten the cable anchor bolt. Final tightening torque 6-8 Nm.

(6) Be sure no more 20mm excess cable beyond anchor bolt. (See 2c)

CAUTION -

Compression less or Kevlar® cable housing MUST be used if optimum braking performance is desired.

SECTION 3 Removing the pads

■ Adjusting the pads and caliper (See3a)

When pads are worn, make sure to adjust both clearances between rotor and pad to be equal in 0.3mm. If adjust only one side will cause braking fail.

- (1) Use 5mm Allen wrench to adjust the stationary caliper adjusting bolt at the back (hub) side of caliper. (A side)
- (2) Adjust cable barrel adjustment for B side.

WARNING -

- Do not only adjust cable tension for compensate pad wear.
- After replace with new pads, check if rotor and pad contact with each other, if so, need to adjust step 1 & 2 again.

■ Pad should be replaced when total thickness is less than 2.5mm (friction material & metal plate (See3b)

■ For Aquila / Lyra / Aries Disc Brake system (See 3c)

(1) Pads and pad holders are held in place by a 3 mm pad retainer bolt on the caliper. To remove the pads and pad holder, unscrew the retainer bolt. Then gently push out the pads and holder this may be easiest to achieve by using the Allen wrench.

(2) Once free of the caliper, the pads may be easily removed from the pad holder.

■ For Novela / Io Disc Brake system (See 3d)

(1) Pads are held in the caliper magnetically. No tools are required to install or remove them. As the left and right pads are the same they may be inserted on either the left or right of the caliper.

(2) Holding the pad end-tab, insert it into the caliper slot with its metal backing towards the piston. Make sure the hole in the metal backing goes over the piston pins. When correctly inserted, the pad will be held in place magnetically. Repeat the procedure for the other pad.

(3) Pads can be removed by grasping the pad end-tab, lifting the pad clear of the piston pin, and then maneuvering it out of the rotor slot in the caliper body.

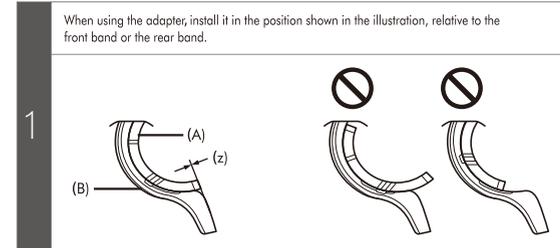
CAUTION -

The pads and rotor must be kept clean and free from oil or grease-based contamination. If the pads become contaminated you must discard them and replace them with a new set. A contaminated rotor should be cleaned with a detergent solution, rinsed thoroughly and dried. Holding the pad end-tab, insert it into the caliper slot with its metal backing towards the piston.

7.6 Derailleur

Front Derailleur for MTB/Trekking

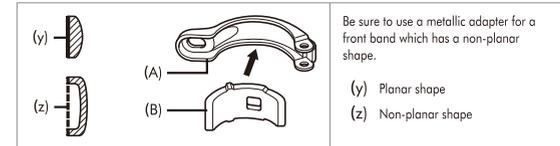
Installation / Band type



(z) Align

(A) Adapter
(B) Front band/Rear band

When using a non-planar front band

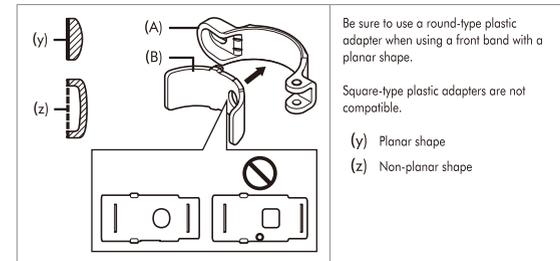


Be sure to use a metallic adapter for a front band which has a non-planar shape.

(y) Planar shape
(z) Non-planar shape

(A) Front band
(B) Metallic adapter

When using a planar front band



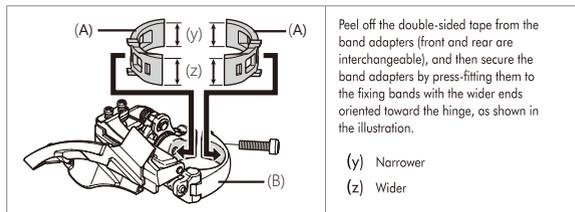
Be sure to use a round-type plastic adapter when using a front band with a planar shape.

Square-type plastic adapters are not compatible.

(y) Planar shape
(z) Non-planar shape

(A) Front band
(B) Round-type plastic adapter

For the SM-AD16/SM-AD17



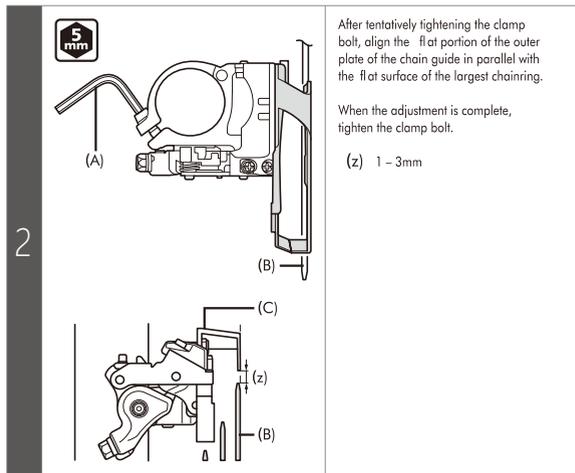
Peel off the double-sided tape from the band adapters (front and rear are interchangeable), and then secure the band adapters by press-fitting them to the fixing bands with the wider ends oriented toward the hinge, as shown in the illustration.

- (y) Narrower
- (z) Wider

- (A) Band adapter
- (B) Fixing band

NOTE

These band adapters are available in two sizes: S size (SM-AD16S/AD17S/28.6mm diameter) and M size (SM-AD16M/AD17M/31.8mm diameter).



After tentatively tightening the clamp bolt, align the flat portion of the outer plate of the chain guide in parallel with the flat surface of the largest chainring.

When the adjustment is complete, tighten the clamp bolt.

- (z) 1 - 3mm

- (A) 5mm hexagon wrench
- (B) Largest chainring
- (C) Chain guide outer plate

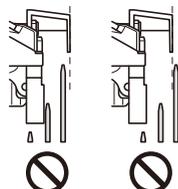
Tightening torque



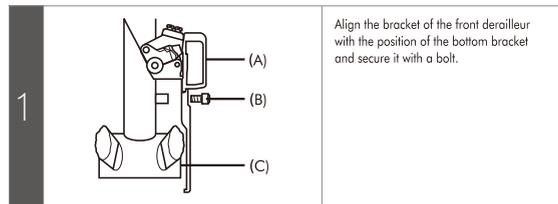
5 - 7 N·m

NOTE

Do not position the chain guide as shown in the below illustrations.



E-Type

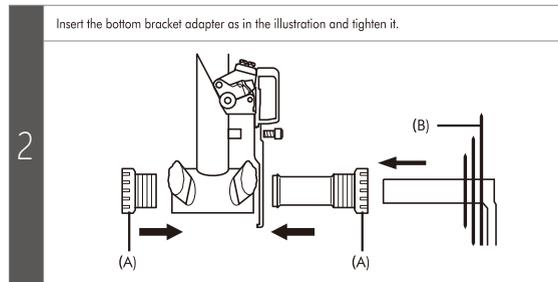


Align the bracket of the front derailleur with the position of the bottom bracket and secure it with a bolt.

- (A) Front derailleur
- (B) Bolt
- (C) Bottom bracket position

Tightening torque

5 - 7 N·m



Insert the bottom bracket adapter as in the illustration and tighten it.

- (A) Adapter
- (B) Front chainwheel

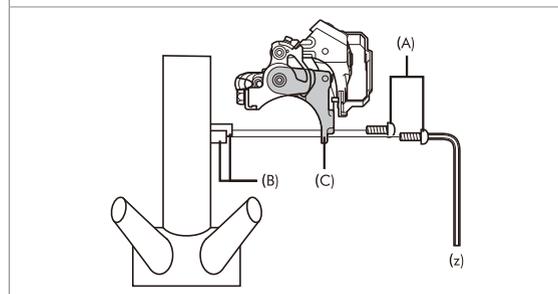
Tightening torque

35 - 50 N·m

E-Type (models without BB plate)

Secure with bottom bracket mount fixing bolts.

Positioning varies depending on number of gear teeth. Refer to the illustration for correct positioning.



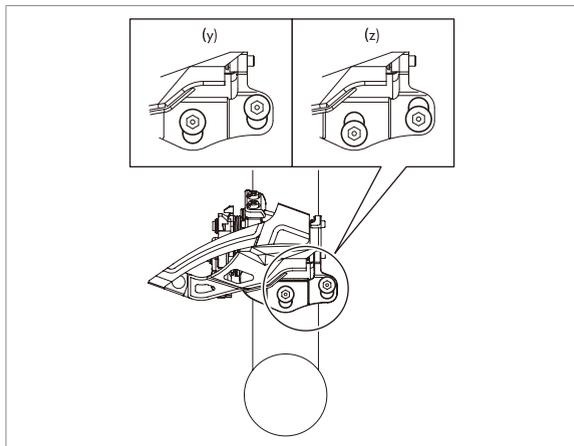
- (z) Example: When using a hexagon wrench

- (A) Bottom bracket mount fixing bolt
- (B) Bottom bracket mount
- (C) Bracket

NOTE

Shimano does not provide the bottom bracket mount fixing bolts.

Securing position



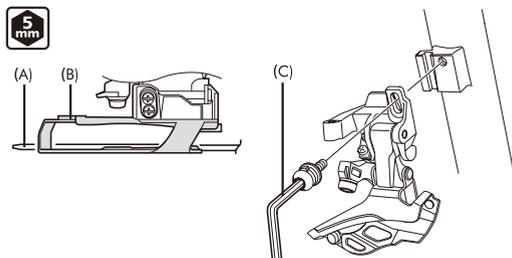
- (y) Double:
Largest chainring 38T
Triple:
Largest chainring 40T
- (z) Double:
Largest chainring 40T
Triple:
Largest chainring 42T

Direct mount type

Adjust the height of the front derailleur.

The flat section of the chain guide outer plate should be directly above and parallel to the largest chainring.

Secure with a hexagon wrench (5mm).



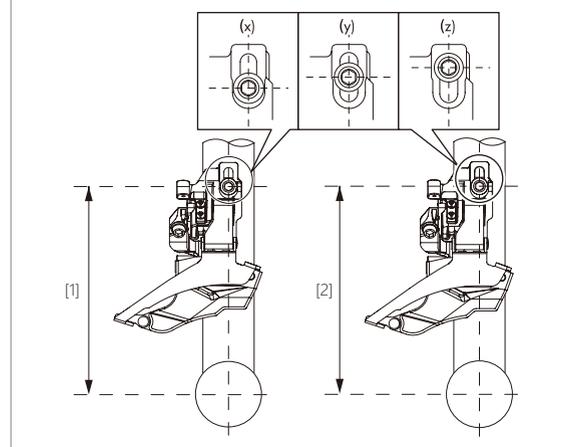
- (A) Chainwheel
(largest chainring)
(B) Chain guide
(C) 5mm hexagon wrench

Tightening torque



5 - 7 N·m

The mounting height varies depending on the position of the base on the frame.



[1] 155.5mm
(From bottom bracket center)

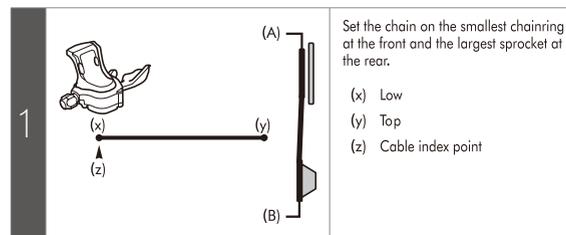
- (x) Double: 42T
(y) Double: 40T
Triple: 42T
(z) Double: 38T

[2] 159.5mm
(From bottom bracket center)

- (x) Double: 44T
(y) Double: 42T
(z) Double: 40T
Triple: 42T

Fixing the cable and adjusting the SIS (front duble)

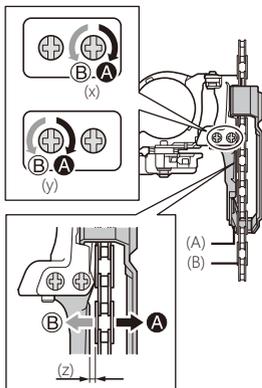
Low adjustment



Set the chain on the smallest chainring at the front and the largest sprocket at the rear.

- (x) Low
(y) Top
(z) Cable index point

- (A) Smallest chainring
(B) Largest sprocket



Set so that the clearance between the chain guide inner plate and the chain is 0 – 0.5mm.

- (x) Top swing
- (y) Down swing
- (z) 0 – 0.5mm

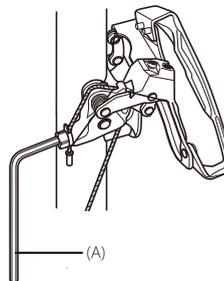
- (A) Chain guide inner plate
- (B) Chain

Securing the cable

Use the shifting lever with a mode converter in x2 mode. To shift from x3 to x2, refer to the maintenance section of the dealer's manual for the shifting lever RAPIDFIRE Plus.

Top Swing (Common to E-type and band type)

Down pull



Use a spanner or a hexagon wrench to tighten the wire mounting bolt.

- (A) 5mm hexagon wrench/
9mm spanner

Tightening torque



5 - 7 N·m

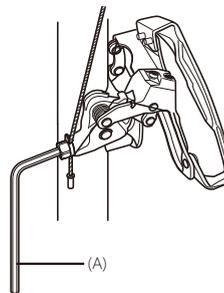


NOTE

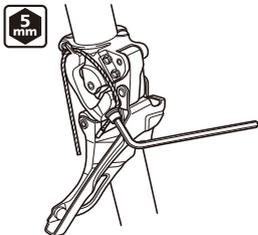
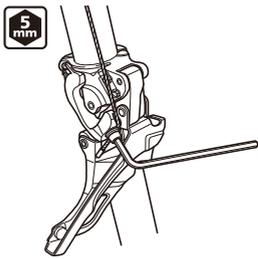
Run the cable through as shown in the illustration.



Top pull



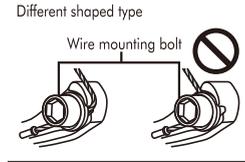
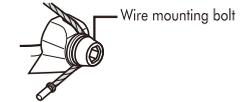
Down swing (Band type)

<p>Down pull</p> 	<p>Use a hexagon wrench to tighten the wire mounting bolt.</p>
<p>Top pull</p> 	<p>Use a hexagon wrench to tighten the wire mounting bolt.</p>

Tightening torque	
	5 - 7 N·m

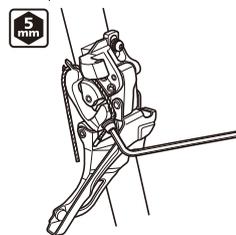
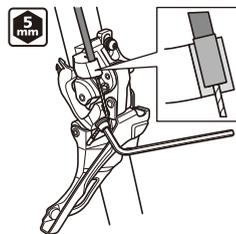
NOTE

Run the cable through as shown in the illustration.



Tightening torque	
	5 - 7 N·m

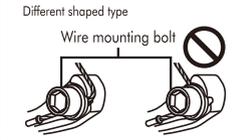
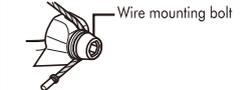
Down swing (Direct mount type)

<p>Down pull</p> 	<p>Use a hexagon wrench to tighten the wire mounting bolt.</p>
<p>Top pull</p> 	<p>Use a hexagon wrench to tighten the wire mounting bolt.</p>

Tightening torque	
	5 - 7 N·m

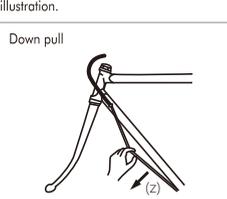
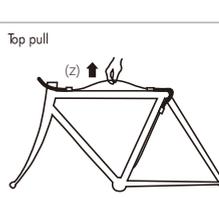
NOTE

Run the cable through as shown in the illustration.



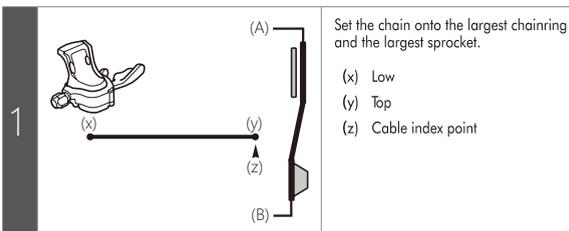
Tightening torque	
	5 - 7 N·m

After taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.

<p>Down pull</p> 	<p>Top pull</p> 
---	--

(z) Pull

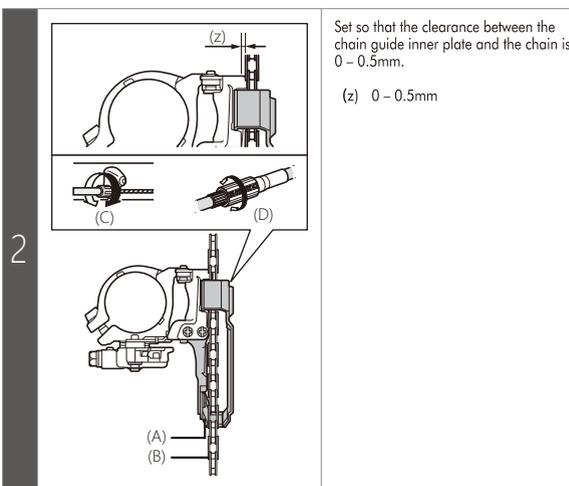
Adjustment of cable tension



Set the chain onto the largest chainering and the largest sprocket.

- (x) Low
- (y) Top
- (z) Cable index point

- (A) Largest chainering
- (B) Largest sprocket

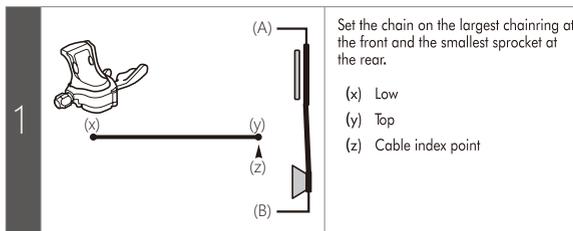


Set so that the clearance between the chain guide inner plate and the chain is 0 – 0.5mm.

- (z) 0 – 0.5mm

- (A) Chain guide inner plate
- (B) Chain
- (C) Cable adjustment barrel
- (D) Cable adjuster

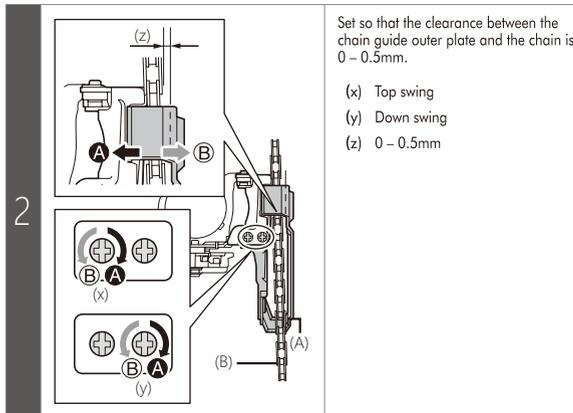
Top adjustment



Set the chain on the largest chainering at the front and the smallest sprocket at the rear.

- (x) Low
- (y) Top
- (z) Cable index point

- (A) Largest chainering
- (B) Smallest sprocket



Set so that the clearance between the chain guide outer plate and the chain is 0 – 0.5mm.

- (x) Top swing
- (y) Down swing
- (z) 0 – 0.5mm

- (A) Chain guide outer plate
- (B) Chain

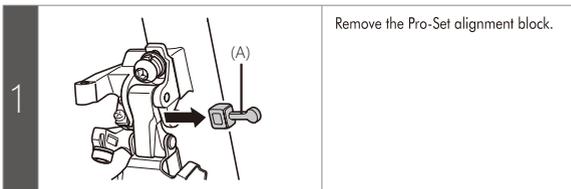
Troubleshooting chart

After low adjustment, fixing the cable, cable tension adjustment and top adjustment, operate the shifting lever to check the shifting. (This also applies if shifting becomes difficult during use.)

Turn the bolt by 1/8th turn for each adjustment.

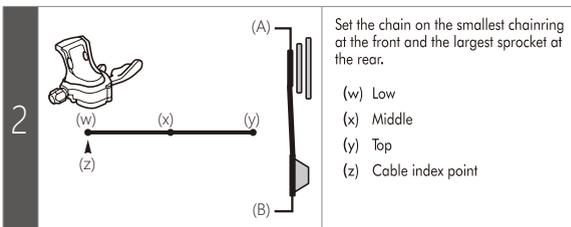
If the chain falls to the crank side.	Turn the top adjustment bolt clockwise.
If shifting is difficult from the smallest chainering to the largest chainering.	Tighten the cable. If this does not improve the situation, turn the top adjustment bolt counterclockwise.
If shifting is difficult from the largest chainering to the smallest chainering.	Turn the low adjustment bolt counterclockwise.
If the chain falls to the bottom bracket side.	Turn the low adjustment bolt clockwise.

Low adjustment



Remove the Pro-Set alignment block.

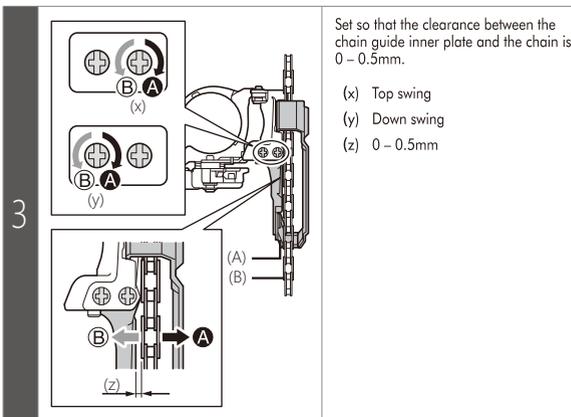
(A) Pro-Set alignment block



Set the chain on the smallest chainring at the front and the largest sprocket at the rear.

(w) Low
(x) Middle
(y) Top
(z) Cable index point

(A) Smallest chainring
(B) Largest sprocket



Set so that the clearance between the chain guide inner plate and the chain is 0 – 0.5mm.

(x) Top swing
(y) Down swing
(z) 0 – 0.5mm

(A) Chain guide inner plate
(B) Chain

Adjustment of the cable tension

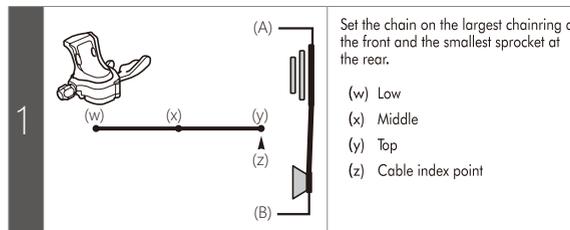
Use the shifting lever with a mode converter in X3 mode. To shift from X2 to X3, refer to the maintenance section of the dealer's manual for the shifting lever Rapidfire Plus



TECH TIPS

The cable can be secured on each FD type in the same way as the double. Refer to Fixing the cable and adjusting the SIS (Front double).

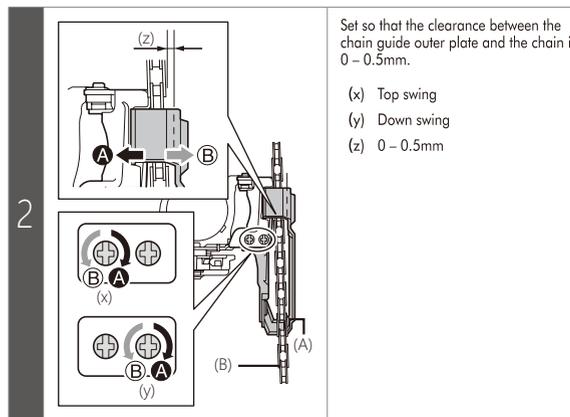
Top adjustment



Set the chain on the largest chainring at the front and the smallest sprocket at the rear.

(w) Low
(x) Middle
(y) Top
(z) Cable index point

(A) Largest chainring
(B) Smallest sprocket



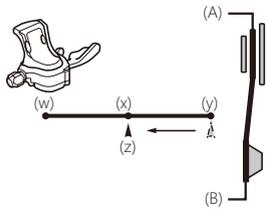
Set so that the clearance between the chain guide outer plate and the chain is 0 – 0.5mm.

(x) Top swing
(y) Down swing
(z) 0 – 0.5mm

(A) Chain guide outer plate
(B) Chain

Adjustment of the cable tension

1



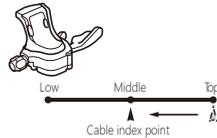
Set the chain onto the middle chainring and the largest sprocket.

- (w) Low
- (x) Middle
- (y) Top
- (z) Cable index point

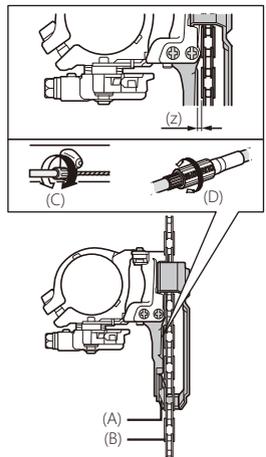
- (A) Middle chainring
- (B) Largest sprocket

NOTE

Adjust the lever after operating it from top to middle, not low to middle.



2



Set so that the clearance between the chain guide inner plate and the chain is 0 – 0.5mm.

- (z) 0 – 0.5mm

- (A) Chain guide inner plate
- (B) Chain
- (C) Cable adjustment barrel
- (D) Cable adjuster

Troubleshooting chart

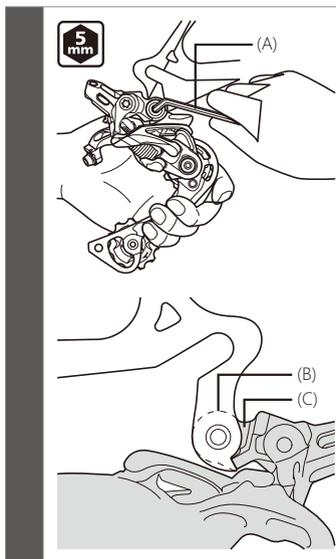
After low adjustment, fixing the cable, cable tension adjustment and top adjustment, operate the shifting lever to check the shifting. (This also applies if shifting becomes difficult during use.)

Turn the bolt by 1/8th turn for each adjustment.

If the chain falls to the crank side.	Turn the top adjustment bolt clockwise.
If shifting is difficult from the middle chainring to the largest chainring.	Tighten the cable. If this does not improve the situation, turn the top adjustment bolt counterclockwise.
If shifting is difficult from the largest chainring to the middle chainring.	Loosen the cable.
If the chain falls to the bottom bracket side.	Turn the low adjustment bolt clockwise.
If the middle chainring is skipped when shifting from the largest chainring.	Tighten the cable.
If shifting is difficult from the middle chainring to the smallest chainring.	Turn the low adjustment bolt counterclockwise.

Installation of the rear derailleur

Standard type



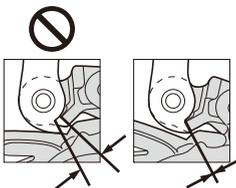
Install the rear derailleur.

- (A) 5mm hexagon wrench
- (B) Fork end
- (C) Bracket

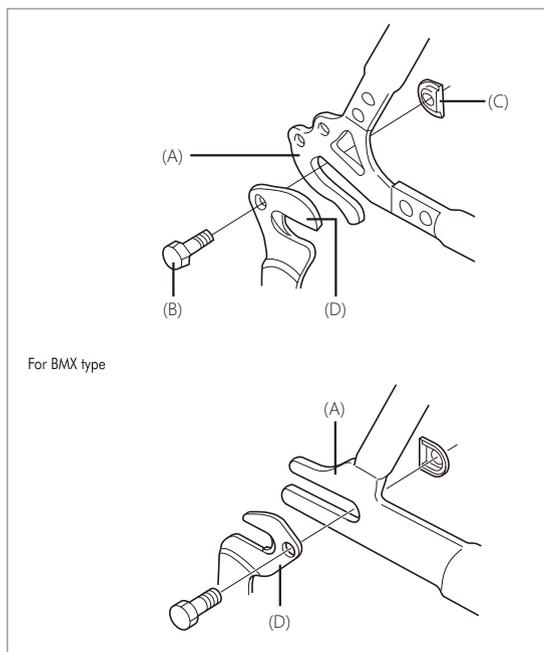
Tightening torque	
	8 - 10 N·m

NOTE

Periodically check that there is no gap between the fork end and the bracket as shown in the illustration. If there is a gap between these two parts, problems with gear shifting performance may occur.



Bracket type



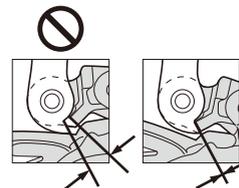
For BMX type

- (A) Fork end
- (B) Bracket bolt
- (C) Bracket nut
- (D) Bracket

Tightening torque	
3 - 4 N·m	

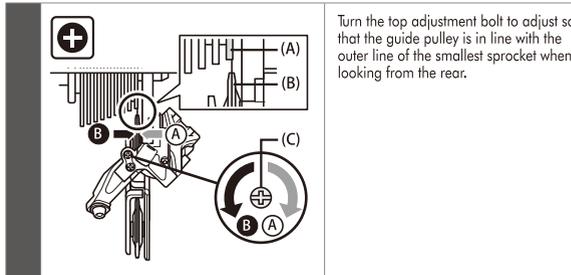
NOTE

Periodically check that there is no gap between the fork end and the bracket as shown in the illustration. If there is a gap between these two parts, problems with gear shifting performance may occur.



Stroke adjustment

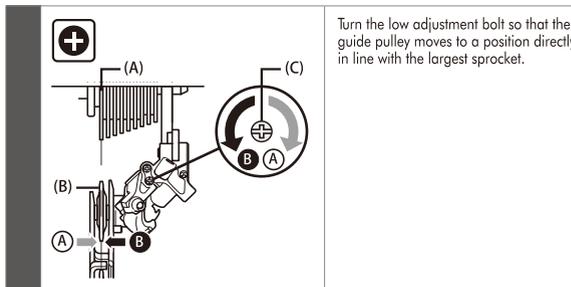
Top adjustment



Turn the top adjustment bolt to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear.

- (A) Outer line of smallest sprocket
- (B) Guide pulley
- (C) Top adjustment bolt

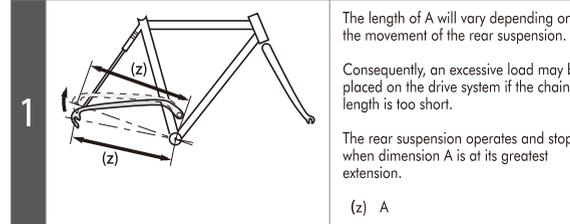
Low adjustment



Turn the low adjustment bolt so that the guide pulley moves to a position directly in line with the largest sprocket.

- (A) Largest sprocket
- (B) Guide pulley
- (C) Low adjustment bolt

Chain length

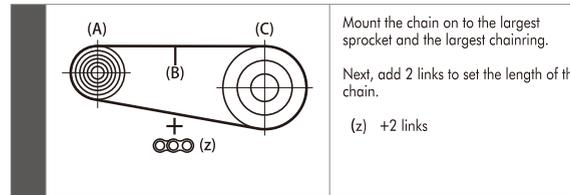


The length of A will vary depending on the movement of the rear suspension.

Consequently, an excessive load may be placed on the drive system if the chain length is too short.

The rear suspension operates and stops when dimension A is at its greatest extension.

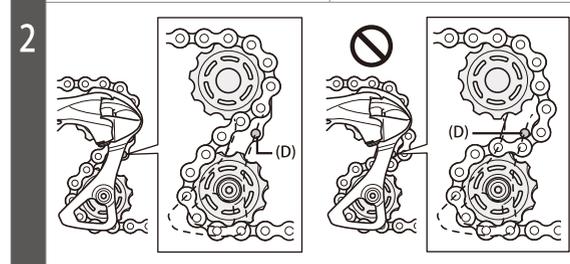
(z) A



Mount the chain on to the largest sprocket and the largest chainring.

Next, add 2 links to set the length of the chain.

(z) +2 links



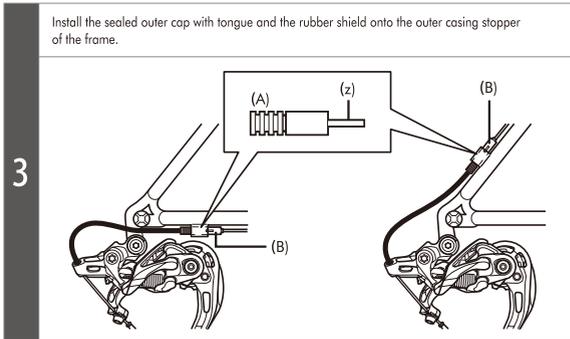
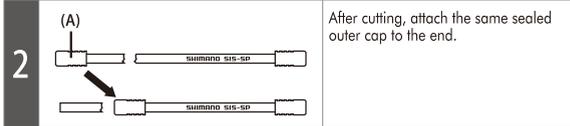
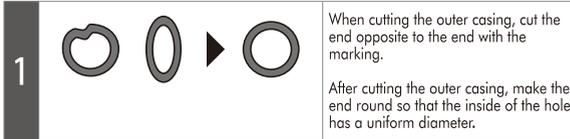
- (A) Largest sprocket
- (B) Chain
- (C) Largest chainring
- (D) Pin/plate for preventing chain derailment

NOTE

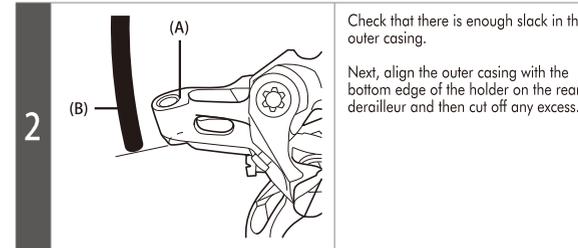
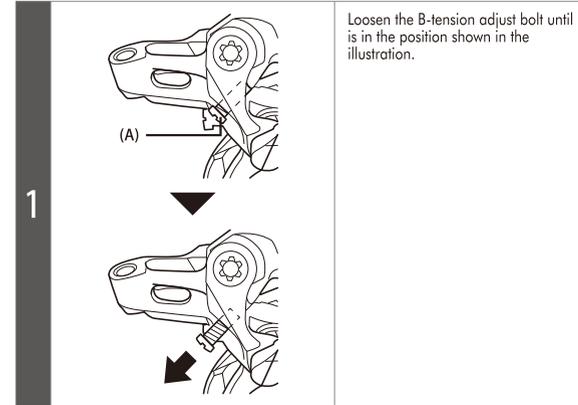
- If there is a lot of movement in the rear suspension, the slack in the chain may not be taken up properly when the chain is on the smallest chainring and smallest sprocket.
- The rear derailleur plate assembly is equipped with a pin or plate that prevents the chain from derailing. When passing the chain through the rear derailleur, pass it to the rear derailleur body from the side of the pin/plate for preventing chain derailment as shown in the illustration. If the chain is not passed through the correct position, damage may be caused to the chain or rear derailleur.

Securing the cable

Cutting the outer casing

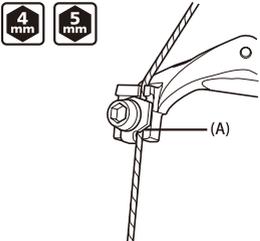


Outer casing length for SHADOW RD



Connecting and securing of the cable

1

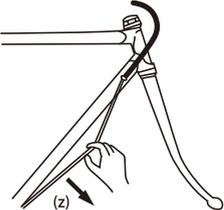


Connect the inner cable to the rear derailleur.

(A) Groove

(z)

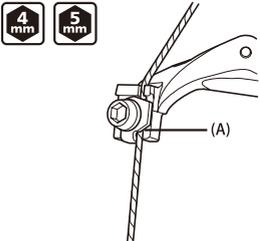
2



Remove the initial slack from the cable as shown in the illustration.

(z) Pull

3



Reconnect the inner cable to the rear derailleur.

(A) Groove

(z)

Tightening torque

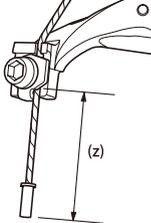
4 mm
5 mm

6 - 7 N·m

NOTE

Be sure that the cable is securely in the groove.

4



Set the inner cable so that the margin is approximately 30mm or less.

Install the shift inner cap.

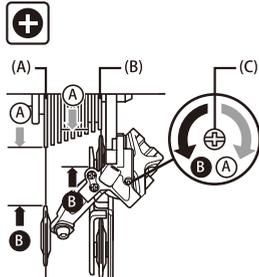
(z) 30mm or less

NOTE

Check that the inner cable does not interfere with the wheel spokes. Stop the wheel from turning while carrying out this step.

Using the B-tension adjust bolt

+



Mount the chain on the smallest chaining and the largest sprocket, and turn the crank arm for shifting.

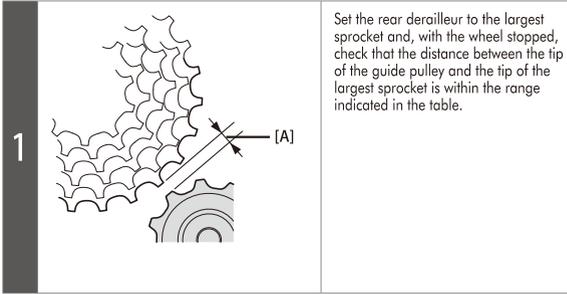
Adjust the B-tension adjust bolt so that the guide pulley does not interfere with the sprocket but do not let the guide pulley come so close to the chain that they come into contact with each other.

Next, set the chain on the smallest sprocket.

Repeat the above to make sure that the pulley does not touch the sprocket.

(A) Largest sprocket
(B) Smallest sprocket
(C) B-tension adjust bolt

Checking the distance between the largest sprocket and the guide pulley (SHADOW RD)



Gear combination	[A]
11-36T	5 – 6mm
11-34T	5 – 6mm
11-32T	9 – 10mm



When the lower gear uses the gear combination of 36T or 34T, set the distance to 5 to 6mm.
When the lower gear uses the gear combination of 32T, set the distance to 9 to 10mm.

NOTE

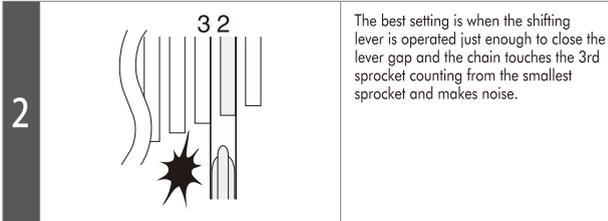
If the number of teeth for the cassette sprocket is changed, try setting it again.

2 Turn the crank arm to shift gears and ensure that the shift is smooth.

SIS adjustment

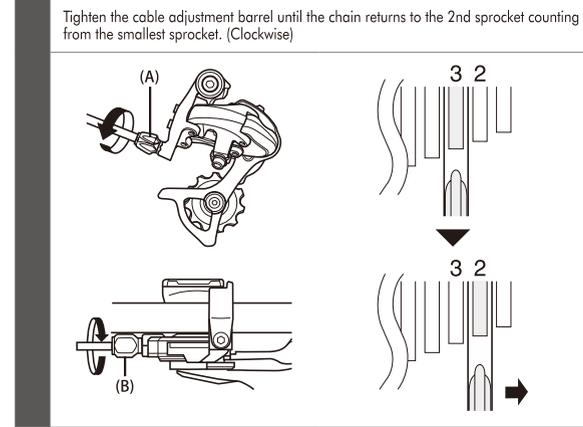
Confirming positioning on gear

1 Operate the shifting lever several times to move the chain to the 2nd sprocket counting from the smallest sprocket.
Then, while operating the lever just enough to close the gap in the lever, turn the crank arm.



Adjusting SIS

When the chain shifts to the 3rd sprocket from the smallest sprocket



When no sound at all is generated

1

Loosen the cable adjustment barrel until the chain touches the 3rd sprocket counting from the smallest sprocket and makes a noise. (Counterclockwise)

(A) Cable adjustment barrel
(B) Adjustment bolt

2

Return the lever to its original position (the position where the lever is at the 2nd sprocket setting counting from the smallest sprocket and it has been released) and then turn the crank arm clockwise.

If the chain is touching the 3rd sprocket counting from the smallest sprocket and making a noise, turn the cable adjustment barrel clockwise slightly to tighten it until the noise stops and the chain runs smoothly.

Stop turning at the point where the noise just stops.

3

Operate lever to change gears, and check that no noise occurs in any of the gear positions.

- (A) Cable adjustment barrel
(B) Adjustment bolt

TECH TIPS

For the best SIS performance, periodically lubricate all power-transmission parts.

Replacing the pulley

Guide pulley

Replace the guide pulley.

(A) Guide pulley
(B) 3mm hexagon wrench

- (A) Guide pulley
(B) 3mm hexagon wrench

Tightening torque	
	2.5 - 5 N·m

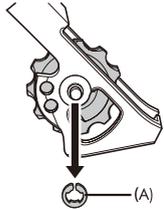
NOTE

Check the arrow direction on the pulley when installing it.



Tension pulley

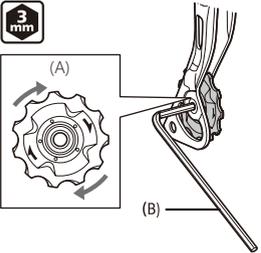
1



Remove the E-ring first.

(A) E-ring

2



Replace the tension pulley.

(A) Tension pulley
(B) 3mm hexagon wrench

Tightening torque	
	2.5 - 5 N·m

NOTE

Check the arrow direction on the pulley when installing it.



8. Display

8.1 LCD-450U

Electrical Parameters

- 24V/36V battery supply
- Rated operating current : 10mA
- Max operating current : 30mA
- Off leakage current < 1uA

Max output current to controller : 50mA

Operating temperature : -20 ~ 70 °C

Storage temperature : -30 ~ 70 °C

Dimensions & Material

- ◆ Product shell is ABS, transparent window is made with high strength Acrylic, the stiffness equals the tempered glass.
- ◆ Dimensions : host/L78 mm*W46.8mm*H12.7mm



Features

Serial communications.

Speed display : AVG SPEED, MAX SPEED, SPEED(Real-time).

Kilometer / Mile : Can be set according to customers' habits.

Smart battery indicator : Provide a reliable battery indicator, it will not fluctuate with the motor on/off.

BMS support: BMS indicator, battery percentage, indicating the mileage indicator (need access to BMS information system support)

Power indicator : Real-time battery power indication

The brightness of the backlight adjustable : 5-sections

9-level PAS : 3-PAS/5-PAS/6-PAS/9-PAS... optional

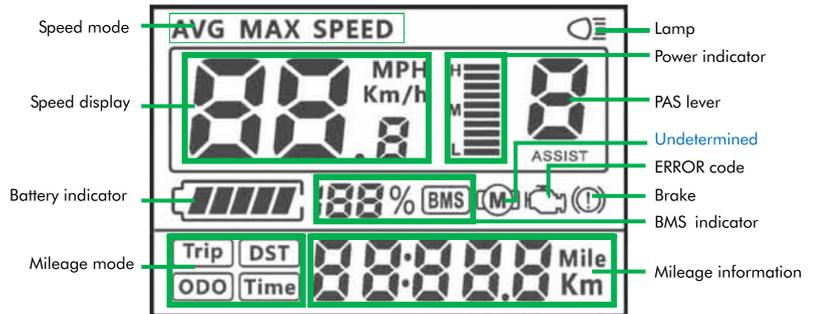
Mileage indicator : Odometer/Trip distance/ Riding time

Error code indicator

Parameter settings : Multiple parameter can be set through computer USB port, including PAS level / Wheel diameter / Voltage / Speed limit...

LCD instructions

The figure of LCD display see below:



Functional Description



◆ Power On/Off

Press and hold **Power** button for 1.5 second can turn on/off the display. The Display can automatically shut down when there is no operate & ride for X minutes (X could be 0-9).

◆ PAS operating

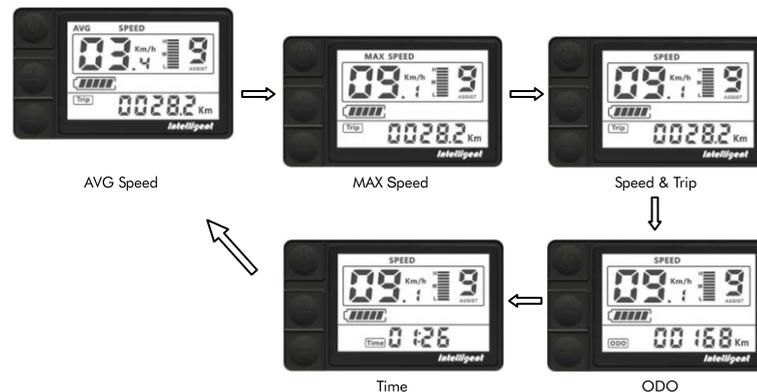
Short press **UP/DOWN** button can change the PAS level. Top PAS level is 9, 0 for neutral. Level quantities can be adjusted according to the customer requirements.



PAS operating

◆ Speed mode switch & Mileage mode switch

Short press **POWER** button can change the speed mode & the mileage mode, Speed -> AVG Speed -> MAX Speed -> Trip -> ODO -> Time.



Speed mode switch & Mileage mode switch

*If there is no operation for 5 seconds, display will return Speed (Real-Time) display automatically.

◆ Headlight/backlight On/Off

Press and hold **UP** button for 1 second can turn on/off the headlight/backlight.

The motor does not work when the battery voltage is low, Display still can keep the headlight on for a while when E-bike is in riding.



◆ 6km walk

Press and hold **DOWN** button for 2 seconds can get into walk mode, out of the mode when release the button.



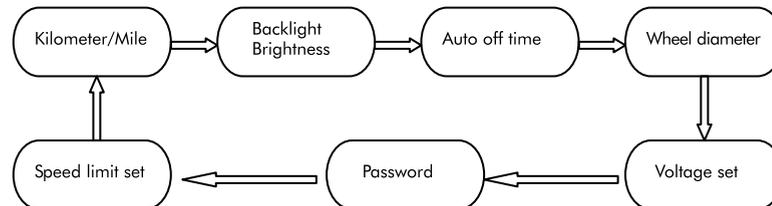
◆ Data cleanup

Press and hold **UP** & **DOWN** buttons together for 1 second can reset several temporary data, temporary data include AVG Speed / MAX Speed / Trip / Time .

Parameter setting

Double press **POWER** button (press interval less than 0.3 second) can get into parameter setting state, the parameter twinkles. Short press **UP/DOWN** buttons to change the parameter value, short press **POWER** button can switch to the next parameter. Double press **POWER** button (press interval less than 0.3 second) can quit from the parameter setting state. The display will automatically quit the parameter setting state when there is no operation for 10 seconds.

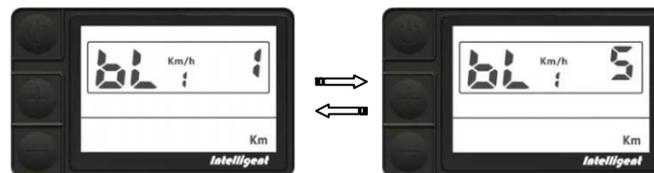
The order of parameters is as follows.



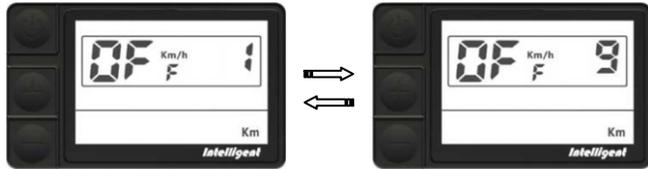
- ◆ Kilometer / Mile : The location of speed displays symbol S7, press **UP/DOWN** button rotate display the symbol km/h / MPH (Km / Mile)



- ◆ Backlight brightness : The location of speed displays symbol **bl1**, press **UP/DOWN** button display symbol 1~5 to change the brightness of the backlight.



- ◆ Auto off time : The location of speed displays symbol off, press up/down button to change the value from 1 to 9, the number represent delay time (minutes) before display shutdown automatically, default value is 5 minutes



- Wheel diameter : The location of speed displays symbol Wd, press UP/DOWN button rotate display the symbol 16/18/20/22/24/26/700C/28/29, value represents the diameter of the wheel (inch). Wrong value for wheel diameter will cause speed&mileage abnormal.



- Voltage set : The location of speed displays symbol bU0, press UP/DOWN button rotate display the symbol 24V/36V/UbE, UbE means user-defined voltage setting, this parameter can be set through computer.



short press POWER button to switch the password item, password is 4 digits, the default password is "1919". Press POWER button when password adjustment is completed. Display will return to the Voltage set item if the password is incorrect. Correct password will enter the Speed limit set item.



- Speed limit set : The location of speed displays symbol SPL, the location of mileage displays speed limit value, the default value is 25km/h. Press UP/DOWN buttons to modify the value, the value can be set from 10 to 45km/h. Press POWER button to confirm when you finish the adjustment.



The maximum speed is restrict by the motor and controller, probably couldn't reach the setting value.

Error Code define

450U meter can give warning message when E-bike exist error, LCD display  icon and the error code in speed position, error code is from 01 E~FF E, the definition see the table below.

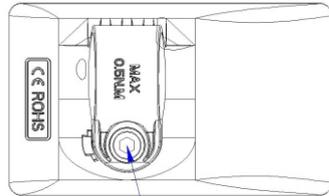
Error Code Error description Handle

01	Communication Error	Check the cable connection
02	Controller protection	Check three-phase power line.
03	three-phase power error	Check three-phase power line connection
04	Battery low	Charge the battery
05	Brake error	Check the brake connection.
06	Turn error	Check turn to connect.
07	Hall error	Check the hall connection
08	99Reserved	Please contact the manufacturer for error definitions



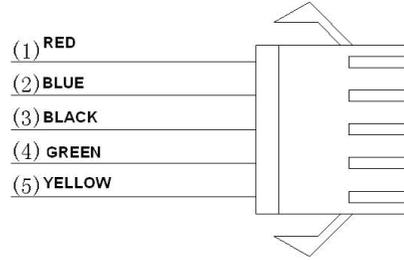
Assembly instructions

Please pay attention to the screw's torque value, damaged caused by excessive torque is not within the scope of the warranty.



M4*12
MAX=0.50 N.M

Output wire instructions



1. Red wire : Anode(24v/36v)
2. Blue wire : Power cord to the controller
3. Black wire : GND
4. Green wire : RxD (controller -> display)
5. Yellow wire : TxD (display -> controller)

PAS level instructions

PAS level can be customized, the highest level is 9, common used PAS level see the table below:

3 level	5 level	9 level	
0		0	No power assist
	1	1	
	2		
1	2	3	
	4		
	3	5	
2		6	
	4	7	
		8	
3	5	9	

Certification

CE / IP65 (water proof) / ROHS.

8.2 LCD-W108

Material & color

W108 made of ABS is able to work well under -20°C to 60°C. Available color: Black and white.

Picture and size (Unit: mm)



Function & button

Function

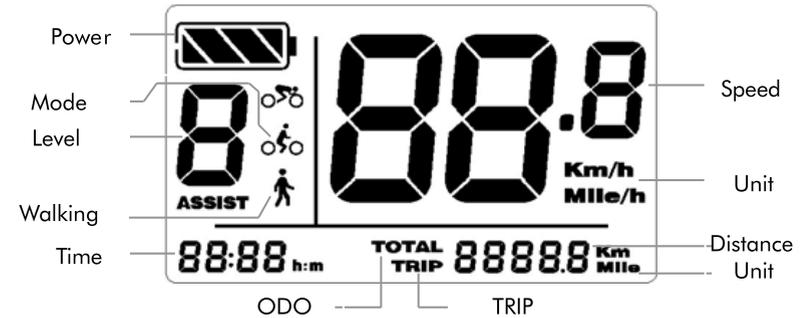
W108 gets many functions for your enjoying riding.

Show context:

- ◆ Capacity
- ◆ Speed (Speed/ MAX/AVG)
- ◆ Distance (TRIP/ TOLTAL)
- ◆ Time

- ◆ Assist walking
- ◆ Backlight
- ◆ Error code
- ◆ Levels setting

Interface



Button

W108 gets three buttons:



Attention:

Don't plug in/out this display when power on.



Avoid collision.



Keep the membrane for waterproof performance.



Don't abuse parameters resetting, in case out of working.



Call service if display out of working

Installation

Install display on handlebar and adjust it's location. Plug it into controller when power off.

ON/OFF

Long press Mode to start display. Long press **M** again to switch off.

Display off automatically after no any operation on vehicle for ten munites (default).

Walking assist

Long press (-), to start assist walking.  highlights on scree. Vehicle goes at 6km/h.

Only in case of pushing, can this function be used. Please don't abuse when riding.

Backlight

Long pree (+) to switch on backlight on scree, and front light on as well if front light available. Long press (+) again to switch it off.

Note: Automatical backlight is available if controller gets this function.

Backlight & front light on automatically according to the lightness outside if controller gets light sensor inside. Automatical function off when manual operation on.

Level

Press (+) or (-) to change the levels. Default range 0 - 3,



0 no output, 3 max output. Default level 1 when switch on.

Capacity

Four sections highlights when battery is full.

Percentage of capacity for sections:



Frame flashes at 1 Hz when low power.

Distance

Press **M** to shift TRIP and TOTAL.

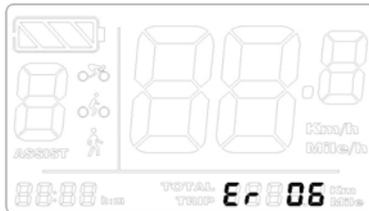


TRIP clearance

Power on, long press **M** and (-) to clear TRIP distance.

Error code

When something goes wrong with system, error code will flash on scree. Check details on attached list.



Vehicle stops working in case of any error. 

Only when error is gone, can vehicle work again.

Setting

Preparation

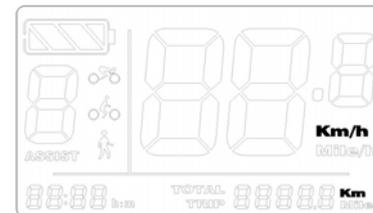
Makes sure good connection then power on.

Setting

Long press **M** to start display. Long pree press (+) and (-) to setting mode.

Unit

Press (+) to change unit Km or Mile.



Press **M** to save and skip to speed setting.

Speed limit

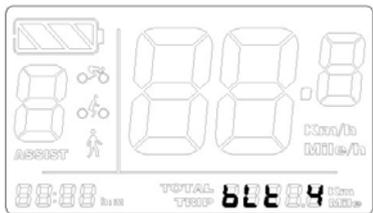
Limit range from 15Km/h to 40Km/h. Press press (+) or (-) to change the limit.



Press **M** to save and skip to backlight setting.

Backlight

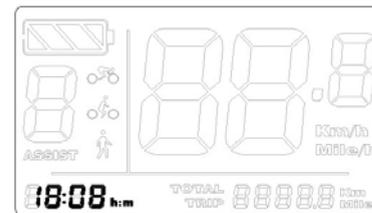
Press press (+) or (-) to change the brightness, range from 1 to 8.



Press **M** to save and skip to time setting.

Time

Press (+) or (-) to change the hour, then press **M** to minute setting, press (+) or (-) to change the minute.



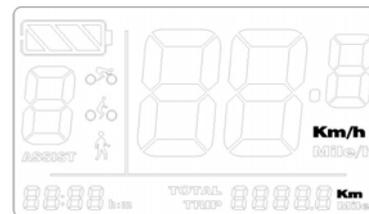
Press **M** to save and exit.



Setting effects after restart.

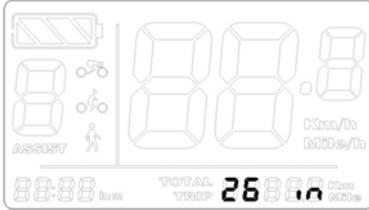
Advanced setting

Long press **M** to start display. Long pree press (+) and (-) to setting mode,



Then press (+) and (-) and no release, meanwhile press **M** eight times, to advanced setting.

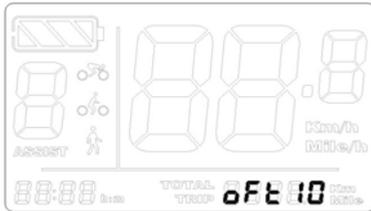
Wheel size setting



Press (+) or (-) to change the wheel size. Range from 8 to 32 inch. Press **M** to save and skip to sleep time interval setting.

Sleep time interval setting

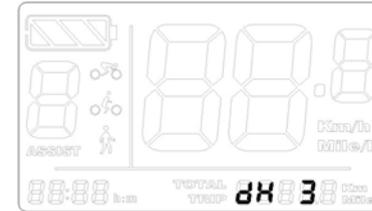
Press (+) or (-) to change the time, range from 0 to 60 minutes.



Display will sleep and cut off power after no operation on system for the setted time. Press **M** to save and skip to level amount setting.

Level amount setting

Press (+) or (-) to change the amount, range from 2 to 9 levels (excluding level 0).



Press **M** to save and exit.



Setting effects after restart.

FAQ

Q: Why can't it be on?

A: Please check power on/off and wires.

Q: What to do to when error?

A: Please check the probable problem according to the error code list. Please call service if user can't remove error.

Warranty

Under warranty:

1\ Warranty term 24 months.

2\ Problems due to quality problem within 24 months.

Beyond warranty:

- 1\ Opened display.
- 2\ Connector gets damaged.
- 3\ Scratch or damage on housing after delivery.
- 4\ Wire gets scratch or broken.
- 5\ Damage result from Irresistible accident such fire or earthquake hazard, and other natural hazard such as thunderstrike.
- 6\ Over warranty.

Attached list:

Error code	Definition
04	Throttle no homing
05	Throttle abnormality
06	Low voltage protection
07	Over voltage protection
08	Hall sensor abnormality
09	Phase line abnormality
10	Controller overheat
11	Temperature sensor in controller abnormality
12	Current sensor abnormality
21	Speed sensor abnormality
22	Communication abnormality in BMS

FAQ

Q: Why the display is not able to start up?

A: Check the connector between display and controller.

Q: How to deal with the error code?

A: Fix it to the maintenance place immediately.

Barcode

The barcode is built up as follows:



KM5S =Name

000001=Sequence No.

12=Year of Production

06=Week of Production

3=Battery Voltage

1=sample (0=mass production)

01=hardware version No.

801=software version No.

Quality assurance and warranty scope

I、Warranty

- 1、Any quality problems in normal case and during guarantee period, our company will be responsible for the warranty.
- 2、The warranty time is 24 months when display out of the factory.

II、Other items

The following items do not belong to our warranty scope.

- 1、It can not be demolished.
- 2、The damage is caused by wrong installation or operation.
- 3、Shell is broken when display is out of the factory.
- 4、Wire is broken.
- 5、The fault or damage is caused by the force majeure (such as fire, earthquake, etc,) or natural disasters like lighting, etc.
- 6、Beyond Warranty period .

Connection layout

Connector line sequence



Display-side Connector

Display-side adapter

Switch wiring

Line sequence table

Line sequence	Color	Function
1	Red (VCC)	+
2	Blue(K)	Lock
3	Black(GND)	-
4	Green(RX)	RX
5	Yellow(TX)	TX



Some wire use the water-proof connector, users are not able to see the inside color.

Version changes

This operating instruction is a general-purpose version (V1.0). Some of the version for the display software will be different from the specification, which should depend on the actual use version.

Attached list 1 : Error code definition

Error Code	Definition
21	Current Abnormality
22	Throttle Abnormality
23	Motor Abnormality
24	Motor Hall Signal Abnormality
25	Brake Abnormality
30	Communication Abnormality

Attached list 2 : Password table

No	OSD	Password	Setting
1		0512	Using parameter setting password(settled)
2		Default 1234	Starting up password
3		2962	Personality setting password(settled)
4		0368	Recovery setting password(settled)

Attached list 3: Personality Parameter setting

No	Setting	Display	Details
1	Battery power		Five battery power value
2	Assistance		Power assist level option
			Assistance proportion

3	Current-limiting	200	Limit current 200 15.0
4	Power assist sensor	PAS	PAS direction 800:88
			PAS sensitivity 500:82
			PAS magnet No 800:82
5	Speed sensor	SPS	Speed sensor magnet No SPS:81
6	Throttle	H2D	Throttle - changing 8HF:98
			Throttle H2:98

Continue list 3 :

No	Items	Display	Setting
7	System setting	595	Time of battery power delay 804:88
			Max speed C/E MAX 888:40

Attached list 4: Power assist table

Level Level Item	1	2	3	4	5	6	7	8	9
0-3/ 1-3	50%	74%	92%	—	—	—	—	—	—
0-5/ 1-5	50%	61%	73%	85%	96%	—	—	—	—
0-7/ 1-7	40%	50%	60%	70%	80%	90%	96%	—	—
0-9/ 1-9	25%	34%	43%	52%	61%	70%	79%	88%	96%

Attached list 5: symbol definition

No	Symbol	Definition
1	SEE	Setting
2	PSD/PP	Password
3	DTY	Power delayed time
4	DEF	Recover default
5	EE	Trip and time to clear
6	BL	Backlight
7	HF	Throttle-changing
8	HW	Throttle power assist walk

9	SL	Speed limit
10	WD	Wheel diameter
11	?	Question mark
12	B	Backward
13	F	Forward
14	Y	Yes
15	N	No

9. Battery

Li-ion battery maintenance

For the proper use , maintenance and storage of this battery , it is crucially important that you read and understand the instructions given in this manual .

Warnings:

- Never short circuit the discharge or charge terminals of the battery .
- Never charge the battery by discharge terminals or discharge the battery by charge terminals . keep the battery away from excessive heat and open flames . never put the battery into water
- Never subject the battery to intense physical shock or severe vibration or impact
- Protect the battery from water or other moisture . protect the discharge and charge terminals of the battery from rain or water logging .
- Keep the battery away from children
- Never disassemble the battery without permission .
- We suggest removing the battery from the load and placing it in a safety environment at the temperature range from 15c to 35c when the battery is not in use over ten days .
- Use only the special charger supplied by our company never use other charger to charge the battery . If you failed to comply with the instructions and warnings described above , you would be responsible for the deed .

General use instructions

1 . Charge :

- Charge temperature range 15-40°C
- Over charging is seemly improving the battery' capacity , but it will be danger and shorting life of the battery .
- The higher the charging end-voltage , the higher the charging current . the longer the charging time . the more harmer the battery receives
- If there is any abnormal situation such as the battery transforms and bloats , or becomes very hot please Stop charging at once .
- Do not connect the battery and the charger to ac for a very long time
- Do not connect the charger with the ac for a long time unless under the condition of charging
- The charging environment should be dry , well-ventilated and far away from fire

There should be no inflammables in 1 . 5 meters around the battery when it is under charging
 Do not charge around inflammable or dangerous things It is better to take out the batteries from containers when charging for abstraction of heat .
 Keep away from children when the charger is working to avoid danger .
 2.Discharge is charge temperature range -20°C -55°C

- Avoid over discharging . when the voltage of per cell is lower than the limit of cut-off voltage , the battery is under over discharging condition . long time of over discharging will shorten the life of the battery

- Never charge more full and discharge more empty will lengthen the battery life
- Avoid large current or it will affect the battery life
- Accelerate slowly when cycling starting . avoid starting at still , avoid sudden accelerating at start Avoid starting at still when running up the slope , it is best to use pedal power when struggling uphill .
- It is best to cycle human-assisting when running up . climbing or heading up
- Speed up slowly or pedal at low temperature
- Avoid flooding the battery by the rain when cycling , which may cause danger
- When the battery is not in use for an extended period of time , remove the battery from the load for storage to avoid self-discharge by load . do not lay up the battery when there is no electricity or low voltage

Storage :

- Storage conditions for the battery circumstance temperature 15-35°C circumstance relative humidit:≤75 % RH . The battery should be kept in storage in a clean dry and ventilated circumstance . it should be avoided to touch with the corrosive substance and should be away from excessive heat and open flames
- The batteries should be kept with 50 % of the capacity . storage time of the battery should not be more than 30 days .
- The capacity of the lithium battery will be decline when storage
- The battery should be charged once every 30 days when storage , every time charged about 2 hours
- The battery should be with fireproofing measures when storage together . there should be safe distance or reproofing material for isolation

Charging the battery



A



B



C

Never let a battery be charged unattended. The battery's autonomy is indicated with the 3 LED lights located on top of the battery, and also on the display unit located on the handlebars. Your battery must be charged in an ambient temperature, on a non-flammable and dry surface, away from any sources of heat, humidity or flammable materials. Also, it must not be covered.

Here are the steps to be followed when charging your battery:

- Step 1 Turn the battery off. The LED lights will be off.
- Step 2 Put the charger into position. (A)
- Step 3 Plug the charger (which is off) into the socket and then insert the charger's plug into the battery, which is also off.
- Step 4 the charger's LED indicators lit up in the following manner:
 - The red and orange LED lights will be on: the battery is being charged.
 - The red LED light stays on and the orange LED light becomes green: the battery is charged; you can unplug the charger. (B)

It takes 5 hours for the battery to be fully charged when using the standard charger that's supplied with your electric bike.

Safety recommendations

Helmet

For safe riding- use of a bicycle helmet.

Tyres

Inspect the wear of your tyres on a regular basis and verify the tyre pressure at least once a month.

Tyre pressure: 40-65 PSI depending on the weight of the user.

Wheel-rims

Please care of the wheel-rims and a clear explanation of any danger of rim-wear.

Brakes

Please check all connections of the Disc Brakes before attempting to ride the bicycle. Secure tightly the 6 bolts that hold the disc to the front wheel hub and the 2 bolts that hold the brake mechanism to the fork. Insert the front wheel into the fork dropouts ensuring that the disc fits into the brake mechanism between the enclosed brake pads.

Secure the front wheel to the bicycle by tightening the quick release mechanism and clamping the lever to the closed position. Please refer to section 6 for further instruction on quick release mechanisms.

Next, attach the cable to the brake lever by inserting the cable end into the cable end holder after the barrel adjuster and lock nut slots have been aligned with the cable end holder. After the cable is secured to the lever, rotate the barrel adjuster and lock nut so the slots no longer line up.

Ensure the cable housing seats appropriately into the end of the barrel adjuster and check for any kinks or damage. Slide the exposed brake cable through the rotating rod/housing stop located on the caliper body and seat the housing all the way into the same stop. Insert the cable into the spring and spring boot.

Next, slide the cable through the cable anchor and pull all the slack out. Secure the cable in place by tightening the bolts that comprise the anchor assembly.

Some disc brakes will have a centering device while others are a free-floating mechanism. If your caliper body is equipped with centering bolts, apply the brake lever after the cable has been connected. While engaging the lever, tighten the centering bolts securely. This will center the caliper body on the disc.

Minor brake adjustment can be made via the barrel cable adjusters which are located on each brake lever. To adjust, squeeze the brake pads against the rim, loosen the lock nut, and turn the adjuster to pull the brake pads closer to, or spread them away from the rim as required. Make sure to inspect the wear of the front brake pads as well as the rear brake blocks. If the brake action remains insufficient, despite your adjustment efforts using the toothed wheel located next to the levers, contact your dealer so that these worn out parts can be replaced.

Important : braking distance increases on humid or slippery ground

Saddle-post

suitable covering and coil springs under the saddle , if a child-seat if fitted to prevent trapping of fingers;



Reflector

please regarding the positioning of reflectors and lamps such that these are not obscured when luggage is attached to the luggage carrier.

Gears

Like the chain, the freewheel must be kept clean and well lubricated. If the chain has become worn and needs replacing, then it is likely that the freewheel will also have become worn and should also be replaced. Take the chain off the freewheel and rotate it with your hand. If you hear a grinding noise or the freewheel stops suddenly after spinning it, it may need adjustment or replacement.

Carrier

Maximum authorised load: 100kg(including the load of carrier 25kg) This luggage carrier is not designed to pull a trailer. Don't install the child-seat on the carrier.

The bicycle may behave differently (particularly with regard to steering and braking) when the luggage carrier is loaded, please attention. Please ensure that any luggage fitted to the luggage carrier is securely fitted in accordance with the manufacturer's instructions and that there are no loose straps that can get caught in any of the wheels. Please distribute luggage evenly between the two sides of the luggage carrier.

Surfaces

Rack

The rack is able to hold a maximum, evenly balanced load of 25kg. Signaling device Your Velosolex is silent. In order to alert others as to your presence, you have an approved signaling device: use it only when absolutely necessary, don't abuse it!

Battery

Cf. Chapter. Battery

WARNING:

As with all mechanical components, the bicycle is subjected to wear and high stresses. Different materials and components may react to wear or stress fatigue in different ways. If the design life of a component has been exceeded, it may suddenly fail possibly causing injuries to the rider. Any form of crack, scratches or change of colouring in highly stressed areas indicate that the life of the component has been reached and it should be replaced .

Maintenance

Caution:

Bike maintenance and repair require specific skills and appropriate tools. Do not repair your bike or change any of its settings if you have the slightest doubt regarding your ability to correctly proceed with such work. Contact your dealer. Any adjustments or repairs that are not properly done can damage the bike and lead to accidents resulting in extensive injuries. Using only genuine replacement parts for safety-critical components.

Cleaning

Always remove the battery when cleaning. Use soapy water or water mixed with a gentle detergent, and then rinse with clean water. Make sure that the controller located behind the battery compartment is not exposed to humidity as it contains electronic components. Do not use a high pressure washer!

Maintenance

Your electric bike is safe for the environment. Used parts must be disposed of in appropriate selective sorting recycling bins. A battery that no longer works must be returned to your dealer so that he may pass it on to a recycling company. Replacing the front and rear light batteries: (It is recommended that you replace them every year)

Front light : Remove the screw from the front case's cover to open it. Remove the light to access the batteries

Rear light: Remove the screw to access the batteries.

Engine:

The engine does not require any sort of maintenance.

Chain :

It is recommended that you lubricate your bike's 6 speed gearwheels and chain on a regular basis using appropriate products (ask your dealer for advice).

Warranty

Information regarding your electric bike's warranty coverage terms is available from your dealer. When your electric bike is delivered, your dealer will also provide you a warranty policy.



FELWEL Electric bicycle

www.feiruiebike.com