

MS4000D

MS4000D-WX-V0

Maintenance Manual



Declaration:

Due to maintenance needs of the vehicle, this manual is the guideline for professional technicians. Repairing the vehicle requires certain mechanical and electrician knowledge, as well as understanding of torque. If the user is in lack of professional knowledge, please send the vehicle to experienced technicians. Please read and fully understand this manual before the maintenance to assure safety of both user and the vehicle. All maintenance of the vehicle should be done by Tromox authorized distributors and dealers. Tromox is not responsible for damage, malfunctions, or performance problem caused by improper repair made by user him /herself, nor any other unprofessional person. Please pay extra attention that this vehicle has lithium battery. Any improper operation may cause serious fire or damage to the circuit. When maintain or repair the vehicle, keep it away from flammable and explosive materials and take necessary fire prevention measures. When the battery has a burning accident, the surrounding power supply must be cut off immediately, and the FE-36 fire extinguisher should be used to extinguish and cool the battery. When it is not available, water-based fire extinguishers are also applicable. Dry powder fire extinguishers must not be applied in this case.

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Safety Operation Issues

1 Anti-crushing: wear protection clothes and shoes during maintenance. To prevent crushing and bumping, Slippers, sandals, and bare feet are not allowed.

2 Anti-electricity: When repairing the vehicle, regardless of whether electrical components are involved, it is recommended to cut off the power of the vehicle to prevent the vehicle from starting accidentally during the repair process and causing accidental injury.

3 Anti-clamping: Since this vehicle is a chain drive vehicle, the sprocket and chain are dangerous during maintenance, which can easily cause serious injuries. During maintenance, power must be cut off. When more than two people are required to cooperate, each action must be directed by one of them to prevent accidental injury.

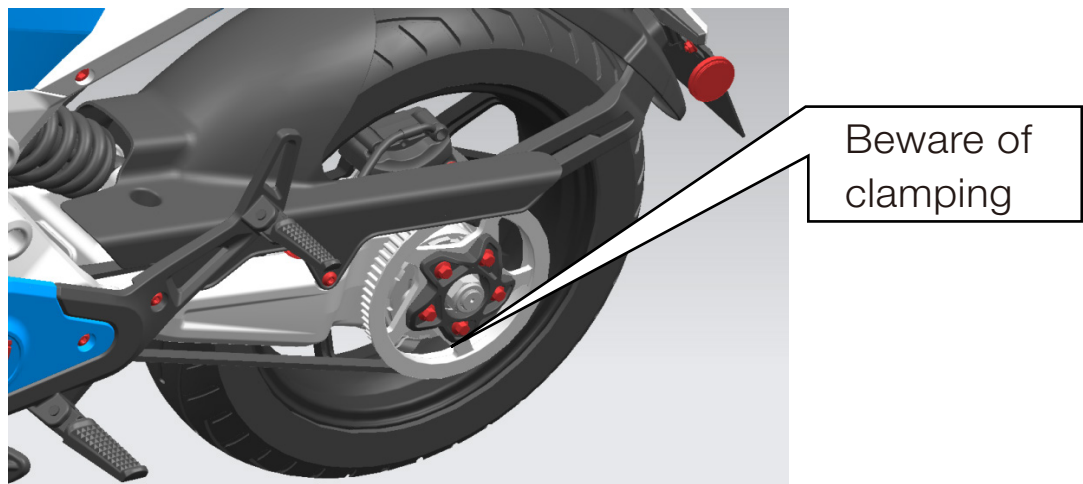


Image1 Dangerous area of sprocket

Safety Operation Issues

4 The identification of the positive and negative poles of the main cable and the methods for preventing errors:



Image2 Identification of the positive and negative poles of the main

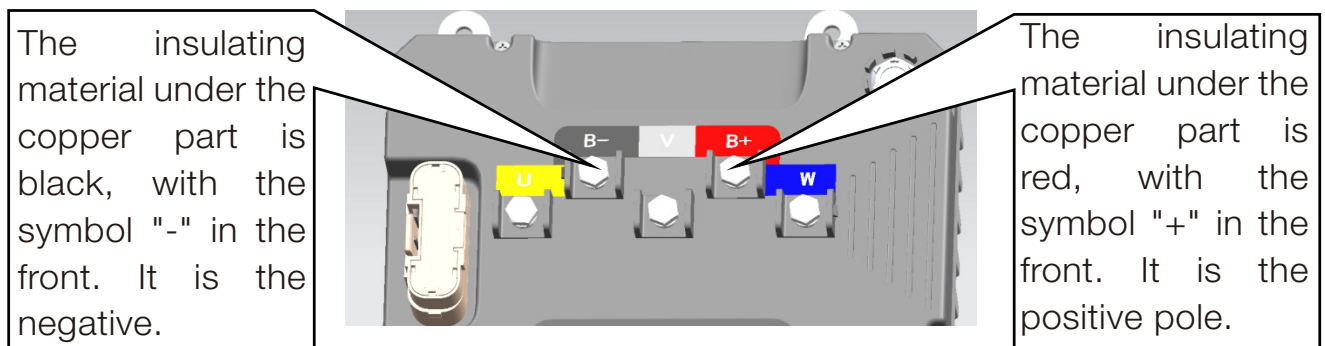


Image 3 Identification of the positive and negative poles of the controller

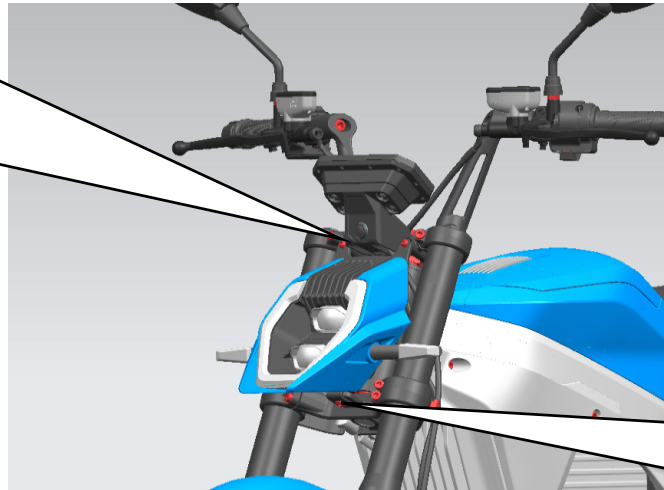
Error prevention method: first identify the positive pole (red end) of the main cable, hold it, and then identify the positive pole (red end) of the controller, and then connect it.

5 Fire prevention: Keep away from flammable and explosive materials during maintenance, and equipped with FE-36 type fire extinguisher. Without this type of fire extinguisher, water-based fire extinguisher is also applicable.

Disassembly and Assembly

1. Partial disassembly of headlight

1. Remove the M6X25 hexagon socket head screws in the headlamp bracket, there are 2pcs in each place on both the left and right side.



2. Remove the M6 x12 bolt on the bottom front cover to disassemble the front headlight.

Image 4: Disassembly the headlight

3. Remove the self-tapping screws ST4.2x13-C-H on the headlight bracket, total 4 pcs. Then the headlight and the headlight bracket can be separated.

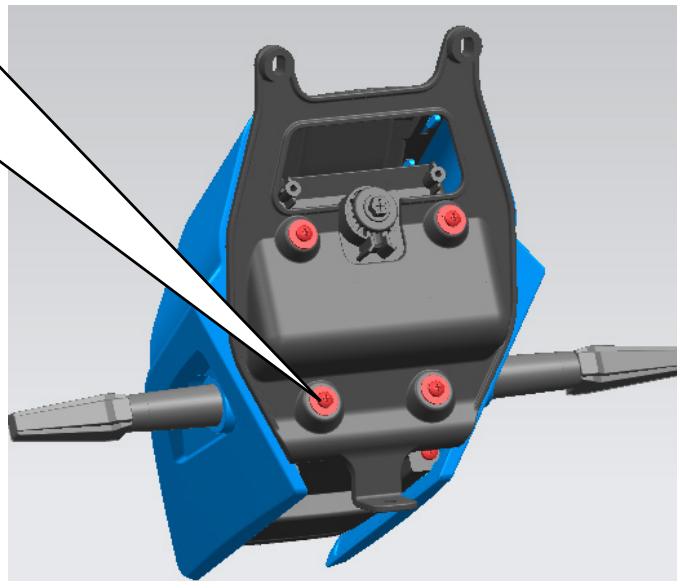


Image 5 Remove the headlight bracket

Disassembly and Assembly

4. Remove the self-tapping screws ST4.2×13-C-H on the headlights, 4 in total. Then the headlights and the side panels of the headlights can be separated.

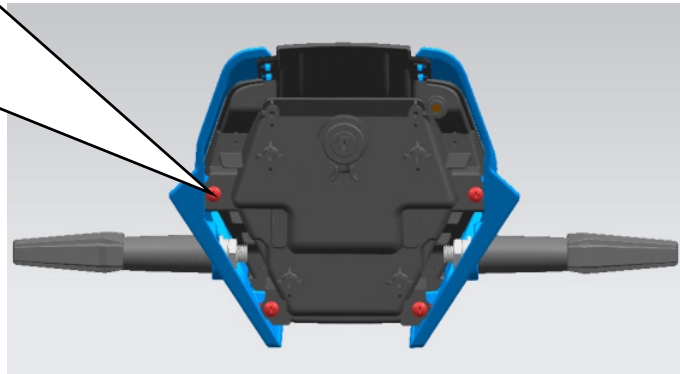
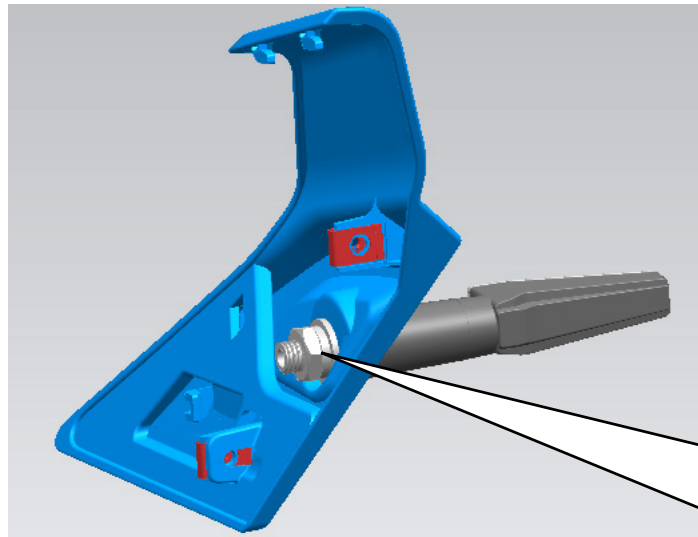


Image 6 Remove the headlight bracket



5. After removing the side plate, turn the nut behind the turn signal to remove the turn signal for replacement.

Image 7 Remove the headlight bracket

Disassembly and Assembly

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon Socket Flat Head Screws	M6X25	2		Black
2.	Socket head cap screws	M6×12	1		
3.	Self-tapping screws	ST4.2×13-C-H	8		Galvanized Army Green

Disassembly and Assembly

2 Disassembly and assembly of the dashboard

1. Remove the M6X25 hexagon socket flat head screws at the bottom of the dashboard seat, 2 in total. Remove the dashboard assembly.



2. Remove the M6X16 hexagon socket flat head screws at the bottom of the dashboard seat, a total of 4 pieces. The dashboard can be removed then.

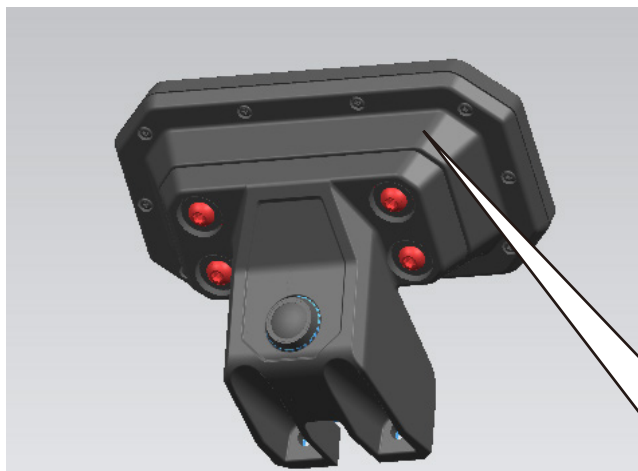
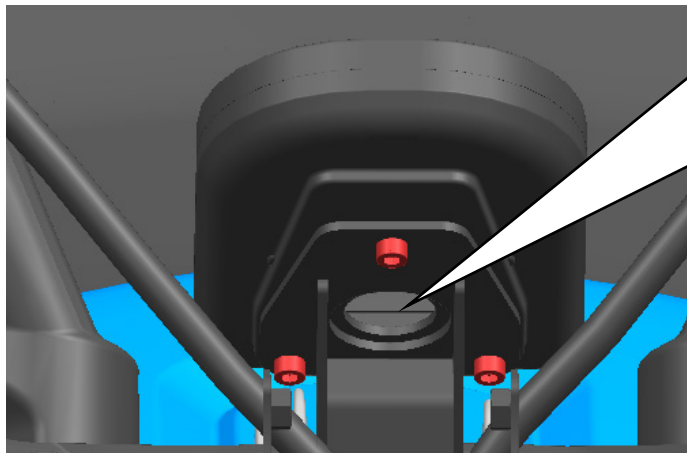
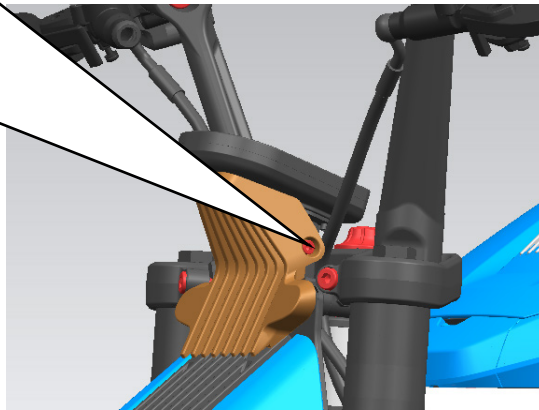


Image 8 Disassemble the TFT screen dashboard

Disassembly and Assembly

Remove the M5X12 hexagon socket flat head screws at the bottom of the dashboard seat, 2 in total. Remove dashboard the instrument kit.



2. Remove the M4X8 hexagon socket flat head screws at the bottom of the dashboard seat, totally 3 pcs. The dashboard can be removed.

Image 9 Disassemble the VA dashboard

Disassembly and Assembly

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon socket flat head screws	M6X25	2		Black (TFT dash-board)
2.	Hexagon socket flat head screws	M6×16	4		Black (TFT dash-board)
3.	Hexagon socket flat head screws	M5X12	2		Black (V A dash-board)
4.	Hexagon socket flat head screws	M4X8	3		V A dash-board

Disassembly and Assembly

3 Steering part Disassembly and Assembly

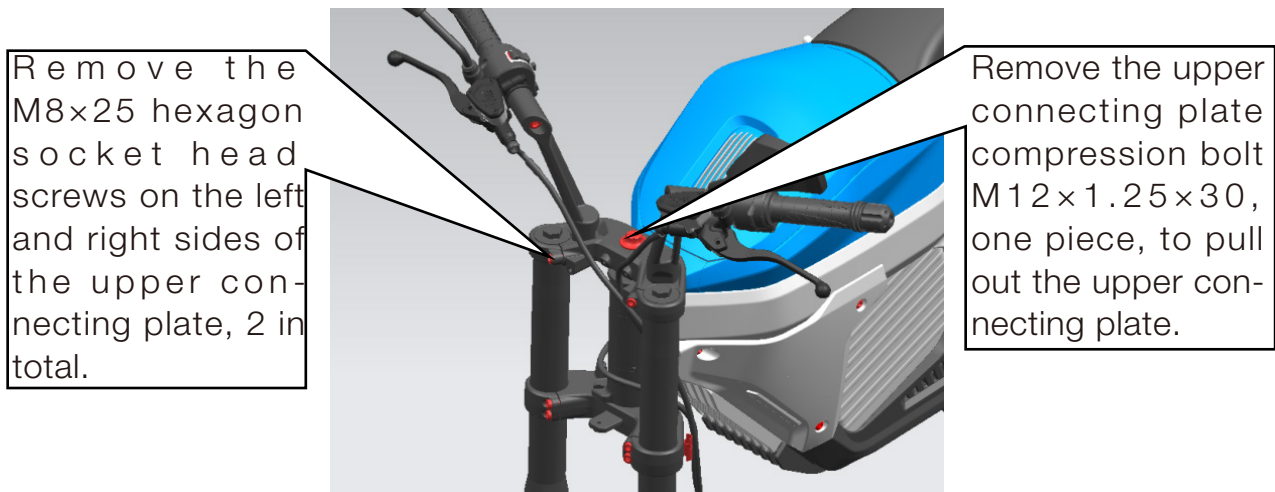


Image 10 Disassemble the upper connecting plate



Image 11 Disassemble the balance weight and rearview mirror

Disassembly and Assembly

Remove the M8X25 hexagon socket head screws, two in each of the left and right positions, 4 in total.



Image 12 Disassemble the lower connecting plate

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon socket head screw	M8×25	6	15~22	Black
2.	Upper connecting plate compression bolt	M12×1.25×30	1	15~22	Knight Black

Disassembly and Assembly

4 Front wheel disassembly and assembly

Remove the hex nut M25×1, 2 in total. Then the lower connecting plate and the front wheel assembly can be withdrawn.

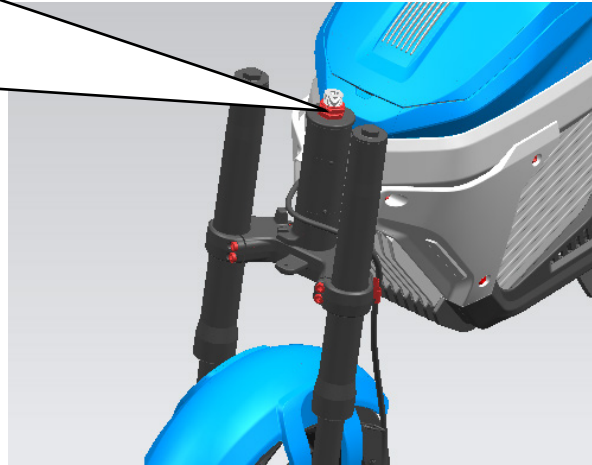
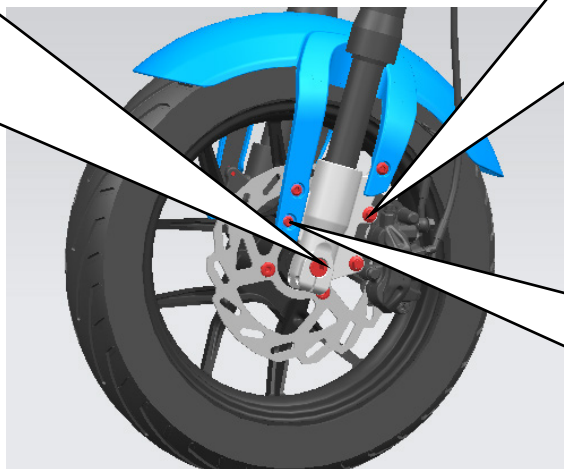


Image 13 Disassemble the shock absorber and front wheel

Remove the front wheel axle, after loosening, it can be drawn out directly, and the front wheel can be removed.



Remove the M8X35 hexagon flange bolts, a total of 2 pieces. Then remove the front wheel brake pump in order to replace the brake pads.

Remove the M6×12 hexagon socket screws, 3 on each side, 6 in total.

Image 14 Disassemble the brake pump and front mud plate

Disassembly and Assembly

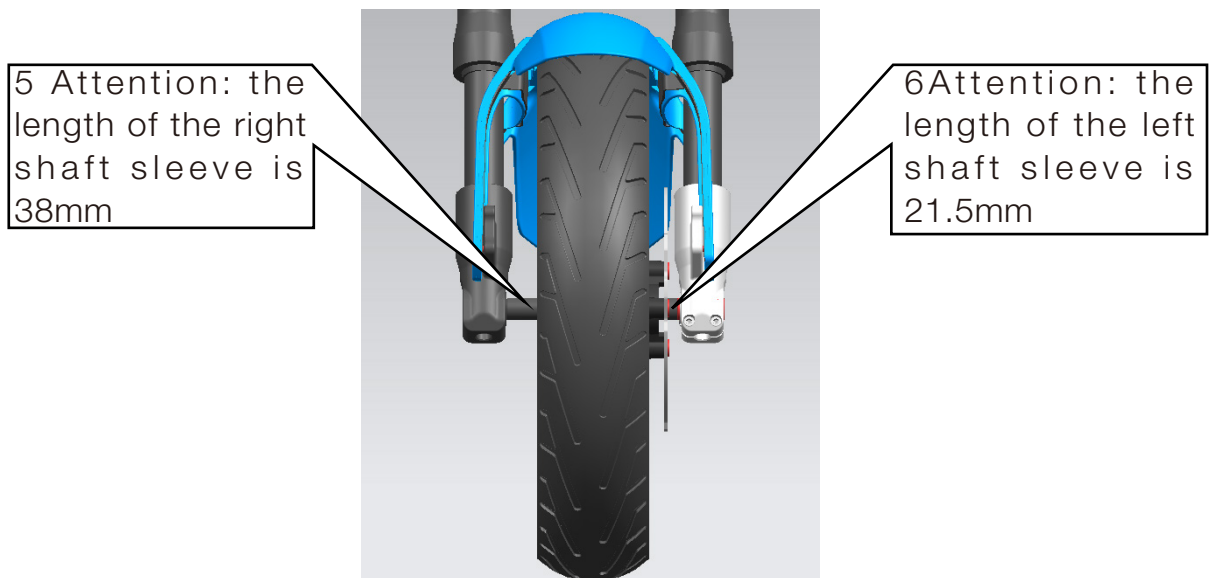


Image 15 The position of the left and right shaft sleeves

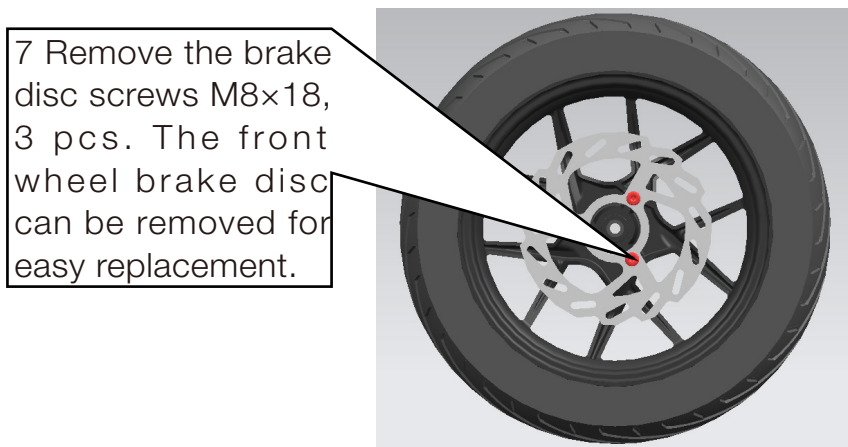


Image 16 Disassemble the brake disc

Disassembly and Assembly

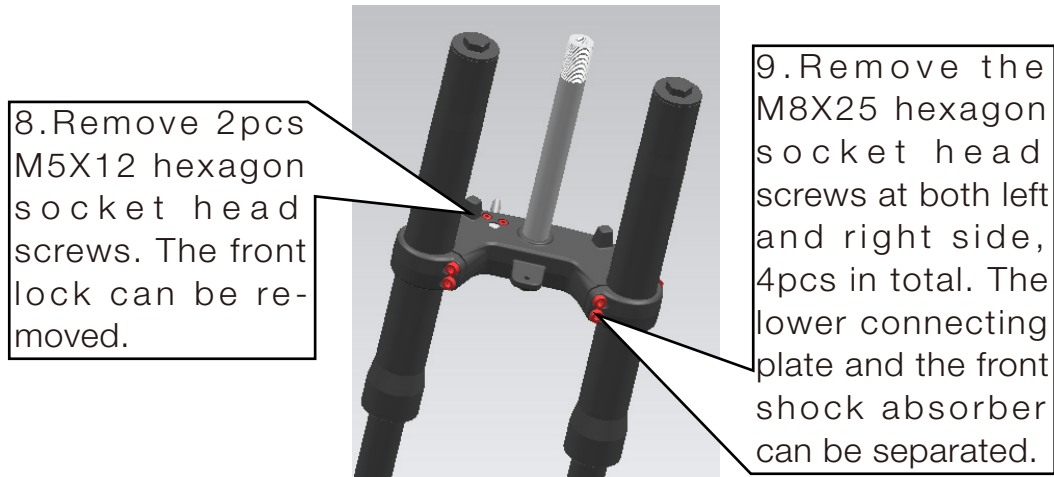


Image 17 Disassemble the head lock

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hex nuts	M25×1	2	Subject to smooth steering	black
2.	Hexagon flange bolts	M8X35	2	15~22	
3.	Socket head cap screws	M6×12	6		
4.	Brake Disc Screw	M8×18	3	15~22	
5.	Hexagon socket head screw	M5X12	2		black
6.	Hexagon socket head screw	M8X25	4	15~22	black

Disassembly and Assembly

5 Disassembly and assembly of the controller

1. Disassemble the M6×12 hexagon socket screws, 6pcs in each of the three places on the left and right. After disassembly, the controller guard plate can be taken off.

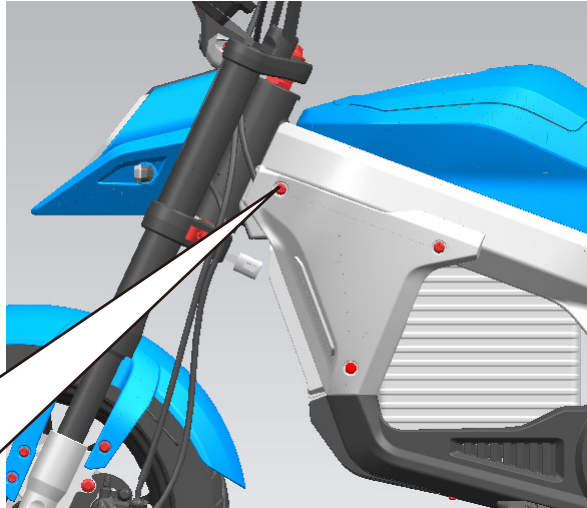
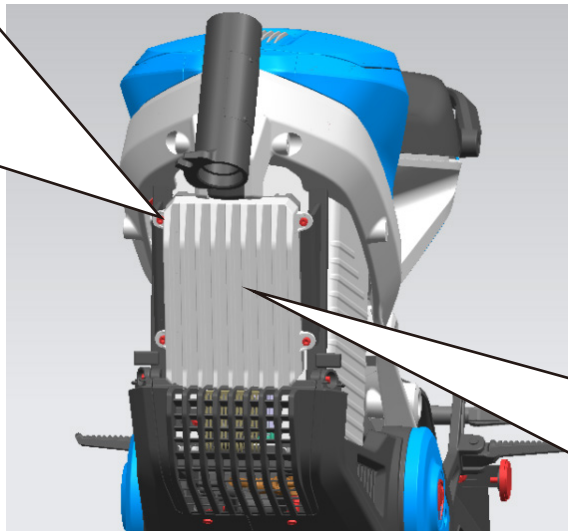


Image 18 Disassemble the controller guard plate

2. Disassemble the M5X12 hexagon socket head screws, 4pcs in total. The motor controller can be removed.



3. Note: There are wires connected to the back of the motor controller. It is not allowed to remove the wires on the back only if the vehicle is on outage.

Image 19 Disassembly the motor controller

Disassembly and Assembly

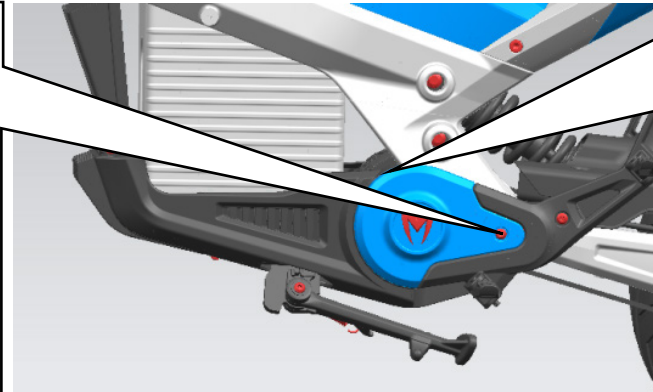
The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Socket head cap screws	M6×12	6		
2.	Hexagon socket head screw	M5X12	4		Black

Disassembly and Assembly

6 Disassembly and assembly of the horn

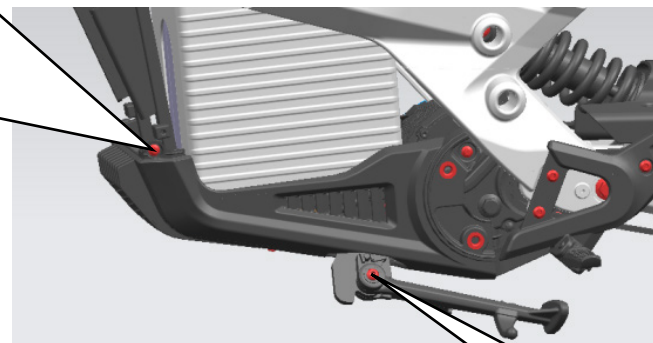
Disassemble the M6×12 hexagon socket screws, 6pcs in each of the three places on the left and right. After disassembly, the controller guard plate can be taken off.



Note: The side cover is reinforced and fixed by I-shaped rubber, and can be removed by pushing the side with your fingers when disassembling.

Image 20 Disassemble the side cover of the motor

Disassemble the M6×12 hexagon socket screws, there are 4pcs in total, on both left and right side of the vehicle.



Note: After removing the 4pcs screws, the entire bottom battery fender can be removed. If the single side stand part is stuck, the side bracket flameout switch can be removed first.

Image 21 Disassemble the bottom battery fender

Disassembly and Assembly

Disassemble the hexagonal flange bolts, M6X12, 1pc. Take off the horn after cutting off the power

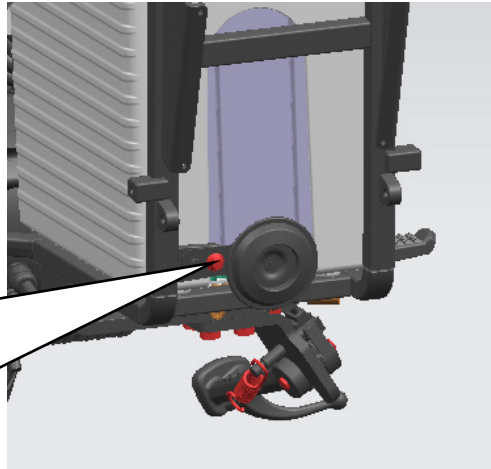


Image 22 Disassemble the horn

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Socket head cap screws	M6X20	2		
2.	Hexagon flange bolts	M6X12	5		

Disassembly and Assembly

7 Disassemble the motor

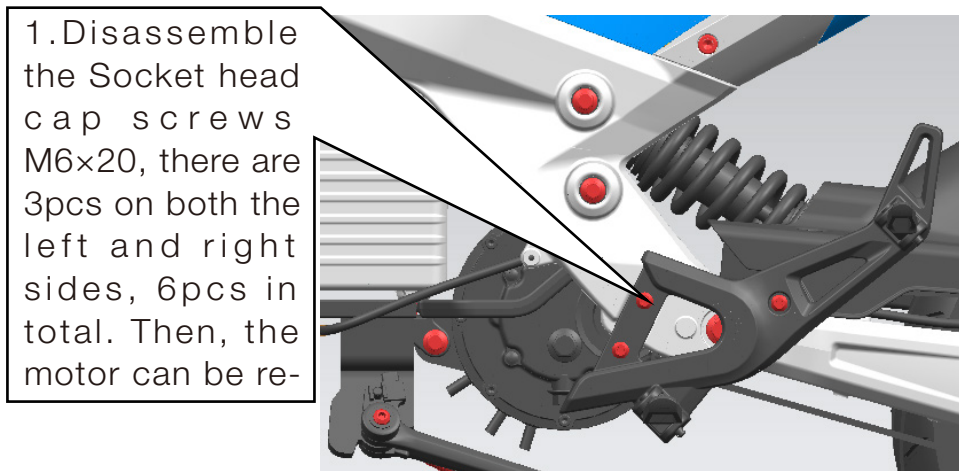


Image 23 Disassemble the pedal

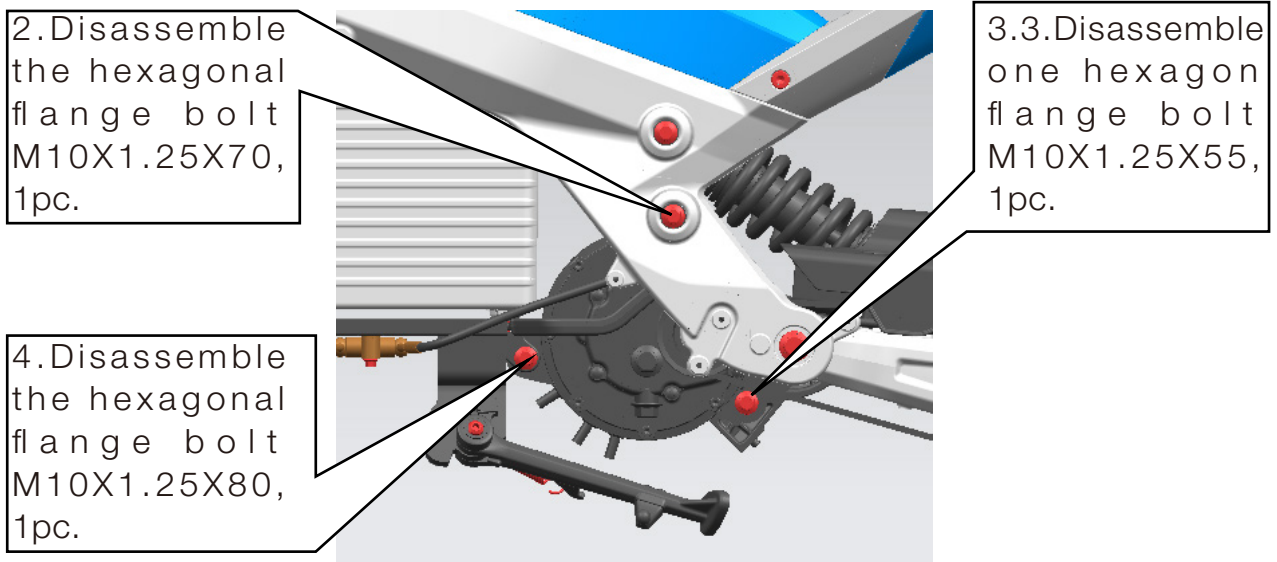


Image 24 Disassemble the motor

Disassembly and Assembly

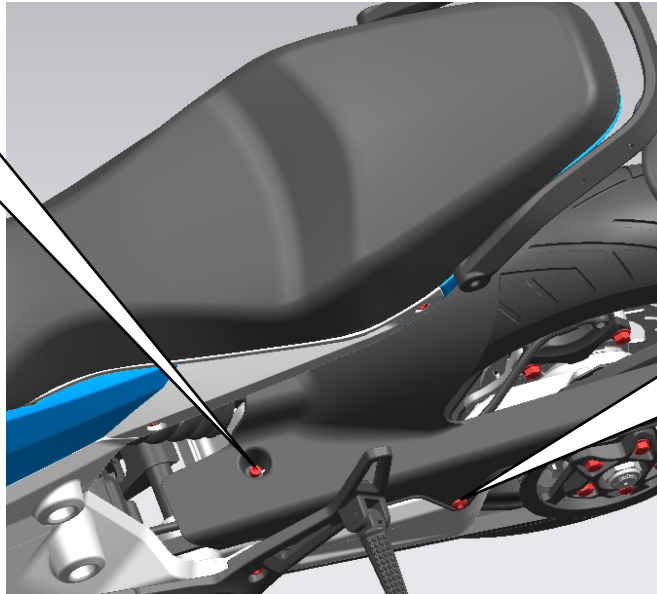
The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Socket head cap screws	M6 X 20	6		
2.	Hexagon flange bolts	M10X1.25X70	1	30~40	
3.	Hexagon flange bolts	M10X1.25X55	1	30~40	
4.	Hexagon flange bolts	M10X1.25X80	1	30~40	

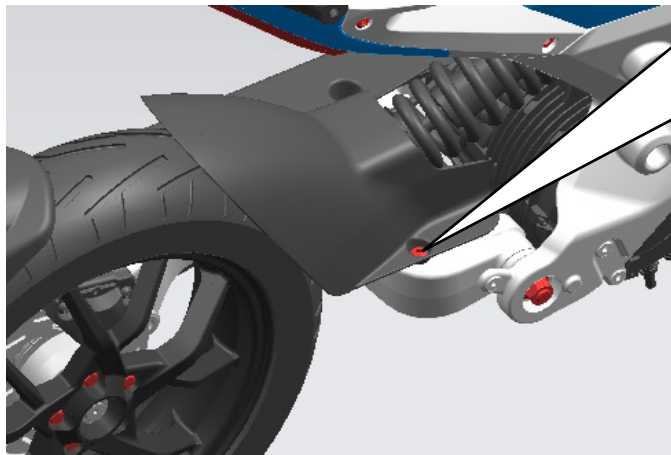
Disassembly and Assembly

8 Adjust the rear wheel

1. Disassemble one M6X55 hexagon socket head screw, 1 pc.



2. Disassemble the M6x20 hexagon socket screw, 1 pc.



D3. isassemble the M6x20 inner hexagon, and then remove the rear mudguard.

Image 25 Disassemble the rear mudguard

Disassembly and Assembly

4. Disassemble the M8X20 hexagon socket head screws, 2 in total. The backing components can then be removed.

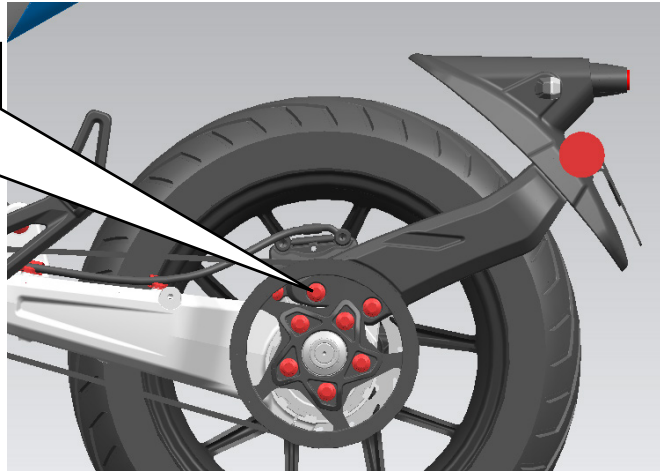
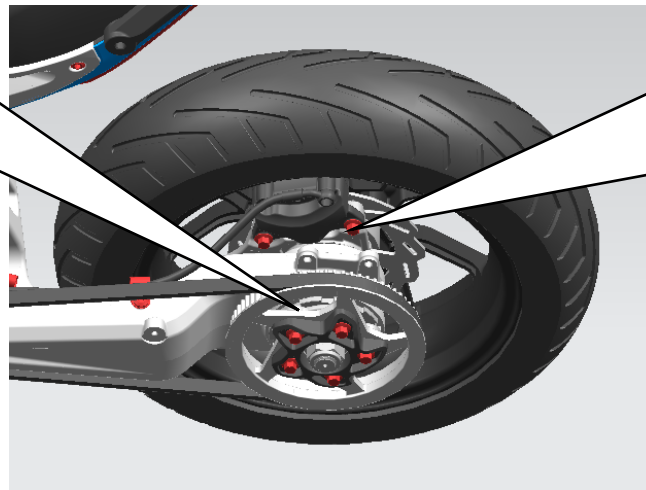


Image 26 Disassemble the backing components

5. The pointed position of the rear wheel can be adjusted here to achieve the purpose of adjusting the tightness of the belt.



6. Remove two M8X20 hexagon flange bolts, 2pcs in total. The rear brake pump can then be removed to facilitate replacement of the brake pads.

Image 27 Adjust the rear wheel hub

Disassembly and Assembly

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon socket head screw	M6X55	1		
2.	Socket head cap screws	M6×20	2		
3.	Hexagon socket head screw	M8X20	2	15~22	
4.	Hexagon flange bolts	M8X20	2	15~22	

Disassembly and Assembly

9 Disassembly and assembly of backing components:

1. Disassemble the M6×12 hexagon socket screws, 2pcs in total, and the hexagon flange nut M6, 2pcs in total. Then the rear license plate can be removed.

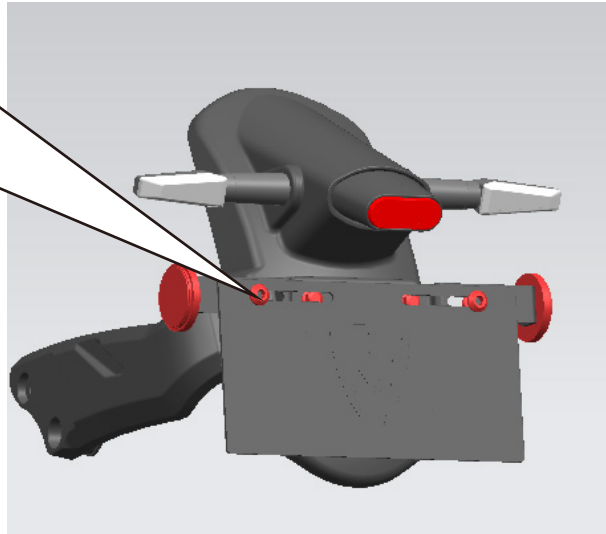


Image 28 Disassemble the rear license plate

2. Disassemble 2 pcs M6X20 hexagon flange bolts to remove the rear license plate bracket.

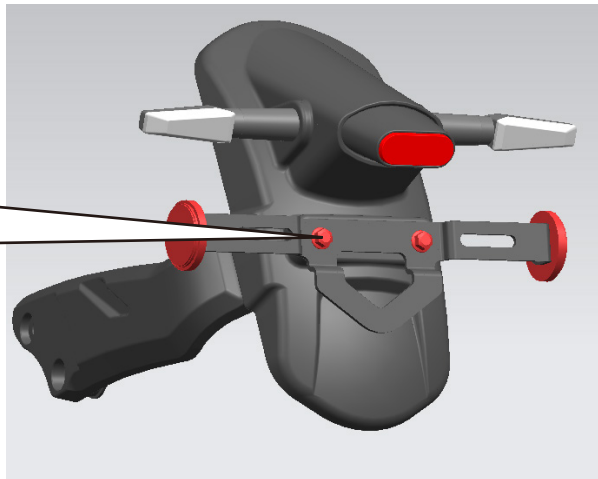


Image 29 Disassemble the rear license plate bracket

Disassembly and Assembly

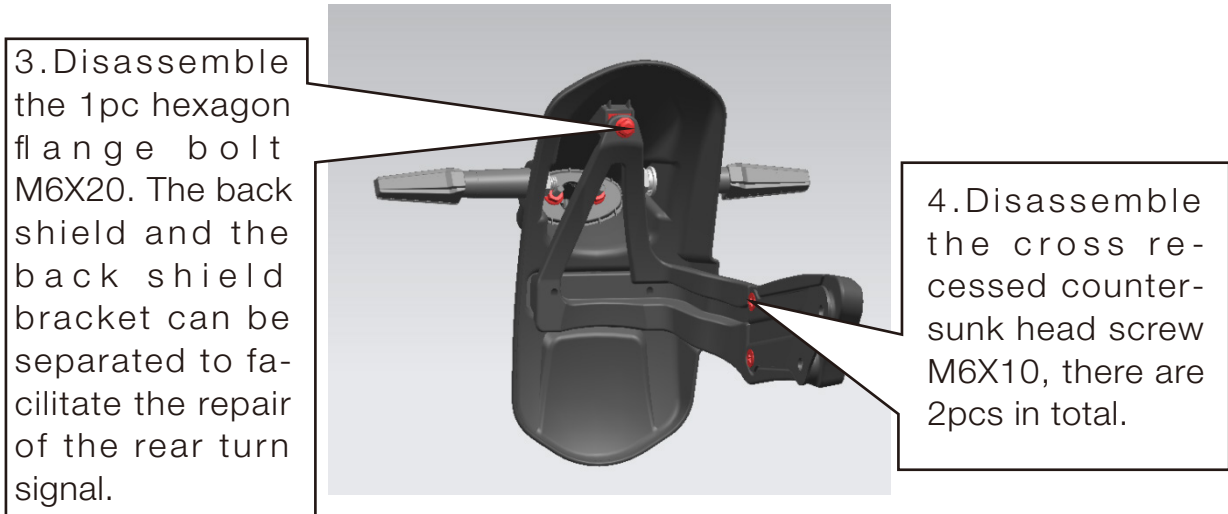


Image 30 Disassemble the rear license plate bracket

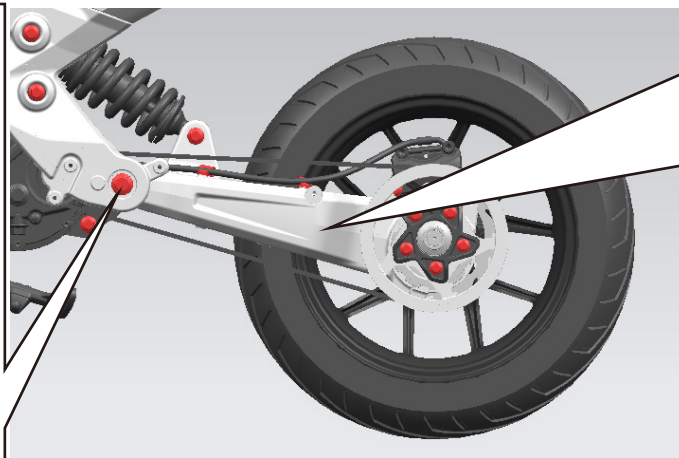
The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Socket head cap screws	M6×12	2		
2.	Hex flange nut	M6	2		
3.	Hexagon flange bolts	M6×20	3		
4.	cross recessed countersunk head screw	M6X10	2		Black

Disassembly and Assembly

10 Replace the belt

After removing the motor or pulley, remove the rear flat fork shaft. After doing this, the single rocker arm is connected with the front body only by the rear shock absorber, and the belt can be removed from the gap and replaced.



Cautions: When the rear flat fork shaft is pulled out, the body of the vehicle will fall, please pay attention to your safety.

Image 31 Replace the belt

11 Disassembly and assembly of rear shock absorber

Disassemble the hexagonal flange bolts, M10X1.25X70, 1pc on each side. The rear shock absorber can then be removed.

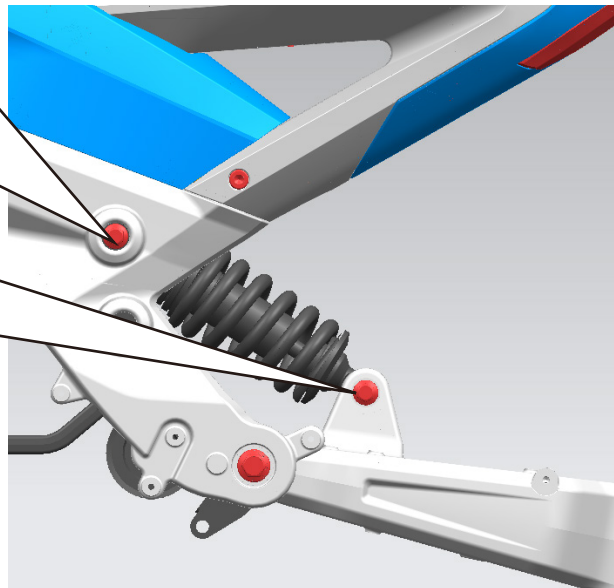


Image 32 Disassembly of rear shock absorber

Disassembly and Assembly

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon flange bolts	M10X1.25X70	2	30~40	

Disassembly and Assembly

12 Body trim disassembly and assembly

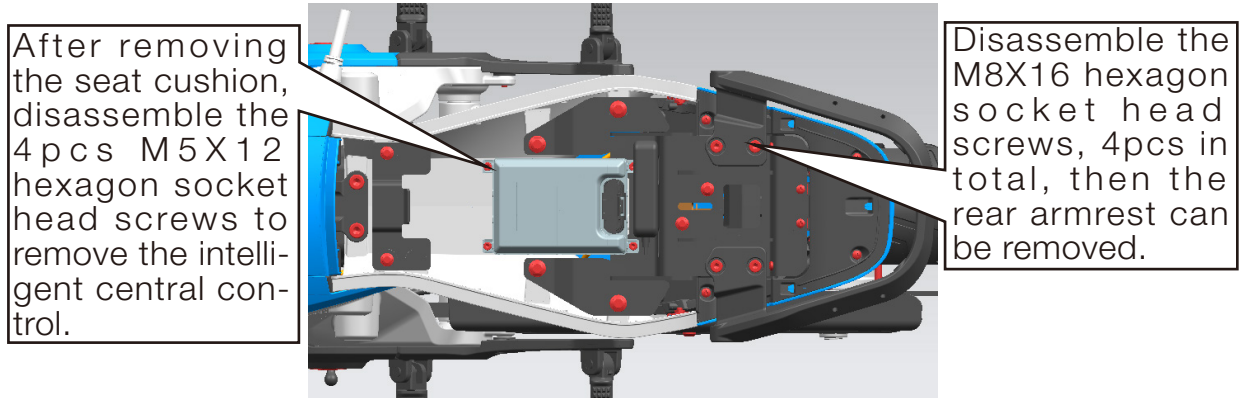


Image 33 Disassemble the smart central control and rear armrest

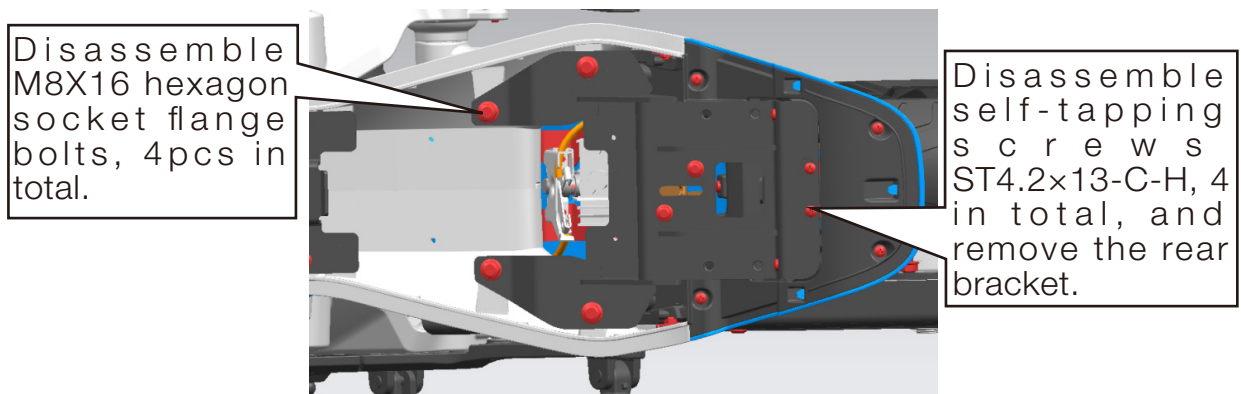


Image 34 Disassemble the rear bracket

Disassembly and Assembly

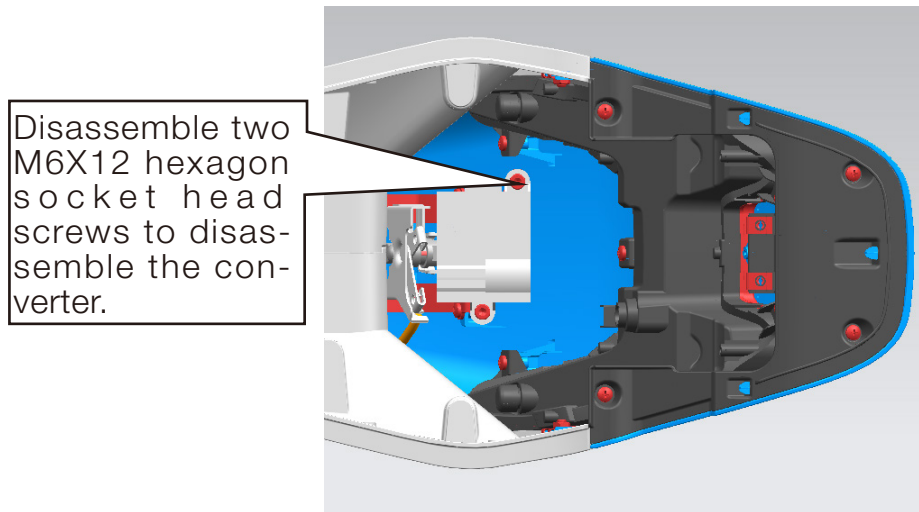


Image 35 Disassemble the converter

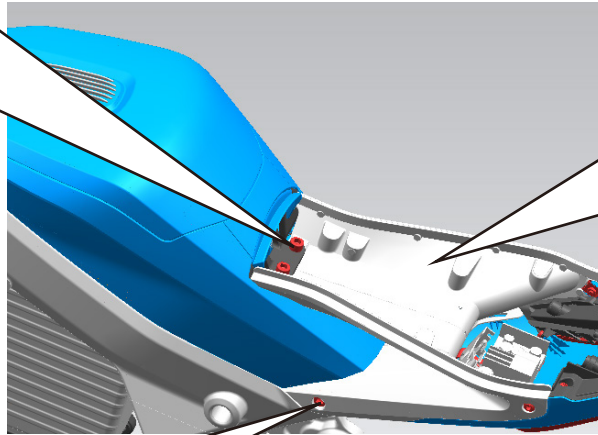
The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon socket head screw	M5X12	4		Black
2.	Hexagon flange bolts	M8X16	8	15~22	
3.	Self-tapping screws	ST4.2×13-C-H	4		Galvanized Army Green
4.	Hexagon socket head screw	M6X12	2		

Disassembly and Assembly

13 Disassemble the rear part of the vehicle:

Disassemble 2pcs M10X1.25X40 hexagon socket head screws. Open the flip lock and disconnect the wire to remove the flip.

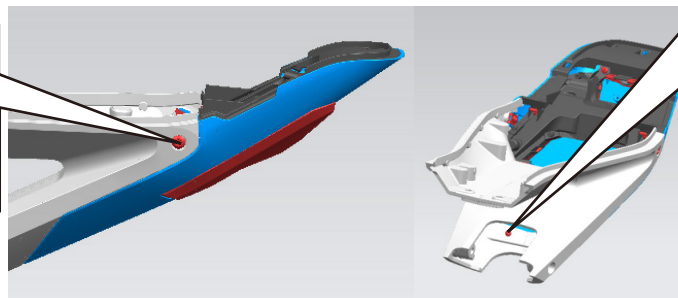


Caution: At this time, the rear half of the vehicle body has been separated from the front half. Pay attention to prevent the rear half from falling.

Disassemble the M10X1.25X40 hexagon socket head screws, and there are 2pcs on each side of the vehicle, on both the left and right sides.

Image 36 Separate the body of the vehicle

Disassemble the M6x16 hexagon socket screws, 1pc each side, totally 2pcs.



Disassemble the self-tapping screws ST4.2x13-C-H, 2pcs in total. The rear tail plate can then be removed.

Image 37 Separate the rear tailgate

Disassembly and Assembly

Disassemble the self-tapping screws ST4.2×13-C-H, 4 pcs. Remove the inner cover of the rear tail plate.

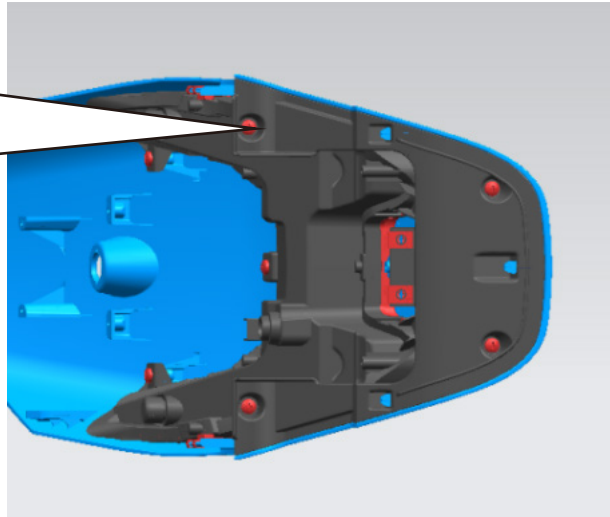


Image 38 Disassemble the inner cover of the tail plate

Remove the 5pcs self-tapping screws ST4.2×13-C-H to disassemble the tail light and rear camera.

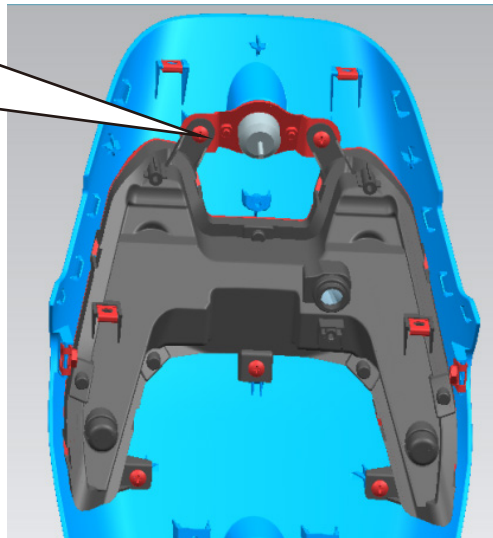


Image 39 Disassemble the taillights

Disassembly and Assembly

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon socket head screw	M10X1.25X40	4	30~40	
2.	Socket head cap screws	M6×16	2		
3.	Self-tapping screws	ST4.2×13-C-H	11		Galvanized Army Green

Disassembly and Assembly

14 Separate the upper cover

Disassemble the self-tapping screws ST4.2×13-C-H, totally 8 pcs. Then the upper cover and the upper cover bottom plate can be separated.

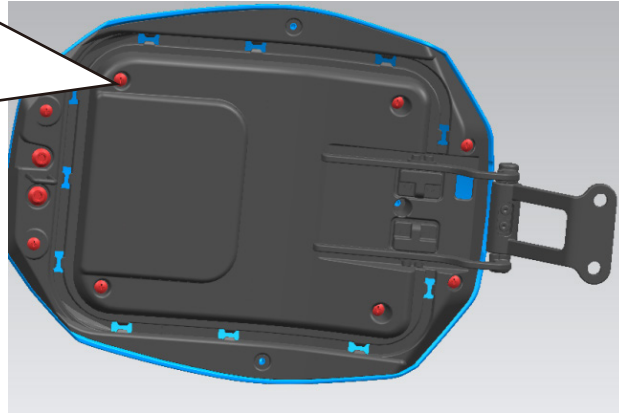
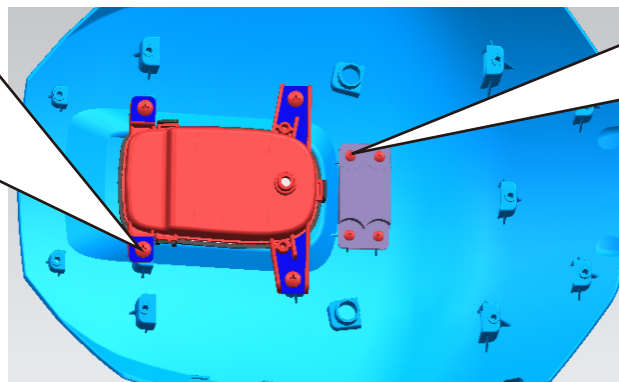


Image 40 Separate the upper cover and the bottom plate of the upper cover

Self-tapping screws ST4.2×13-C-H, a total of 4pcs in four places. The breathing light can be removed afterwards.



Disassemble the self-tapping screws ST2.9X9.5-C-H, 4pcs in total. The NFC module can be then removed.

图 41 拆呼吸灯与 NFC 模块

Disassembly and Assembly

The reverse order of the above steps are the installation sequence. The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Self-tapping screws	ST4.2×13-C-H	12		Galvanized Army Green
2.	Self-tapping screws	ST2.9X9.5-C-H	4		Galvanized Army Green

Disassembly and Assembly

15 Disassembly and assembly of front wheel brake pads

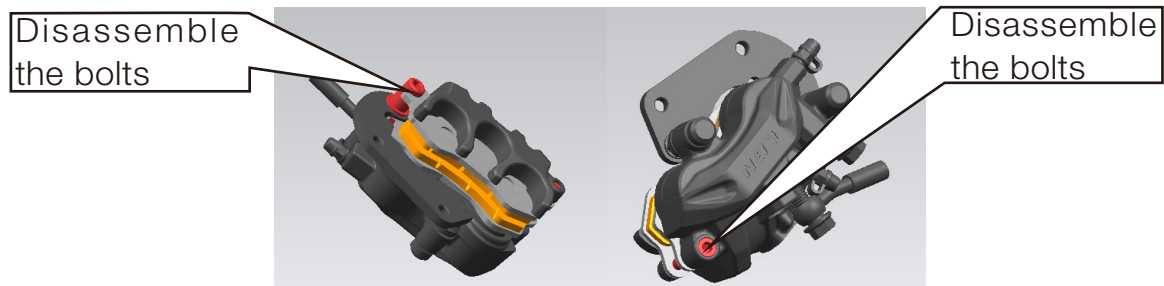


Image 42 Disassemble the bolts

Image 43 Disassemble the bolts

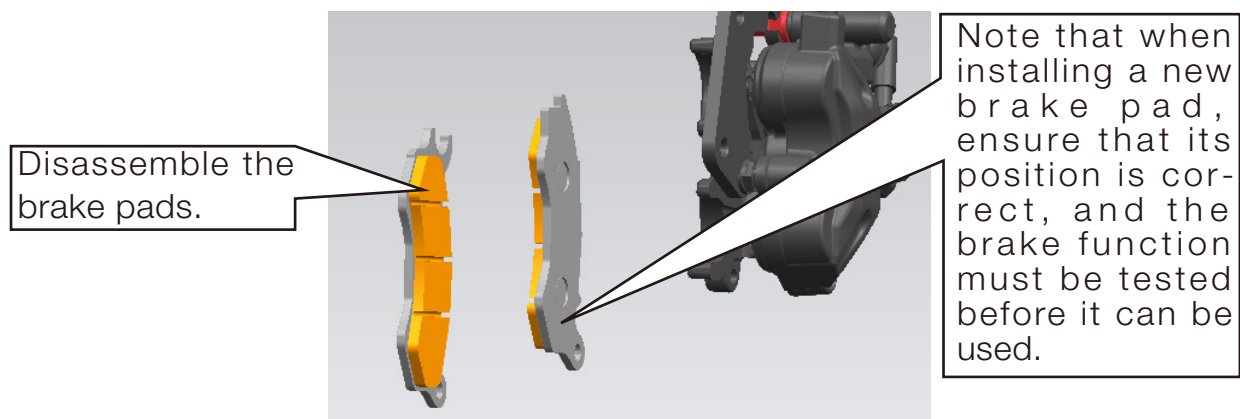


Image 44 Disassemble the brake pads

Disassembly and Assembly

16 Disassembly and assembly of rear brake pads

Disassemble
2 pcs M8×25
hexagon flange
bolts.



Image 45 Disassemble the bolts

Disassemble the
split pin and pull
out the pin shaft

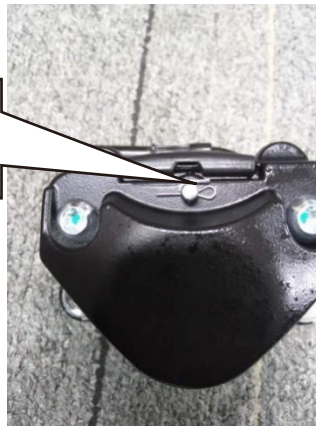


Image 46 Disassemble the split pin and pull out the pin

Pull out the brake
pads.



Image 47 Pull out the brake pads

Warning: After the brake pads are properly installed, they must be tested before being used!

Disassembly and Assembly

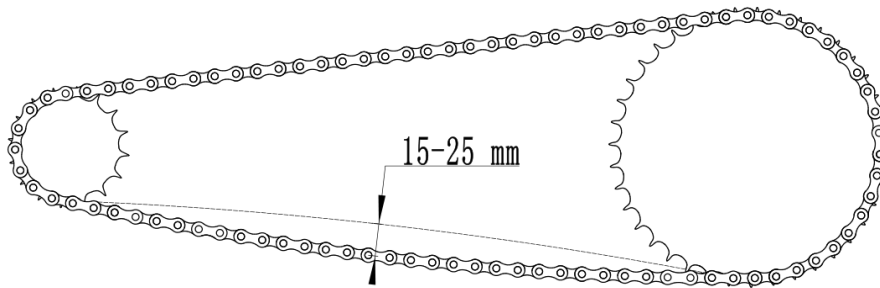
The torque of the fasteners involved in the installation process is shown in the following table:

No.	Product Name	Description	Qty	Torque (N.M)	Notes
1.	Hexagon flange bolts	M8×20/25	2	15~22	

Disassembly and Assembly

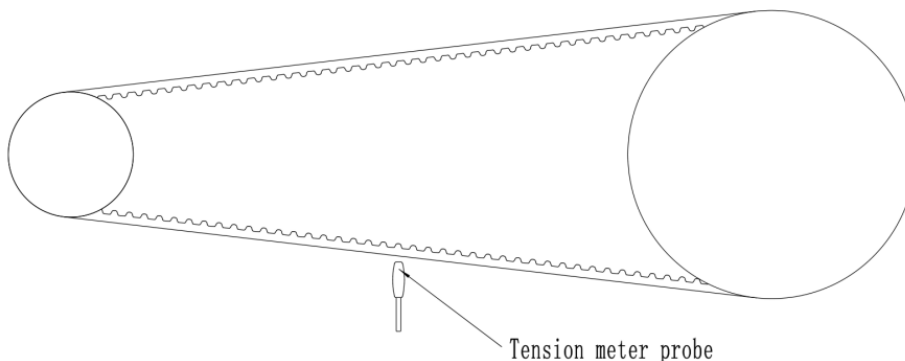
17 Chains, sprockets and their tightness

- (1) Measure the chain at the lower end of the middle of the sprocket;
- (2) When the tightness is correct, the swing amount of the chain at this position is 15-25mm.



18 Belts, pulleys and their tightness

- (1) Place the belt tension meter probe close to the belt at the lower end of the middle of the pulley;
- (2) Use your fingers to move the belt at this part;
- (3) Read the value on the tension meter, the correct tightness value is 105~115Hz.



Regular Check-ups

1	1 month	Check whether the front and rear wheels are fastened.
2	15 days	Check whether the brake calipers are fastened.
3	2 months	Check the level of brake oil.
4	3 months	Check the lubricating oil level of the gearbox.
5	15 days	Check brake pad status and the braking performance of brake system.
6	1 month	Check whether the handlebars are fastened.
7	1 month	Check the tightness of the chain.
8	15 days	Check the lubrication condition of the chain (make sure to cut off the power before lubricating and chain inspection).
9	15 days	Check the cleanliness of the belt (make sure to cut off the power before cleaning and belt inspection)
10	1 month	Check whether the cable line is worn out or damaged.
11	1 week	Check whether the vehicle has abnormal sound or the sound caused by loose parts.
12	1 week	Check whether the tire pressure is 250kPa.

Maintenance Standard

No.	Part Name	Maintenance Standard	Note
1	Bearing	Over heating or noises during rotation	
2	Brake Pads	When the braking distance exceeds 4 meters (25km/ h), the brake pads are seriously worn out.	
3	Tire	Tire cracks and bulges happen when the tire depth of the tread is less than 0.8mm	
4	Sprocket	Abrasion exceeds 0.4mm.	

Troubleshooting

No.	Faults	Causes	Solutions
1	The whole vehicle is powered off; the remote control and APP cannot be on.	Press the battery level display button	The flashing indicates battery protection, and it needs to correspond to the battery fault code
		Battery connection failed	Connect the battery plug correctly.
		Battery management system (BMS) subjected to power-off protection	First, ensure there is no short circuit; after 10 minutes, turn on the power again
		Anti-theft alarm fault	Replace the anti-theft alarm.
		Fuse burned	Replace the main cable fuse.
		The air switch is not on	Turn on the air switch.
2	The motor doesn't run when you turn the governor handle	Side stand is not folded	Fold the side stand.
		Battery is low	Charge the battery.
		Brake handle is not back to the correct position	Lubricate the brake handle joint and turn it to the correct position.
		Handlebar fault	Replace the handlebar.
		Controller plug loose	Re-insert the controller plug.
		Handlebar plug subjected to poor contact	Adjust the handlebar plug pins.
		Motor Hall plug subjected to poor contact	Adjust the motor Hall plug pins.
		Motor failure	Overhaul or replace the motor.
		Controller failure	Replace the controller.
3	The riding speed is low or the riding range is relatively short.	Battery is low	Charge the battery.
		Tire pressure insufficient	remain the tire pressure at 225kPa.
		Overloaded seriously	Avoid overloading
		Brake pad interfering	Overhaul the brake caliper and adjust its installation position.
		Battery aged or normally scrapped	Replace the battery
4	The brake failure	Power converter failure	Replace the power converter.
		Brake handle switch damaged or subjected to open circuit	Replace the switch and inspect the circuit

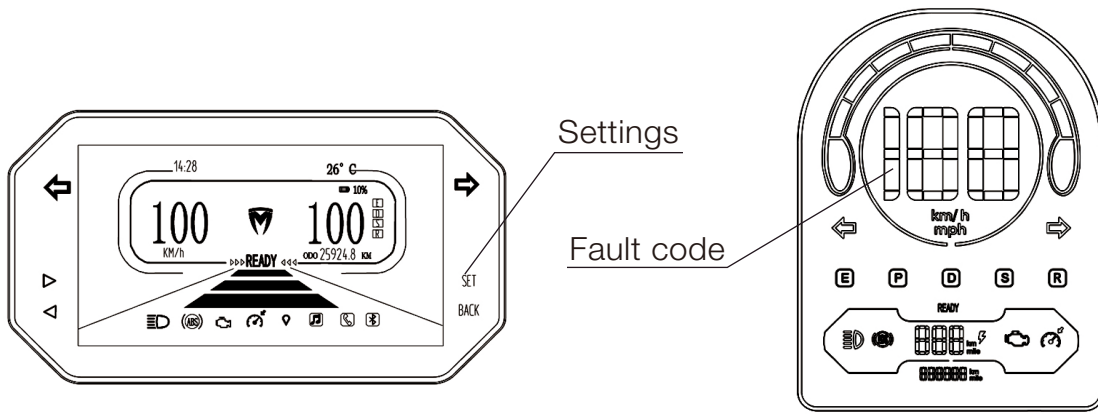
Troubleshooting

No.	Faults	Causes	Solutions
5	The battery cannot be charged.	The main charging plug subjected to poor contact	Check whether the main plug is correctly inserted.
		Wrong charger	Use the Tromox charger with designated model.
		Battery aging or normal scrap	Replace the battery.
6	There is metal scraping sound while braking	Brake pad is worn out	Replace the brake pad.
		Brake disc loose	Tighten the bolts of brake disc.
7	The headlight and tail light cannot be switched on.	Control switch failure	Replace the switch.
		Plug loose or not inserted	Check the plug.
		Power converter failure	Replace the powerconverter.
		Lamp holder burnt out	Replace the lamp.
8	The turn signal light doesn't work.	Power converter failure	Replace the power converter.
		Control switch failure	Replace the switch.
		Flasher failure	Replace the flasher.
		Lamp holder is burnt out	Replace the lamp.
9	The vehicle can be turned on, but the dashboard light is not on.	Dashboard failure	Replace the dashboard.
10	There is no battery level, speed, time, temperature or other information displayed on the dashboard.	Power converter failure	Replace the power converter.
		VCU communication module failure.	Replace the VCU.
		Anti-theft alarm communication module failure	Replace the Anti-theft alarm.
		Controller communication module failure	Overhaul the controller communication module.
		Instrument communication module failure	Overhaul the instrument communication module.

Fault Code

1 Vehicle fault code

When an error occurs, the fault code will appear on the indicator as a two-digit value. On the horizontal indicator, press [SETTINGS] to enter the fault code screen; on the vertical indicator, the display position is where the speed was originally displayed. When the error is eliminated, the error code will automatically change back to the speed. The position is as shown in the images below:



No.	Fault source	Fault details	Fault code
1	Controller fault	Mos Fault	1
2		Over Current	2
3		Over Voltage	3
4		Throttle Fault	4
5		MCU Over Temp1	5
6		MCU Over Temp2	6
7	Motor fault	Motor Phase Fault	7
8		Motor Hall Fault	8
9		Motor Over Temp1	9
10		Motor Over Temp2	10

Fault Code

No.	Fault source	Fault details	Fault code
11	Battery fault	Short Circuit	11
12		Over Temperature	12
13		Under Temperature	13
14		Over Voltage	14
15		Under Voltage	15
16		Over Circuit	16
17	Charger fault	Charger Hardware Fault	17
18		Charger OverTemp Fault	18
19		Charger Cmfault	19
20		Charger Input Over Voltage Fault	20
21		Charger Input Under Voltage Fault	21
22		Charger Output Over Voltage Fault	22
23		Charger Output Under Voltage Fault	23
24		Charger Output Over Current Fault	24
25		Charger Short Protection	25
26		Charger Open Protection	26
27	ABS fault	0x0B Sensor power supply failure	27
28		0x15 Coil open circuit	28
29		0x16 Coil open circuit	29
30		0x17 Coil open circuit	30
31		0x18 Coil open circuit	31
32		0x1F The front wheel sensor is open or the wiring harness is reversed	32
33		0x20 The rear wheel sensor is open or the wiring harness is reversed	33
34		0x29 Front wheel sensor open circuit	34

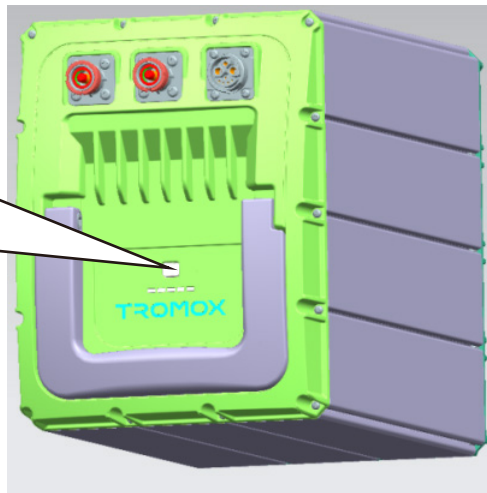
Fault Code

2 Battery fault code

When an error occurs, the LED indicators will flash specific times in accordance with the following table. If two or more errors occur, the LED lights will first flash with a smaller number of times and then flash with a bigger number of times at an interval of about 1 second, and the LED indicator panel will continue to display for 1 minute.

For example: if the host computer displays the under-temperature of charging and discharging, the light will flash 21 times first, and then flash 22 times at an interval of about 1 second, and repeat until the light goes out in 1 minute.

Press the pointed button to check the number of flash



Fault Code

No.	Battery system protection features	LED flash frequency	Notes
1	Protection chip error	1	
2	Cell disconnection	2	
3	Cell non-equalizing	3	
4	Measurement error	4	
5	Storage error	5	
6	Clock error	6	
7	Discharge MOS damage	7	
8	Charging MOS damage	8	
9	Overcharge	9	
10	Level 1 over discharge	10	
11	Level 2 over discharge	11	
12	Software discharge overcurrent	12	
13	Level 2 overcurrent	13	
14	Overcurrent in charge	14	
15	Pre-boot failure	15	
16	Pre-charge overtime	16	
17	MOSTemp damage	17	
18	CellTemp damage	18	
19	Overtemperature in discharge	19	
20	Overtemperature in charge	20	
21	Under-temperature in discharge	21	
22	Under-temperature in charge	22	

Fault Code

No.	Battery system protection features	LED flashfrequency	Notes
23	Discharge MOS overtemperature	23	
24	Charge MOS overtemperature	24	
25	Overtemperature in pre-boot	25	
26	ROM error	26	
27	Discharge fuse damage	27	
28	Charge fuse damage	28	
29	Level 3 overcurrent	29	
30	Level 4 overcurrent	30	

Controller buzzer alarm prompt description

No.	b u z z e r alarm fre- quency	Corresponding alarm meaning	Instruction
1	1	Overcurrent fault	Overcurrent signal collected by hardware circuit
2	2	Overvoltage fault	The system power supply voltage exceeds the upper limit set by the software
3	3	Undervoltage fault	The system power supply voltage is lower than the lower limit set by the software
4	4	MOS tube failure	The software has detected a direct connection failure between the upper and lower bridges of the MOS tube
5	5	Phase failure	During operation, the motor phase line has the open circuit fault
6	6	Motor Hall failure	The software detects all 0 or all 1 faults in the Hall signal
7	7	Handlebar failure	Throttle lever voltage is lower than 0.5V, or higher than 4.5V
8	8	Stall failure	After the running command is given, the motor static time is greater than 2 seconds
9	9	Self-check failure	After the system is powered on, the software FLASH verification is abnormal
10	10	Over temperature fault	The temperature detected by the controller is higher than 120 degrees
11	11	Brake failure	After the system is powered on, it detects that the brake signal is continuously valid
12	12	Abnormal current sampling failure	Software FOC sampling operation failure



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