

KAYO MOTO

eKMB

Service Manual



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Zhejiang Kayo Motor Co., Ltd.
August 2023

Preparation instructions

This service manual provides a detailed introduction to the maintenance and adjustment procedures, disassembly and assembly essentials, inspection and maintenance points, troubleshooting methods, and maintenance technical data of the eKMB two wheel electric motorcycle, and is accompanied by detailed graphical materials to guide the operation.

Please read this manual carefully and carry out maintenance according to standard operating procedures, which can effectively extend the service life of various components and improve the reliability of the entire vehicle.

The first chapter mainly introduces general work items, tools used, basic techniques, and maintenance parameters.

The second chapter introduces the assembly and disassembly operation techniques of the vehicle cover parts.

The third chapter introduces the regular inspection and adjustment of the entire vehicle.

The fourth chapter introduces the methods and precautions for disassembling, inspecting, repairing, and assembling electrical system components.

The fifth chapter introduces information related to vehicle chassis.

Appendix: Electrical schematic diagram

If the content involved in this manual is changed due to vehicle improvement and other reasons, no prior notice will be given. Performing maintenance should be based on the actual condition of the vehicle.

Zhejiang Kayo Motor Co., Ltd.
Quality Technology Department
August 2023

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The unit conversion table in this book

Item	Unit conversion
Pressure	$1\text{kgf}/\text{cm}^2=98.0665\text{kPa}$; $1\text{kPa}=1000\text{Pa}$
	$1\text{mmHg}=133.322\text{Pa}=0.133322\text{kPa}$
Torque	$1\text{kgf}\cdot\text{m}=9.80665\text{N}\cdot\text{m}$
Volume	$1\text{mL}=1\text{cm}^3=1\text{cc}$
	$1\text{L}=1000\text{cm}^3$
Force	$1\text{kgf}=9.80665\text{N}$
Length	$1\text{in}=25.4\text{mm}$

Danger/Warning/Attention

Please carefully read the following explanation, which emphasizes the specific meanings of the words "Danger", "Warning", and "Attention". When repairing the engine, special attention should be paid to their prominent meanings.

Danger: means to be vigilant to high danger

Warning: means to be vigilant to moderate danger

Attention: means to pay attention to minor danger

However, please note that the "Danger" and "Warning" contained in this maintenance manual cannot cover all potential hazards during use and maintenance. Therefore, in addition to the relevant provisions of "Danger" and "Warning", maintenance personnel must also have basic knowledge of mechanical safety. If you are not sure about completing the entire maintenance operation process, please consult a more experienced senior technician.

1 Maintenance information

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1.1 Precautions for operation

Safety precautions

1. Work clothes (one-piece work clothes, etc.), hats, safety boots suitable for the operation must be worn, and if necessary, dust-proof glasses, dust-proof mask, gloves and other safety protection articles should be worn to protect your body.
2. Lithium batteries are composed of high energy density lithium-ion batteries. Please operate them carefully in daily use, otherwise it may cause electrical and chemical risks. Once there is a fire source or electric spark approaching, there is a risk of explosion.
3. It is strictly prohibited to place the battery in a high-temperature environment, such as heating, near a fire source, or exposed to sunlight.
4. Please charge in a dry, cool, and well ventilated area. After the battery is fully charged and the charger is connected to the power supply for 30 minutes, please disconnect the charger cable in time to avoid safety hazards and affect the battery life.
5. Avoid unnecessary impacts and vibrations on the vehicle. Regularly inspect the vehicle's frame, chassis, and batteries. If there are any problems, please replace them promptly.
6. During maintenance, always be careful not to let rotating parts such as the rear wheel and movable parts catch hands and clothes.
7. When two or more people are working, they must constantly greet each other to confirm safety.

Precautions for disassembly and assembly

1. Parts, lubricating oil and grease must use products recommended by Kayo.
2. The parts of each system should be sorted and kept separately, so that each part can be reinstalled in their original position.
3. Please clean the soil and dust on the vehicle before maintenance.
4. Cotter pins and other components must be replaced with new ones after disassembly.

5.If the opening of the elastic retaining ring is too large during disassembly, it will deform and easily fall off after reassembly. Please do not use elastic retaining rings that have become loose or have lost elasticity.

6.Before disassembling and inspecting the components, they should be cleaned thoroughly. Apply lubricating oil to the moving surface before assembly.

7.When disassembling, necessary places should be inspected and relevant data should be measured so that it can be restored to the state before disassembly during assembly.

8.Fasteners such as bolts, nuts, and screws should be pre-tightened first, and then tightened according to the specified tightening torque on the diagonal according to the principle of from large to small, from inside to outside.

9.When the rubber parts are disassembled, check whether they are aging, and replace them in advance if necessary. In addition, as rubber parts are not resistant to corrosion from gasoline, kerosene, etc., try not to let volatile oils and greases attach to them.

10.According to the requirements of the Service manual, apply or inject the recommended grease on the designated parts.

11.Correct special tools should be used for disassembly and assembly operations.

12.Ball bearings can be rotated with fingers to confirm whether the rotation is flexible and smooth. If force is applied to the ball during disassembly, the disassembled bearing should not be used again:

- If the axial and radial clearance of the bearing is too large, replace it.
- Bearings that feel stuck when rotating should be cleaned, and those that still feel stuck after cleaning should be replaced, and those that cannot be cleaned should be replaced directly.
- It was originally a tight fit with the body or the shaft diameter, but if the fit is not tight after disassembly, the bearing should be replaced.

13.Bearings should be coated with engine oil or grease before assembly. Pay attention to the installation direction when assembling single-sided dust-proof bearings. When assembling open-type or double-sided dust-proof bearings, install the side engraved with the manufacturer's logo and size facing outward during assembly.

14.When installing the rectangular retaining ring, the chamfered side should face the direction of the force. Do not use the retaining ring that has been loosened and lost its elasticity. After assembly, turn the rectangular retaining ring to confirm that it has been firmly installed in the groove.

15.After assembly, it is necessary to check whether all fastening parts are tightened and whether the work is normal.

16.Brake fluid and coolant can damage the coating surface, plastic parts, rubber parts, etc. Do not let them adhere to these parts. In box of adhesion, rinse them with water immediately.

17.The oil seal should be installed with the side marked by the manufacturer facing outward (in the direction without oil):

- When assembling, pay attention not to curl the lip of the oil seal or scratch the lip of the oil seal with burrs.

- Apply lubricating grease to the oil seal lip before assembly.

18. When installing rubber hose parts, insert the rubber hose to the root of the joint. If there is a pipe clip, install the pipe clip in the dent of the pipe. Replace the rubber hose that is not tight during installation.

19. Do not get dust, soil, etc. inside the motor or brake system.

20. Do not twist or bend the cables excessively. A deformed or damaged cable may cause poor movement or damage.

21. When assembling protective cap parts, if there is a groove, the protective cap must be inserted into the groove.

1.2 Vehicle identification number

- ① Frame number
- ② Vehicle nameplate
- ③ Motor number

Vehicle model	eKMB
Frame number	KAY0EAATAP+ ~
Motor number	KAY048A+ ~



1.3 Main parameter table

Items		Parameters	
Vehicle model		eKMB	
Length (mm)		1230	
Width (mm)		610	
Height (mm)		780	
Wheelbase (mm)		845	
Battery capacity (V/AH)		48V8AH lithium battery	
Vehicle curb weight (kg)		29.7	
Person capacity		1 person	
Rated loading mass (kg)		30	
Tire specifications	Front wheel	2.50-10	
	Rear wheel	2.50-10	
Minimum ground clearance (mm)		220	
Power system	Motor type	DC permanent magnet brushless motor	
	Peak power (w)	800	
	Rated speed (rpm)	460	
	Rated torque (N.m)	30	
	Shift type	Two speed release switch speed change	
Transmission system	Transmission method	Hub type	
Steering device	Steering angle	Left	45°
		Right	45°
Brake device type	Front	Disc brake	
	Rear	Disc brake	
Buffer type	Suspension type	Front: forward reducing front fork, Rear: steel swingarm	
Frame type		Steel frame	

1.4 Maintenance parameter table

•Wheels (same front and rear wheels)

Items		Standards	Usage limit
Rim runout	Longitudinal	0.8mm	2.0mm
	Transverse	0.8mm	2.0mm
Tire	Residual groove	—	1mm
	Pressure	0.2Mpa	—

•Brake system

Items		Standards	Usage limit
Front brake	Brake disc thickness	2mm	1.5mm
Rear brake	Brake lever stroke	2 ~ 5mm	—
	Brake disc thickness	2mm	1.5mm

1.5 Tightening torque of fasteners

Attention:

Before installing the thread, apply rust proof grease to the thread area and mating surface

Tightening torque for specified parts - complete vehicle section

Serial Number	Items	Fastener code	Quantity	Tightening torque (N · m)
1	Rear shock bolt	Blue white zinc M10*40*1.25	2	49-59
2	Swingarm assembly bolt	Blue white zinc M10*130*1.25	1	68-81
3	Lower raiser bolt	Blue white zinc M10*30*1.5	2	49-59
4	Dust seal	Iron SSR/Small CRF	1	25
5	Upper and lower clamp, front right and left shock Fixing bolts	Blue white zinc M8*25	4	25-30
6	Top nut	Chromium plated grade 6	1	35-40
7	Handlebar upper raisers bolts	Blue white zinc M8*25	4	25-30
8	Rear wheel fixing nut	Blue white zinc M12*1.25	2	70-80
9	Front and rear brake pump fixing bolts	M6*16	4	10-12
9	Sidestand fixing bolt	Blue white zinc M10*30*1.5	1	20-30

Tightening torque of specified parts**Tightening torque of fasteners in unspecified positions**

Category	Torque N·m	Category	Torque N·m
5mm bolts and	4.5~6	5mm screw	3.5~5
6mm bolts and	8~12	6mm screw	7~11
8mm bolts and	18~25	6mm raised bolt	10~14
10mm bolts and	30~40	8mm raised bolt and nut	20~30
12mm bolts and	35~50	10mm raised bolt and nut	30~40

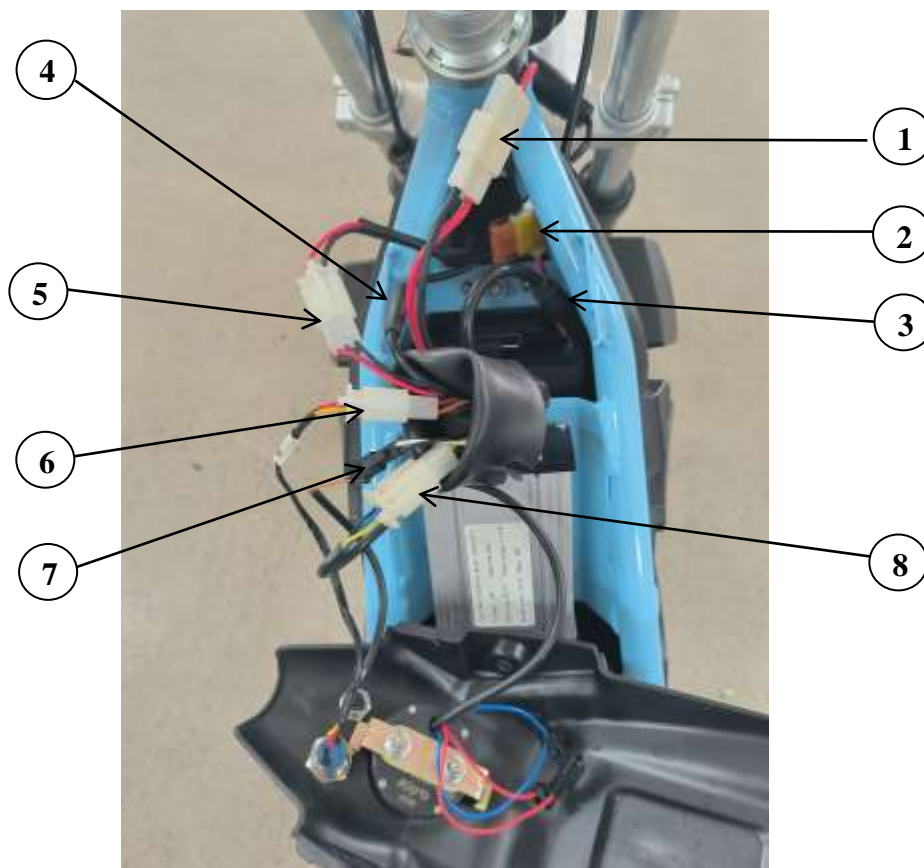
1.6 Lubricants and sealants

Coating site	Points for attention	Oils and fats
Steering bearing		Lightweight lithium soap based lubricating grease
Sidestand		
Inner peripheral surface of handlebar		

Lubrication of control cables, bearings, and rotating parts

Location	Content	Oils
At the rotation axis of the left and right brake lever	Lubrication	General lithium based lubricating grease for automobiles GB/T5671

1.7 Wiring diagram for cables, hoses, and brake wires



1.Battery connection plug-in 2.Fuse box 3.DC brushless motor plug-in 4.Main cable plug-in 5.Charging interface plug-in 6.Start switch plug-in 7.Speed release switch plug-in 8.Instrument connection plug-in

Attention: Before inspecting and repairing the above components, the upper cover plate must be removed. For specific disassembly, refer to the second chapter -Covering parts of the vehicle



1.Front brake line 2.Rear brake line 3.Brake power off switch (on the brake lever)

4.Rotary accelerator 5.Horn switch

Attention: Before inspecting and repairing the above components, the front panel plastic parts must be removed. For specific disassembly, refer to 2.4 Covering parts of the vehicle in the second Chapter

Remove the main cable and the connector of the above components here



Remove the main cable and horn connector here

2 Covering parts of the vehicle

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2.1 Maintenance information

Precautions for operation

When replacing the covering parts with regulatory warning labels affixed or riveted on the vehicle, the corresponding labels must be correctly and completely supplemented as they are.

This chapter describes the disassembly and assembly sequence of vehicle body covers. When repairing internal components of the vehicle that require disassembly of relevant covers, it can be referred to in this chapter.

This chapter provides instructions on the disassembly and assembly of seat and exterior components.

Please follow the wiring diagram for cables, pipes, and cables to pass through from the correct position.

2.2 Installation torque

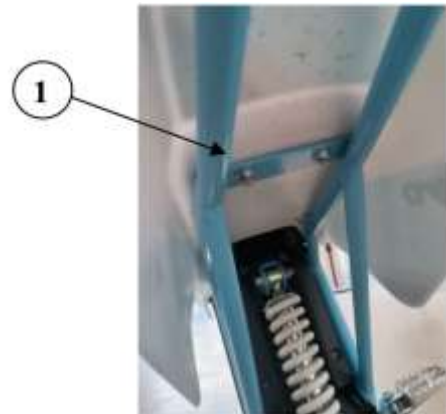
M8 bolts	21 (2.1)	Torque N·m(kgf·m)
M6 bolts	10 (1.0)	Torque N·m(kgf·m)
M5 bolts	5 (0.5)	Torque N·m(kgf·m)
Self-tapping screw	4 (0.4)	Torque N·m(kgf·m)

2.3 Disassembly and assembly of seat and main plastic parts

2.3.1 Seat

Disassembly

1. Use a 10 # wrench to remove the 2 nuts (1) under the seat
2. Lift the rear of the seat and push the seat out backwards (2)
3. Remove the seat(2)



Installation

Follow the reverse order and direction of disassembly
After installation, check whether the seat installed in place, secure, etc



2.3.2 Main plastic parts

Disassembly of the front left panel

Remove the 2 bolts (1) from the front left panel



Disassembly of the front right panel

Remove the 2 bolts (2) from the front right fender

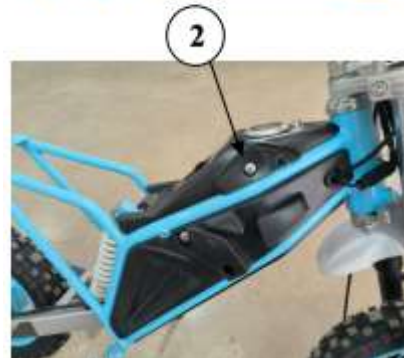


Disassembly of the upper cover plate

Remove the left mounting bolt (1)



Remove 1 mounting bolt (2) on the right side



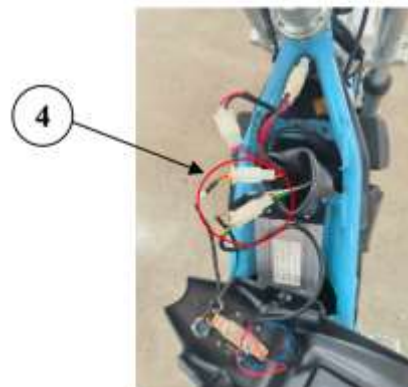
Remove the two upper mounting bolts (3)



Installation

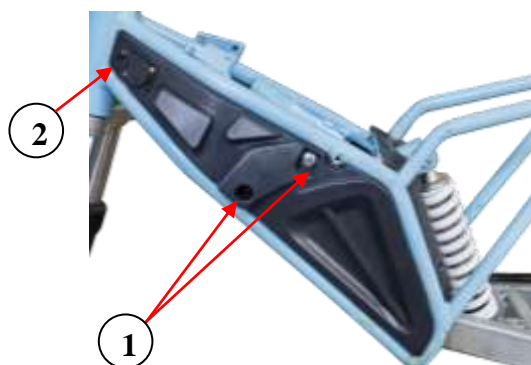
Install in the reverse order of disassembly

Attention: When inspecting and repairing the upper cover plate, it is necessary to unplug the lower plug 4 (start switch, release speed switch, instrument connector) to avoid tearing the wiring harness. For specific disassembly, refer to the first chapter 1.7 Wiring diagram for cables, hoses, and brake wires.



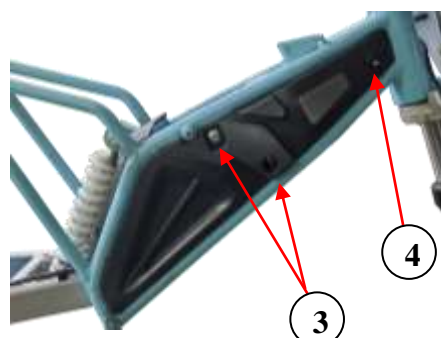
Disassembly of the left side panel

Remove the two mounting bolts (1) from the left side panel
Use a flat screwdriver to pry open the plastic rivet (2)



Disassembly of the right side panel

Remove the two mounting bolts (3) from the right side panel
Use a flat screwdriver to pry open the plastic rivet (4)



Installation

Follow the reverse order and direction of disassembly

2.4 Front panel

Disassembly

Remove the mounting bolts (5) on the front panel
Pull the front panel out



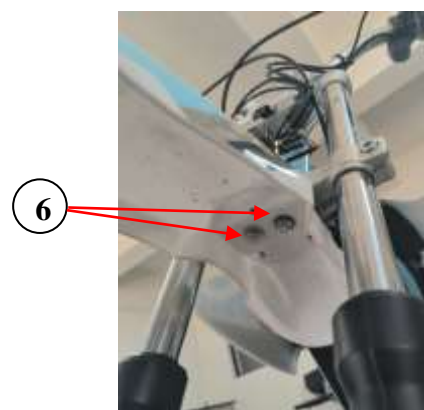
Installation

Follow the reverse order and direction of disassembly

2.5 Front fender

Disassembly

Remove the 2 outer hexagonal bolts (6) below the front fender
Pull the front fender down



Installation

Follow the reverse order and direction of disassembly

3 Regular inspection and adjustment

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Maintenance information

Operation precautions

Attention

- Before operation, check the starting, running, and braking performance, as well as the pressure and temperature.
- Check the motor and circuits for poor insulation, short circuits, and other phenomena.
- Check whether each functional condition is normal.

Attention

Do not let rotating components such as the drive system catch hands and clothes

Attention

The vehicle must be placed on a flat, stable, and dry surface

3.1 Inspection and maintenance methods

Inspection and maintenance items			Maintenance period			Judgment criteria
Inspection parts	Inspection items	Daily inspection	Semi-annual inspection	Annual inspection		
Steering device	Handlebar	Operational flexibility	<input type="radio"/>			
	Steering system	Damage	<input type="radio"/>			
		Installation status of the steering system	<input type="radio"/>			
Braking device	Brake lever	Lever stroke	<input type="radio"/>	<input type="radio"/>		
		Brake effect	<input type="radio"/>	<input type="radio"/>		
	Mechanical braking and brake discs	Wear and damage of brake discs	<input type="radio"/>	<input type="radio"/>		The working disc thickness of the current brake disc is less than 1.5mm, and when the working disc thickness of the rear brake disc is less than 1.5mm, it must be replaced
		Brake pads	Wear and damage of brake pads	<input type="radio"/>	<input type="radio"/>	
Running gear	Wheel	Tire pressure	<input type="radio"/>	<input type="radio"/>		Front wheel: 0.2Mpa Rear wheel: 0.2Mpa
		Tire cracking and damage	<input type="radio"/>		<input type="radio"/>	
		Tire groove depth and abnormal wear	<input type="radio"/>		<input type="radio"/>	If there is no wear indication on the tire surface, the residual groove depth size should not be less than 1mm
		Loosening of wheel nuts and wheel axles	<input type="radio"/>	<input type="radio"/>		
		Shake of front wheel bearings	<input type="radio"/>		<input type="radio"/>	
		Shake of rear wheel bearings	<input type="radio"/>		<input type="radio"/>	
Buffer device	Suspension arm	Shake of the connecting part and damage to the rocker arm	<input type="radio"/>		<input type="radio"/>	
	Shock	Oil leakage and damage	<input type="radio"/>		<input type="radio"/>	

Inspection and maintenance items		Maintenance period			Judgment criteria
Inspection parts	Inspection items	Daily inspection	Semi-annual inspection	Annual inspection	
Transmission device	Output shaft (transmission shaft)	Loose connection part	○	○	
	Battery	Connector connection status			○
	Electrical wiring	Looseness and damage of connections			○
Instrument		Effect			○
Frame		Looseness and damage			○
Other		Lubricating grease status of various parts of the frame			○
Parts that can confirm anomalies during operation		Confirm if there are any abnormalities in the relevant parts	○		

3.2 handlebar and braking system

Place the vehicle in a horizontal position, grip the handlebar tightly, and apply force in the direction shown in the diagram to check if there is any shaking.

If shaking is felt, it should be confirmed whether it is the handlebar shaking or other shaking, and corresponding maintenance should be carried out.

If the handlebar shakes, increase the locking force of the handlebar locking nut or disassemble the handlebar for maintenance

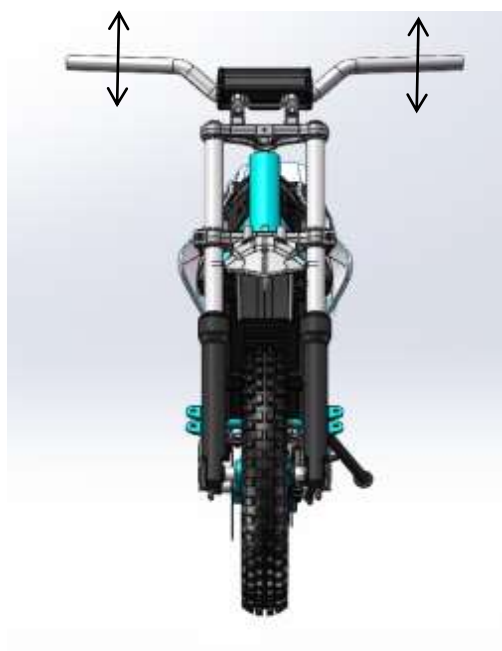
Place the vehicle in a horizontal position and slowly turn the steering wheel to the left and right to confirm if it can rotate smoothly and flexibly, and whether the left and right limits are the same. If there is obstruction in some areas, check the main cable assembly and cables for any interference, confirm if there is any interference, and whether the steering bearing is damaged.

Attention: It is necessary to confirm that the steering is flexible, otherwise the control handle will be unable to control the direction and accidents will occur

Clearance of the brake lever:

Operate the brake lever, check the braking effect and the action of the handle.

Check the clearance at the front and rear brake levers (2-5mm)



Wear of the disc brake discs

Check the wear of the front and rear disc brake discs

If the wear has reached the wear limit, replace the disc brake disc

Attention

The disc brake disc needs to be replaced as a complete set

Inspection and replacement of disc brake discs

Check the sliding surface of the disc brake disc (1) for wear or damage. If the current disc thickness is $\leq 1.5\text{mm}$, replace the disc brake disc

Limit thickness of disc brake disc: 1.5mm

Check the minimum thickness of the disc brake shoe block (2)

Minimum thickness of the shoe block $\geq 1\text{ mm}$

If it is less than the minimum thickness, please replace it with a new disc brake shoe block

Check if there is any damage or crack on the brake disc brake shoe. If there is any damage or crack, please replace it with a new disc brake shoe



3.3 Wheels

Jack up the front wheels in a horizontal position with a tool to ensure that there is no force on the vehicle body. Shake the front wheels left and right to check if they are securely connected and if there is any shaking

If there is shaking, check and tighten the axle, rim bolts, and nuts.

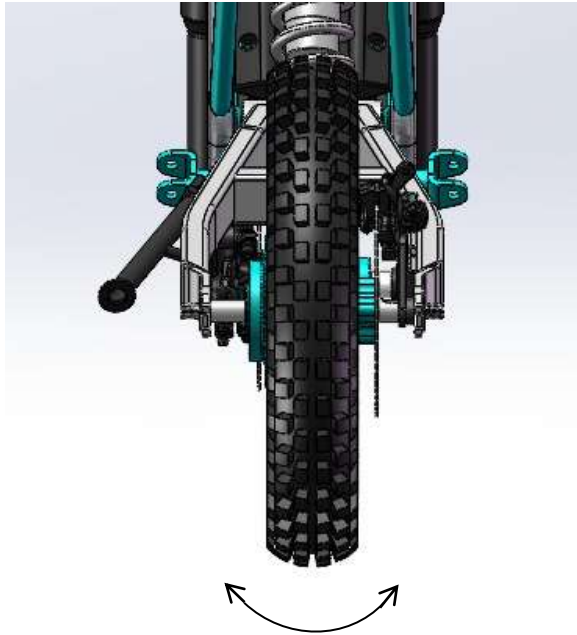
If there is still shaking, check and replace: bearings and other related tire accessories.



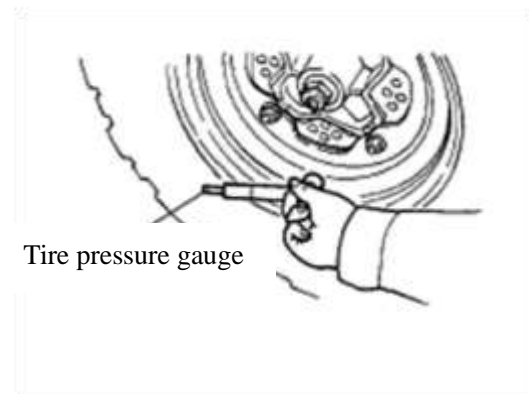
Jack up the rear wheel motor in a horizontal position with a tool to ensure that there is no force acting on the rear wheel. Shake the rear wheel left and right to check if the rear wheel connection is secure and if there is any shaking

If there is shaking, check and tighten the left and right fixing nuts of the motor.

If there is still shaking, check and replace: bearings, tires, and other related accessories.



and riding comfort, and cause adverse effects such as tire bias wear.



Tire pressure gauge

Tire pressure

Use a pressure gauge to check the tire pressure.

Attention

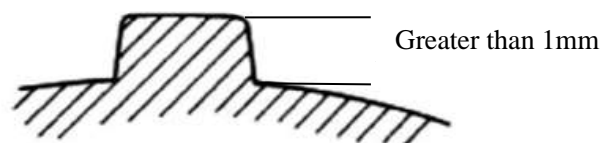
The inspection of tire pressure should be carried out while the tire is cool. If used in a state where the tire pressure is not appropriate, it will lead to poor operation

Designated air pressure/tire

	Front wheel	Rear wheel
Air pressure	0.2Mpa	0.2Mpa
Tire size	See the first chapter	See the first chapter

Tire pattern

Check the tire pattern, and once the height of the pattern is less than 1mm, replace it with a new tire



Attention

When the tire pattern is less than 1mm, it must be replaced immediately

3.4 Suspension system

Place the vehicle body in a horizontal position and compress it up and down several times according to the position shown in the diagram. If there is shaking or abnormal noise, check whether the rebound of the shock is appropriate, whether there is oil leakage, and whether each fastening part is damaged or loose.



3.5 Release of speed limit

The speed control mechanism (1) is shown as the first gear in the figure

Rotate the speed release switch key 90 ° to the right to enter the second gear (release the speed limit)



especially when using it after long-term storage.

Check the accelerator
When rotating the rotary accelerator as shown in the figure, check whether the rotary accelerator rotates flexibly and has no jamming phenomenon. If the rotating accelerator will move, then place the accelerator in the correct position and tighten the lower 1 bolt.

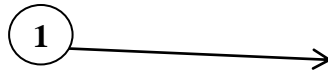


Attention: A gap of 1-2mm should be left with the right half handlebar grip.

3.6 Battery display and throttle inspection

Battery display

When pressing the start switch, observe the battery level on the instrument panel,



4 Electrical system

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Maintenance information

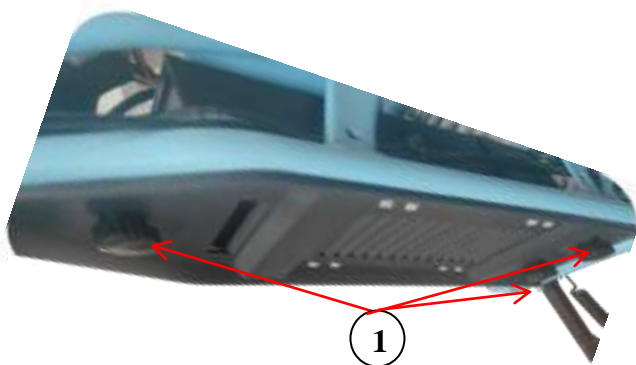
Operation precautions

- During operation and maintenance, please ensure that the vehicle is left standing for no less than 1 hour, confirm the cooling of the heating components, and disconnect the battery connection line before proceeding with maintenance to avoid injury to maintenance personnel.
- Be careful not to damage the frame, motor body, bolts, and cables during operation.
- When disassembling the motor, in order to protect the frame, the frame should be wrapped and protected.

4.1 Disassembly of the battery

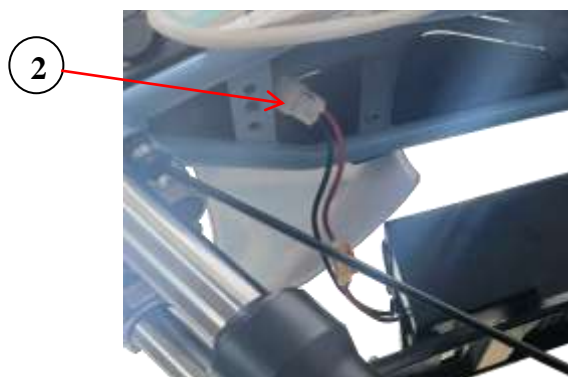
Disassembly

Unscrew the three hand screws (1) of the battery tray, disconnect the connection plug-in (2) between the battery and the controller after removing the battery, and hold the battery tray by hand to prevent it from falling.



Installation

Install in the reverse order of disassembly

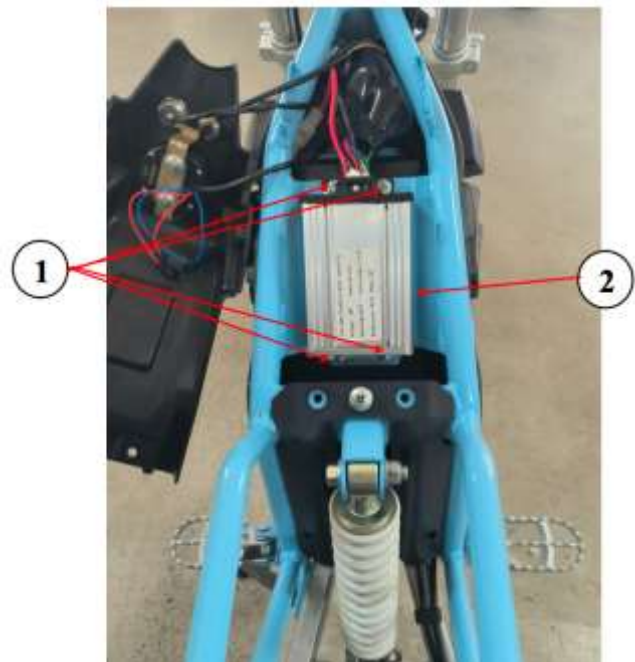


Common faults	Adverse phenomena	Troubleshooting methods
The charger cannot charge and the green keeps light on	Low battery level (normal range of battery voltage 42-54.6V)	Replace with a new battery
	There is an open circuit in the charging interface cable	Check the charging interface cable and replace the charging interface
	Charger damaged	Replace the charger
	Damaged fuse	Replace the fuse
Insufficient mileage	Insufficient tire pressure	Sufficient air
	Battery aging or damage	Replace with a new battery
	Insufficient charging or charger malfunction	Fully charge or check for poor contact at the charging interface or replace the charger

4.2 Disassembly of the controller

Disassembly

- Remove the seat(→ 2.3.1)
- Remove the main plastic part (→ 2.3.2)
- Unplug all electrical plug-ins (→ 1.7)
- Remove the 4 bolts (1)
- Take out the controller (2)



Installation

Install in the reverse order of disassembly

Reason for controller failure:

- 1.Caused by motor overload;
Solution: Replace the controller
- 2.The internal power component circuit of the controller is damaged;
Solution: Replace the controller
- 3.The connecting wire is worn and the contact plug-in is poor or detached;
Solution: Reinstall the plug-in after power outage, and if it fails, replace the controller

4.3 Disassembly of the motor

Disassembly

Unplug the motor plug-in (→ 1.7) and remove the motor cable

Remove the two fixing bolts (1) from the rear brake pump bracket and remove the rear brake pump

Remove the left and right motor two fixing nuts (2) and take out the motor (3) backwards



Installation

Install in the reverse order of disassembly

Common faults of motors:

1.The motor rotation is stuck, jammed, and has abnormal noise: there are foreign objects inside, the coil is deformed, and the bearings are damaged;

Solution: Replace the bearings or motor

2.Motor does not rotate after power on: Hall is damaged

Solution: Replace the motor

4.4 Other electrical components

Disassembly of the horn switch

Remove the left handlebar grip and left brake lever (→ 5.3)

Open the horn switch connector (1) (→ 1.7)

Loosen the bolt on the back of the horn switch (2)

Remove the horn switch (3)



Installation

Install in the reverse order of disassembly

Disassembly of the rotary accelerator

Unplug the rotary accelerator connector (→ 1.7)

Loosen the bolt (1) below the rotary accelerator

Pull out the right handlebar grip (2)

Remove the rotary accelerator (3)



Installation

Install in the reverse order of disassembly



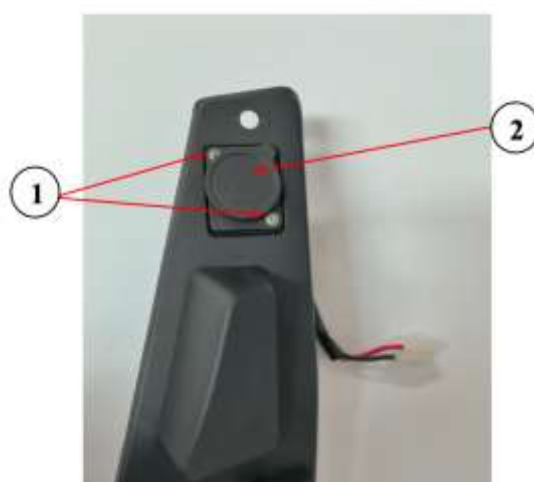
Disassembly of the charging interface

Remove the left side panel (→ 2.3.2)

Unplug the charging interface connector (→ 1.7)

Remove the two bolts (1) from the charging interface

Remove the charging interface (2)



Installation

Install in the reverse order of disassembly

Disassembly of the release speed switch

- Remove the upper cover plate (→ 2.3.2)
- Remove the fixing nut (1) of the release speed switch
- Remove the release speed switch (2)

Installation

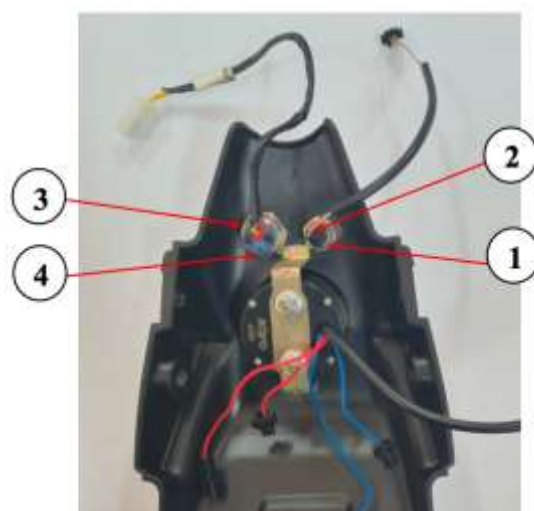
Install in the reverse order of disassembly

Disassembly of the start switch

- Remove the upper cover plate (→ 2.3.2)
- Remove one fixing nut (3) from the start switch
- Remove the start switch (4)

Installation

Install in the reverse order of disassembly

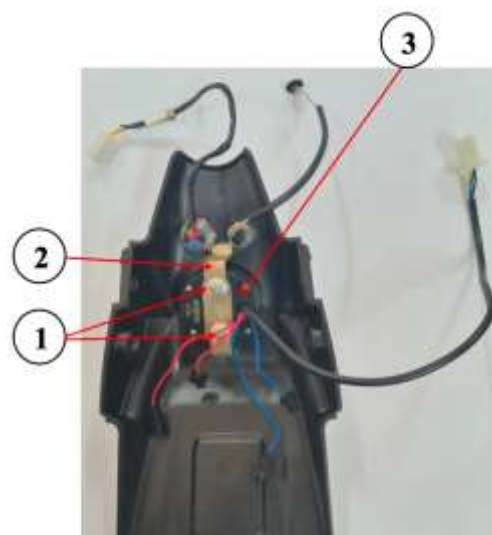


Disassembly of the instruments

- Remove the upper cover plate (→ 2.3.2)
- Remove the two fixing nuts (1) from the instrument panel
- Remove the instrument bracket (2)
- Take out the instrument (3)

Installation

Install in the reverse order of disassembly



5 Vehicle chassis

Maintenance information.....	5-2
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5.2 Wheels.....	5-4
5.3 Front and rear brake systems.....	5-4
5.4 Steering system.....	5-6
5.5 Front suspension system.....	5-7
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Maintenance information

Attention

- When conducting maintenance work on the front wheel and suspension system, the frame must be firmly supported before operation
- The maintenance and inspection of lighting, instruments, and switches should be carried out according to the corresponding chapters
- Do not exert excessive force on the wheels. Be careful not to damage the wheels
- When disassembling tires from the wheel rims, it is necessary to use specialized tires and wheel rim protectors to avoid damaging the wheels rims

Maintenance benchmark

	Items	Standards	Usage limit
Wheel rim	Axial runout	0.8mm	2.0mm
	Radial runout	0.8mm	2.0mm
Tires	Residual groove	—	3mm
	Pressure	0.2Mpa	—

Tightening torque

Name	Specifications	Torque
Rear shock bolt	Blue white zinc M10*40*1.25	49-59N·m
Swingarm assembly bolt	Blue white zinc M10*1.25	68-81N·m
Lower raisers bolt	Blue white zinc M10*30*1.5	49-59N·m
Dust seal	Iron SSR/Small CRF	25N·m
Upper and lower clamp, front right and left shock Fixing bolts	Blue white zinc M8*25	25-30N·m
Top nut	Chromium plated grade 6	35-40N·m
Handlebar upper raisers bolt	Blue white zinc M8*25	25-30N·m
Rear wheel fixing nut	Blue white zinc M12*1.25	70-80N·m
Front and rear brake pump fixing bolts	M6*16	10-12N·m

Tools

Inner hexagonal 5#	Torque wrench
Inner hexagonal 6#	Socket wrench 10#
Open end wrench 8#	Socket wrench 13#

Open end wrench 10#	Socket wrench 14#
Open end wrench 13#	Pointed nose pliers
Open end wrench 14#	Cross screwdriver
Open end wrench 17#-19#	Slotted screwdriver
Open end wrench 30# (for tightening the top nut)	

5.1 Troubleshooting

1. Steering weight

- 1) Damage and wear of steering bearings
- 2) Damaged and worn inner and outer races of bearings
- 3) Steering column deformation
- 4) Low tire pressure
- 5) Tire wear

2. Handlebar shaking

- 1) Damaged and poorly tightened steering bearings
- 2) Left and right shocks do not match
- 3) Tire skewness
- 4) Frame deformation
- 5) Tire wear and eccentric wear
- 6) Wheel bearing shaking

3. Front wheel runout

- 1) Wheel deformation
- 2) Poor wheel bearings
- 3) Poor tires
- 4) Improper wheel balance
- 5) Poor fastening around the wheel axle

4. Wheel rotation is not flexible

1) Poor wheel bearings

- 2) Improper installation of front wheels
- 3) Brake cable, cable stuck

5. Front suspension too soft

- 1) Reduced elasticity of the front shock
- 2) Low tire pressure

6. Front suspension too hard

- 1) Damaged front shock
- 2) Excessive tire pressure

7. Abnormal noise from the front shock

- 1) Poor front shock
- 2) Loose fastening parts of the shock

8. Poor braking effect

- 1) Poor brake adjustment
- 2) The surface of the brake disc is dirty
- 3) Brake pad wear

5.2 Wheels

Disassembly

Set up the front wheels of the entire vehicle and ensure that there is no force acting on the front wheels

Remove the front axle fixing nut (1)

Take out the front axle and take down the front wheel assembly

Inspection of wheel rims

Check the front wheel rim (2) for damage, deformation, or scratches, and replace it if there are any abnormalities. Slowly rotate the wheel and measure the runout of the wheel rim using a dial gauge

Usage limit: Axial: 2.0mm

Radial: 2.0mm

Rear wheel disassembly: the same as 4.3 motor disassembly

Disassembly of the disc brake disc

Remove the fixed bolts (1)

Remove the disc brake disc (2)

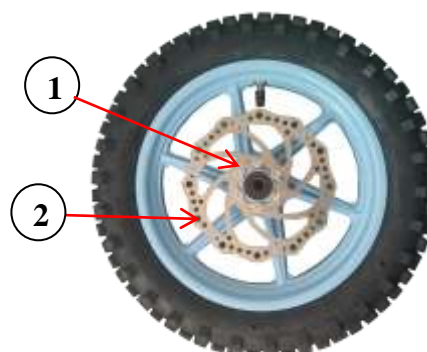
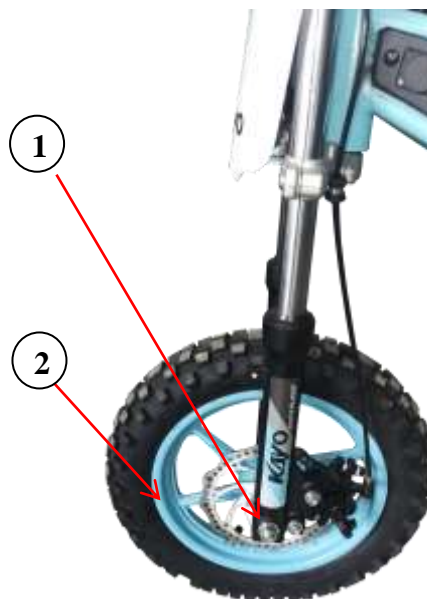
Installation

Install in the reverse order of disassembly

Wheel axle mounting nut torque: $70\text{N} \cdot \text{m}$ - $80\text{N} \cdot \text{m}$

Tightening the installation bolts of the disc brake disc (apply thread fixing agent)

10-12N•m (apply thread fixing agent)



5.3 Front and rear brake systems

Disassembly of the front brake pump

Remove the front brake cable fixing bolt (1)

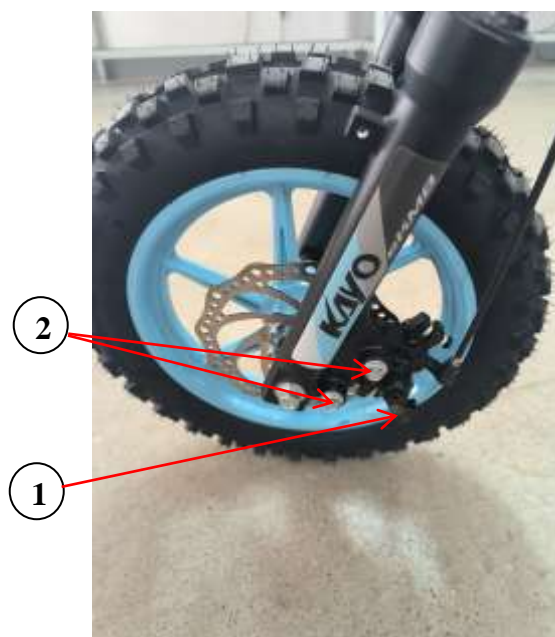
Remove the 2 bolts (2) installed on the front shock

Inspection

Observe whether there are cracks on the front brake pump body. If the thickness of the front brake shoe block is $\geq 1\text{mm}$, replace it

Installation

Front brake pump fixing bolt (2) torque:



Disassembly of the rear brake pump

Remove the fixing screw (1) of the rear brake cable

Remove the 2 bolts (2) installed on the rear brake pump bracket



Inspection

Observe whether there are cracks on the rear brake pump body. If the thickness of the rear brake shoe block is ≥ 1 mm, replace it

Installation

Rear brake pump fixing bolt (2) torque: 10-12N•m (apply thread fixing agent)

Disassembly of the front and rear brake pumps

Remove the pin (1)

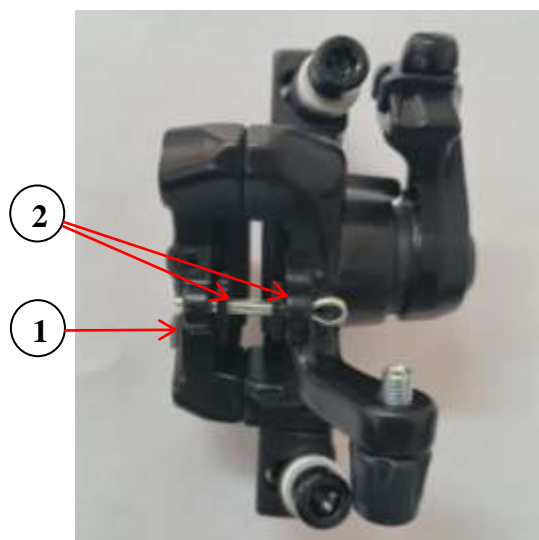
Take out the shoe block (2)

Inspection

Measure the thickness of shoe block 2. When the thickness of shoe block (2) is less than or equal to 1 mm, it is necessary to replace the brake shoe block.

Installation

Install in the reverse order of disassembly



Disassembly of the left brake lever and the brake cable

Remove the front panel (→ 2.4)

Pull open the left brake lever connector (1)

Loosen the bolt (2)

Loosen the left brake lever nut (3)

Loosen the rear brake cable fixing bolt (4)

Pull out the left handlebar grip (5)

Take out the left brake cable (6)



Install in the reverse order of disassembly

Disassembly of the right brake lever and brake cable

- Pull out the right brake lever connector
- Loosen the bolt (1) that secures the front brake cable
- Take out the front brake cable (2)
- Loosen the fixing bolts (3) of the brake lever
- Take out the right brake lever to the right

Installation

Install in the reverse order of disassembly



Installation

Install in the reverse order of disassembly

Attention: The direction of the brake wire on the vehicle body must be in accordance with the brake wire and electrical wiring diagram in the first chapter. It is necessary to ensure a smooth braking system. When the assembly is installed, the braking force must be checked.



5.4 Steering system

Disassembly of the handlebar

- Remove the front panel
- Remove the left and right brake levers, horn switches, rotary accelerator, and their connectors (→ 1.7)
- Tear off the adhesive underneath the handlebar pad cover and remove the handlebar pad
- Remove the four bolts (1) that secure the handlebar
- Remove the upper pressing block of the handlebar
- Remove the handlebar



5.5 Front suspension system

Disassembly of the front suspension assembly

Attention: When repairing the suspension system, lift the front wheels of the vehicle first.

Disassembly of the front suspension

Remove the front panel (→ 2.4)

Remove the front wheel (→ 5.2)

Remove the front fender (→ 2.5)

Remove the front brake pump assembly (→ 5.3)

Remove the handlebar (→ 5.4)

Loosen the top nut (1) and the fixing screw (4) on the front shock

Remove the upper clamp

Remove the dust seal (2) securing the handlebar

Remove the front suspension assembly (3)

Installation

Install in the reverse order of disassembly

Attention

The torque requirement for the top nut is 35-40N·m

The torque requirement for the front shock fixing screw is 25-30N · m



Front shock

Disassembly

Loosen the upper (1) and lower (2) fixing bolts of the front shock

Remove the front shock (3)



1

Installation

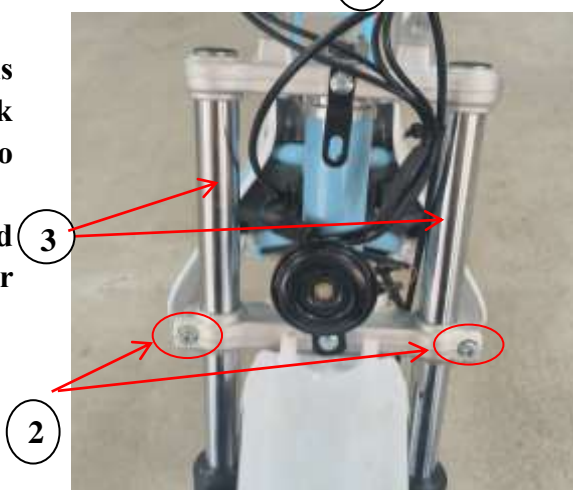
Install in the reverse order of disassembly

Attention

When removing the front shock, it is necessary to use wooden strips to block the gaps, otherwise it will be difficult to support it when reinstalling the shock.

The bottom of the shock absorbing red cover is flush with the plane of the upper clamp

Bolt torque requirement: 25-30 N.m



2

clamp assembly

Disassembly

Remove the bolts (1) that secure the lower raisers

Remove the lower raisers (2)

Remove the bolts (3) that secure the front panel bracket

Remove the front panel bracket (4)

Remove the top nut (5)

Remove the upper clamp

Remove the handlebar dust seal (7) and remove the lower clamp



Installation

Install in the reverse order of disassembly

Apply lubricating grease (grease) to the bearing area

Attention

The Steering column and needle bearing in the lower clamp are installed using a hydraulic press, and do not need to be disassembled unless they are damaged



(Upper clamp)



(Lower clamp)

5.6 Rear suspension system

Disassembly

Remove the seat, front left guard, front right guard, left panel and right panel (→ 2.3 Covering parts of the vehicle)

Remove the motor wire and rear brake wire (→ 1.7)

Remove the flange shaft (1) that fixes the rear shock

Remove the flange shaft (2) that is fixed to the frame with a swingarm after removal

Take out the swingarm shaft and remove the rear suspension assembly (3)



Installation

Install in the reverse order of disassembly

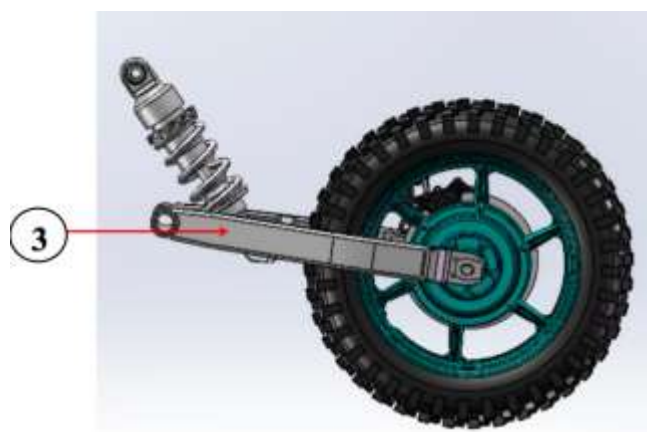
Attention

It is necessary to protect the motor wires and connecting plug-in

The flange shaft runs from right to left

Rear shock absorption torque requirement: 49-59 N.m

Rear swingarm torque requirement: 68-81 N.m



Disassembly of the rear shock

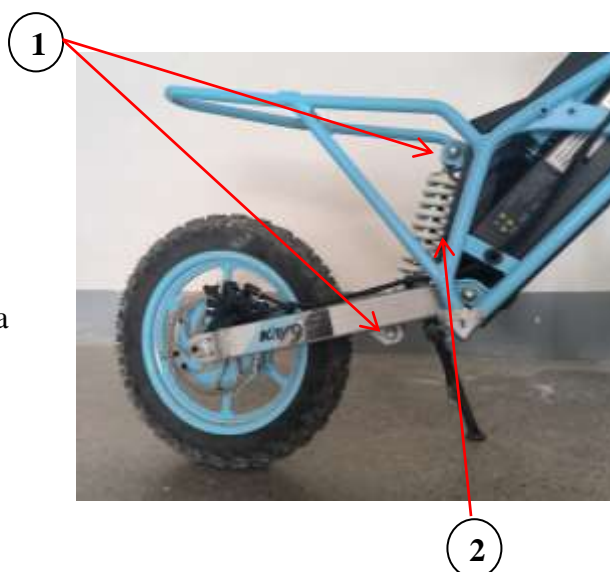
When repairing the suspension system, the vehicle body should be suspended first and the suspension system should be removed, otherwise the vehicle body will fall down due to lack of support

Park the vehicle on a level surface and use a support stool to firmly support the rear of the vehicle

Remove the seat

Remove the bolts (1) that install the rear shock on the vehicle body and the rear fork assembly

Remove the rear shock (2)



Inspection

Inspect the removed shock

Installation

Install in the reverse order of disassembly

Disassembly of the rear swingarm

When disassembling the swingarm, the entire vehicle should be elevated first, otherwise the vehicle will fall down due to lack of support

Park the vehicle on a level surface and use a support stool to firmly support the rear of the vehicle

Unplug the motor connector (→ 1.7) and remove the motor cable

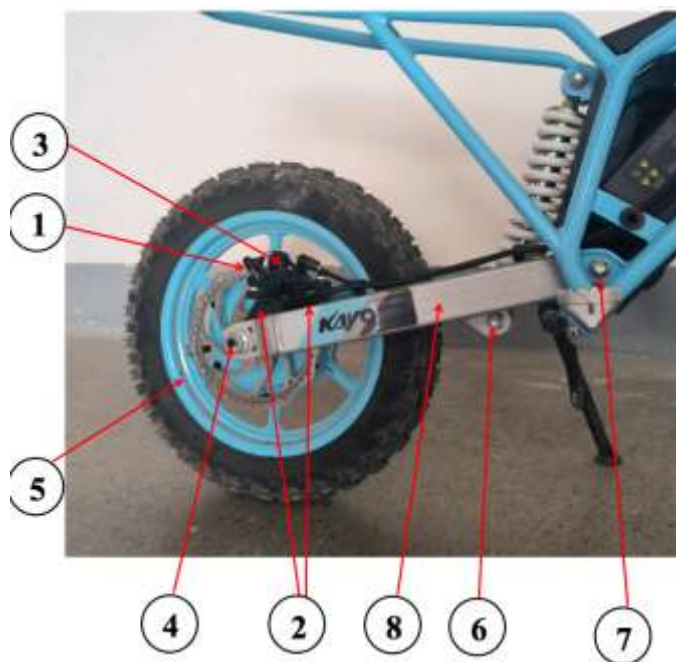
Loosen the rear brake cable bolt (1), remove the fixing bolt (2) of the rear brake pump bracket, and remove the rear brake pump (3)

Remove the fixing nuts (4) of the left and right motors and take out the motor assembly (5) backwards

Remove the bolts (6) fixed to the rear shock

Remove the swingarm shaft (7) fixed to the frame

Remove the rear swingarm (8)



Installation

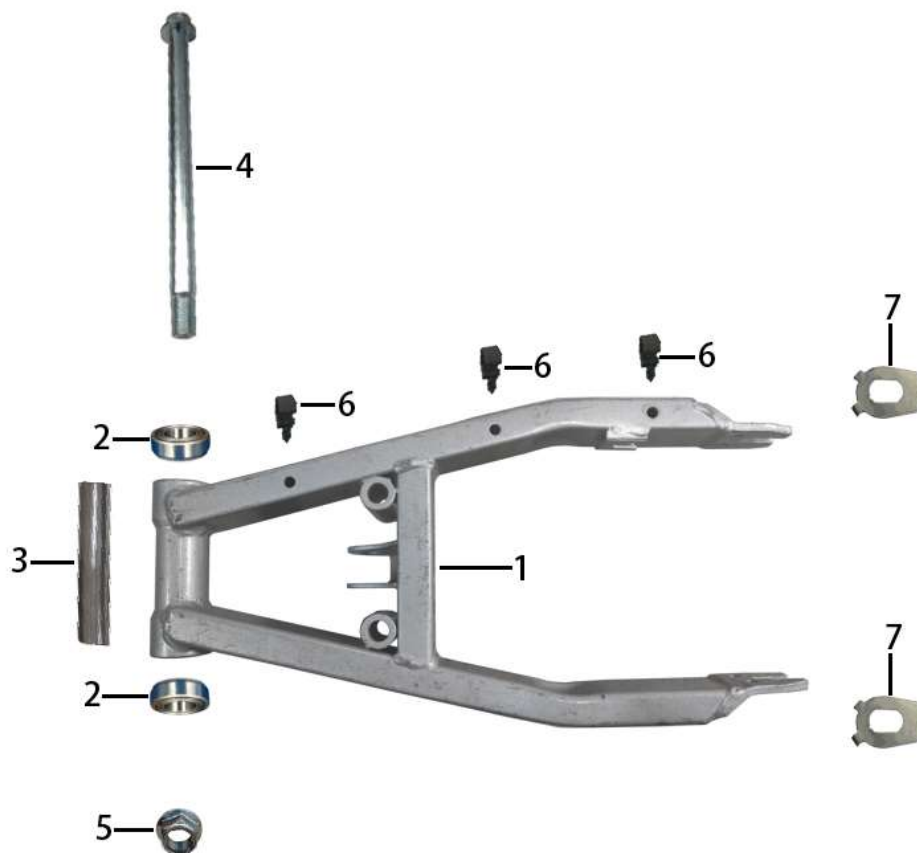
Install in the reverse order of disassembly

The rear wheel motor cable should be wound around the rear brake pump bracket, and the bolt on the rear brake pump bracket should be clamped into the limit bracket of the swingarm

Motor fixing nut torque requirement
70-80N · m

Inspection

The diagram of the total composition of the rear swingarm of the vehicle is as



Number	Name	Quantity
1	Steel swingarm	1
2	Bearing	2
3	Swingarm bushing	1
4	Flange shaft	1
5	Self-locking nut	1
6	Double hole clamp	3
7	Rear wheel limit spacer	2

Inspection after disassembling the rear swingarm

- Check if the rear flange shaft is bent or damaged, and if so, replace it with a new flange shaft
- Check the steel swingarm, and if there is any damage, replace it with a new one
- Check if the other parts are damaged, and if there is any damage, replace them with new ones

Installation

Perform in the reverse order when decomposing by a rear fork

Attention: When installing the bushing, apply Mobil XHP222 grease to both ends of the swingarm shaft

Appendix

