E-Scooter Maintenance and Repair Guide for Technicians

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Important notice: the Evolve e-scooter is a certified product. It is type approved under the “Nationale typegoedkeur Bijzondere Bromfietsen”, cat. L1-1b regulations by the Rijksdienst voor het Wegverkeer RDW for use on the Dutch cycle lanes and roads (where applicable following local regulations).
Any unauthorized alterations to the vehicle, use of non-conforming components (e.g. brake pads or lighting components) or damaged or missing parts may cause the vehicle approval to become annihilated and make the vehicle unfit for road use.
Please contact the manufacturer or its authorized representative in case of doubt.

1. Safety Precautions

Always wear appropriate personal protective equipment (PPE), including gloves and eye protection.
Disconnect the battery before performing any maintenance or repairs.
Ensure the e-scooter is on a stable surface and cannot roll during maintenance.

2. Tools and Equipment

 Metric wrench set	 Screwdrivers (Phillips and flathead)	 Tire inflator with pressure gauge	 Multimeter	 Battery tester
 Allen wrench set	 Tire lever (large)	 Tire lever (small)	 Valve nozzle (dis)assembly tools	 Hex wrench (18mm)

3. Routine Maintenance

a. Tire Inspection:

1. Check tire pressure regularly and inflate to manufacturer specifications.

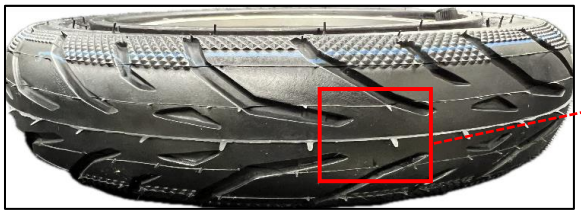
The maximum tire pressure of 350 KPa (50 PSI.) is marked on the tire. It should be close to but not exceed this number when inflating.

2. Inspect tires for wear, cuts, or punctures.

Tire wear/puncture/cuts

If the tires in the above three damaged examples or worn for a long time until the tread indicator line disappears, tires need to be replaced immediately to ensure driving safety.
*For more information on the tire replacement, please refer to the repair section in this manual.

3. Replace tires if tread depth is below the recommended levels.



Tread wear indicator line, if the tire surface is worn to the same level as the tread wear indicator line,
indicates the need for new tires to maintain riding safety.

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b. Brake System Maintenance:

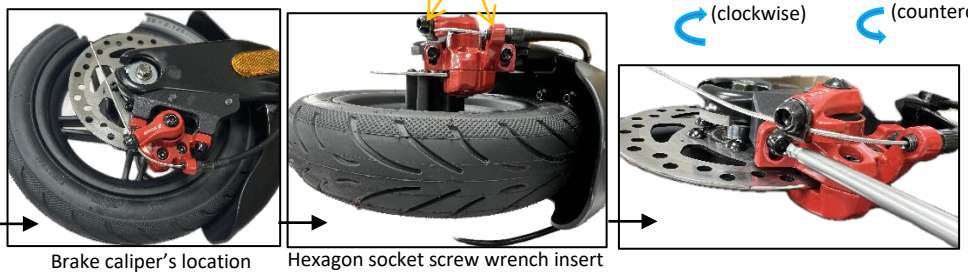
1. Inspect brake pads for wear and replace if necessary.
2. Adjust brake calipers for optimal performance.

Prepare No. 5 Allen wrench

Allen wrench insert here

First remove the brake caliper, use a No. 5 Allen wrench, align the screw wrench at the position of the brake caliper, loosen and unscrew it counterclockwise to make the pads further apart to increase the disc clearance. On the contrary, lock it clockwise to keep the pads closer together to reduce disc clearance.

Prepare No. 5 Allen wrench



Hexagon socket screw wrench insert

To tighten (clockwise)

To loosen (counterclockwise)

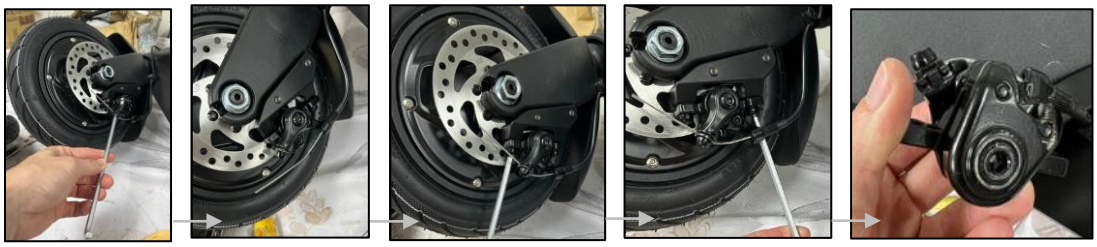
Brake caliper's location

Hexagon socket screw wrench insert

After loosening, the caliper can be adjusted up and down, and then locked.

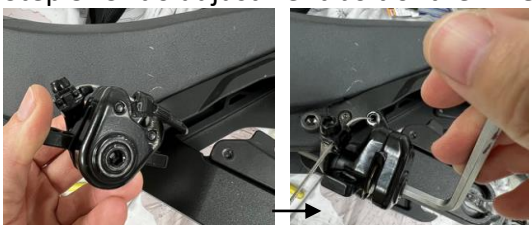
c. Brake caliper adjustment

Step 1. Remove the cable from the lever and remove the brake caliper using Allen key 5.

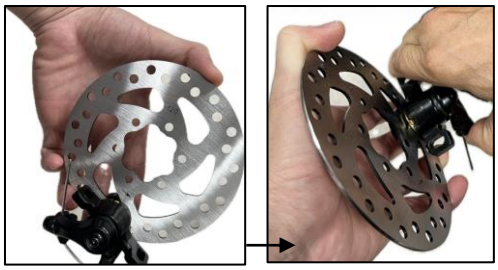


Step 2. Replace brake pads if necessary.
See chapter 5. Repairs, section c for brake pad replacement.

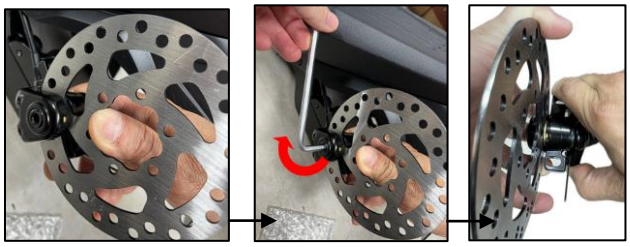
Step 3. Undo adjustment bolt of the inner brake pad.



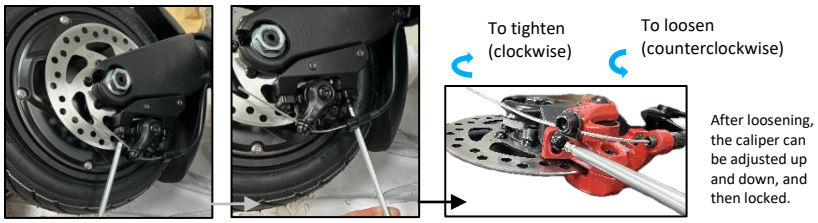
Step 4. Insert a spare brake disc between the brake pads (if available. If not available, adjustment should be estimated and tried in iteration process).



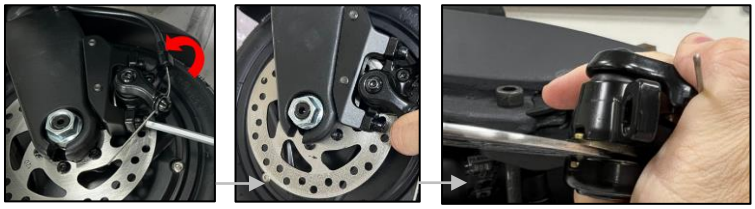
Step 5. Tighten the adjustment bolt of the inner brake pad until the caliper clamps the disc lightly. Undo the bolt approximately 1/10th of a turn until the disc is just released again.



Step 6. Mount the brake caliper by tightening the 2 bolts mildly until the caliper is held in position but still free to be adjusted slightly.



Step 7. Rotate the caliper lever in braking direction such that it clamps the disc. Keep lever in this braking position.



Step 8. Tighten caliper fixation bolts firmly and release the lever.

Step 9. Pull the brake cable to make sure all play is out.

Step 10. Fix the caliper lever to the cable.

3. Check if the brake caliper is properly adjusted

Step 1. Check if the wheel moves freely without the brake pad touching when the brake is not applied

Step 2. When pulled firmly (i.e. emergency stop), check if the brake lever cannot be pulled against the handlebar grip. There should always be space between the brake lever and grip (e.g. 1 cm minimum).

*If any of the above checks is not satisfactory, then repeat the adjustment procedure

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c. Battery Care:

Please follow the below instructions for battery care:

1. Do not submerge the battery in water or let it get wet.
2. The battery pack must be protected from falling to the ground, being hit by heavy objects, or being punctured by sharp objects.
3. Disassembling, modifying or using the battery pack for purposes other than those used with the product is strictly prohibited.
4. The power output terminal of the battery pack is strictly prohibited from touching metal conductors.
5. Charge the battery according to the manufacturer's guidelines. (Charging ambient temperature: 0℃~ 45℃; Discharge ambient temperature: -20℃~ 45℃)
6. Please charge in a well-ventilated place. The charger cannot be directly exposed to the sun without shelter. It is strictly prohibited to charge in a humid, dew-heavy place with flammable materials, volatile gases, and excessive dust nearby.
7. Do not use or store the battery where it is exposed to extremely hot, such as under the window of a car in direct sunlight on a hot day. Otherwise, the battery may be overheated. This can also reduce battery performance and/or shorten service life.
8. Long-term storage: The pack should be stored at room temperature and charged to about 40% to 60% of capacity. To extend battery life, the pack should be charged for one time every 2 months while storing, and batteries should be discharged and charged after being stored for more than a year to activate it and restore energy.
9. It is strictly prohibited to use special chargers other than those provided by the original manufacturer for charging.
10. The battery of this product is a special battery. Please do not use it as a power source other than this product to avoid damage to the battery.

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d. Frame and Components Check:

1. Inspect the frame, handlebars, and other components for damage. Replace parts that are broken, torn of have sharp edges.
2. Tighten loose bolts and screws.

4. Troubleshooting

a. Power Issues:

1. Check the battery voltage.

Remove the battery.

Closed pin2,3

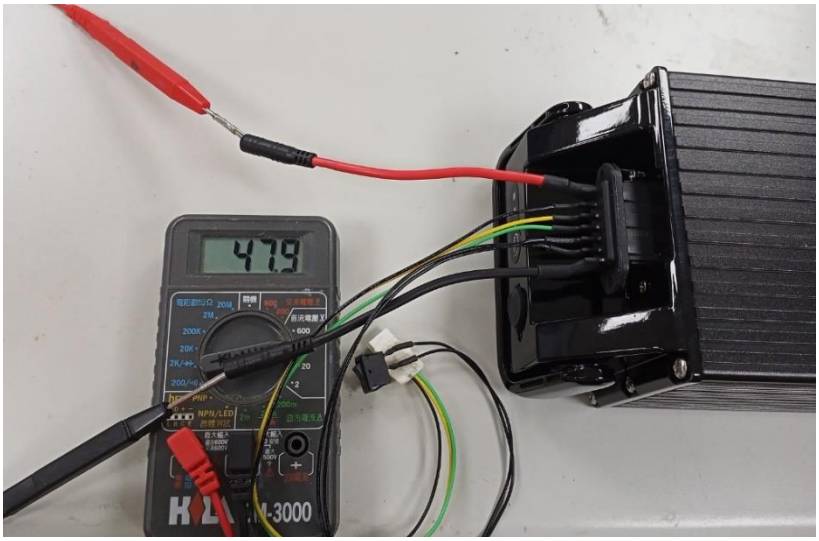
#2, #3 : Closed: Power on

Open:Power off

Check the voltage, normal range: 39.0V~54.6

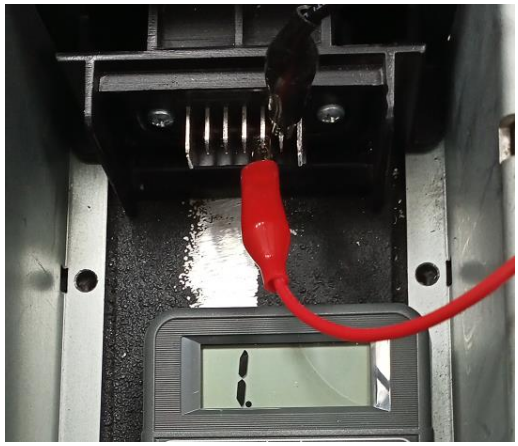
If there is no voltage, recharge or replace the battery.

Red is the positive pole (+), black is the negative pole (-)

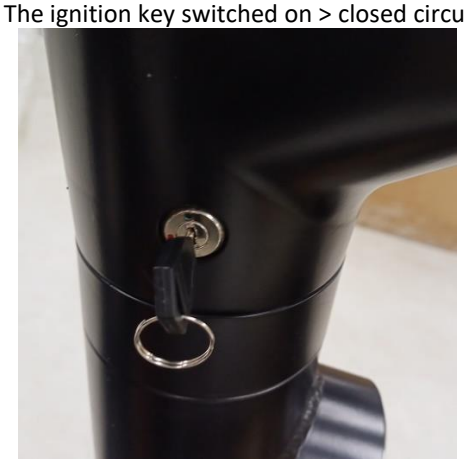


2. Use a multi-meter to check whether the power ON/OFF contact from the power switch to the battery is normal.

The ignition key switched off > open circuit. (It is normal for the resistance value to be high)



The ignition key switched on > closed circuit. (It is normal for the resistance value to be low)



3. Inspect wiring for loose connections or damage.
4. Check whether there is a closed circuit between the positive and negative contacts of the controller power supply and the battery.

Normally the resistance value is very high. If the resistance value is low, the wire or controller may be defective.

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b. Brake Problems:

1. Inspect brake pads and replace if worn and not functioning.

2. Examine brake cables for fraying or damage.

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c. Electronic Malfunctions:

1. Inspect the wiring harness for loose connections or damage.
2. Test the throttle.

Turn the wheel by hand and press the throttle when the speed reaches 3km/h, and the motor will activate.

The below issues will cause the motor to inactivate when doing the throttle testing:

Throttle abnormality	Wire detached or defective
	Throttle knob defective
	Motor controller defective
	Brakes defective
	Motor defective

3. Test the brake sensors.

Right brake sensor

Left brake sensor

Press the left or right brake, (the brake indicator symbol will be displayed on the screen). Hold the left/right brake lightly, then conduct the throttle testing (refer to above
“test the throttle” steps), the motor should not activate.

The below issues will cause the motor to activate when doing the brake testing:

Brake abnormality	Wire detached or defective
	Brake detector defective
	Motor controller defective

4. Check the controller for faults.

Error code	Check items	Explanation
0x24	Wire detached or defective	Any Hall signal of the motor is abnormal. (open circuit, short circuit)
	Motor defective	
	Motor controller defective	
0x25	Wire detached or defective	The brakes were not released for more than 1 minute. Shows braking abnormality.
	Brake stuck	
	Defective brake detector	
	Motor controller defective	
0x30	Wire detached or defective	Abnormal UART communication between the instrument and control panel. Use the instrument to judge for yourself
	Motor controller defective	
	IOT PCB defective	
0x33	Controller temperature protection	-Over 60℃: Maximum power and current are halved. -Over 65℃: Motor does not output. -Drop back to 50℃ and restore maximum output power
0x34	Motor Temperature protection	-Over 80℃: Maximum power and current are halved. -Over 90℃: Motor does not output. -Drop back to 70℃ and restore maximum output power
0x35	Battery Temperature protection	-Over 60℃: No output. -Drop back to 55℃ and restore output power
0x36	Battery abnormality	Battery abnormality

5. Repairs

a. Tire Replacement:

1. Remove the wheel.

Prepare an 18mm external hex wrench to loosen and remove the nut at the arrow. Then use a flat wrench to pry open the single-hook washer under the nut. Then remove the tire together with the wheel frame set. Use a No. 4 internal hexagon. The wrench can remove the 6 screws circled in the diagram (right).

2. Remove the old tire and tube and install the new tire and tube, ensuring proper alignment.


Tire lever-large


Tire lever-small


Valve nozzle (dis)assembly tools


A


B


C


D


E


F


G


H


I


J

1) Insert the valve removal tool into the valve to deflate it. (Pic A)
2) The removed valve. (Pic B)
3) Use both hands to press the tire and loosen the tire away from the rim (Pic. C)
4) Pry the tire away from the rim. (Pic D)
5) Insert the tire bar and pry one side of the tire away from the rim. (Pic E)
6) Then insert the second tire lever, use the first tire lever as the fixed point, and use the second tire lever as the force point to pry it out. Outer tire. (Pic F)
7) Press the valve with your thumb to press the inner tire away from the rim. (Pic G)
8) Completely pull the inner tube out from the other side of the tire. (Pic H)
9) Use a tire lever to completely pry the outer tire away from the rim. (Pic I)
10) After the outer tire and inner tube are completely separated, reinstall the new inner tube. (Pic J)
11) perform the above steps in reverse order for installation

3. Inflate the tire to the recommended pressure.
*Please refer to the above tire inspection section.

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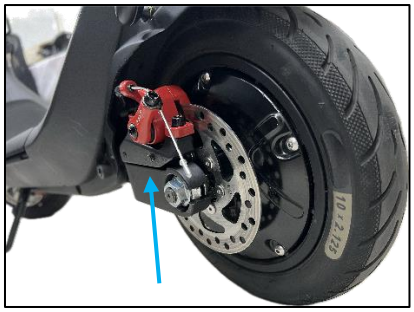
b. Replace Brake Discs:

1. Remove the wheel to access the brake components.
2. Replace worn brake discs



Prepare an 18mm external hex wrench to loosen and remove the nut at the arrow. Then use a flat wrench to pry open the single-hook washer under the nut. Then remove the tire together with the wheel frame set. Use a No. 4 internal hexagon. The wrench can remove the 6 screws circled in the diagram (right) and replace them with new metal discs. Then install the tires and wheel frame set in the reverse order. (The front wheel adjustment method is also the same as the rear wheel).

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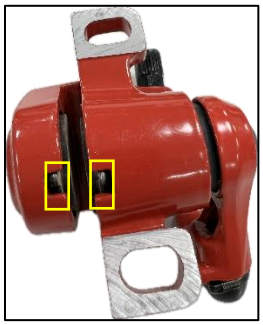
c. Replace worn brake pads.

1. Use tweezers to pry off the pads and clip out the pads.
2. Replace the new brake pads in the caliper. (To replace new brake pads, please go through the reverse process)



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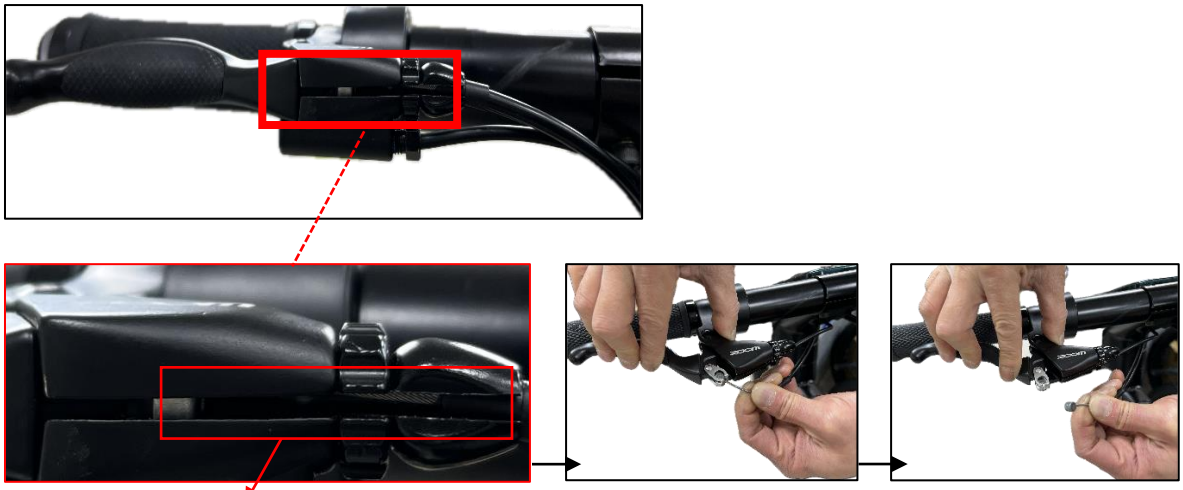
d. Replace brake cables.



Point to the key on the brake handle
The gap between the 3 parts is turned into a straight line

As shown in the diagrams, turn the gaps between the three parts pointed at the key of the brake handle to a straight line, tighten the brake lever with your hand until the circular fixing part is exposed, and then use the other hand to grab the brake line and pull the circular Once the fixing piece is taken out, the separation process of the upper half of the brake line is completed.
(The brake lines of the tire part can be separated by referring to how to adjust the brake tightness).

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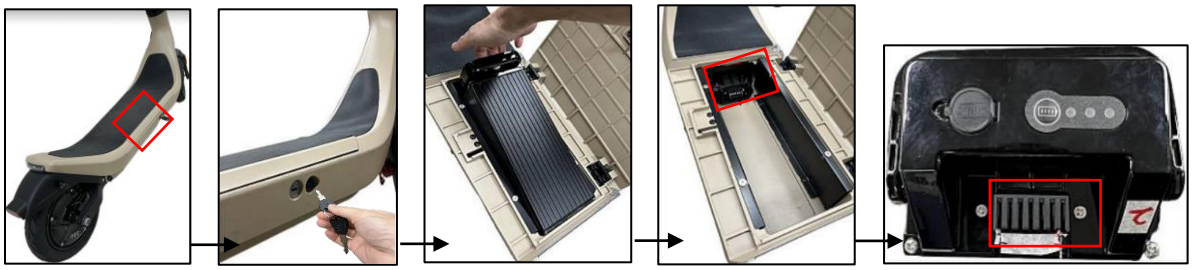
e. Battery Replacement:

1. Disconnect the old battery.
2. Connect the new battery according to manufacturer instructions.



To lock (clockwise)
To open (counterclockwise)

As shown in the diagrams, insert the key into the anti-theft lock hole of the battery and turn it open, then lift the battery compartment lid and take out the battery for replacement. Please check the terminal interface between the battery holder and the battery (framed area) after removing the battery to see if there is any abnormality such as rust.

3. Test the scooter to ensure proper power delivery.

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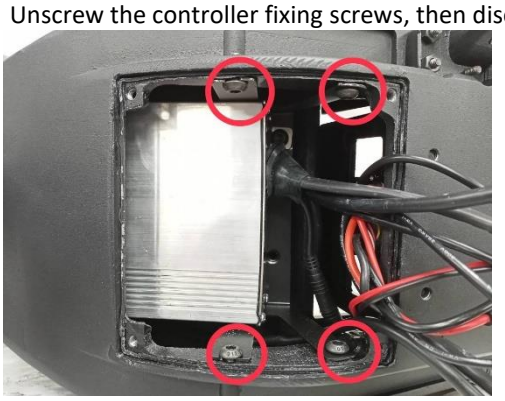
f. Motor Controller Replacement:

1. Replace the controller: turn off the power and remove the battery.

2. Replace the faulty controller.

Open the steel cover plate below

Unscrew the controller fixing screws, then disconnect cables and replace the failed controller.



3. Reconnect wiring and test for functionality.

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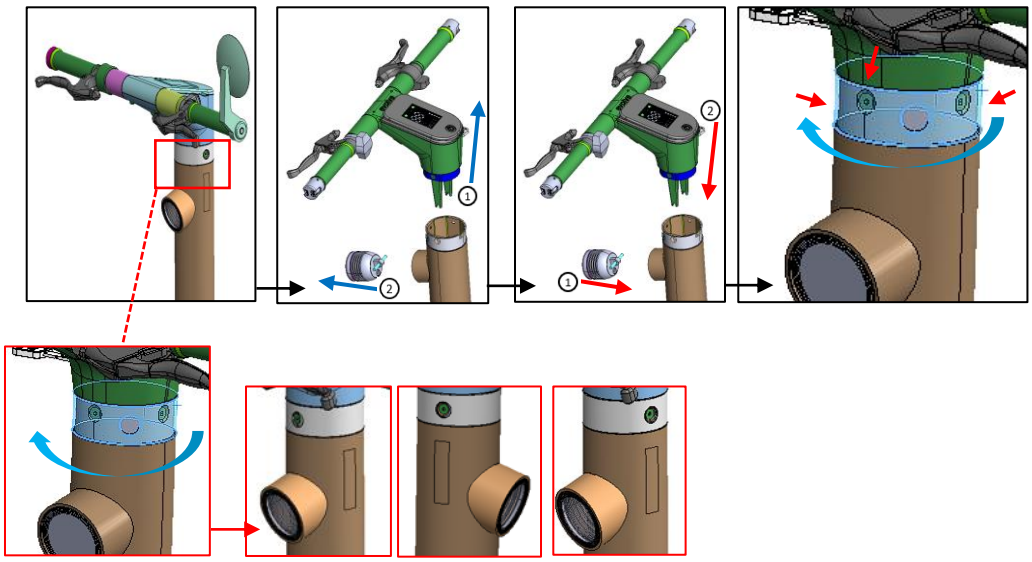
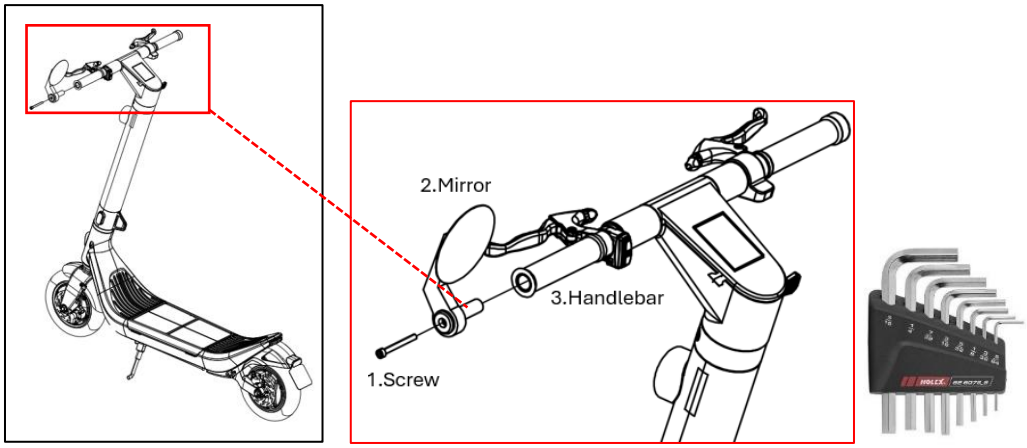
g. Headlight Replacement:



Step 1: Rotate the metal cover until the screw heads (3x) are exposed. Use the No. 4 wrench to remove the 3 screws.
Step 2: Pull up the entire bridge, and then take out the headlight from the tube.
Step 3: Replace the new headlight by inserting it into the tube, then put the bridge back in position.
Step 4: Rotate the cover and lock the 3 screws back into holes.

h. Mirror installation



Insert mirror (2.) into the handlebar (3.) and adjust it to the appropriate position, then align the screw (1.) with the screw hole of the mirror (2.) Use a No.5 Allen wrench to tighten the screw (1.) to fix the mirror (2.)

6. Firmware and Software Updates

Periodically check for firmware and software updates from the manufacturer.
Please follow the provided instructions for updating the scooter's firmware.
Please contact WeFuture for further assistance at: info@wefuturecompany.com

7. Testing and Quality Assurance

Conduct a thorough test ride after each repair or maintenance procedure.
Ensure all components are functioning correctly.
Address any issues identified during testing.

8. Documentation

Maintain a detailed record of all maintenance and repair activities.
Record VIN number (engraved in bottom righthand side of frame), dates, odometer reading, parts replaced, and any issues encountered.

9. Customer Communication

Clearly communicate the results of inspections and repairs to the customer.
Provide recommendations for ongoing maintenance.

10. Recommended Spare Parts

Keep an inventory of commonly used spare parts, including tires, brake pads, and batteries.
Restock as needed to minimize downtime during repairs.
Always follow the manufacturer's guidelines and safety instructions when performing maintenance and repairs on e-scooters. If in doubt, consult with the manufacturer or seek professional assistance.