MQI GT EVO Scooter

Service Manual

Jiangsu Niu Electric Technology Co. Ltd

Foreword

Key points in maintenance of Niu MGT EVO are described in this maintenance manual.
Preparations in the maintenance manual include notes to all operations. Please read the manual carefully before operating.
Key points in the inspection and adjustment, including maintenance methods for scooter safety and component performance that are applied from regular examinations, are described.
Chapters are edited with disassembly diagrams, system figures and instructions about the maintenance and failure diagnosis.

Note:
Modifications of scooter version or structure as well as photos, pictures or instructions in the manual are referred to physical objects without further notice.

Maintenance Information

The maintenance and reparation information contained in this manual is for technical specialists only.
Maintenance or reparation performed by those who are not trained properly and provided with appropriate tools and equipment may cause injuries to themselves or others and also lead to damages or unsafe conditions of the scooter.
The proper maintenance and reparation procedures, some of which require special tools and equipment, are described in this manual. The risks in terms of personal safety and scooter operation safety, which may be resulted from the use of components, maintenance procedures or tools not recommended by Niu must be verified.
Please make replacement with original electric components made by Niu or equivalents that have corresponding part numbers. We strongly recommend you not to use inferior components.

Customer Safety Notice

The proper maintenance is crucial for customer safety and scooter reliability. Any errors or omissions in scooter maintenance may result in operating malfunctions, scooter damages or injuries.
Improper maintenance or reparation may lead to unsafe conditions under which serious injuries or even death of your customers or other people may be incurred.
Please carefully follow the procedures and cautions in this manual and other maintenance materials.

Personal Safety Notice

This manual is used only by professional maintenance technicians, and the warning information about multiple basic workshop safety operation procedures (such as the procedure that requires gloves when working on hot components) is n=ot set forth herein. We recommend you not to carry out procedures specified in this manual without readiness if you have not received the workshop safety training or grasped the knowledge about maintenance safety specifications.
The following are listed as several most importance general notes to maintenance safety. However, we are unable to set forth the warning for each of risks that may arise from maintenance and reparation procedures. You have to determine at your discretion whether a detail task should be implemented.
Failure to properly follow relevant instructions and notes may result in serious injuries or even death.
Please carefully follow procedures and notes in this manual.

Importance Safety Notes

Make sure that you have completely understood basic workshop operation safety procedures and taken on proper protective clothes and are provided with safety equipment. Extra attention should be paid to the following in the implementation of a maintenance task:

- Read all the relevant instructions before operation, and make sure that you have necessary tools, spare parts, components and skills to implement a maintenance task safely and completely.
- There are high-voltage circuits in the scooter system, which can cause electric shock. It must be verified that your maintenance site, tools, protective equipment and operation procedures are in compliance with the insulation requirement.
- Eyes should be protected with proper safety glasses, goggles or masks in operations such as hammering, drilling, polishing or prying or working around high-pressure air or fluid tanks, springs or other energy storage components. Eye protection devices should be worn as long as there are suspicious conditions.
- Other protection devices such as gloves or safety shoes are used where necessary. Gloves should be worn before handling of a hot or sharp component that may cause serious burns or cuts or grasping of any things that may cause injuries.
- Measures should be taken to protect you and others once a scooter is lifted. Make sure that the scooter is always supported stably when being lifted with a crane or jacks. Please use jack mounts.
- The hot motor after driving for a long time may cause burns. Wait for the motor to cool down before working on it.
- Moving parts can cause injuries. Make sure that your hands, fingers and clothes are not obstructive.
- Components must be cleaned with non-flammable solvents instead of the gasoline.
- All components related to a storage battery should be away from cigarettes, sparks and flames.

Contents

Maintenance Rules

1. Metric tools should be made as available as possible in the maintenance of the scooter. Use of improper tools may damage the scooter.

2 Clean off the dirt outside parts or assemblies of the chassis or braking system before guard removal from the scooter or opening for maintenance.

3 Please clean parts and blow them with an air compressor after removal and before measurement of the wearing value.

4 Rubber parts that have become aged or deteriorated are very easy to be damaged by the solvent or oil. They should be checked or replaced if necessary before reassembly.

5. Multiple assemblies should be loosened in the sequence from outside to inside and beginning with small ones.

6. Complex assemblies should be stored in a proper installation sequence for further assembling.

7 Extra attention should be paid to important fitting positions before disassembling. Parts that are no longer to be used should be replaced before disassembly.

8 The bolt or screw leMGTh varies with assemblies and guards. Bolts or screws must be installed at correct positions. A bolt can be placed into a bolt hole for fitness in case of confusion

9 The oil seal should be installed by lubricant application into the oil seal groove, and should be checked for smoothness, smoothness and damages before installation.

10 The spherical bearings (on the front wheel-hub or rear wheel motor) should be removed by holding one or two bearing races (the inner and outer races) with tools. The bearing may be damaged in removal if the force is applied only to one race (the inner or outer race) and thus must be replaced.

Important notes

1．Please use original parts made by Niu. Use of components that are not in compliance with design specifications by Niu Company may cause damages to the scooter.

2．Maintenance operations can be performed only with metric tools. The metric bolts, nuts and screws can not be interchanged with British fasteners.

3．The replacement with new washers, O rings, split pins and lock shims should be made for reassembly.

4．Bolts or nuts should be tightened by beginning with large-diameter bolts or inward bolts and then gradually tightening to specified torques diagonally, unless otherwise indicated.

5．Clean components that have been removed with the detergent solution. All the sliding faces should be lubricated before assembling.

6．Check all components for the proper installation and operating after assembly.

7．Remove the dirt and oil stains before measurement. Apply recommended lubricants to sections to be lubricated during assembly.

8．Apply the lubricant to part surfaces to avoid rusting and dust accumulation, if the engine and transmission systems need to be stored for a long time after disassembling.

Cable connector inspection

- Loose cables constitute a risk to electric safety. Cables should be checked after their clamping to ensure electric safety.
- Bending of cable clamps towards welding points is not allowed.
- Cables are bound at designated positions.
- Cable placement at the scooter frame end or a sharp angle is not allowed.
- Cable placement at the bolt or screw end is not allowed.
- Cable placement should be made away from thermal sources or positions where cables may be stuck in moving.
- The cable placement along stem handles should not be made too tight or loose and should not interfere with adjacent parts at any steering positions.
- Cables should be placed smoothly without being twisted or tied.
- Verify whether the connector shroud is damaged or the connector is excessively open before connecting.
- Please protect the cable at a sharp angle or turning position with adhesive tapes or a hose.
- Cables should be bound reliably with adhesive tapes after reparation.
- Controlling cables should not be bent or twisted. The controlling would not be flexible if controlling cables were damaged.

Scooter Identification

- Vehicle serial number (SN) is in the user manual

- The scooter frame identification code (VIN) is made on the front central panel.

The motor code is made at left side of the wheel-hub motor.

Overall specifications:

MQi GT		
Features	Motor rated power	5000 W
	Battery capacity	72V 26 Ah x 2
	Maximum speed	100 km/h
	Dimension	1949 x 700 x 1171 mm
	Product weight	128 kg
	Maximum permissible laden mass	269 kg
	Number of seating positions	2
	Range	60-70 km
	Gradeability	Dynamic: 19°
Battery System	Voltage	72 V
	Standard charging current	11 A
	Maximum discharging current	130 A
Electrical System	Headlights / indicators Tail light / brake light Meter panel	12 V LED
	Central control unit	12 V
	USB charging	5 V / 1 A
Power System	Motor	Tailored motor by Xinwei
	Motor control mode	FOC vector control
	FOC controller maximum current	120 A
Frame	Front/rear damper	Oil damping direct acting shock absorber
	Front tyre specification	90 / 90 - 14, rim: 2,15 x 14
	Rear tyre specification	110 / 80 - 14, rim: 2,50 x 14
	Brake system	Combined Braking System (CBS)
	Minimum ground clearance	180 mm
	Seat height	816 mm

Specifications of the braking system

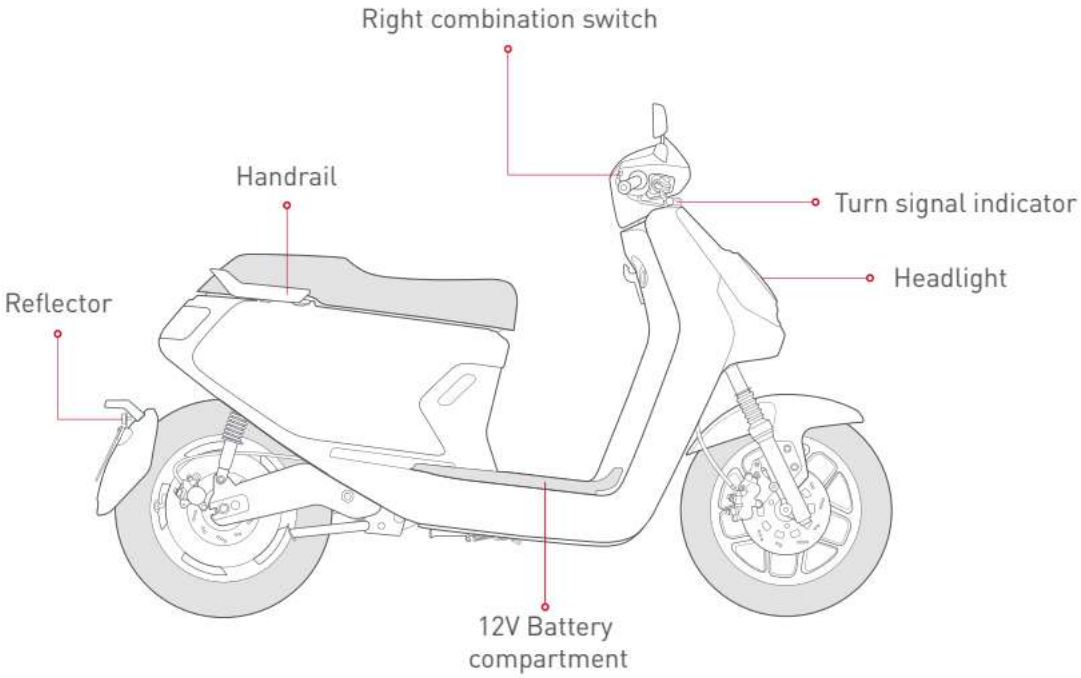
Item	Standard value (mm)	Minimum Thickness(mm)
Diameter of the front brake disc	φ220mm	-
Thickness of the front brake disc	4.0	3.0
Thickness of the front brake pad	4.0	3.0
brake fluid	DOT3 or DOT4	
Diameter of the rear brake disc	φ180mm	-
Thickness of the rear brake disc	3.5	2.5
Thickness of the rear brake pad	4.5	3.0
brake fluid	DOT3 or DOT4	

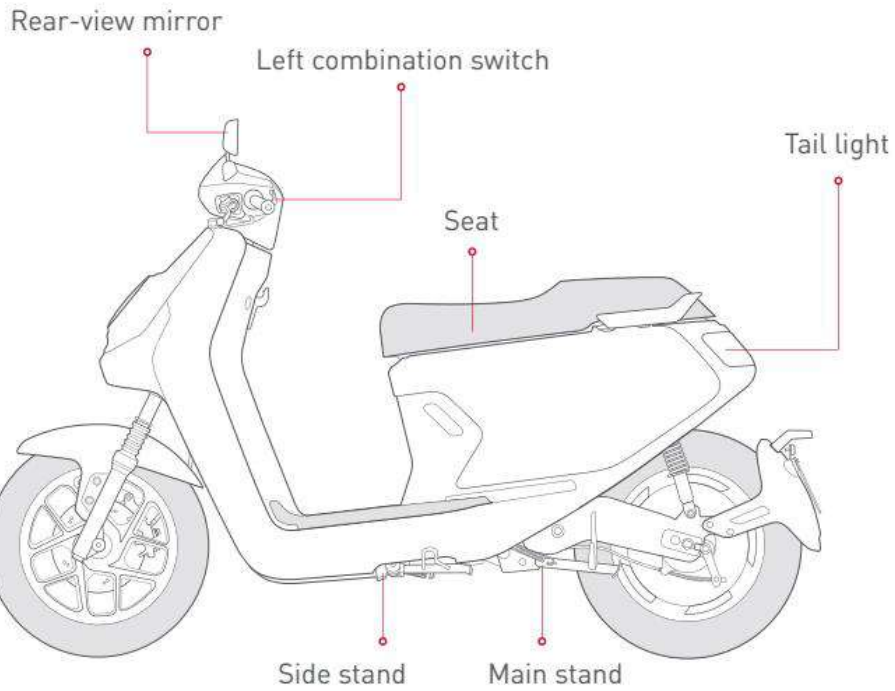
Specifications of the Lighting/Display/switch

Electric system	
Item	Specifications
Front headlight	12V LED
Turn signal lamp	12V LED
Rear tail lamp	12V LED
Brake lamp	12V LED
Display	12V LCD display
Central control unit(ECU)	12V
USB charging interface	5V

Part Names

Scooter body





Parts Removal and Installation Procedure

Procedures for removal and installation of scooter body panels are described in this section.
The ignition switch and main switch (if applicable) must be turned to OFF before disconnection or connection of electric units, when the storage battery has been installed onto the scooter.

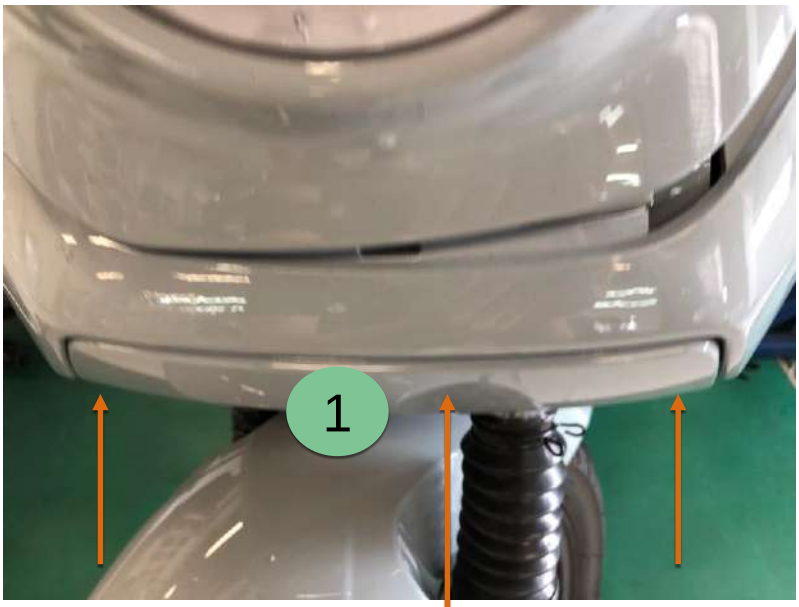
Note

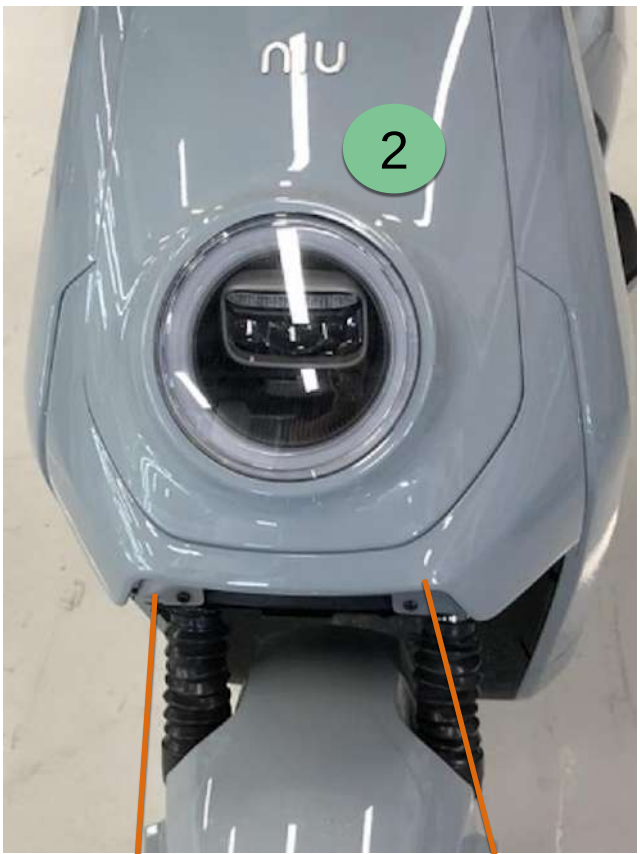
- Do not damage scooter body coverages in disassembling/assembling.
- Do not damage hooks and claws on scooter body coverages in disassembling/assembling.
- Align the embedded panels and covers on scooter coverages with their respective grooves.
- Hooks and claws at various sections should be installed properly during assembly.

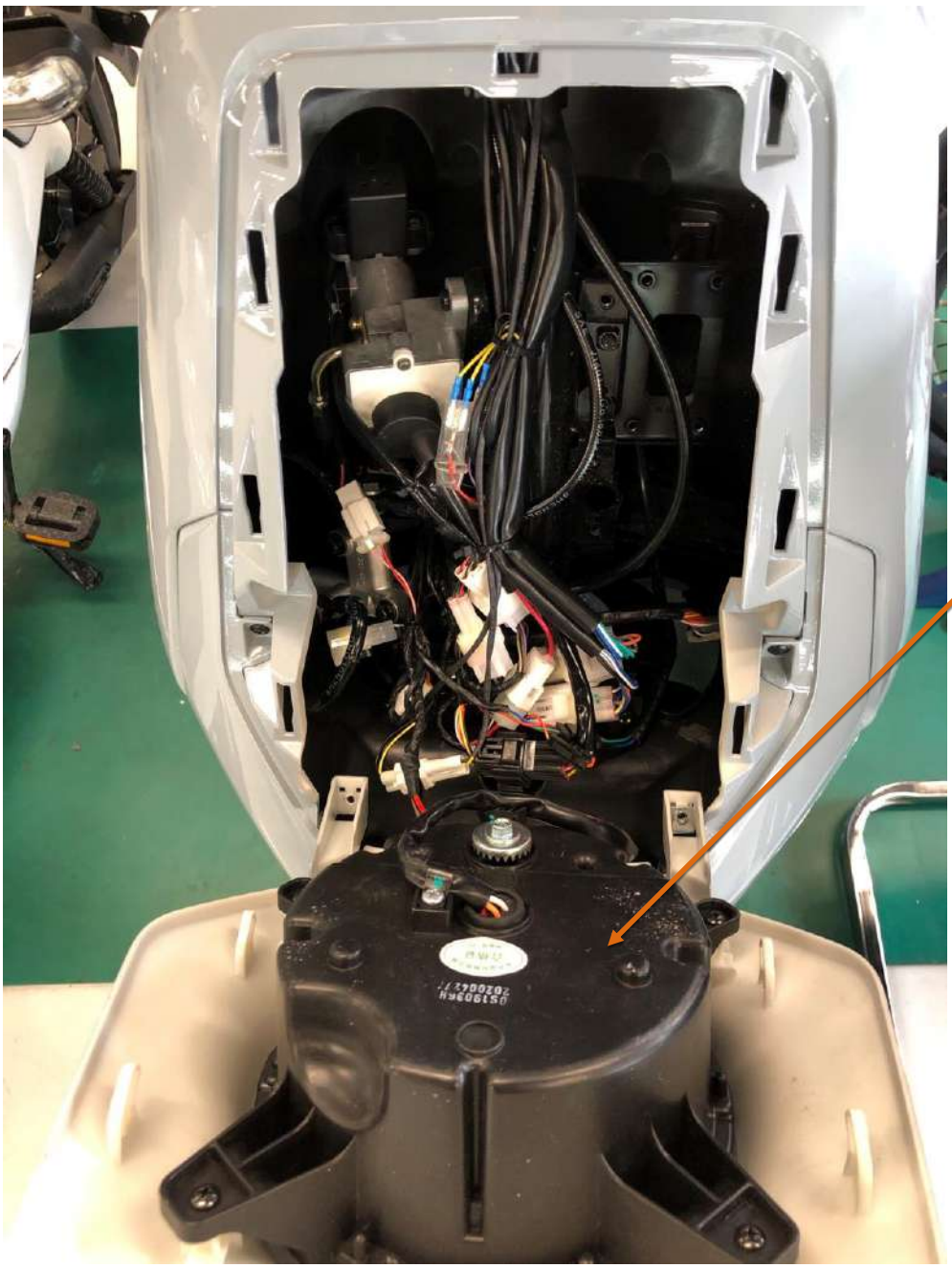
Front Part

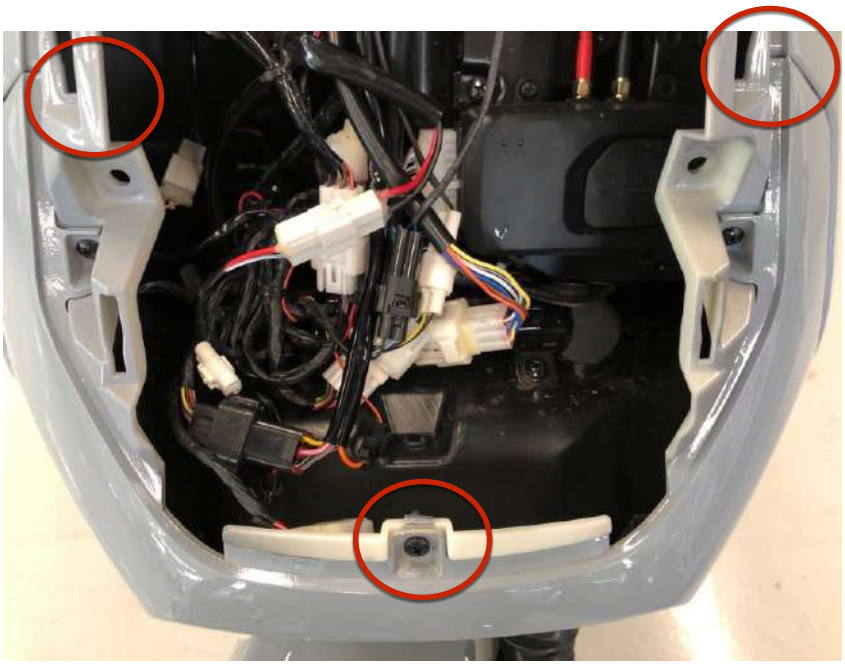
Section 1
1.1 Front body lower lip : Pull it out gently directly
1.2 Remove two bottom screws then pull out it.

Front Panel: Remove two bottom screws then lift the panel up to open it.
Mount: Follow as the reverse order.






Headlight

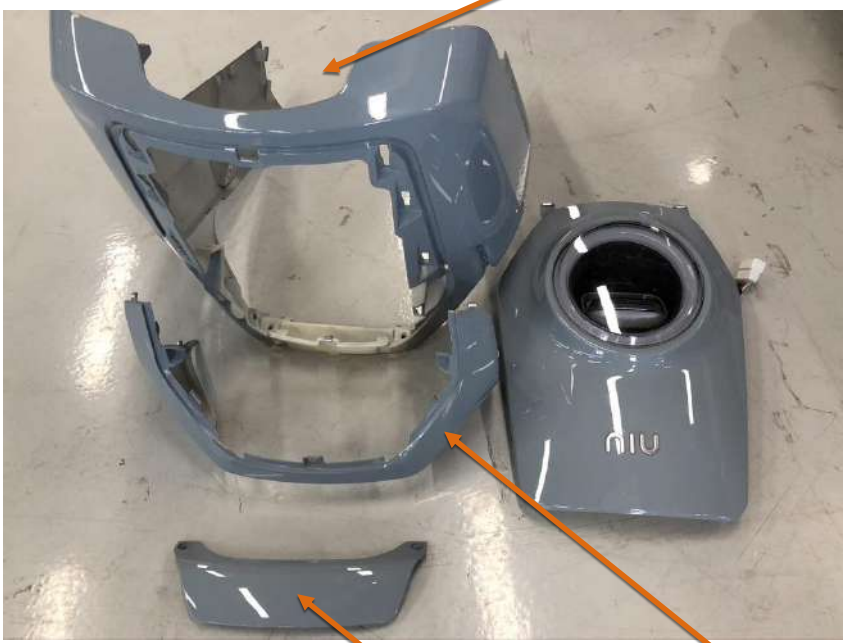


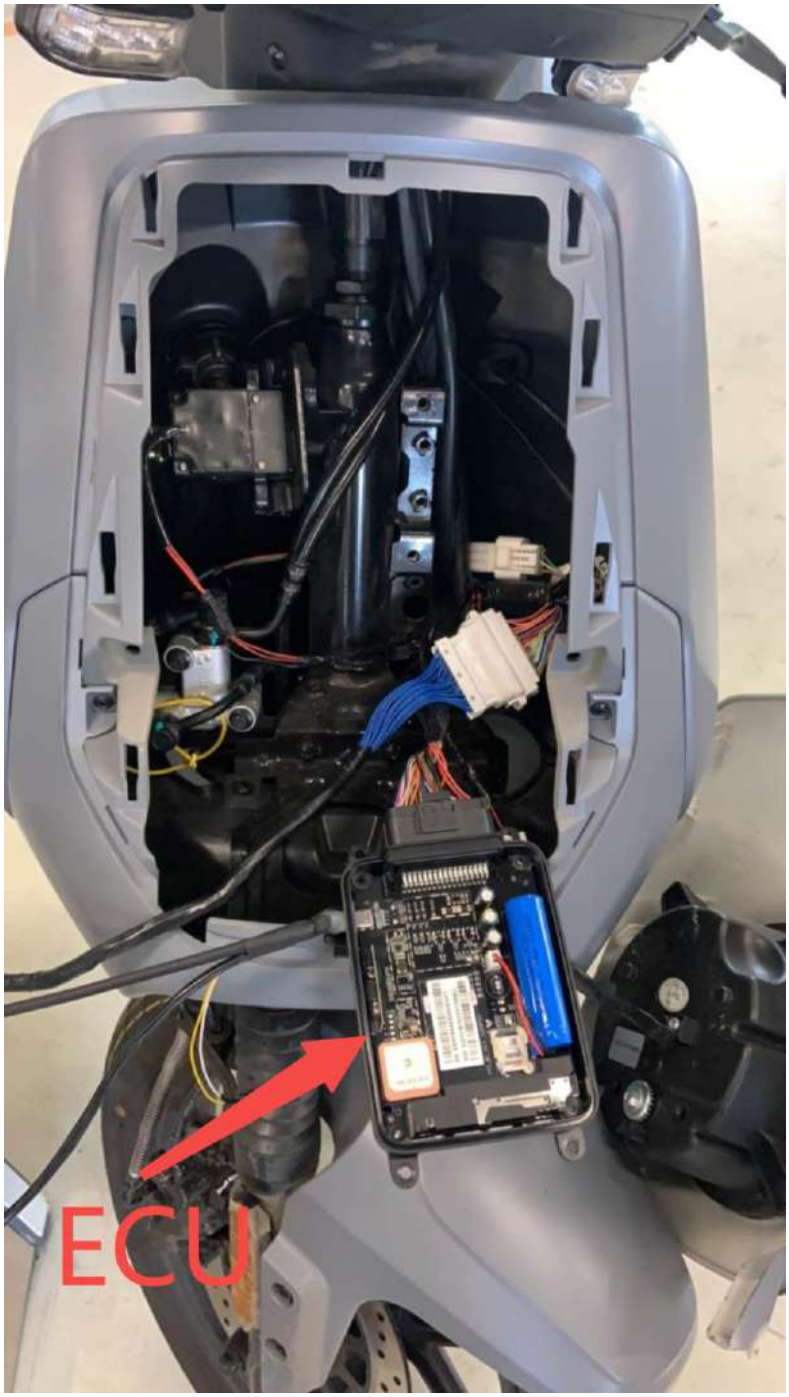
Section 2

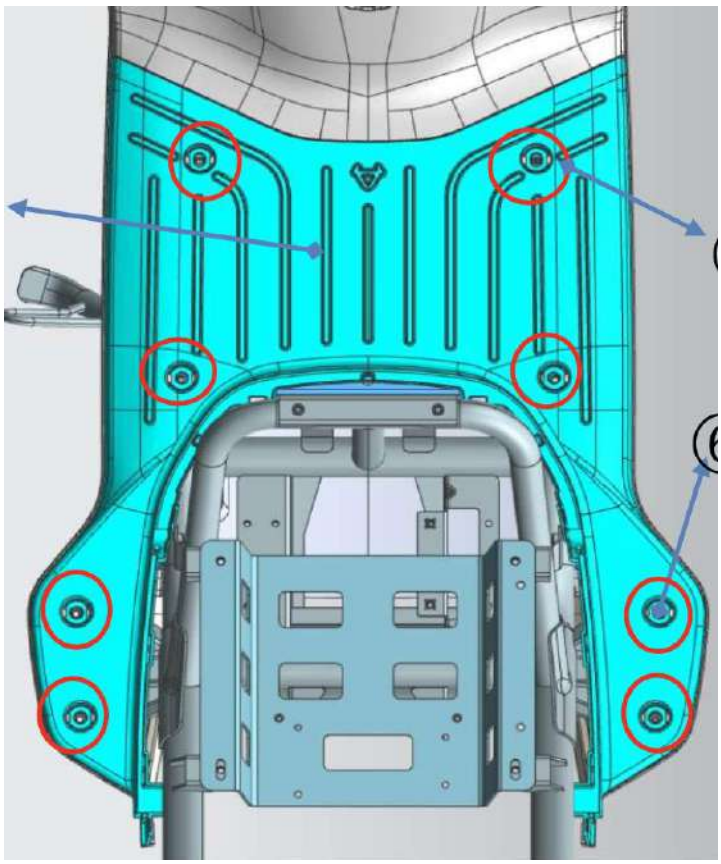
2.1 Front Body upside cover:

remove three screws then pull out it.

Mount: Follow as the reverse order.




ECU



Remove the bottom panel by unscrew the 8 screws

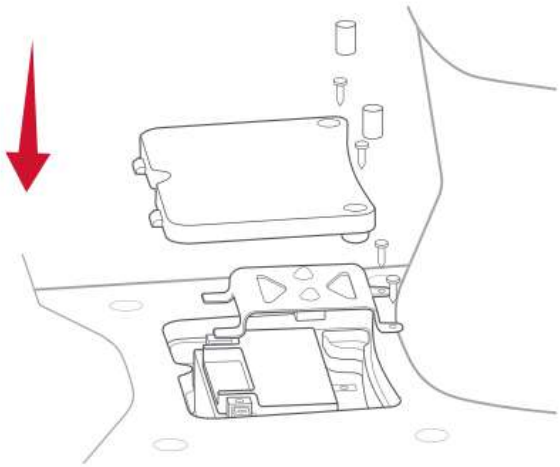
Mount: Follow as the reverse order.

Related Screws: M6*20 (40201078)
Qty:8 pcs
Tighten Torque: 1-2N*M

STEP 1 Place the 12V battery in side the battery compartment under the floor board, with electrode terminals facing forward. Attach the red positive electrode terminal with red wire, and black positive electrode terminal with black wire.

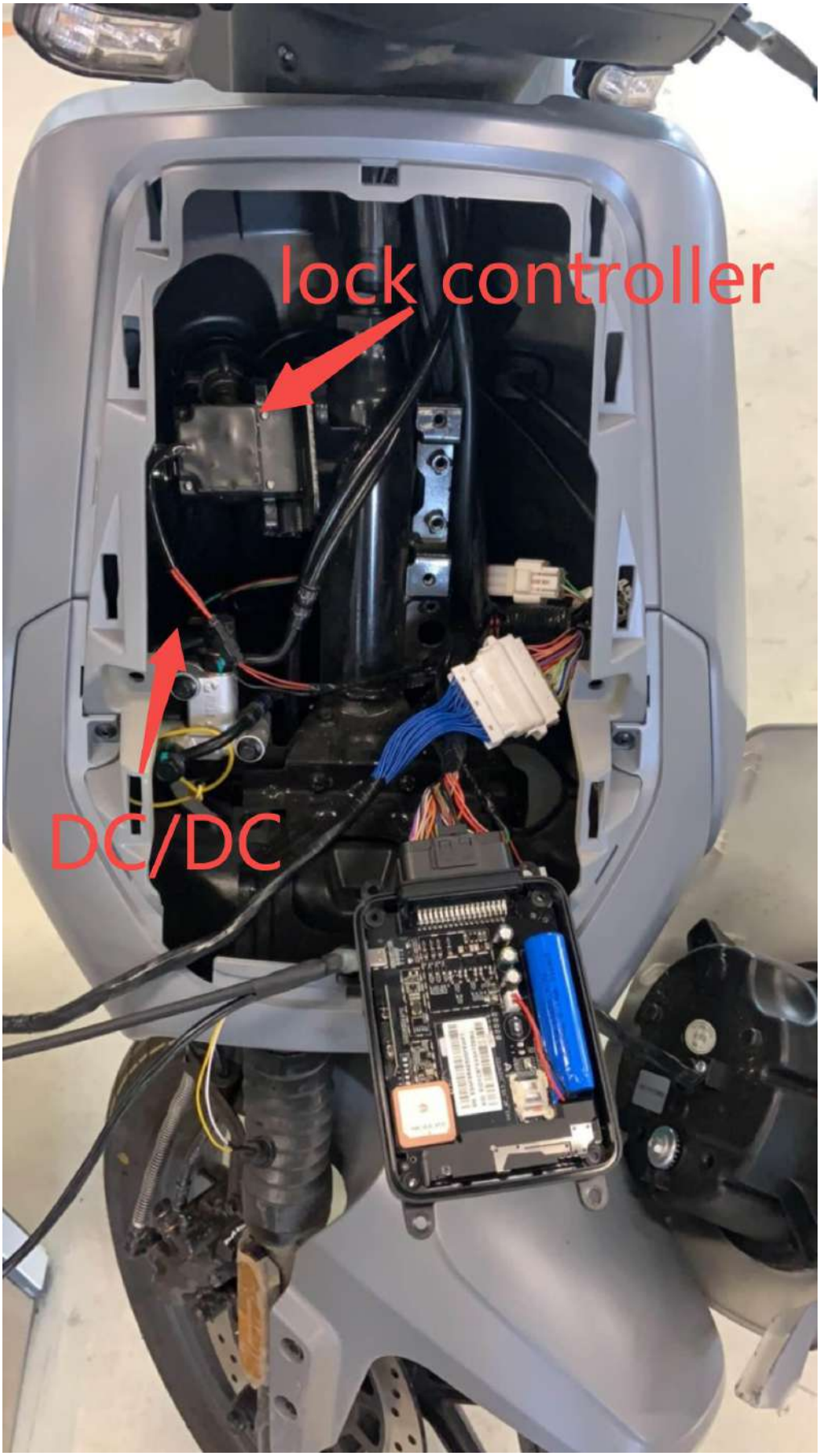
STEP 2 Mount the metal battery fixture to body with screws provided.

STEP 3 Finally, mount the plastic cover to the floor board with screws provided, and the assembly is complete.



Remove the front guard panel
Mount: Follow as the reverse order.

Related Screws: ST4.8X16 （40206006 ）
Qty:6 Pcs
Tighten Torque: 1-2N*M



V1.0.0

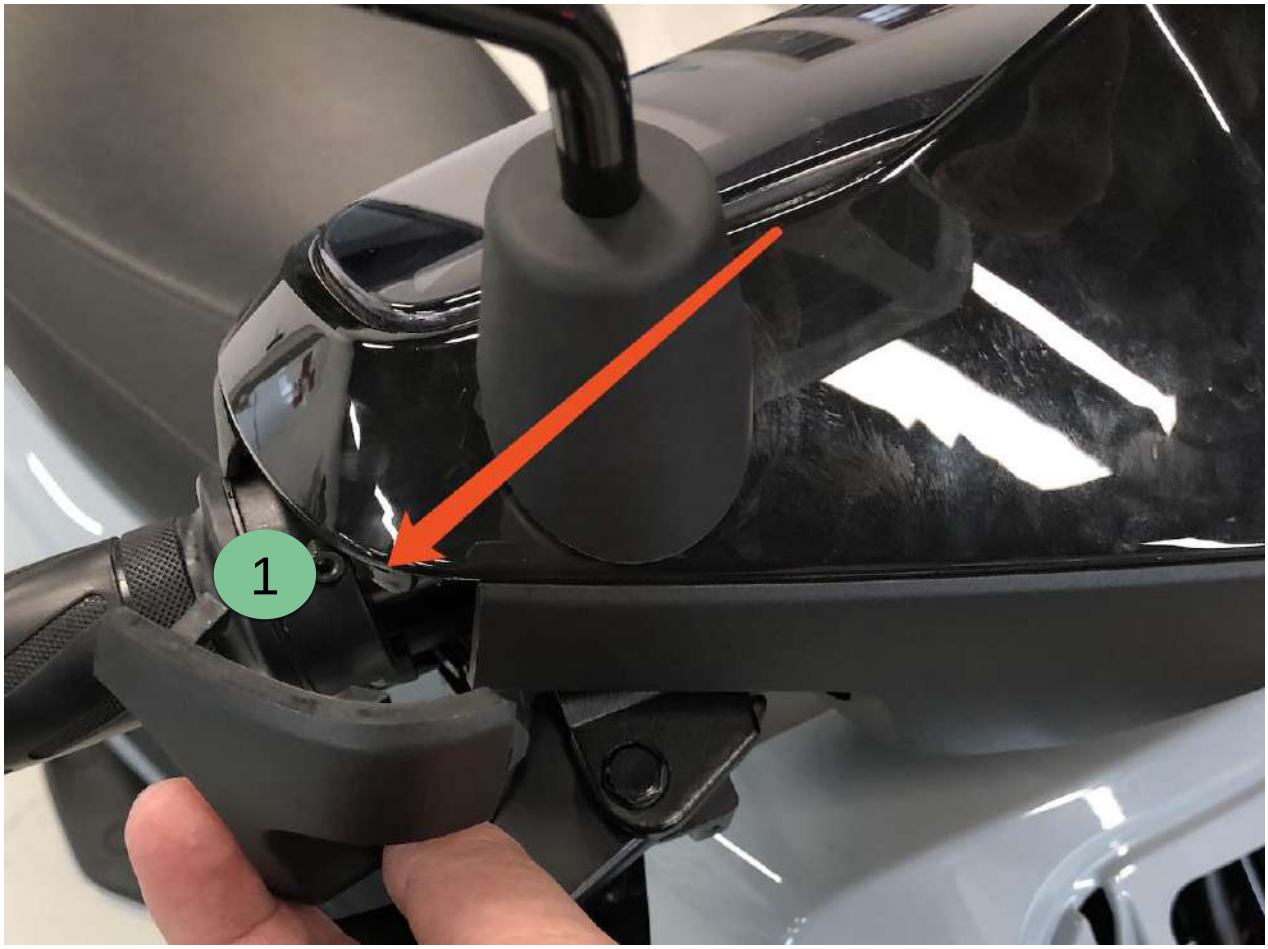
V1.0.0

Dashboard Removal

Section 3 Dashboard
3.1 Dashboard Cover Block
remove 8 screws then
pull left dashboard cover and rear cover out. 1 2

Mount: Follow as the reverse order.

V1.0.0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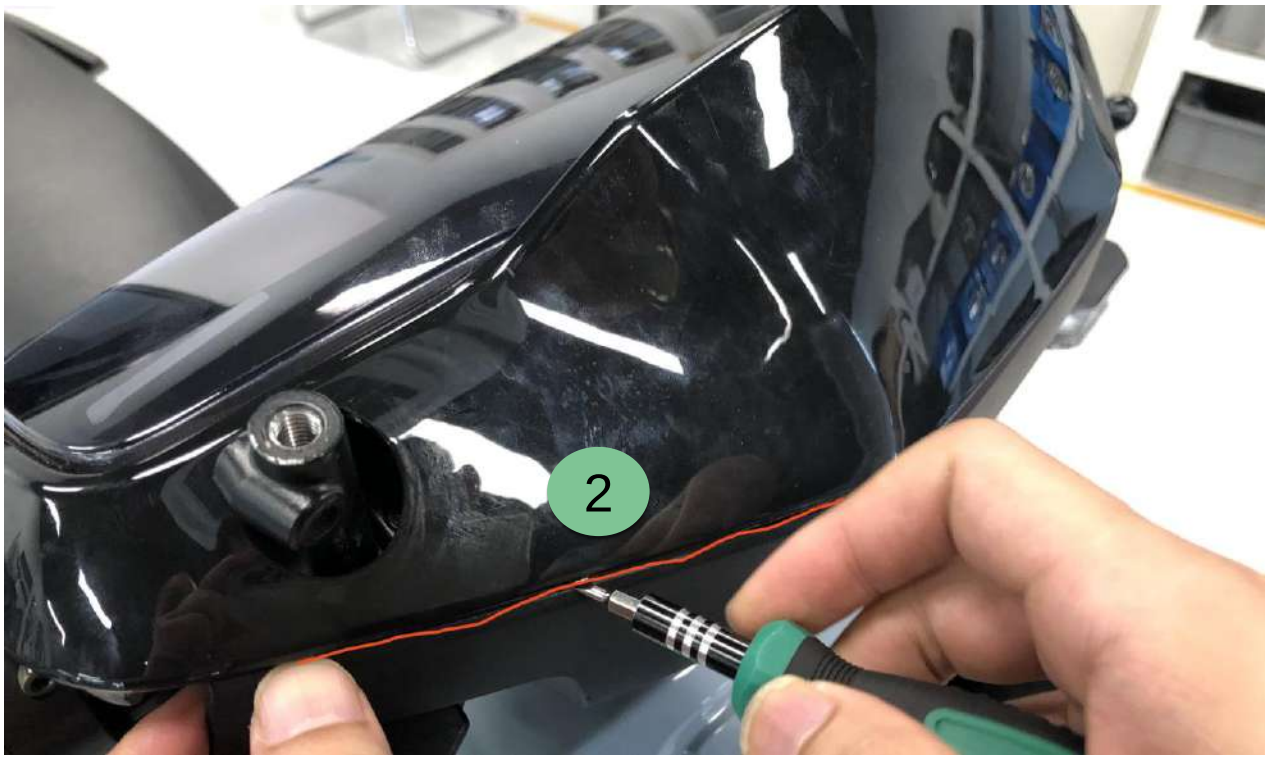
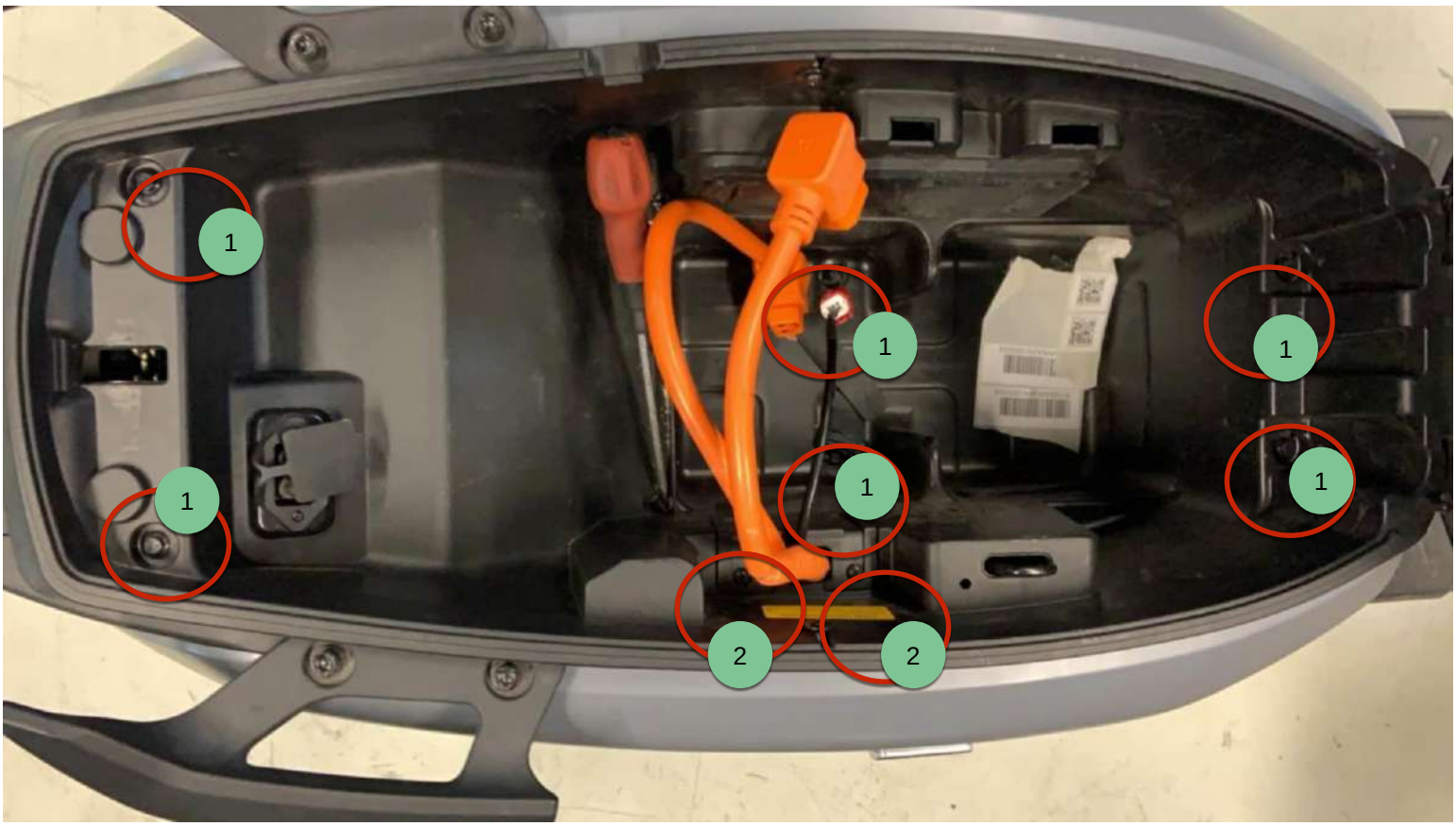
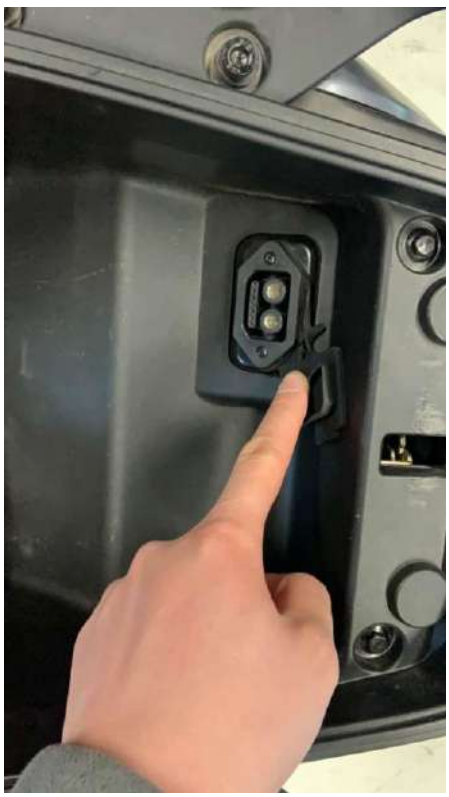
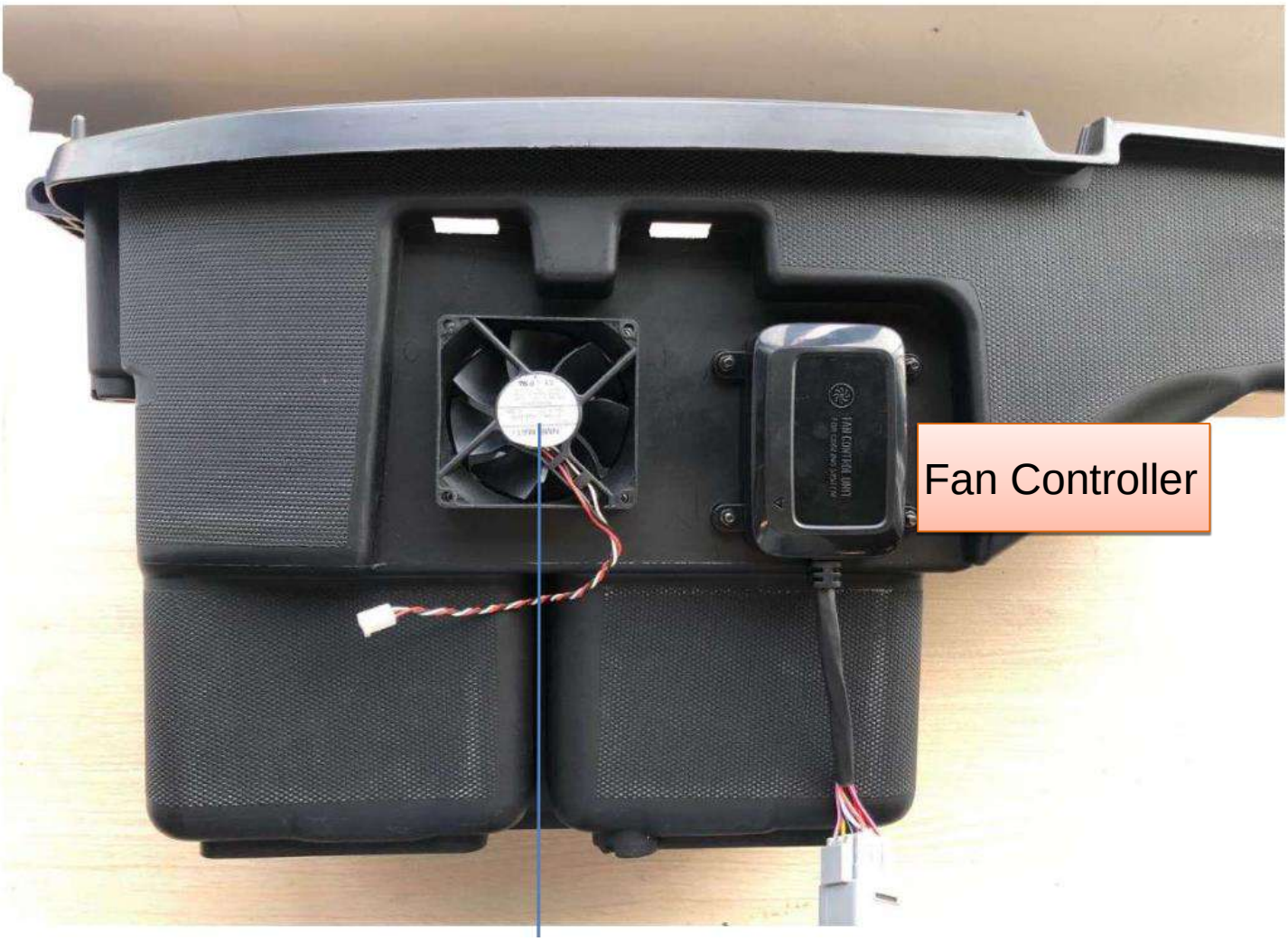

2

Rear Part



Section 4 Seat and Plug lock bracket
4.1 Seat: Remove six screws then pull ou
4.2 Plug Lock bracket: Remove the two scre
Mount: Follow as the reverse order.





Section 5
5.1 Fan: Remove 4 screws then remove it.
5.2 Fan Controller: Disconnect the connector. Disconnect the charging port and 485 port.

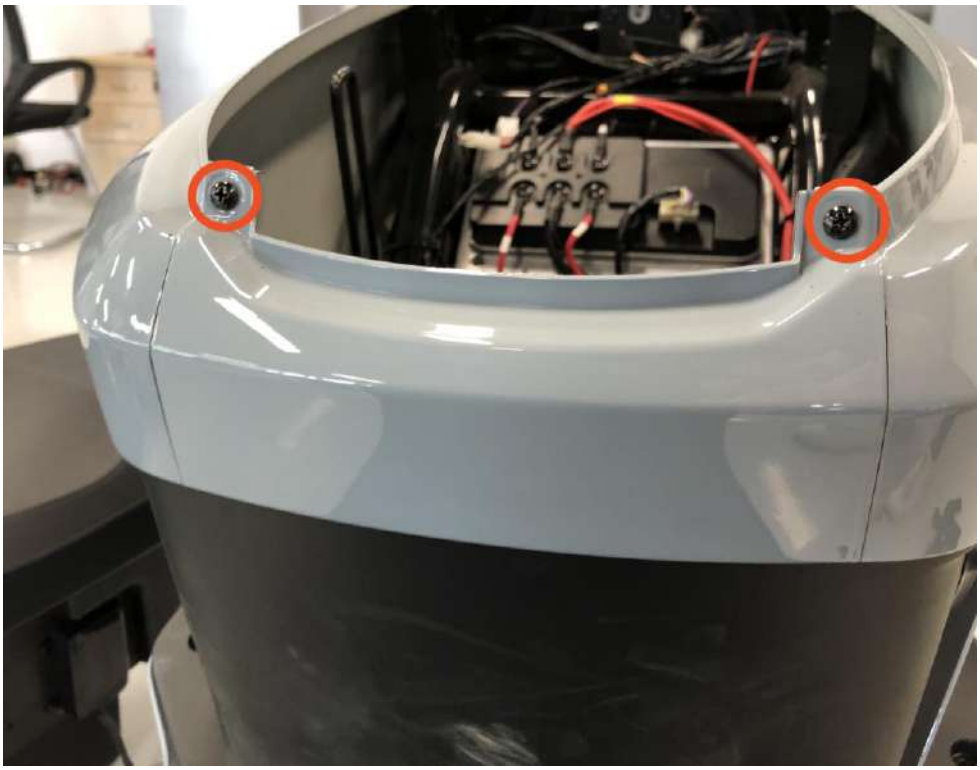
Mount: Follow as the reverse order.

Related Screws: M4*12 (40201078)
Qty:8 pcs
Tighten Torque: 1-2N*M

Handrail

5.3 Remove four Hexagon flange bolts marked in the guide photo

5.4 Pull out the Handrail



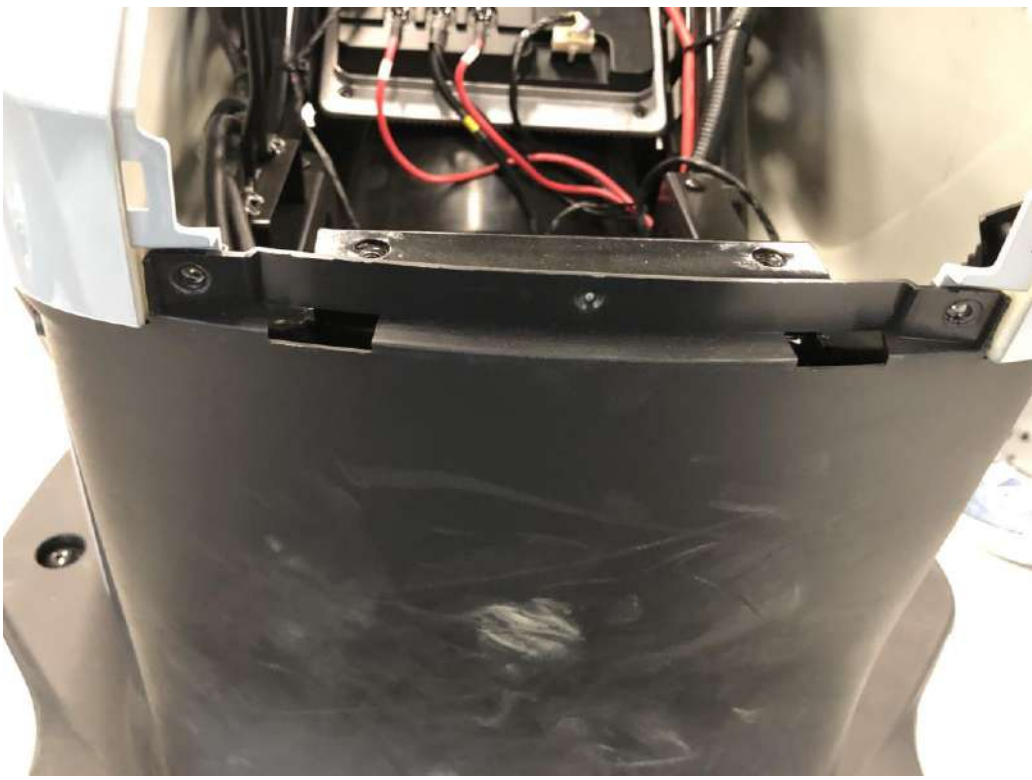
Section 6

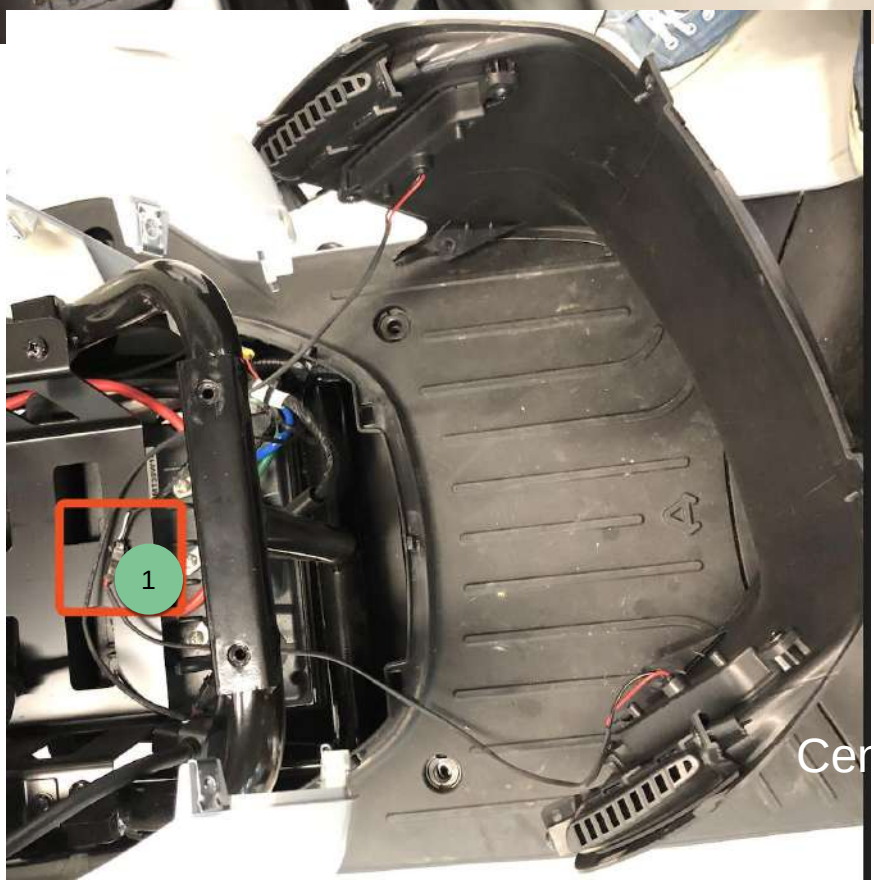
6.1 Central guard panel plate: Remove it by unscrewing two screws.

6.2 Central guard panel: Remove it by unscrewing six screws.

And disconnect the connector of left and right decoration lamps. 1

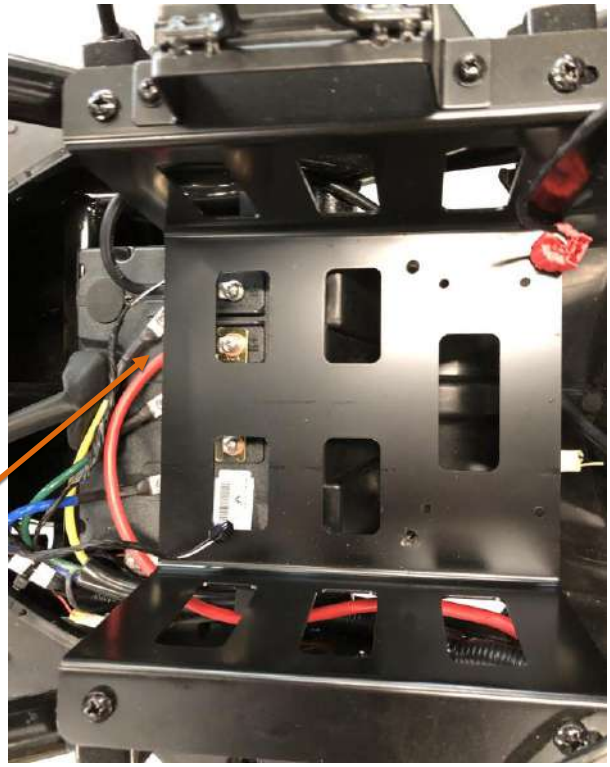
Mount: Follow as the reverse order.





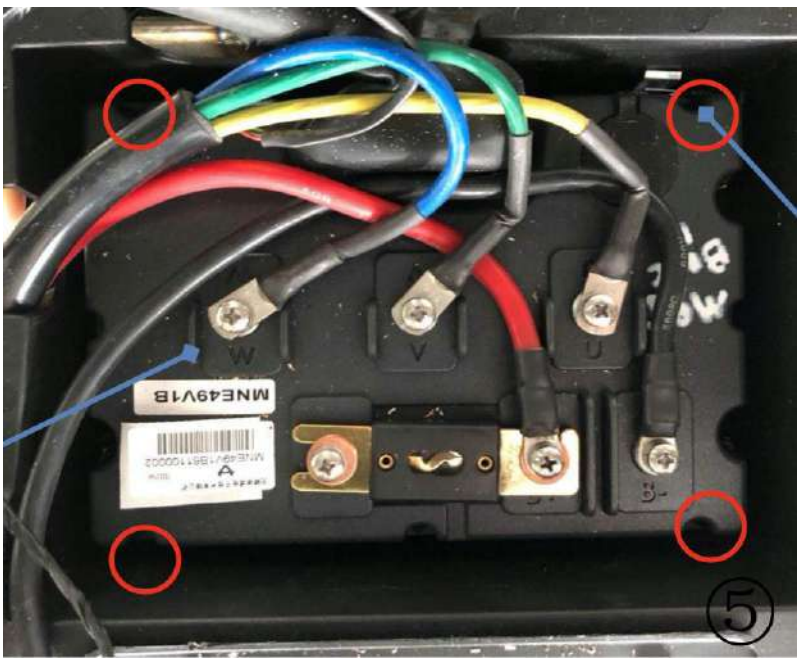
Disconnect the side lamp connector and remove the central guard.

FOC Controller



6.3 Remove the FOC controller

Mount: Follow as the reverse order.

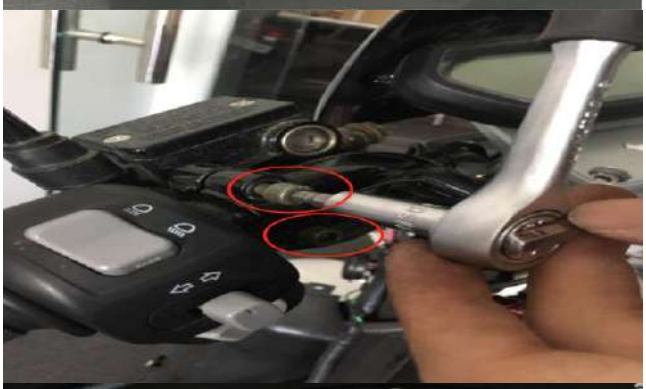


Related Screws: M5*20 (40203002)
Qty:4 pcs
Tighten Torque: 3-5N*M

Brake System

Unscrew one cross recessed pan head bolt and two Hexagon flange bolts then take out front Brake System

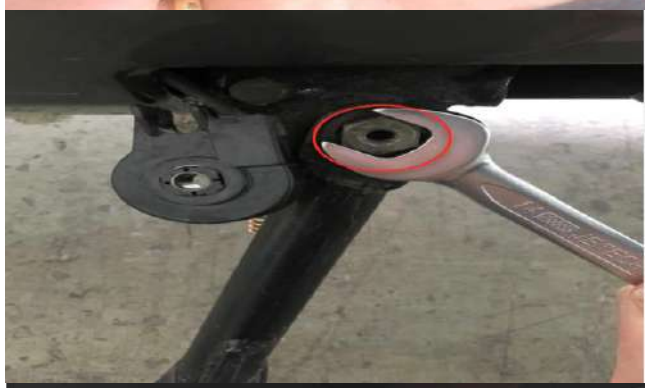
Unscrew two Hexagon socket head stepped bolts marked in the guide photo



Unscrew two cross recessed pan head bolt and take out Rear Brake System

Section 7 Side Stand and Side Stand Switch

7.1 Unscrew the screw and unplug the connector marked in guide photo to take out the side stand switch



7.2 Unscrew the side stand screw and take out the side stand and spring
(spring hook on the red circle when installation)

Section 8. Front Fender and Rear Fender

8.1 Unscrew two Hexagon flange bolts on the left and right sides then take out the Rear Fender

8.2 Unscrew two Cross recessed medium pan head bolts on the left and right sides then take out the Front Fender

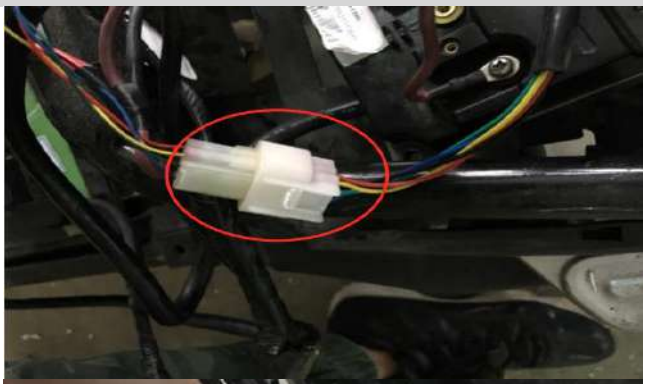
Section 9. Motor

9.1 Unscrew two hexagon flange bolts on the left and right side

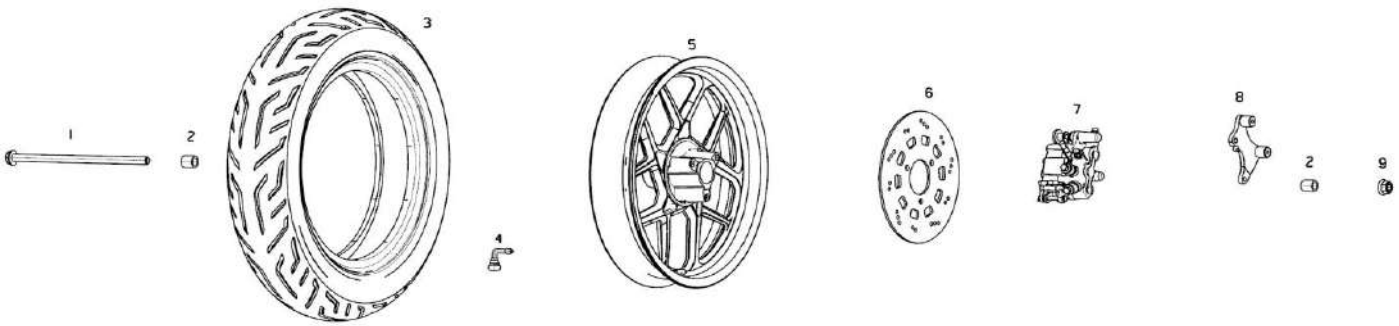
9.2 Remove the motor connectors on FOC controller

Section 9. Motor

9.3 Unplug the motor hall connector （ Scooters produced before 2016 Dec) then pull out Motor



Front Wheel



1. Hexagon Nuts With Flange,Style2-Fine Pitch Thread 2. Front Wheel Axle sleeve 3. Front disk brake lower pump brake pad 4.Front brake lower fluid pump 5. Front brake disk 6.Front Alloy Wheel 7Front tire 8 Value 9 Front wheel axle

Specifications of the front tire: 90/90-14 Installation torque value for screw 11 in the figure: 8Nm Installation torque value for Axle 2 in the figure: 60Nm Rim run-out limits: 2.0mm Vertical limit: 2.0mm Lateral limit: 2.0mm Deflection limit of the front axle: 0.2mm

Front Wheel

Failure diagnosis

The tire pressure is too low.
There is air leakage from the tire.
The tire pressure is insufficient.
The front axle is deflected.
The front wheel tire is deformed and the tire is deflected.
The front wheel oscillates.
The wheel is deformed.
The front axle bearing becomes loosened.
The tire is deteriorated.
The wheel is difficult to turn.
The axle bearing failed or the braking is bad.
The front axle is deflected.
The front brake is applied.

Inspection

Inspection of the rim oscillation

- Place the wheel on a precise support.
- Check the rim oscillation.
- Manually turn the wheel to read the oscillation value.

Inspection of the front wheel bearing

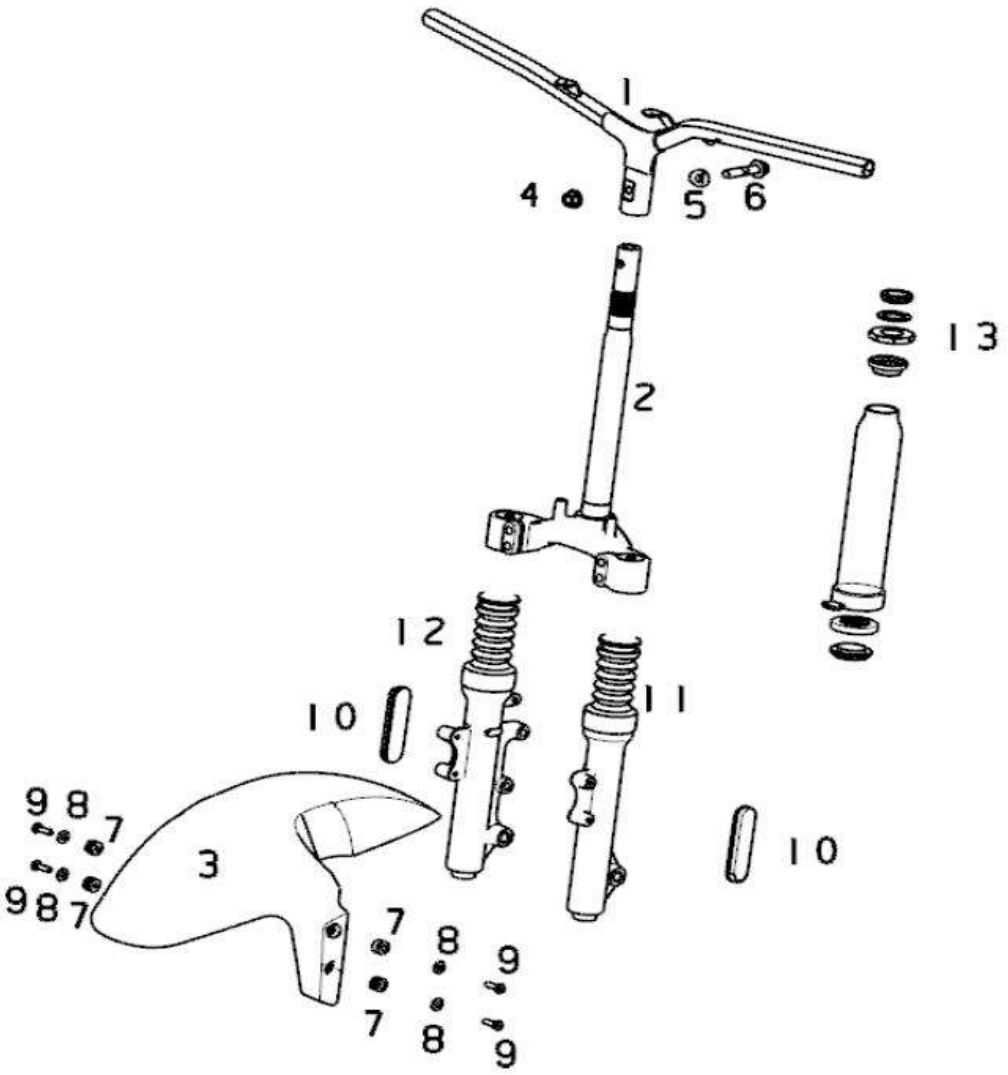
- Remove the front axle and front brake disc.
- Remove outer spacer on the front wheel, and then remove the front wheel oil-seal.
- Remove the bearing.
- Remove the intermediate spacer.
- Check the bearing rotation.
- The bearing that does not rotate is worn or loosened. Replace it with a new one.

Disassembling

Coming soon…

Front Fork Assembly

Specifications of the Front Fork Installation torque value for screw 4 in the figure: 28Nm



1. Front left and right reflectors 2 Front Fender 3 Front fork assembly including shock absorb 4 Fluid Tube Clip 5 – 6 7 pieces of direction bearing

Front Fork

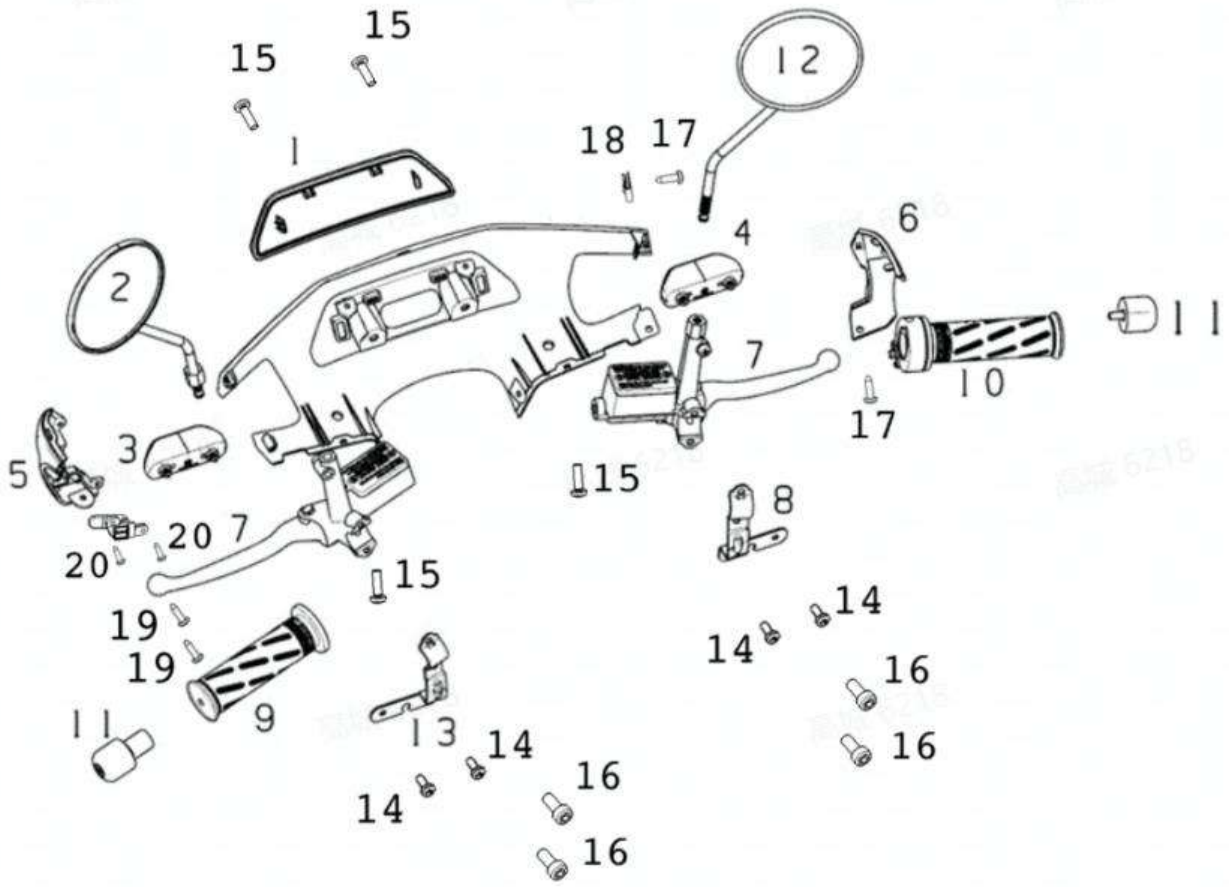
Failure diagnosis

The front fork is deflected.
There is an abnormal noise from the front shock absorber.
Bolts on the shock absorber are loosened.
The liquid in the front shock absorber is insufficient.

Disassembling

Remove the panel, front journal lid and front fender.
Remove the steering handle assembly.
Sequentially remove:
Gland nut, lock nut, bearing cover and
upper conical bearing
Remove the front fork.
Remove the lower conical bearing.
Remove tightening bolts from the front shock absorber.
Remove the front left and right shock absorber assemblies.
Tools:
Spanner for tightening bolts on the steering handle.
Dedicated bearing detacher.

Steering Handlebar



1	30419005	11-2021	current	M2 手把前小盖	handle small front cover
2	30701026	11-2021	current	M-GT EVO 左后视镜	left mirror
	30701028	11-2021	current	MGT EVO-DOT 左后视镜	DOT left mirror
3	10502013	11-2021	current	N-DOT 左转向灯总成（租赁）	DOT left turn signal assembly
	10502009	11-2021	current	N1 左转向灯总成（电摩）	left turn signal assembly
4	10502014	11-2021	current	N-DOT 右转向灯总成（租赁）	DOT right turn signal assembly
	10502010	11-2021	current	N1 右转向灯总成（电摩）	right turn signal assembly
5	30534003	11-2021	current	M2 手把左侧盖	handle left cover
6	30535002	11-2021	current	M2 手把右侧盖	hendle right cover
7	20101036	11-2021	current	M-GT EVO CBS刹车总成	CBS brake assy
8	30305029	11-2021	current	MGT-DOT 前转向灯支架（右）	OT front turn signal bracket (righ
	30305025	11-2021	current	M-GT 前转向灯支架（右）	Front turn signal bracket (right)
9	20401005	11-2021	current	N-Cargo 手把（左）	Handle (left)
10	20402015	11-2021	current	MGT EVO 调速转把（右）	Speed control handle (right)

Steering Handlebar

11	30309001	11-2021	current	N-Cargo 车把防撞柱	handle bumper bar
12	30701027	11-2021	current	M-GT EVO 右后视镜	right mirror
	30701029	11-2021	current	MGT EVO-DOT 右后视镜	DOT right mirror
13	30305028	11-2021	current	MGT-DOT 前转向灯支架（左）	DOT front turn signal bracket (left)
	30306013	11-2021	current	M-GT 前转向灯支架（左）	Front turn signal bracket (left)
14	40201014	11-2021	current	十字槽盘头螺钉	Cross recessed pan head screws
15	40203009	11-2021	current	十字槽中盘头螺钉	Cross recessed middle pan head bolts
16	40201098	11-2021	current	圆柱头内六角螺栓	Hexagon socket bolts with cylindrical head
17	40206006	11-2021	current	十字槽盘头自攻螺钉	Cross recessed pan head tapping screws
18	40208001	11-2021	current	自攻卡片	Tapping card
19	40206004	11-2021	current	十字槽盘头自攻螺钉	Cross recessed pan head tapping screws
20	40206028	11-2021	current	十字槽螺钉	Cross recessed screw

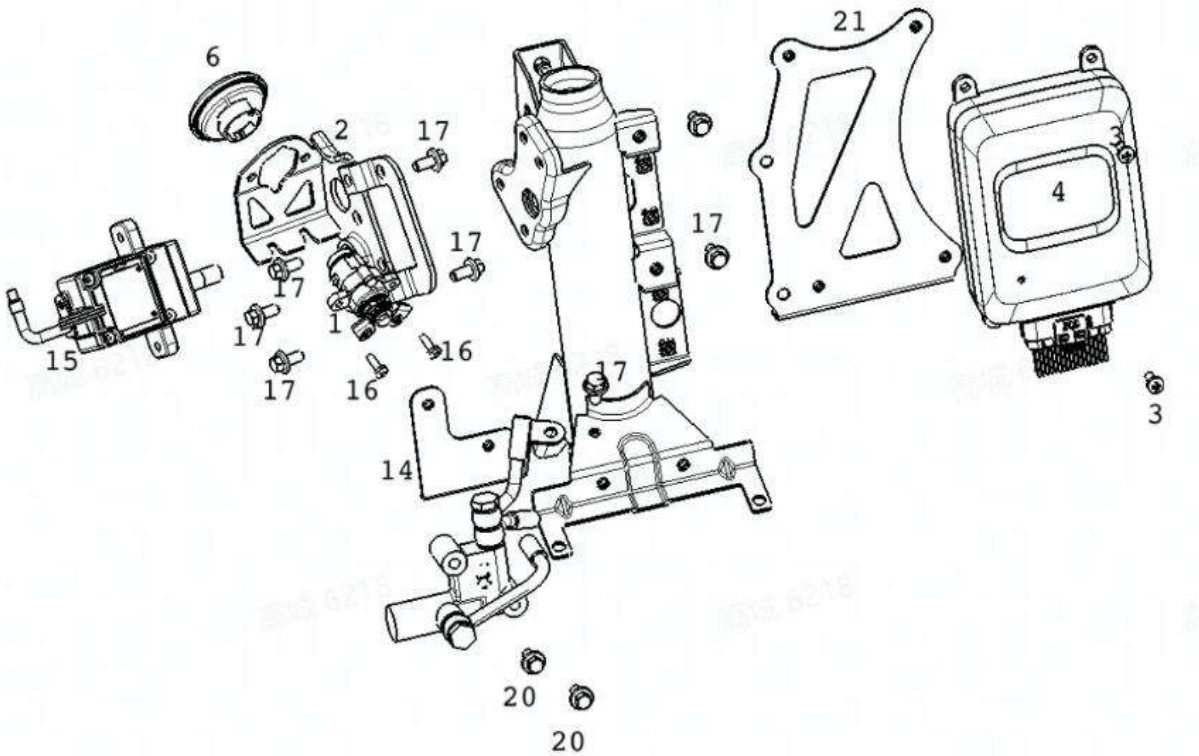
Steering Handlebar

Failure diagnosis

The steering handle is difficult to turn.
The steering handle bearing failed.
The steering handle bearing is damaged.
Steering is unstable
The steering handle bearing is damaged.

Disassembling

Remove the left and right rear-view mirror assemblies (5) and (11).
Remove the left and right grasp handle assemblies (1) and (12).
Remove the accelerator cable assembly (14).
Remove the left and right combination switched (3) and (13).
Remove the rear brake (4).
Remove the front brake (10).
Remove upper and lower press blocks (9) and (15) on the scooter handle.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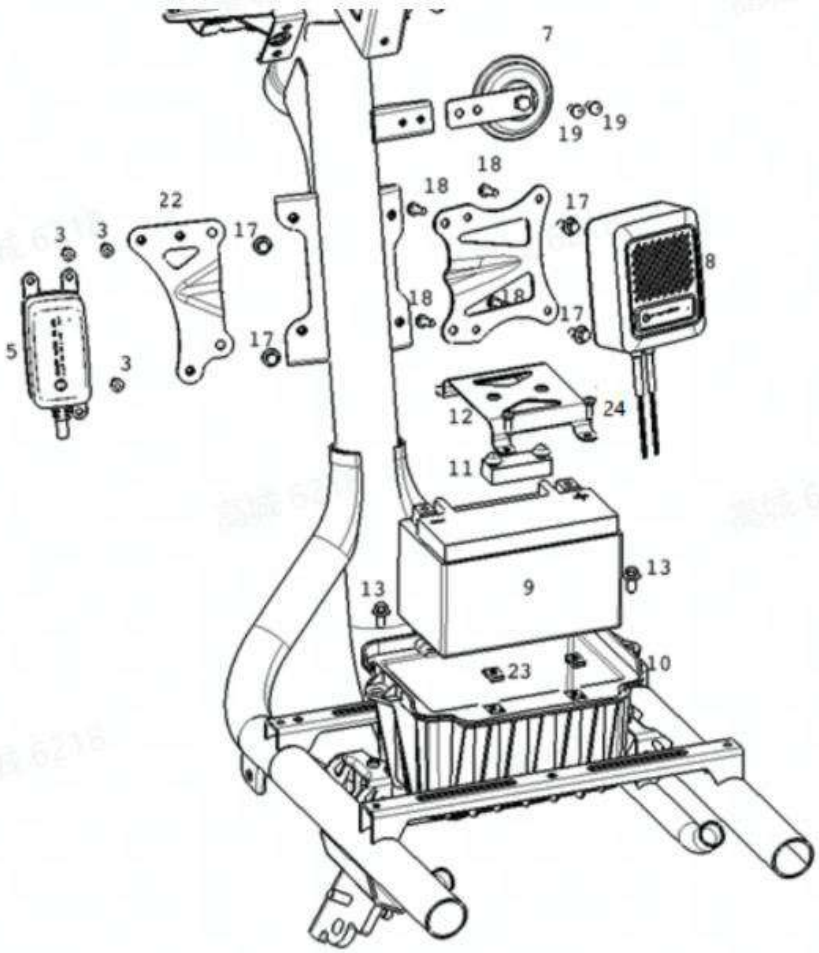
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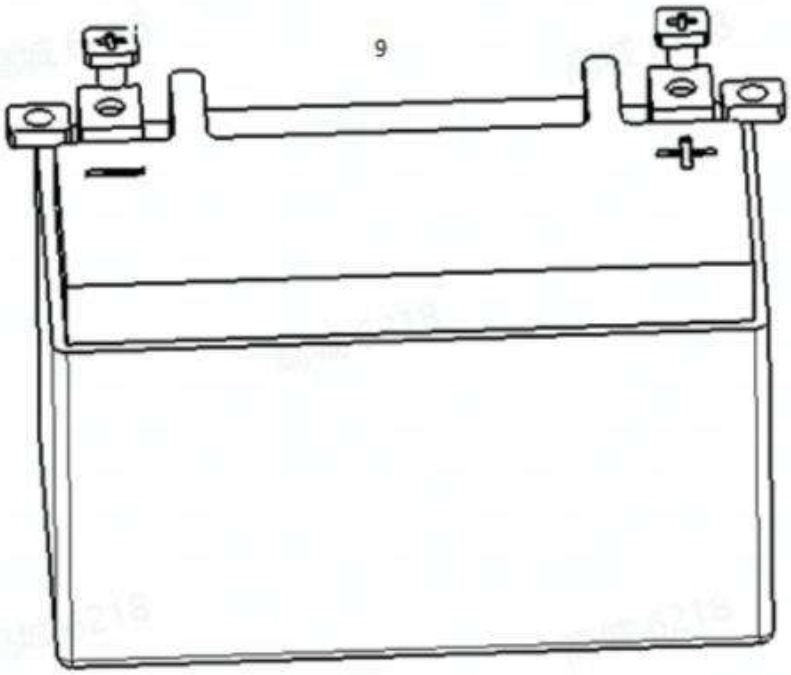
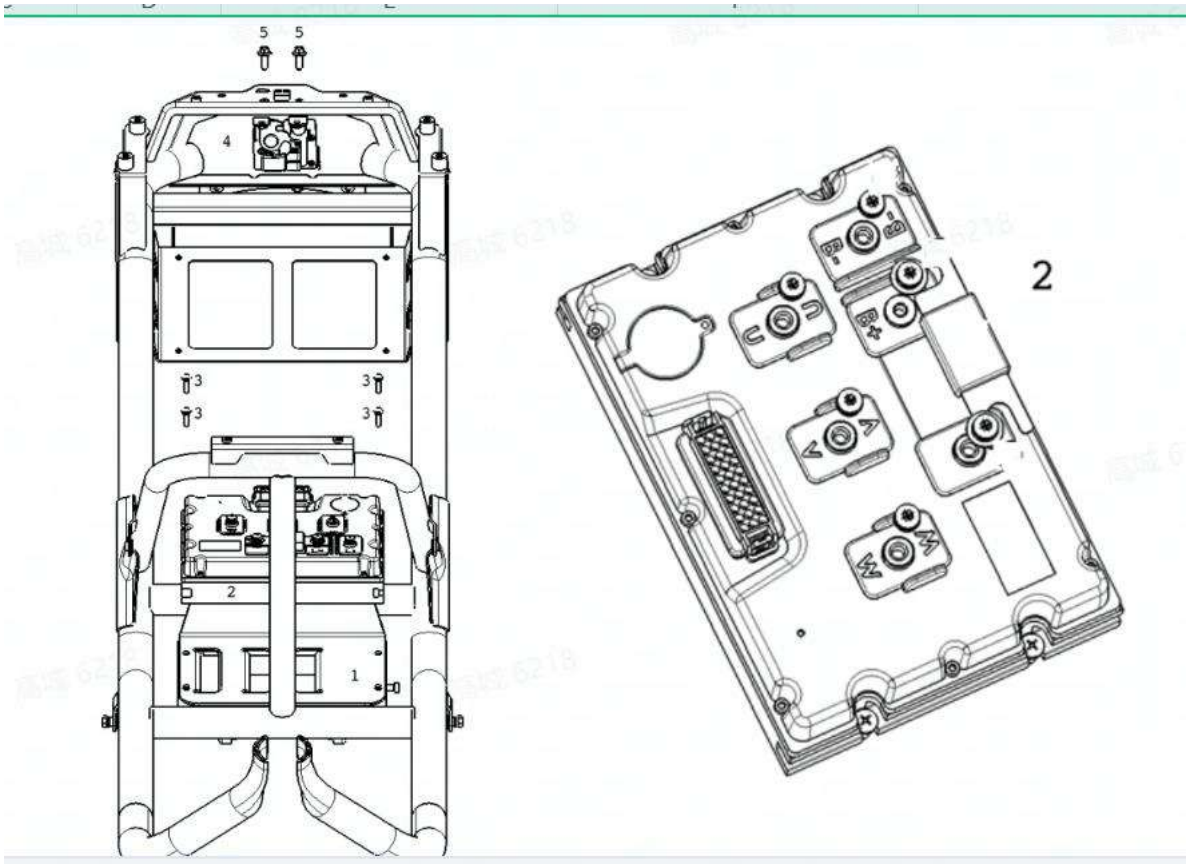


1	20705001	11-2021	current	R1机械应急锁（双向）	Mechanical emergency lock (bidirectional)
2	30714122	11-2021	current	MGT EVO 电子龙头锁支架	Electronic faucet lock bracket
3	40201072	11-2021	current	十字槽盘头螺栓	Cross recessed pan head bolts
4	10302094	11-2021	current	V45智能中控（欧版）	V45 ECU,euro
	10302098	11-2021	current	V45智能中控（美版）	V45 ECU,DOT
5	10302065	11-2021	current	M2 ACC保险盒	ACC safe
6	10505007	11-2021	current	MGT EVO 锁孔灯	EVO locker ring lamp
7	10701001	11-2021	current	喇叭	horn
8	10107028	11-2021	current	R1 DC-DC转换器（CAN）	DC-DC,CAN cable
9	10103013	11-2021	current	铅酸蓄电池	Lead-acid battery
10	30519014	11-2021	current	MGT EVO 电池盒	battery compartment
11	30602058	11-2021	current	MGT EVO 小电池橡胶压块	Small battery rubber block
12	30110006	11-2021	current	MGT EVO 电池压板	The battery holder

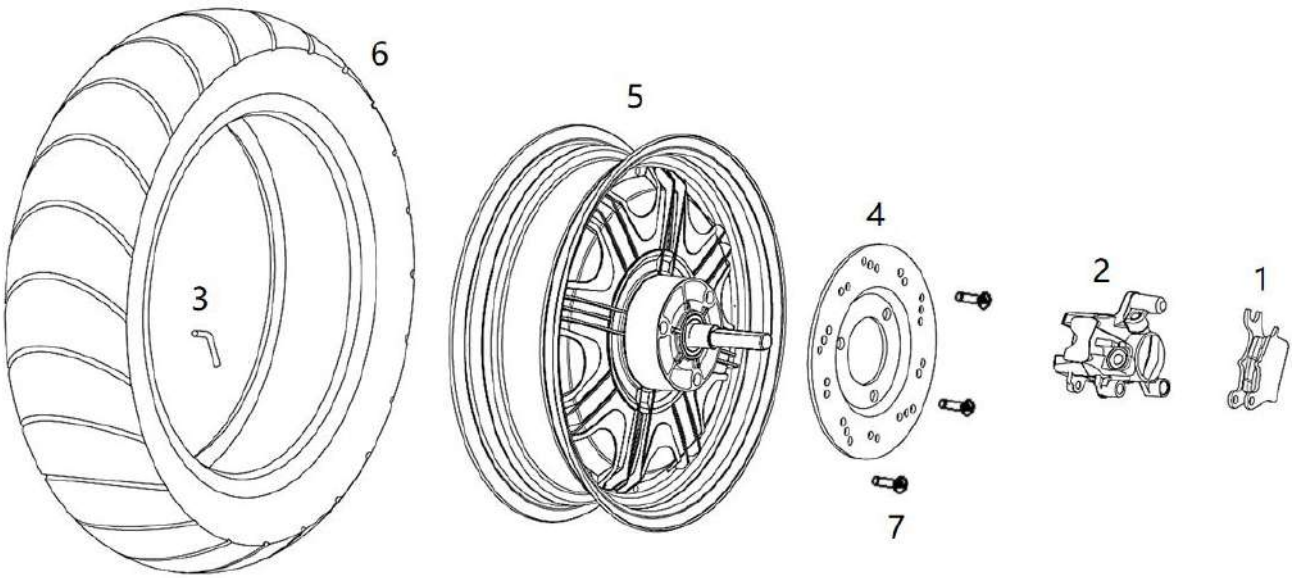
13	40201001	11-2021	current	六角法兰面螺栓	Hexagon flange bolts
14	30714033	11-2021	current	N-GT CBS刹车支架	CBS brake bracket
15	20703032	11-2021	current	R1 电子龙头锁	Electronic faucet lock
16	40201078	11-2021	current	十字槽盘头螺栓	Cross recessed pan head bolts
17	40203009	11-2021	current	十字槽中盘头螺钉	Cross recessed middle pan head bolts
18	40201015	11-2021	current	十字槽盘头螺栓	Cross recessed pan head bolts
19	40203014	11-2021	current	十字槽盘头螺钉	Cross recessed pan head screws
20	40201065	11-2021	current	六角法兰面螺栓	Hexagon flange bolts
21	30108011	11-2021	current	MGT EVO ECU支架	ECU bracket
22	30133001	11-2021	current	MGT EVO ACC支架	EVO ACC bracket
23	40208001	11-2021	current	自攻卡片	Tapping card
24	40206008	11-2021	current	十字槽盘头自攻螺钉	Cross recessed pan head tapping screws

Rear components



1	30134001	11-2021	current	MGT EVO 控制器散热板	V FOC cooling plate
2	10203318	11-2021	current	MGT EVO V极控制器	V FOC
3	40201033	11-2021	current	十字槽盘头螺栓	Cross recessed pan head bolts
4	20702014	11-2021	current	R1 电池仓锁	battery compartment lock
5	40203009	11-2021	current	十字槽中盘头螺钉	Cross recessed middle pan head bolts

Rear Wheel



1. Rear disc brake pad 2 Rear disc brake lower fluid pump 3 Value 4 Rear brake disc 5 Motor (5000W) 6 Rear Tire

Diameter of the rear brake disc: φ180mm Thickness of the rear brake disc: 3.5mm Operating limit: 2.5mm Torque value for Top Bolts on the rear shock absorber: 44Nm Torque value for Bottom Bolts on the rear shock absorber: 28Nm

Failure diagnosis

Oscillation of the rear wheel
Deformation of the motor rim
Motor failure
Motor un-tightened
Bearing loosened or worn
Insufficient tyre pressure
Shock absorber softened excessively
Insufficient spring elasticity
Oil leakage from shock absorber
No elasticity of the rear shock absorber spring
Extremely low tyre pressure
Shock absorber hardened excessively
Shock absorber rod deflected
Extremely high tyre pressure
Abnormal noise from the rear suspension
Rear suspension liner thinned and softened
Failure of the rear shock absorber

Disassembling Rear Absorber

Remove the seat cushion assembly and the scooter body assembly.
Loosen tightening bolts on top of the rear shock absorber.
Loosen tightening bolts on bottom of the rear shock absorber.
Remove the rear shock absorber.

Disassembling Motor

Remove lock nuts from the motor.
Remove motor connection wires.
Remove the motor assembly.

Specifications of the Motor
Installation torque value for self-locking nut 1 in the figure: 75Nm
Motor oscillation value： Vertical oscillation limit： 2.0mm Lateral oscillation limit： 2.0mm

Brake System

Maintenance instruction

Note

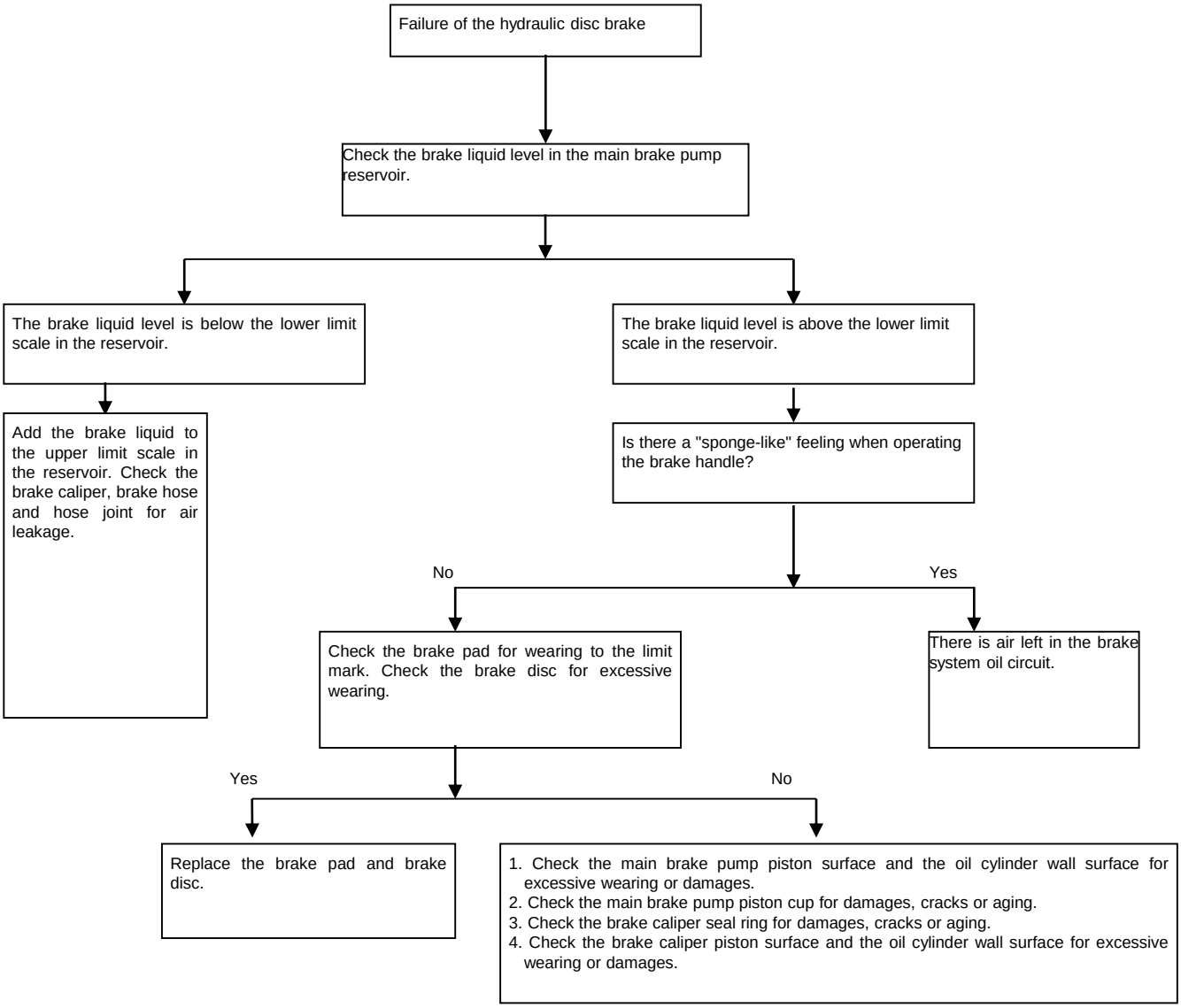
- There should be no oil stains on the brake assembly in installing or removal.
- The cleaning should be made with a specified detergent to avoid reduction of the brake performance.
- Oil stains on the brake pad will result in reduction of the brake performance
- Check the break before riding

Specifications

Item	Standard value (mm)	Minimum Thickness(mm)
Diameter of the front brake disc	φ220mm	-
Thickness of the front brake disc	4.0	3.0
Thickness of the front brake pad	4.0	3.0
brake fluid	DOT3 or DOT4	
Diameter of the rear brake disc	φ180mm	-
Thickness of the rear brake disc	3.5	2.5
Thickness of the rear brake pad	4.5	3.0
brake fluid	DOT3 or DOT4	

Torque value		
Installation screws on the front/rear hydraulic brake disc	8	Nm
Tightening bolts on the Front Brake upper pump fixing screw	8	Nm

Failure diagnosis



Failure diagnosis

The brake performance is not good.
The brake is not adjusted properly.
The brake pad and brake disc are worn.
The brake assembly is not installed properly.
The brake pad and brake disc are contaminated.
The brake responds slowly or the handle is tight.
The brake is not adjusted properly.
The brake pad and brake disc are worn.
The brake assembly is not installed properly.
There is an abnormal noise from the brake.
The brake pad and brake disc are worn.
The brake pad and brake disc are contaminated.
The brake handle is softened without an effective application.
There is air in the hydraulic system.
There is leakage from the hydraulic system.
The brake pad is worn.
The brake caliper piston seal is worn.
The main cylinder piston cup is worn.
The brake caliper is dirty.
The main cylinder is dirty.
The brake caliper does not slide smoothly.
The brake liquid level is low.
The flow channel is blocked.
The brake pad is bent and deformed.

Disassembling

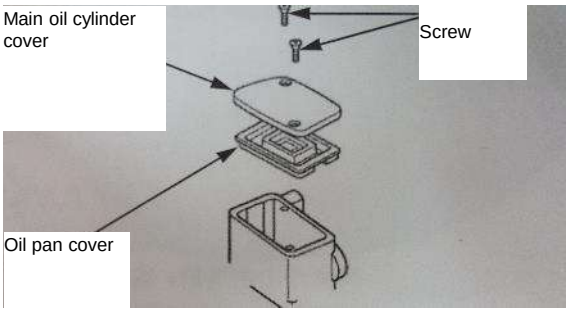
Replace the brake pad assembly.
If the brake pad assembly will be used again, then it should be marked at side before removal so that it can be installed at its original position.
Remove the following assemblies from the handle and shock absorber.
Front/Rear brake:
1. Oil pump body assembly
2. Front/Rear brake disc
3. Brake cylinder assembly
4. Brake pad assembly
5. Brake hose assembly
6. Hydraulic brake handle

There should be no oil stains on the Front/Rear hydraulic brake pad assembly in installing or removal.
The cleaning should be made with a specified detergent to avoid reduction of the brake performance.
Loosen tightening bolts on the brake cylinder assembly.
Remove the brake cylinder assembly from the front shock absorber.
Remove the front axle, and remove the front wheel.
Remove the brake disc from the Front/Rear wheel.

Brake System

Brake liquid change/air discharging (for the disc brake type)
Drainage of the brake liquid

The paint coatings, plastics or rubber parts should be covered with cloths as good as possible to avoid splash of the brake liquid onto them in changing the system liquid or draining the liquid.
There should be no foreign matters that enter into the system in liquid injection into the liquid reservoir.
Turn the steering handle until the liquid reservoir on main oil cylinder becomes horizontal, before removal of the main oil cylinder cover.
Remove screws, oil cylinder cover and oil pan cover from the main oil cylinder on front brake.



Connect the oil drainage hose to the oil drainage screw on front brake caliper.
Loosen the oil drainage screw and grasp the front brake handle tightly until the brake liquid does not flow out from the oil drainage screw.

Brake liquid injection/air discharging
Add the DOT3 or DOT4 brake liquid into the liquid reservoir, and add it to the upper limit of the liquid level.

Note:
Do not use different types of the brake liquid because they are not compatible with each other.
Connect air discharge pump from the brake liquid to the oil drainage valve screw.
Operate the air discharge pump from brake liquid, and loosen the oil drainage screw.
Check the brake liquid level frequently in air discharging to avoid air entrance into the hydraulic system.
Perform the discharging operation procedure strictly until the air discharging from hydraulic system is completed.
Seal thread of the oil drainage screw with a PTFE adhesive-tape, if the air can enter into the air discharge pump through the thread.
Tighten the oil drainage screw, and operate the brake handle.
Repeat the air discharging operation if there is still a soft feeling.
Tighten the oil drainage screw on brake caliper after the air has been discharged completely.

Brake liquid injection/air discharging

The following operation steps can be performed if air discharge pumps are not available.
Hold the front brake handle tightly and pressurize the system until there are no air bubbles from the liquid reservoir hole and the resistance to the front brake handle is felt.
Connect the oil drainage hose to the oil drainage screw, and perform air discharging from the system as per the following steps:

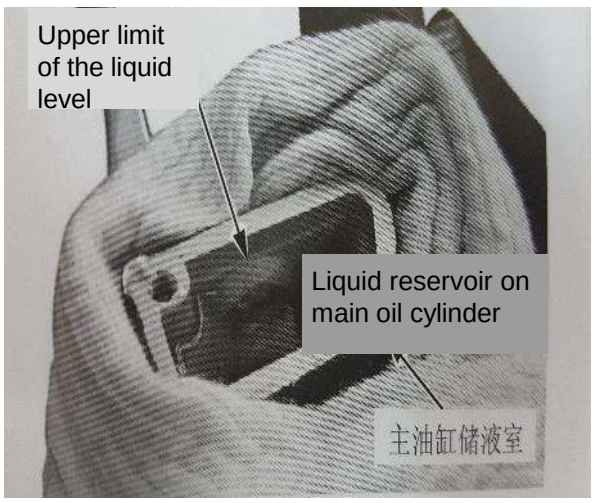
Check the brake liquid level frequently in air discharging to avoid air entrance into the hydraulic system. The brake handle should not be released before closure of the oil drainage screw.

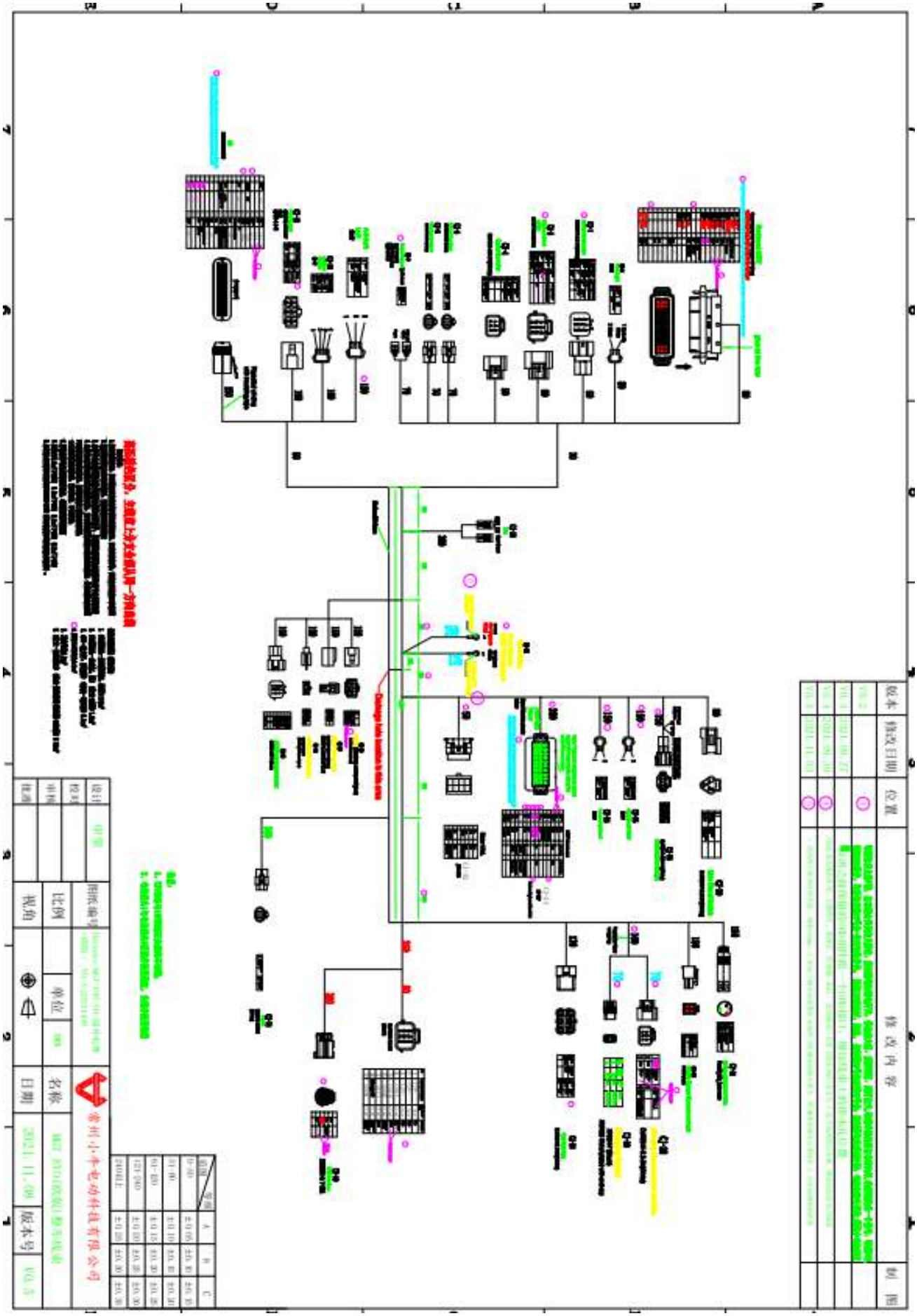
Step1: Grasp the front brake handle for several times, and then hold the front brake handle at the same time to loosen the oil drainage screw to 1/2 circle. Wait for several seconds to tighten the oil drainage screw.

Step2: Loosen the front brake lever slowly until the front brake lever reaches to end of its travel. Wait for several seconds.

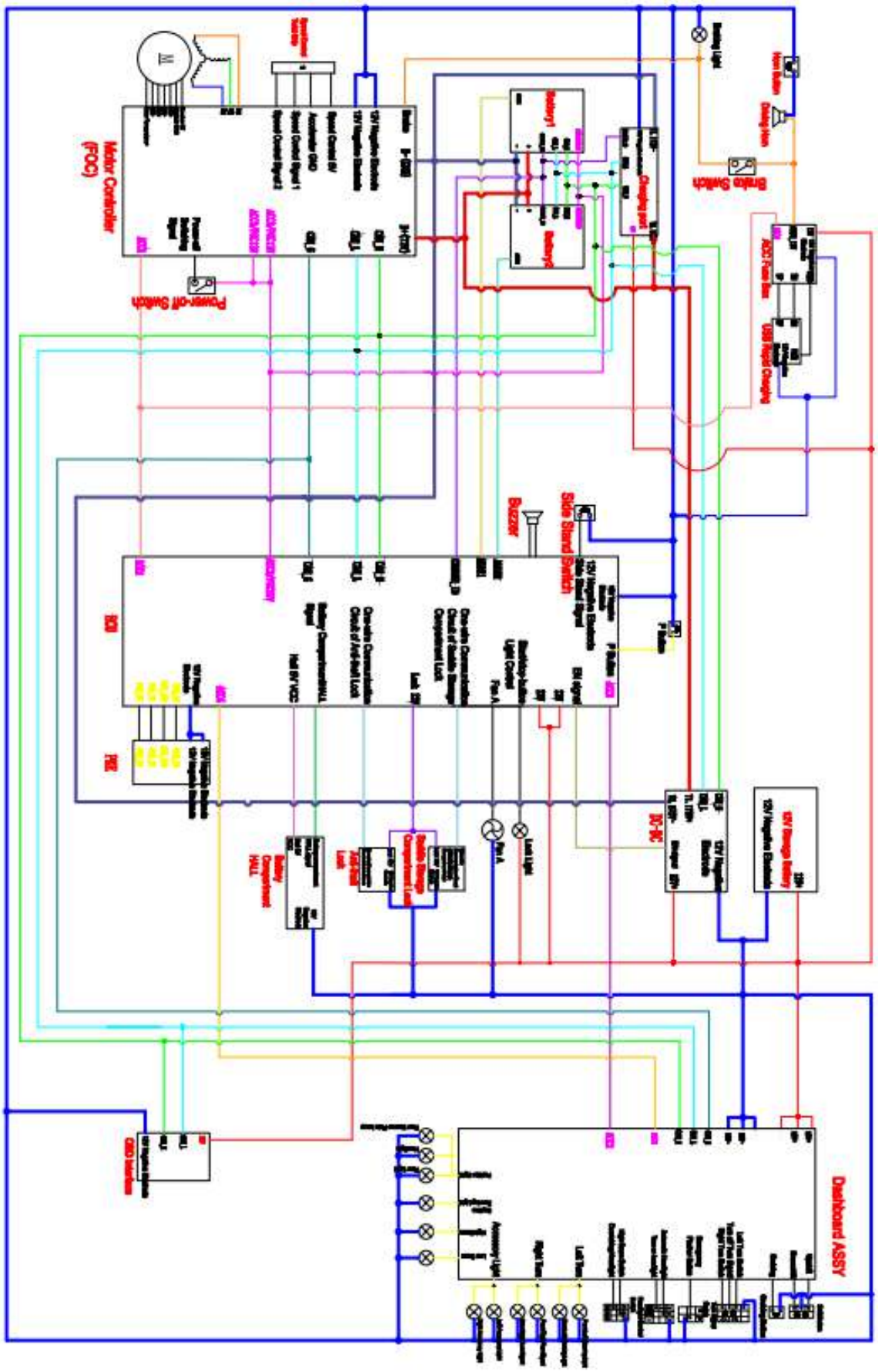
Step3: Repeat steps 1 and 2 until there are no air bubbles from the oil drainage hose.

Tighten the oil drainage screw on brake caliper after the air has been discharged completely.
Add the DOT3 and DOT4 brake liquid that has been sealed completely into
the liquid reservoir, and add it to the upper limit of the liquid level.
Install the oil pan cover and oil pan diaphragm. Tighten screws on the main oil cylinder.





Circuit Diagram



V1.0.0

Lithium battery/charger

Overview

The charger will be generate heat during charging. It should be subject to good ventilation and radiation.

The battery and charger must not be covered.

They must not be close to flammable or explosive objects in charging to avoid the explosion or fire that may cause personal injuries.

There is high-voltage current in the charger during charging. The charger is strictly prohibited from being opened in order to prevent electric shock.

The charging should be made indoor and should not be made at an open site in order to prevent the electric shorting or firing due to rain and other factors.

The charging process is strictly prohibited from being made in a rainy, exposure or high-temperature environment or close to fire sources.

Only original charger and a stable 100-240V AC power supply should be used in charging.

The polarity of the charger output connector must be consistent with the battery output connector, otherwise the charger and battery will be damaged.

Note

The Power Lock and Main Switch should be turned off before removal of electronic components.

The battery used for this model is a lithium battery.

Remove the battery from scooter storage for than a week, Charge the battery to approximately 50% of its capacity and store it at a room temperature.

Perform periodical charging of the battery every month. The long-term storage of battery in below 20% of the electricity is strictly prohibited.

The battery should be fully charged for use after long-term storage.

The original battery for this model must be charged with the original charger that accompanies with the scooter (the scooter charging with a non-original charger will cause irrecoverable damages to the battery). Charging with a non-original charger may lead to the circuit or battery failure.

Battery charging is strictly prohibited from being made immediately after scooter stop. The charging should be made when the battery surface has been naturally cooled down (it is recommended to make charging after 30 minutes).

Stop charging immediately if the battery has not been fully charged for more than 24 hours and the red lamp does not turn to green, and then contact the after-sale service for inspection of the charger and battery.

Specification

Item		Specifications
Battery	Type	lithium battery pack
	Rated voltage	72V
	Rated capacity	2*26Ah
Charger	Output voltage	72V
	Max Output current	26A

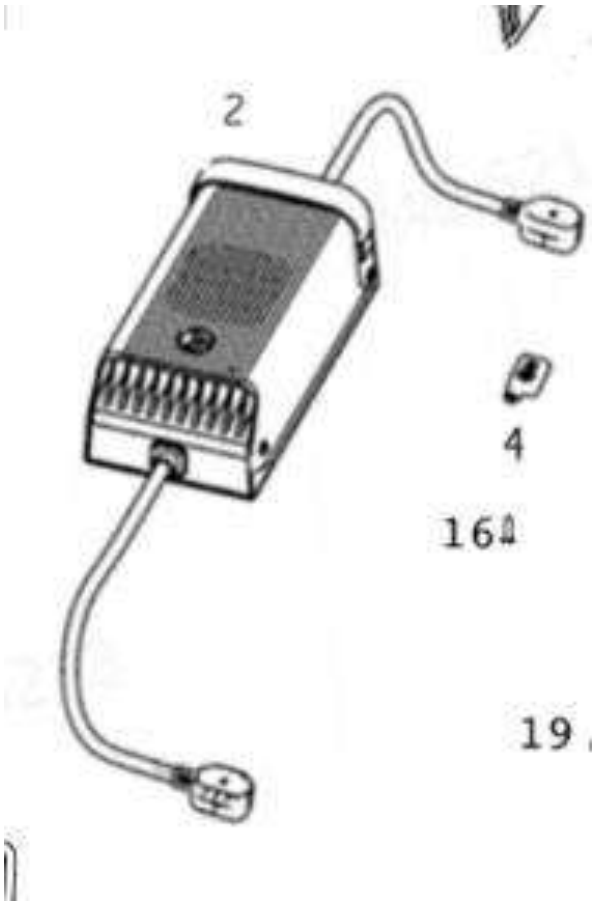
Battery Capacity:72V 26Ah Yuandong

Battery Pack Quantity: 2 Max Speed: 100KM/h

Charger-1000W

1000W 26-86V MAX 26A INPUT 100-240V CAN communication

Spec:
Red constantly on: Charging
Red flash: In fault status
Green constantly on: Finish charge
Green flash: Wait for connecting the batteries
Red and Green flash alternately: Updating firmware



Use H2 can read BMS info to troubleshoot for Battery pack

How to use H2, please check H2 User Manual

Electrical System

Motor

The motor used in this scooter is an efficient DC motor with a permanent magnet made of rare earths, which is integrated with the rear wheel.

The motor does not require maintenance in daily riding. However, attention should be paid to the status of installation and tightening nuts on the motor shaft.

The motor is integrated with the rear wheel. Attention should be paid to inspection of the tire pressure during maintenance. Driving at insufficient tire pressure will cause damages to the motor hub.

The motor should be stopped immediately when the motor is abnormally hot, smoking, smelling abnormally, sounding abnormally or has other abnormal conditions.

Check the battery for normal performance and make it charged fully before maintenance of the motor system.

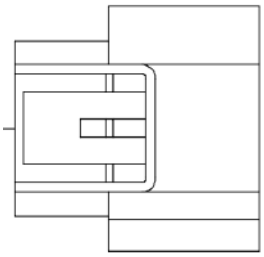
Check the Hall cable sensor connector, Hall motor connector and controller connector for shorting due to moisture, looseness or bad contact before maintenance of the motor system.

Attention should be paid to proper maintenance of the motor system and appropriate protection measures for avoidance of the electric shock, since the high current and voltage are involved.

The Hall cable sensor and Hall motor sensor should be inspected for shorting before replacement of the damaged controller with a new one, otherwise the new controller that has been installed will get damaged again.

The motor temperature rises higher and faster in a high-altitude area than in a plain area. Thus the scooter operating for a long time will easily result in the situation where the motor becomes abnormally hot and even the motor fails.

Pay attention to the wire polarity in installing the battery or controller.



1	B	Hall Ground	6	Yellow	Hall A
			5	Green	Hall B
3	R	Motor Hall 5V	4	Blue	Hall C

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Motor Hall

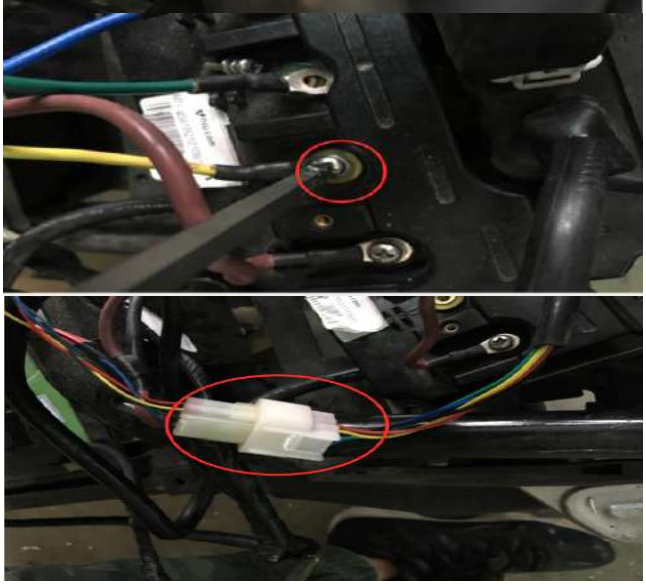
How to replace Motor (Ref: 009)

Preparation： Remove section 4 first

1. Screw up two hexagon flange bolts on the left and right side

2. Install the motor connectors on FOC controller

3. Connect the motor hall connector （Scooters produced before 2016 Dec)



FOC Controller

The controller for this model makes controlling in the way that it receives the signal from speed regulation handle and controls operation of the DC motor.

Main protective functions

1. Current limit protection

The maximum controller output current is limited to protect the motor, controller, battery and other components from being damaged by a current greater than specified.

2. Rotation failure (overload) protection

The controller judges the motor status automatically in a certain period of time after the motor rotation failure (over-current) occurs. It controls automatically the output current to protect safety of the motor, controller and battery.

3. Under-voltage/over-voltage protection

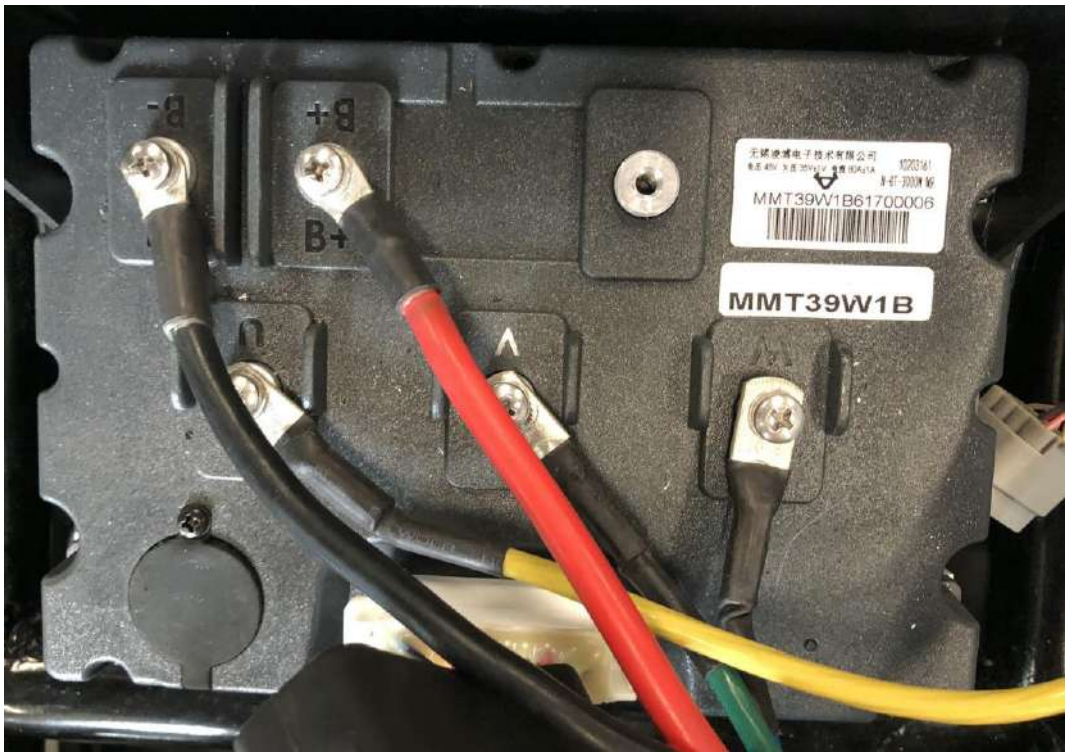
The controller stops automatically the motor rotation when the input voltage to motor is lower or higher than the set value, in order to protect safety of the motor and extend the battery lifetime.

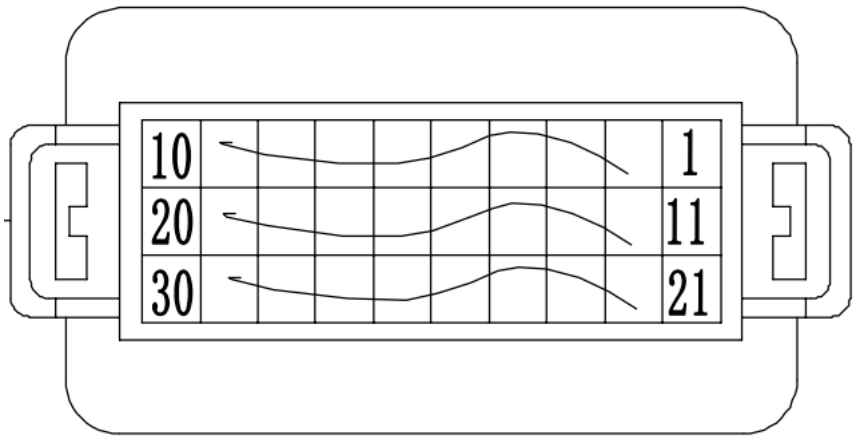
4. Power cut-off protection in charging or braking

The controller stops the motor automatically to avoid unexpected injuries when the vehicle is being braked or charged.

5. Control loss protection

The controller stops the motor automatically to avoid unexpected injuries when the Hall cable sensor or its circuit fails and is out of control. The functions such as motor temperature protection, controller temperature protection and motor winding short protection are also provided.





1 485B 14 Hall 5V 28 Throttle 5V
2 485A 15 Brake Signal 30 Single/Dual battery Signal
5 485地 19 Start green button
7 Cruise Control 20 Shift Up
9 Orange ACC 21 Motor Hall Gournd
11 Blue Motor hall C 24 Shift Down
12 Green Motor Hall B 25 Brake Switch Signal
13 Yellow Motor Hall A 26 Throttle Ground
22 Side Stand Signal 27 Throttle Signal

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How to read FOC controller indicator flashing frequency (Ref: 001)

- Turn ON the power and count how many times the indicator flashes between each interval.
- If FOC controller is in good working condition, after turning ON the power, the indicator should only flash once and no more flashing

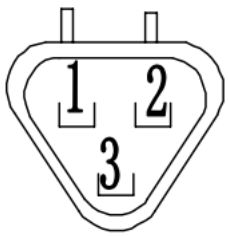
FOC Controller Flashing Indicator Explanation			
Flashing Frequency	System protection feature		Solution
1	Over-Voltage warning	Battery voltage is higher than default value	
2	Under-Voltage warning	Battery voltage is lower than default value	
3	Over-Current warning	Instant current is higher than default value or Phase line short circuit	
4	Locked-rotor warning	Duration of Motor in locked-rotor status longer than default value	Replace FOC controller
5	HALL failure	Incorrect HALL input(Voltage) detected	Replace Motor
6	MOSFET failure	MOSFET power self-check failed	Replace FOC controller
7	Phase default warning	one or more of motor phase lines missing	Replace Motor
9	Brake applied	Controller in the braking status	
10	Self-checking failure	System on the internal electrical self-checking found abnormal	
11	Controller over-heat warning	Temperature is higher than default value	Stop riding until FOC controller cool down
14	Cable Hall Sensor Failure	Twist grip/Cable Hall Sensor Malfunction	
15	Alarm in active state	Alarm activated	
17	Communication failure	Communication between ECU and FOC controller failed	Replace FOC controller

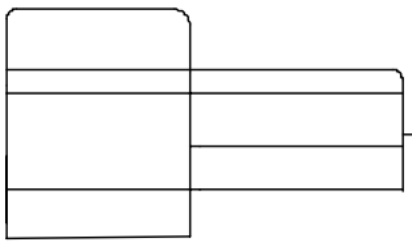
How to replace FOC controller (Ref: 004)

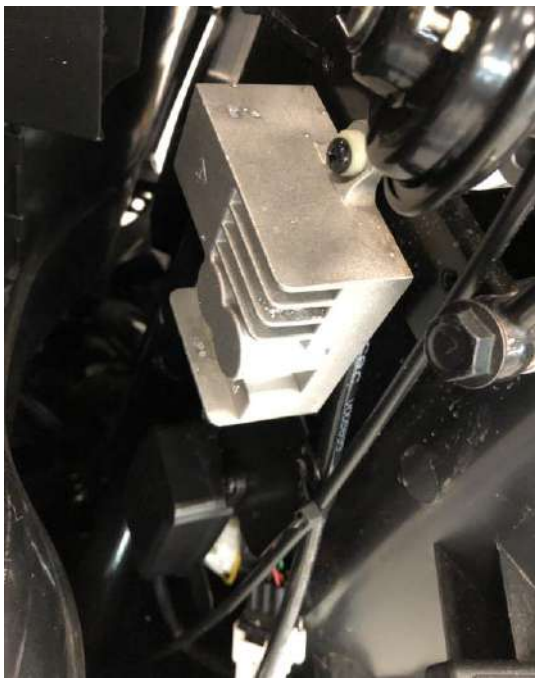
CJ-9

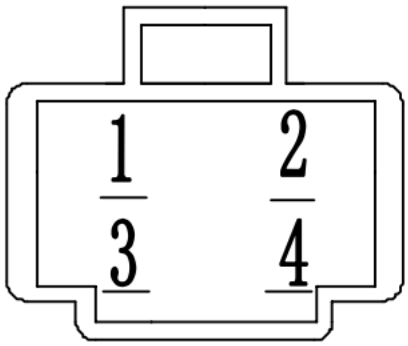
Speed Limitation Sensor

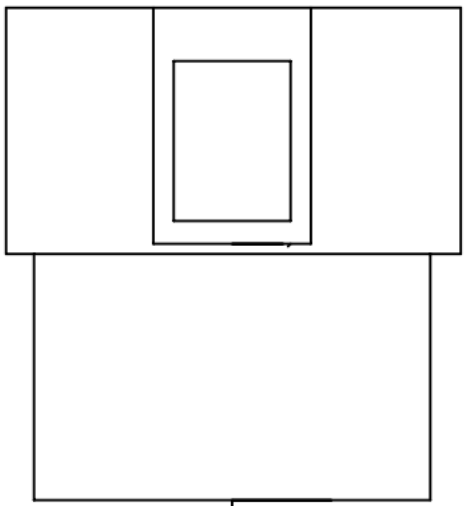
1	B	-	3	Y&W	Sensor Signal
2	R2	5V			











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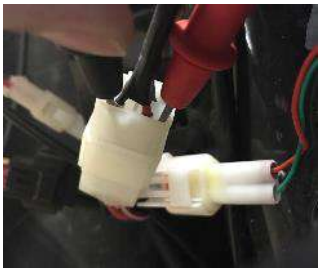
DC-DC

Output：12V，125W，
USB output：5V2A

1	R&G	DC+
2	B	-
3	B	-
4	R&W	12V

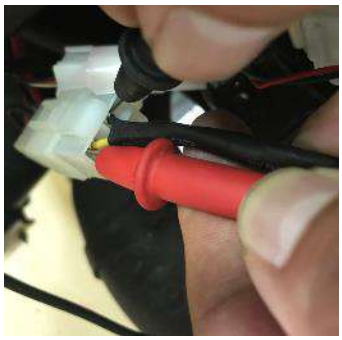
How to check DC-DC Converter power input (Ref: 015)

Step 1: Turn the power ON.
Step 2：Check DC voltage between the Red wire and Black（Negative）at component side.
Step 3：DC voltage reading on multimeter should be same as battery voltage（~71.4V）



How to check DC-DC Converter power output (Ref: 016)

Step 1: Turn the power ON.
Step 2：Check DC voltage between the Yellow and Black（Negative）at component side.
Step 3：DC voltage reading on multimeter should be ~12V



OBD

Integrated in dashboard

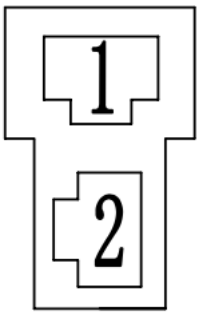
V1.0.0

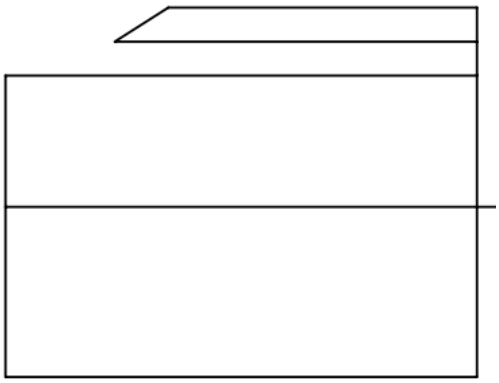
LCU

Integrated in dashboard

V1.0.0

Power Lock

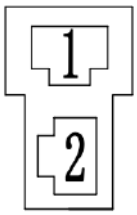




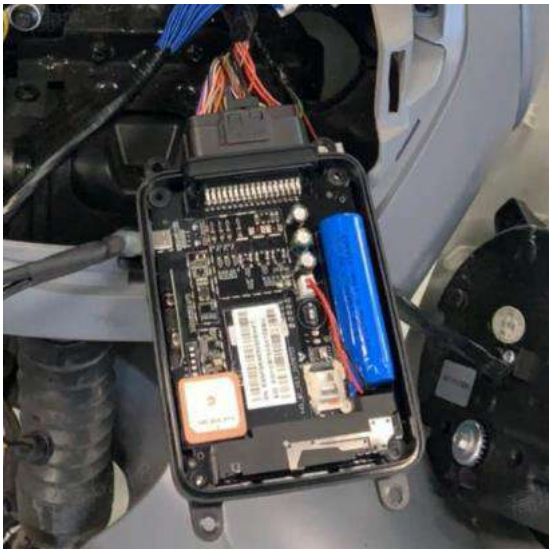
CJ-14

Power Lock

1	Red	48V	2	Grey&W	ON



Version: V45
Built-in alarm



1	Red with White	12V+	18	Purple with Gray	CAN_L
2			19	White	CAN_H
3			20	Black with White	CAN_G
4	White with Yellow 2	Fan A	21	Blue with Brown2	ADDR2
5			22	Blue with Brown1	ADDR1
6	Black	12V-	23	Brown	On
7			24	Dark Yellow	Side Stand Signal
8			25	Black	12V-
9	Red 4	Lock 12V	26	Red with Blue	One-wire communication circuit of anti-theft lock
10	Light Red 1	Start/stop-button Light Control	27	Yellow 2	One-wire Communication Circuit of Saddle Storage Compartment Lock
11			28	Grey	EN signal
12			29	Black	12V-
13			30	Green with Brown	CHARGE_ID
14	Pink 3	ACC3/FOC12V	31	Light Green 2	Battery compartment HALL signal
15	Pink 4	ACC4	32	Red 3	Hall5V VCC
16	Pink 2	ACC2	33		
17	Pink 1	ACC1	34	Red with White	12V+

The indicator definition of ECU

GPS indicator:
Green flash: GPS work normal
Green is always on: NO GPS
Green is off: GPS doesn’t work

LTE indicator:
Blue flash: Communication Network normal
Blue is always on: Can not connect to the network. No Signal or Signal is weak.
Blue off: GSM module doesn’t work.

Must Know:
So if ECU damaged, vehicle could still drive.
If removed ECU, the vehicle could drive with limited speed.
ECU could continue working about 48hours after the batteries drained out.

How to check ECU by checking App Data (Ref: 002)

- This method only applied to scooter with activated SIM card
- Log into NIU E-scooter App to check latest data update, replace ECU if data is not up to date

How to replace ECU (Ref: 003)

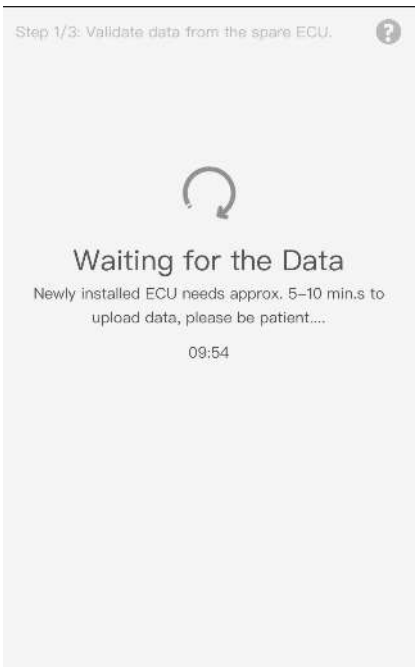
1 Check Section 1-3 to remove the front panel and found ECU

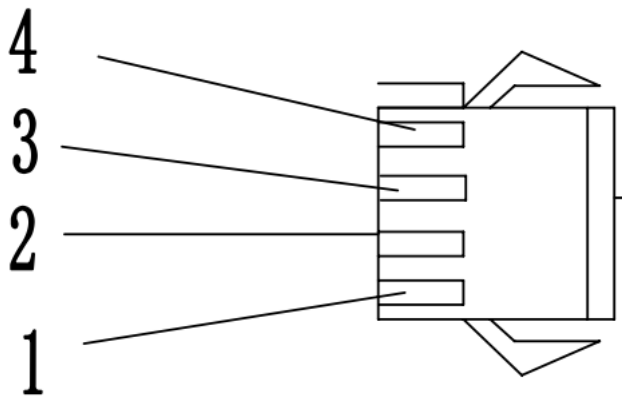
2 Replace the V45 ECU

3 Use a smart phone to scan the QR code of the spare part ECU

4 Input details of the vehicle which the spare part ECU is about to be installed, information such as Vehicle Frame Number, Vehicle SN and mobile number which was banned on the App

5 Check App status after 24 hours



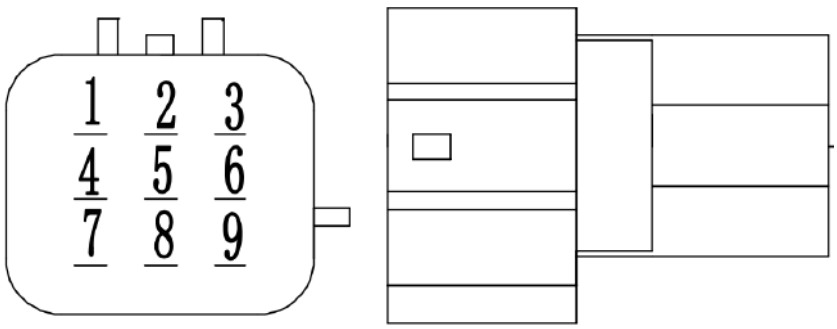


CJ-12

USB Port

1	Light R	VUSB
2	Blue3	DM
3	G3	DP
4	B	-

Left combination switch

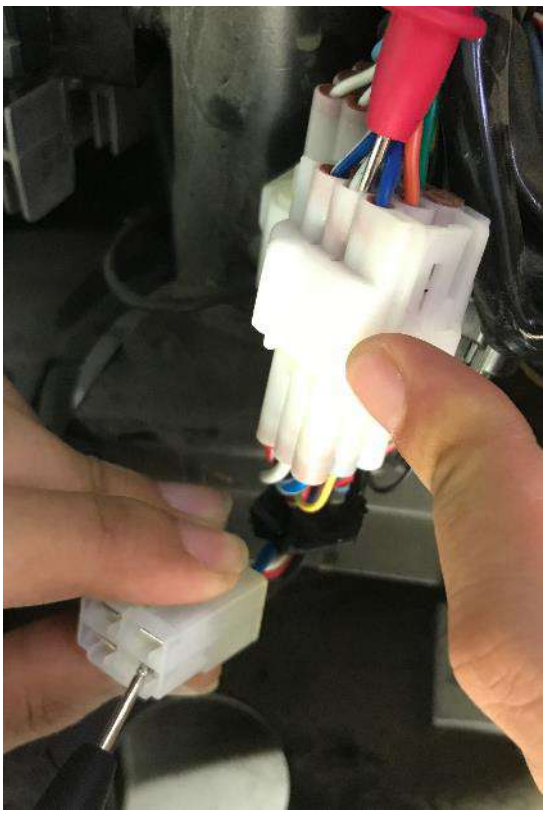


1	B&P	Switch High Beam	6	L&Bl	Turn R
2	W&P	Bypass lamp	7	Y&P	Turn L
3	B	–	8	Grey	Turn Signal Off
4	Dark G	Horn	9	G&Y	Cruise Control
5	L&G	Harzard Warning Lamp			

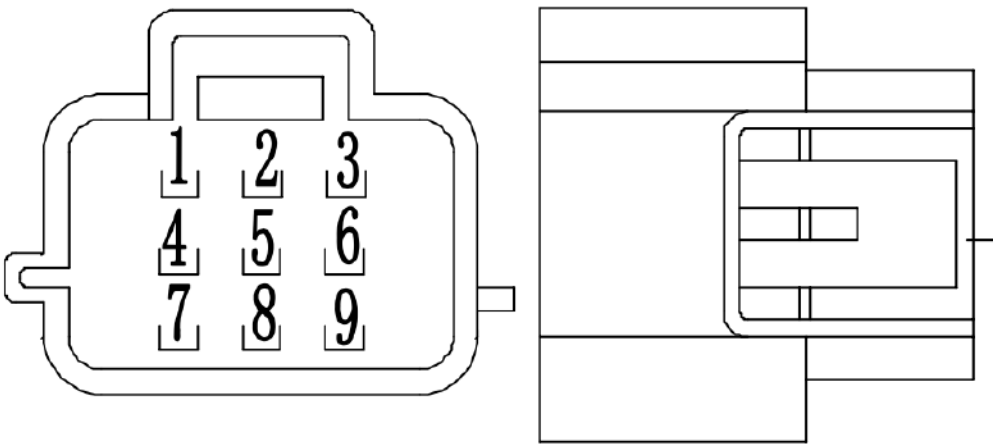
How to check Left Combination Switch Functions (Ref: 022)

Example: Check the Low Beam
Step 1：Turn the power ON
Step 2：Check DC voltage between PIN 6 White wire（Low Beam） and Black wire of another connector(ie Negative pin of Headlight)
Step 3：DC voltage reading on multimeter should be around 12V when the corresponding switch is on

Other switch detection methods are the similar,check the corresponding wire and DC voltage should be around stable 12V.
Note: DC Voltage reading will be dynamic when checking Signal lamps due to Flasher



Right combination switch

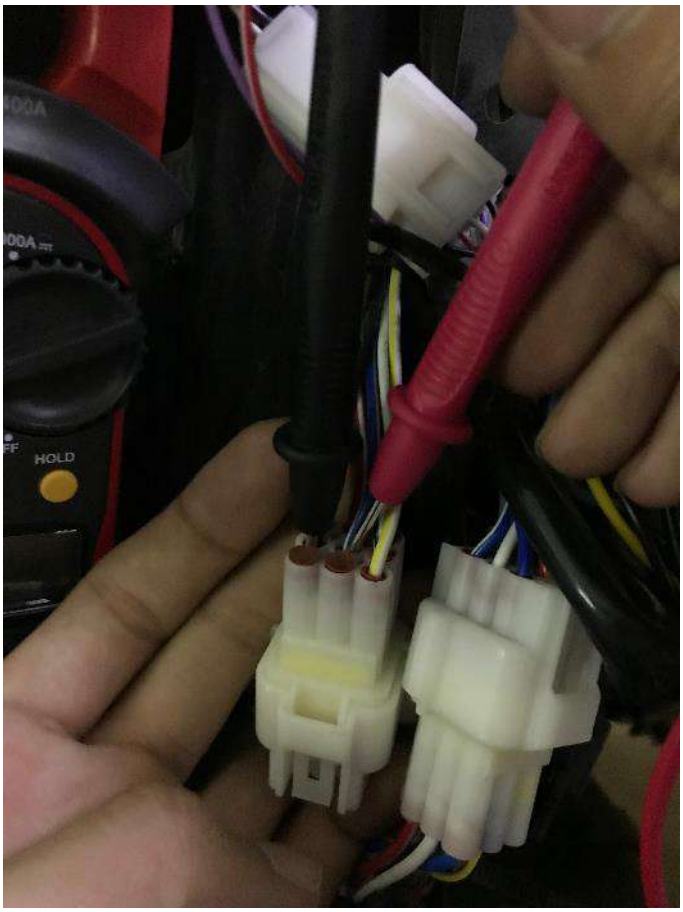


1	W&Y	-shift	6	Black	—
2	W&B	+shift	7	Dark Y1	Brake Swtich
3	Black	-	8	Black	—
4	Blue&W	Headlight on	9	Brown	Start Button
5	Y&W	Auto Head	Lamp		

How to check Right Combination Switch Functions (Ref: 021)

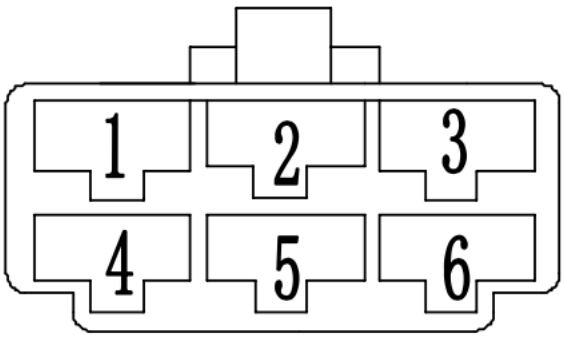
example:
Check the Hazard Light Switch
Step 1：Turn the power ON
Step 2：Check for closed circuit between PIN 5 Blue/White wire（Hazard Lights) and Black wire
Step 3：the multimeter should beep if the circuit is closed.

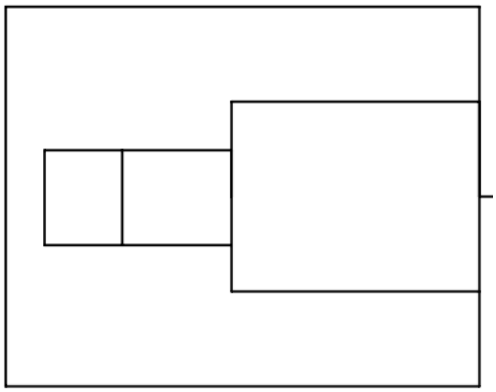
Other switch detection methods are the similar.



Head Lamp

1	W	Low Beam	2			3	Blue	High Beam
4	R&W	12V	5	G&Y	Daylight	6	B	-

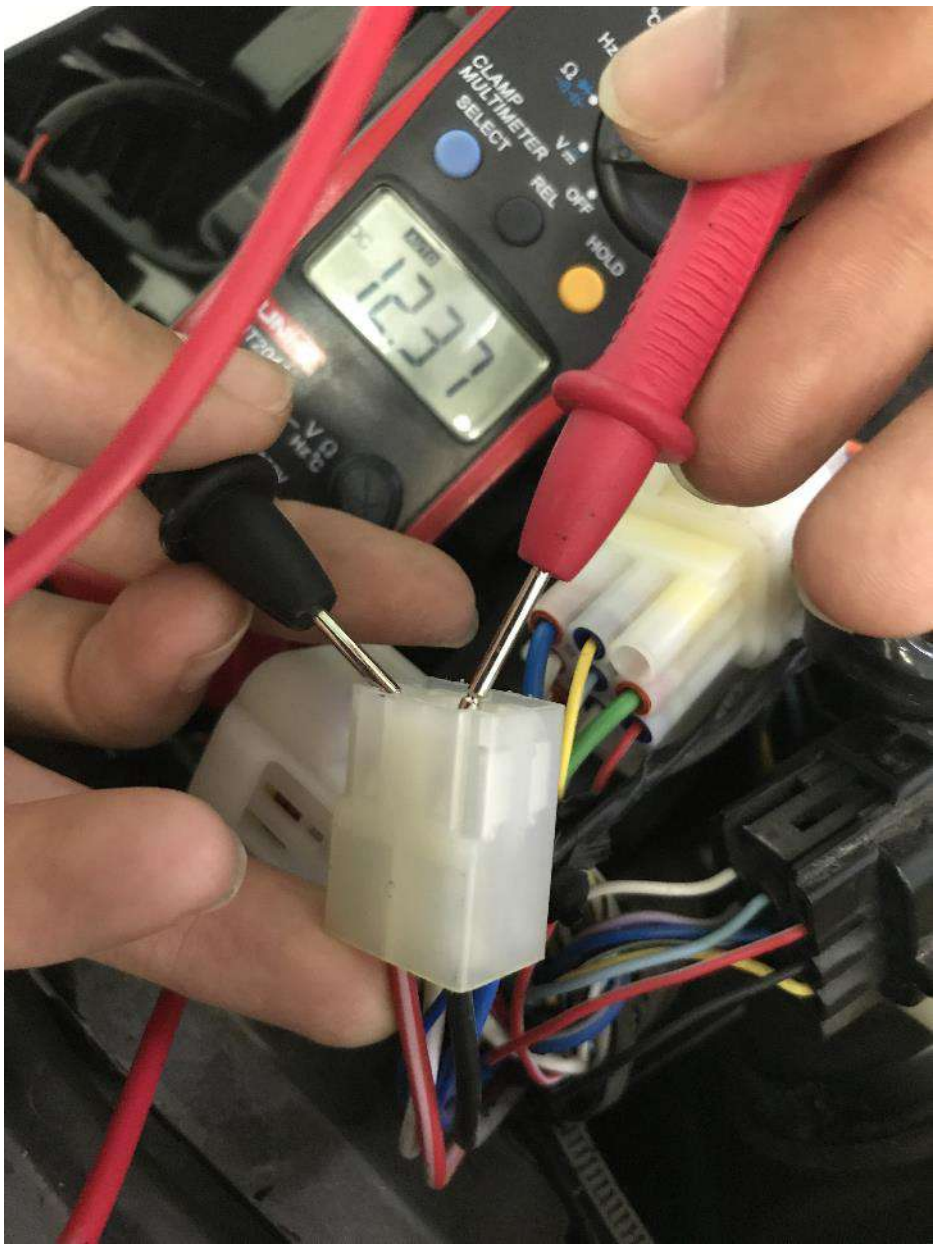




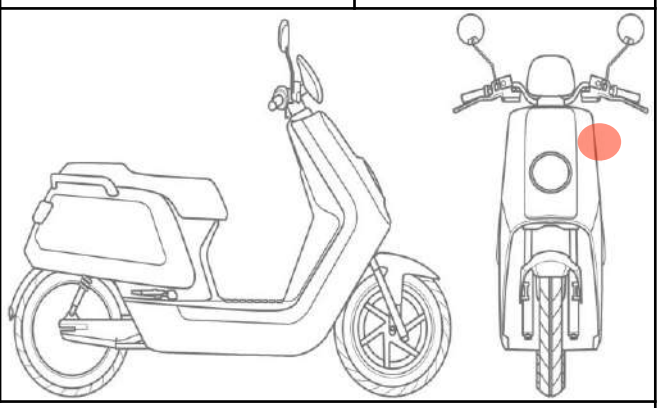
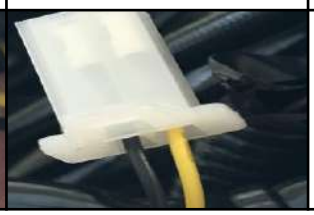
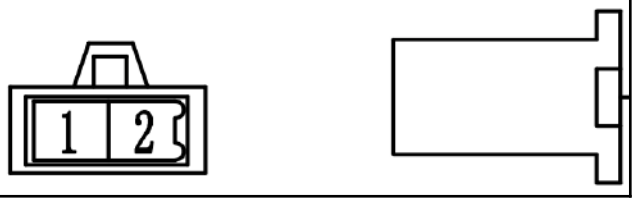
How to check Headlight Power Input (Ref: 023)

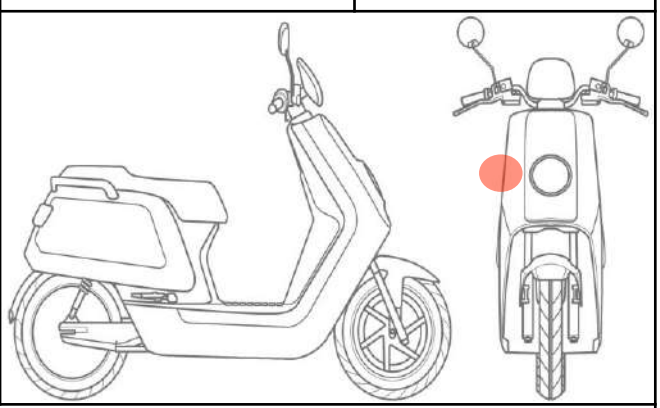
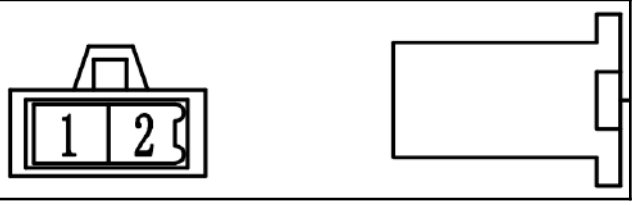
Step 1: Turn the power ON
Step 2: Check DC voltage between Red-White wire and Black wire
Step 3: DC voltage reading on multimeter should be ~12V

If 12V exist but Headlight does not illuminate, replace Headlight
If 12V does not exist, harness is broken



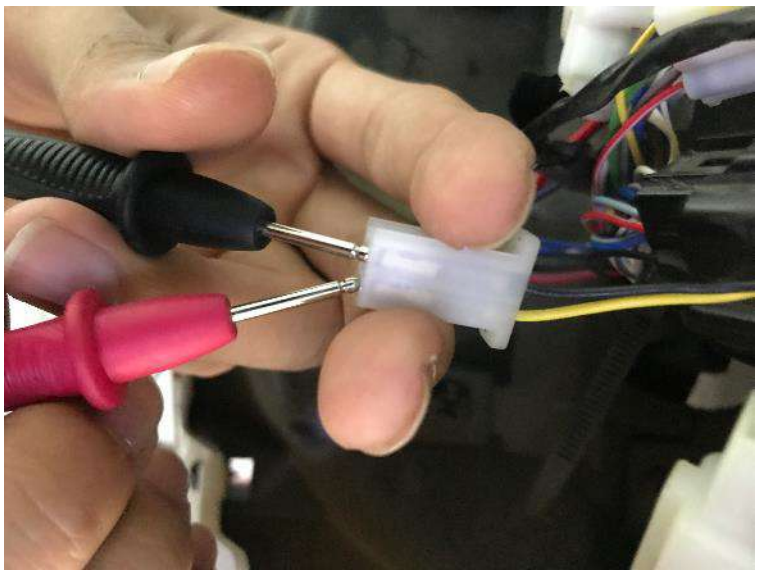
Turn Signal Lamps

Component Name	Left/Right turn signal lamp	Connector Code	J7-A
			
Disassembling order：Section 2>3			
Connector Definition			
PIN	Color	Definition	
1	Yellow	Left turn signal lamp	
2	Black	Negative electrode	
			

Component Name	Right turn signal lamp	Connector Code	J8-A
			
Disassembling order：Section 2>3			
Connector Definition			
PIN	Color	Definition	
1	Light blue	Right turn signal lamp	
2	Black	Negative electrode	
			

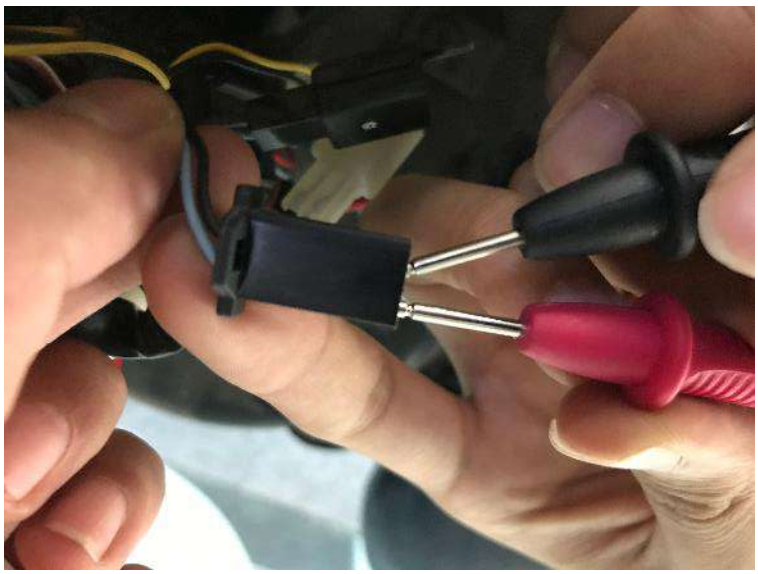
How to check Left turn signal lamp (Ref: 024)

Step 1：Make the Flasher connector PIN2(Grey) and PIN3(Red/White) shorted with a short wire.
Step 2: Disconnect the Left turn signal lamp connector
Step 3: Turn the power ON and then turn the left turn switch ON
Step 4: Check DC voltage between Yellow wire and Black wire on harness side
Step 5: DC voltage reading on multimeter should be ~12V

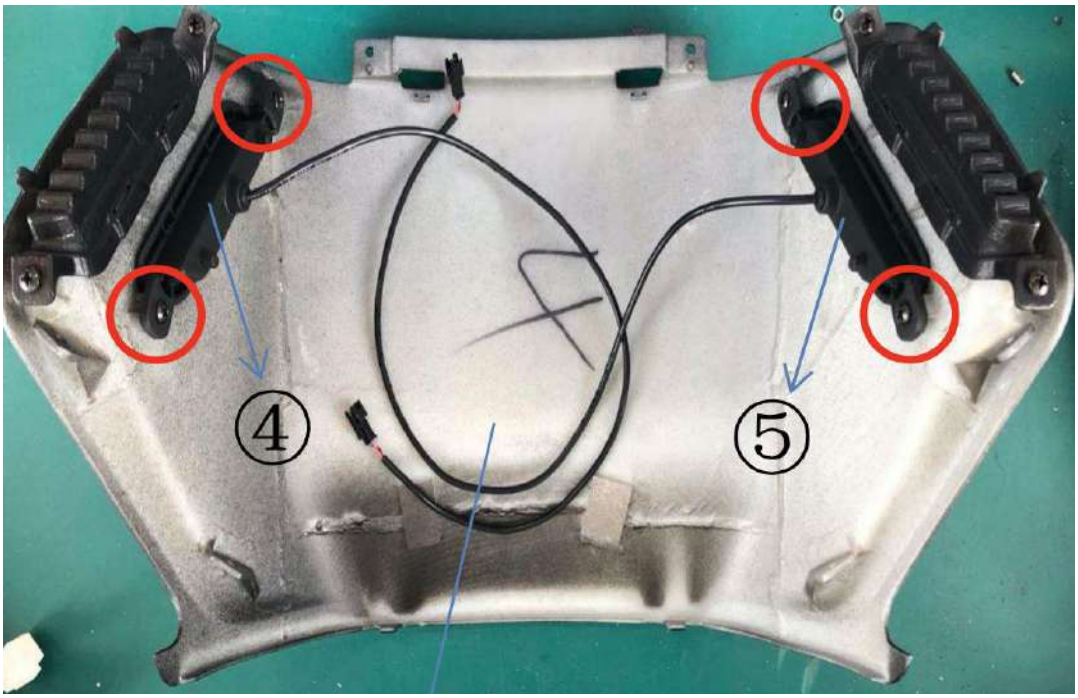


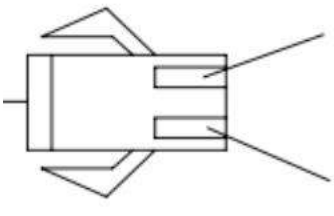
How to check Right turn signal lamp (Ref: 025)

Step 1：Make the Flasher connector PIN2(Grey) and PIN3(Red/White) shorted with a short wire.
Step 2: Disconnect the Right turn signal lamp connector
Step 3: Turn the power ON and then turn the left turn switch ON
Step 4: Check DC voltage between Blue wire and Black wire on harness side
Step 5: DC voltage reading on multimeter should be ~12V



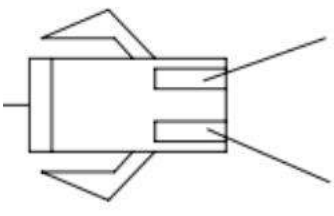
Side Lamp 12V LED





1	R&Y	Side Lamp
2	B	-

CJ-35
Side Lamp2



1	R&Y	Side Lamp
2	B	-

CJ-34
Side Lamp1

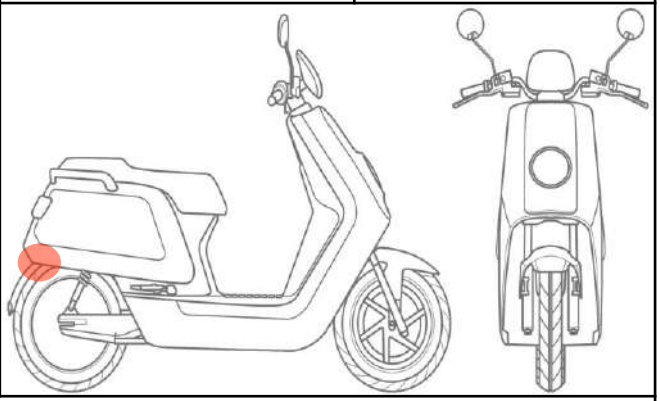
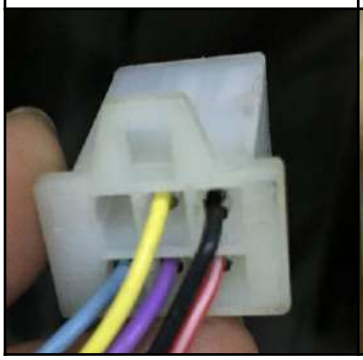
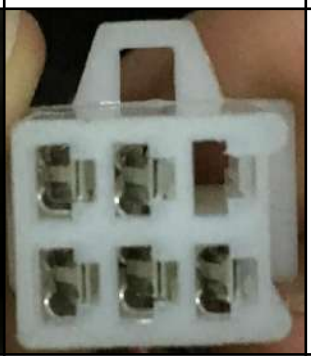
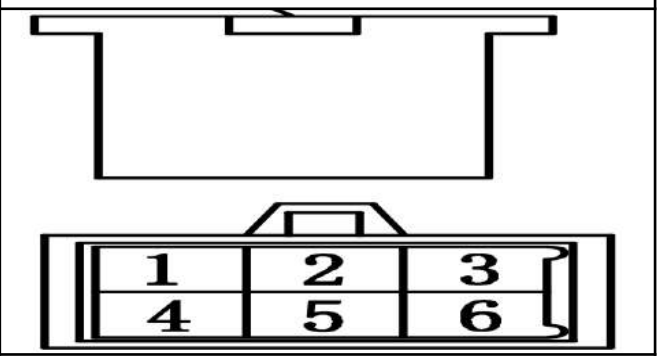
Saddle Lock

1	Brown2	ID
2	G1	Lock Status
3	Y2	Unlock 12V
4	Black	-

CJ-30

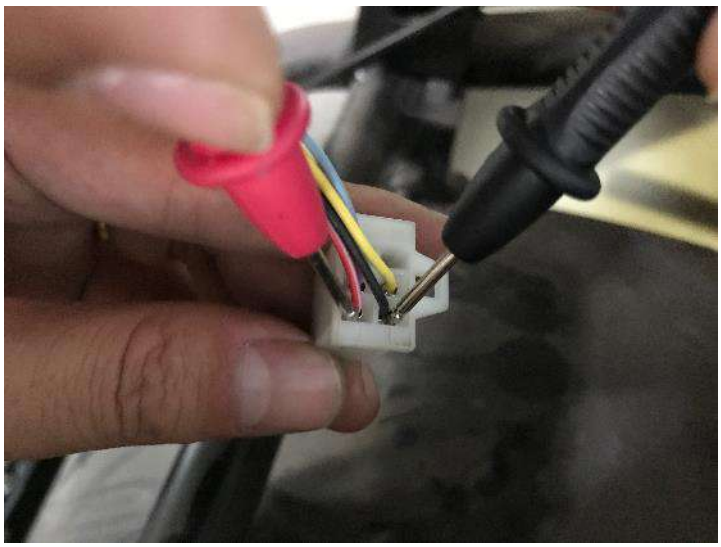
Saddle Lock

Tail Light

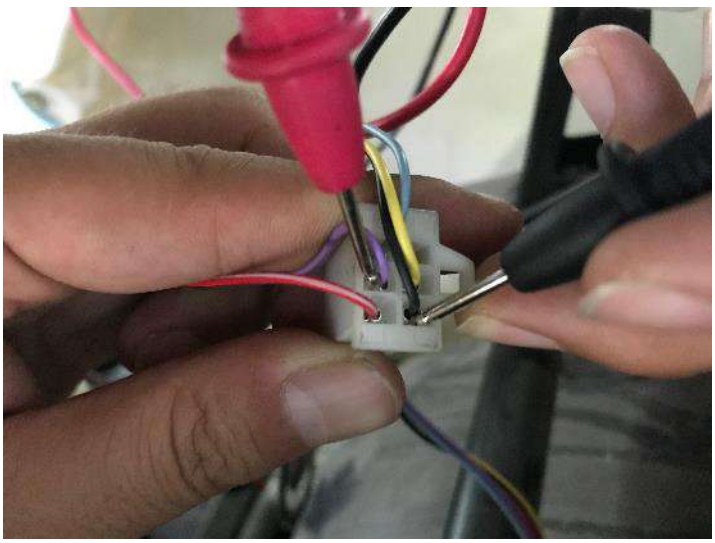
Component Name	Tail Light	Connector Code	J9-A
			
Disassembling order：Section 2>3			
Connector Definition			
PIN	Color	Definition	
1	Black	Negative electrode	
2	Yellow	Left lamp signal wire	
3	/		
4	Red and white	Power cord (12V)	
5	Violet	Brake lamp	
6	Light blue	Right lamp signal wire	
			

How to check Tail Light power input （Ref: 026)

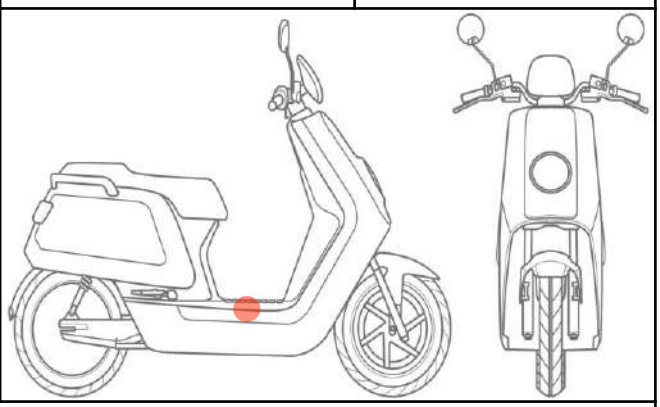
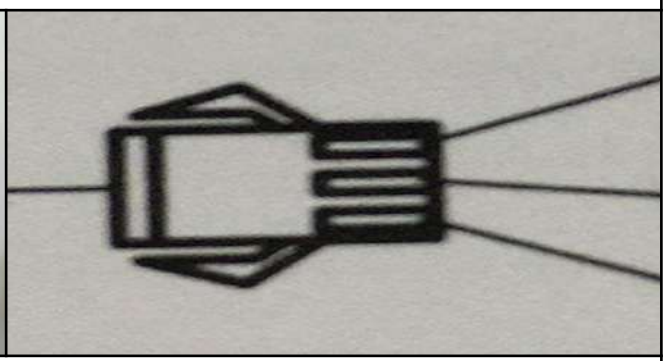
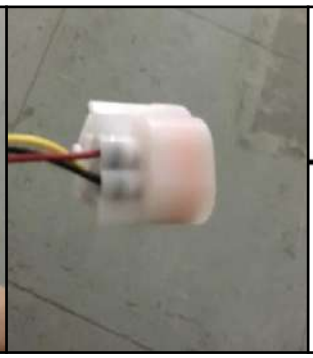
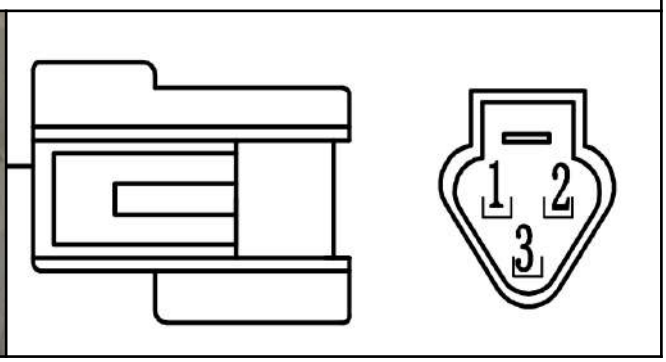
Step 1：Turn the power ON
Step 2：Check DC voltage between Red/White wire and Black wire on harness side
Step 3：DC voltage reading on multimeter should be around~12V



Step 4：Press the brake，DC voltage reading on multimeter should also be around~12V
If 12V exist and Tail light does not illuminate，then replace the taillight



Side Stand

Component Name	Side Stand Switch	Connector Code	
			
Disassembling order：Section 4>5>6>7			
Connector Definition			
PIN	Color	Definition	
1	Red	Power cord（5V）	
2	Yellow	Side Stand Switch signal	
3	Black	Negative electrode	
Manufactured From 05-2016 to 12-2016			
			
Manufactured From 01-2017 ~current			
			

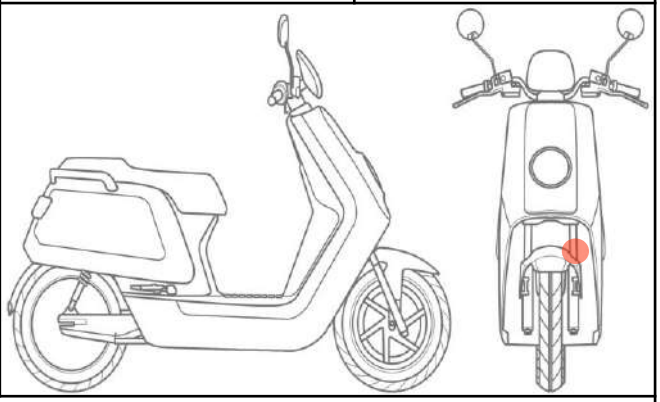
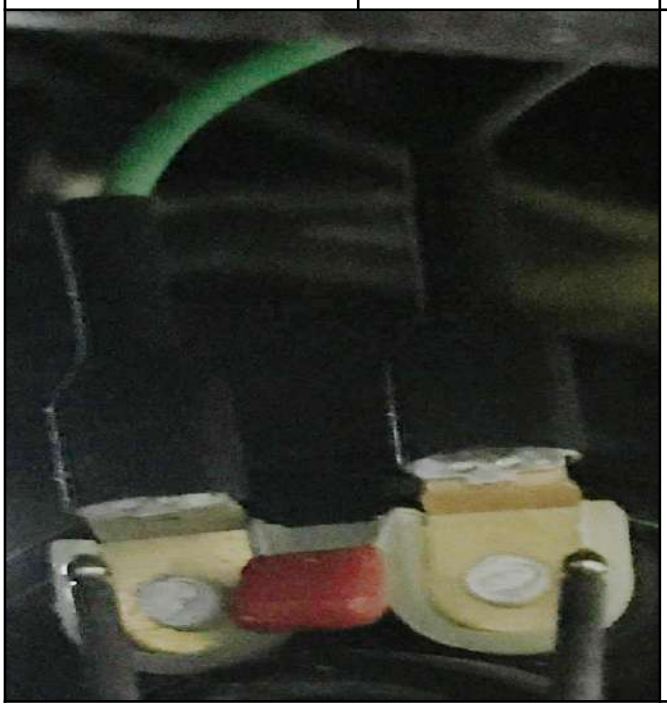
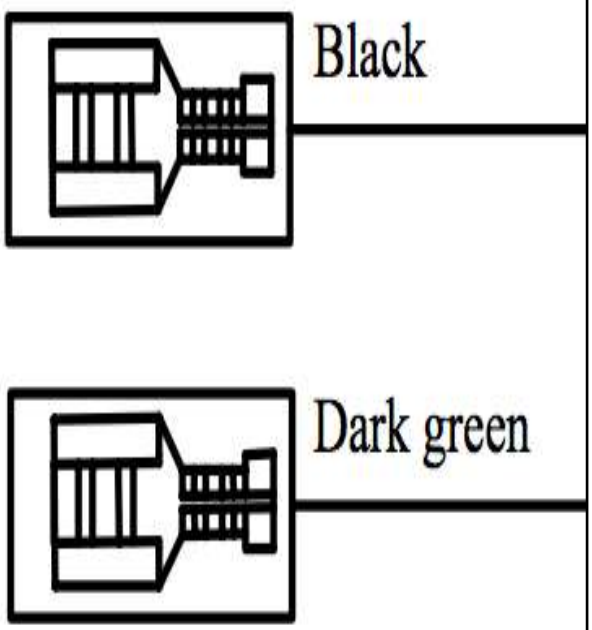
Prop Stand: If the prop stand is extended,the electronic motor is cut-off.
It cannot be restarted until the prop stand is moved into its retracted position.

How to check Side Stand Switc (Ref: 027)

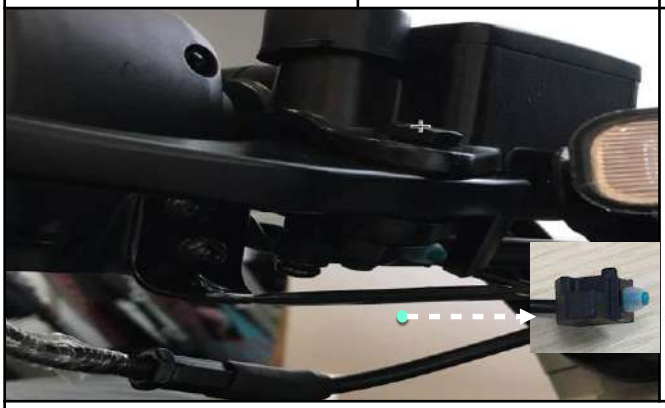
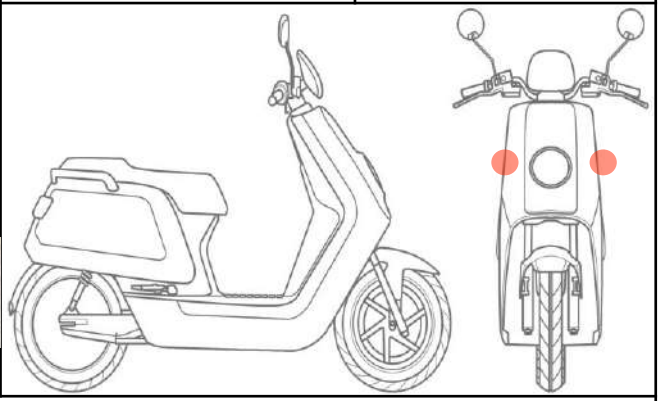
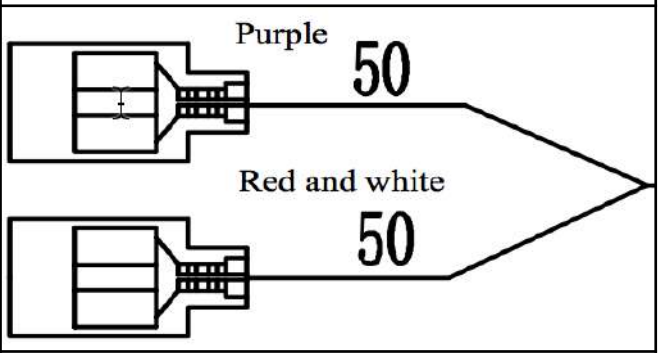
Step 1: Disconnect the connector to Check power input;

Check DC voltage between Red wire and Black wire on harness side, Voltage reading should be ~5V
Step 2: Turn the power ON
Step 3: Connect the connector to Check DC voltage between Yellow wire and Black wire on component side
Step 4: When the side stand is retrieved(not used), voltage should be around ~3.5V
When the side stand is used(side stand is down), voltage should be 0V.

Horn

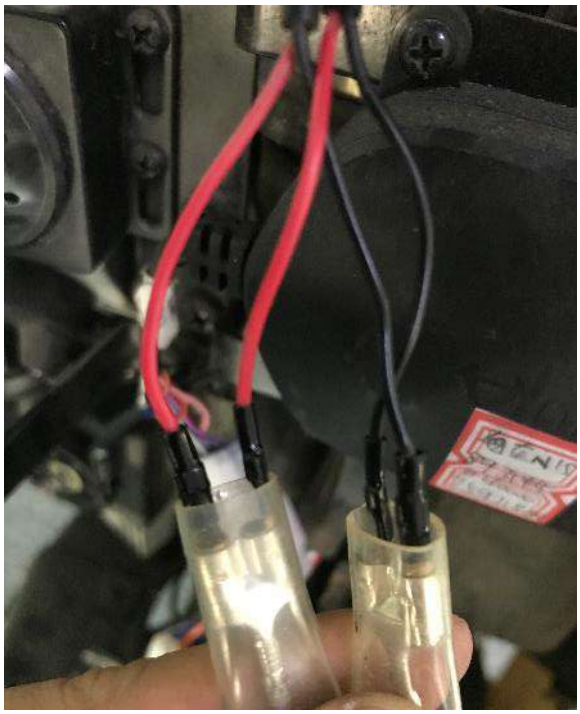
Component Name	Horn	Connector Code	
			
Disassembling order：Section 2>3			
Connector Definition			
PIN	Color	Definition	
1	Green	Horn	
2	Black	Negative electrode	
			

Brake Switch

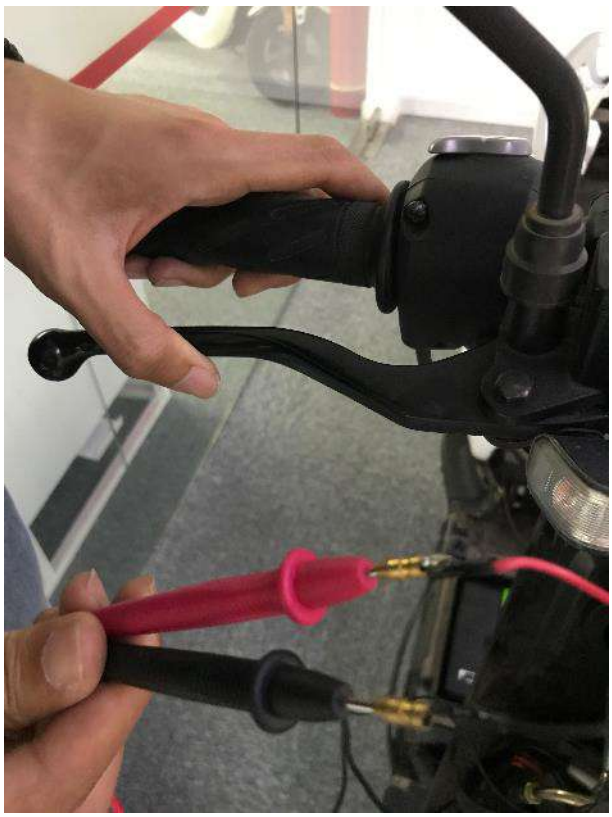
Component Name	Left/right brake Switch	Connector Code	J16-B
			
Disassembling order：Section 2>3			
Connector Definition			
PIN	Color	Definition	
1	Red	Power cord(12V)	
2	Violet(harness side)	Left/right brake handle signal wire	
			

How to check Brake Switch (Ref: 028)

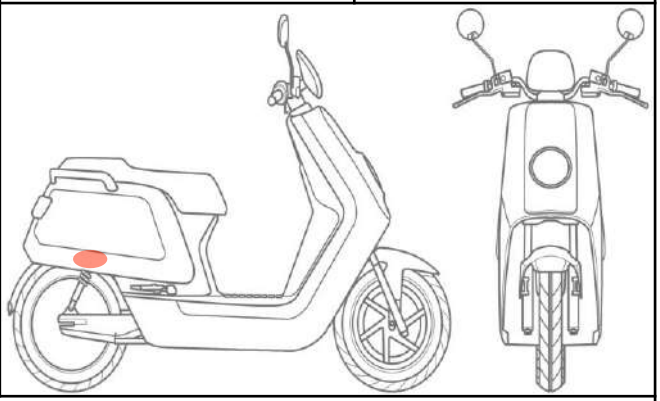
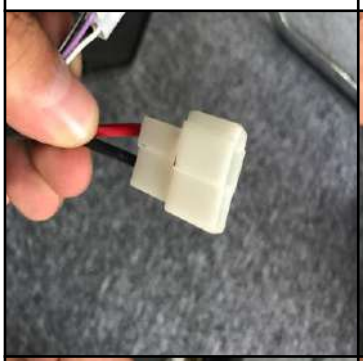
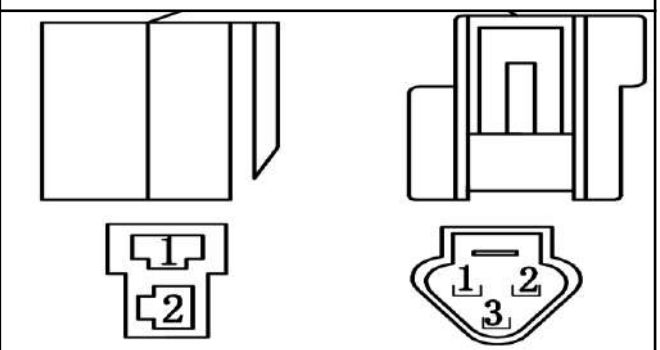
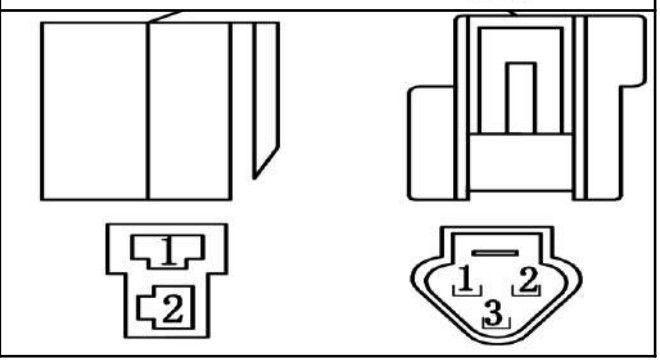
Step 1: Disconnect the Red and Black wires of the Brake Switch connector



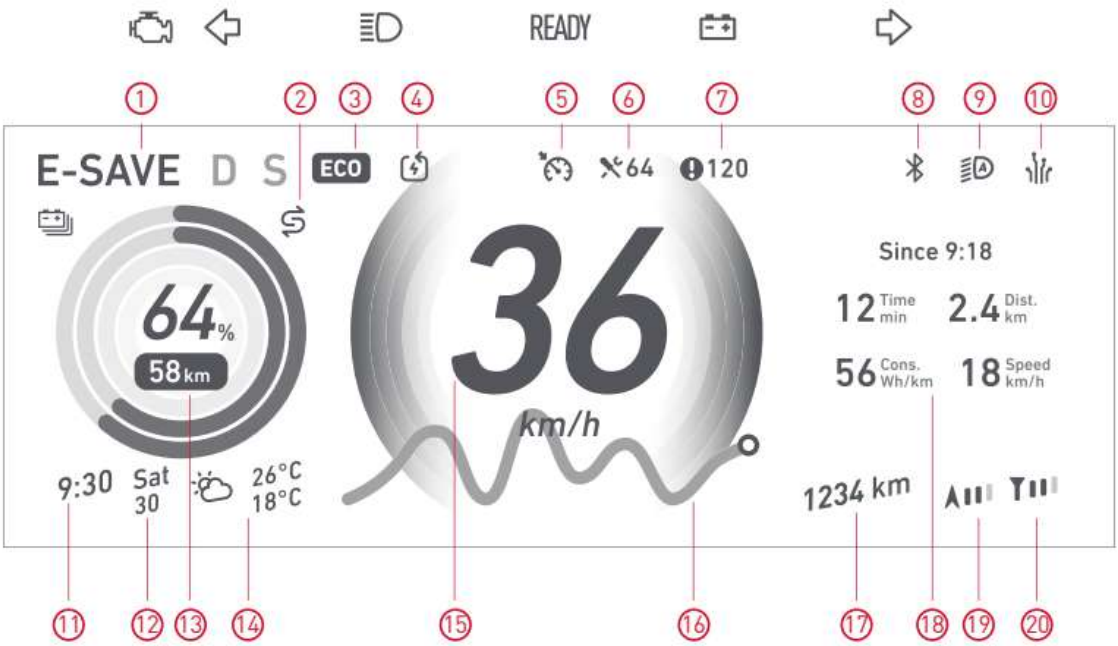
Step 2: Connect Multimeter Positive and Negative pins to the connectors and Set multimeter to test closed circuit mode, then pull the brake, the multimeter should beep if the Brake Switch is working.



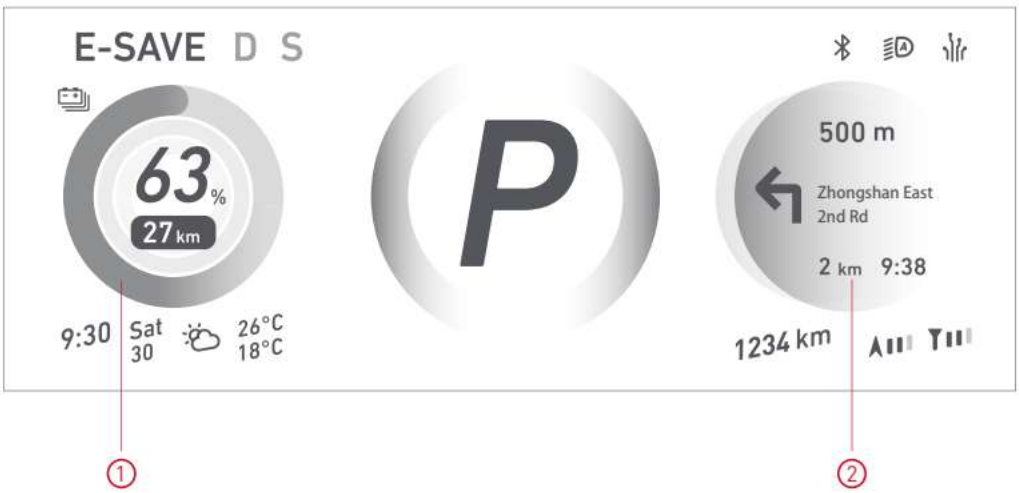
Charging Port

Component Name	Charging Port	Connector Code	J10-A
			
Disassembling order：Section 4			
Connector Definition			
PIN	Color	Definition	
1	Red	Power cord (60V)	
2	Black	Negative electrode	
1	Purple and Grey	Communication B	
2	White and Grey	Communication A	
3	Black and White	485 Earth	
			
			

INSTRUMENT CLUSTER

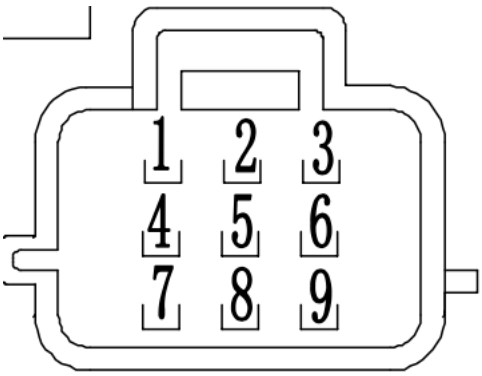


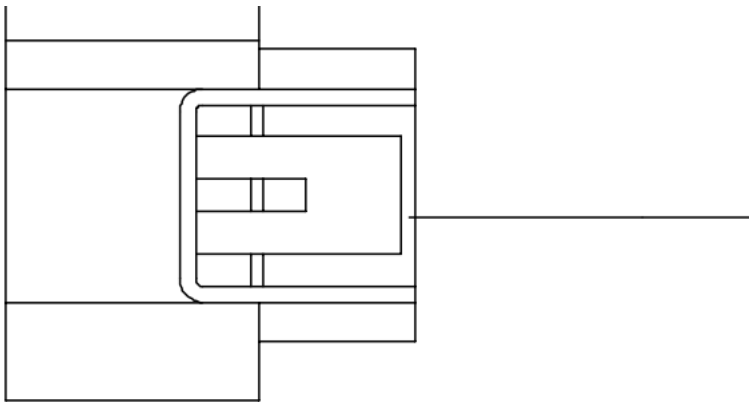
INSTRUMENT CLUSTER



Dashboard

MGT EVO uses a colorful LED large screen. The backlight will adjust according to the illumination intensity. When the illumination intensity is high, the backlight will be white. When it is low, the backlight will be changed according to the illumination.





CJ-2
Dashboard

1	R&W	12V	6	P&G	Comm B
2	L&B	Turn R	7	Y	Turn L
3	W	Comm A	8	Pink	DB ACC
4	B	—	9	B&W	485--
5	Blue	High	Beam		

Dashboard Status in normal

When the two batteries voltage difference is less than 0.8V,it would show the S icon.
And the left icon battery we named the first battery is the one in battery compartment and the right icon battery we named the second battery is the one in helmet bucket.

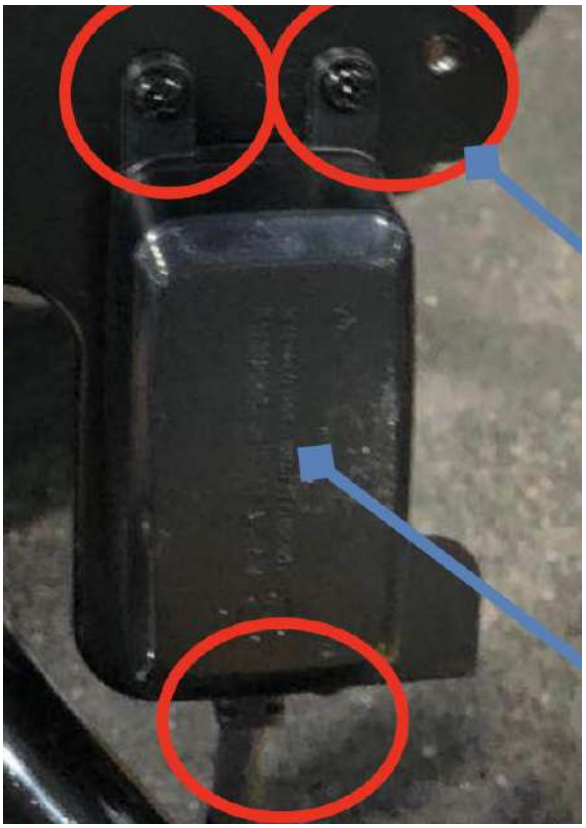
Battery 2-
in helmet bucket

Battery 1-in Compartment

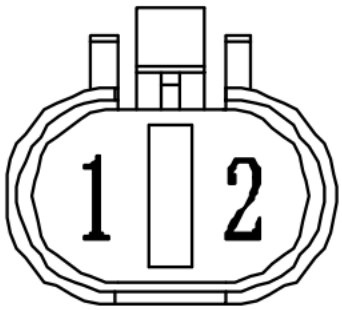
3 Distinct Driving Modes

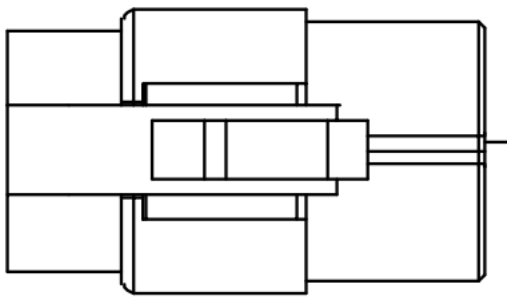
SPORT	Maximum speed and performance
DYNAMIC	Perfect for everyday use
E-SAVE	Longer range, greater efficiency

ACC(Fast Charger)



Support protocol: QC2.0/3.0,
Max current 3A
Output:12V,3A





CJ-15

ACC12V Output

1	R&Y	12V-ACC	2	B	-

V1.0.0

Diagnostic Code List

Error code list			
Error code	Meaning	Cause	Troubleshooting
10	FOC no longer works	The engine is stuck.	Check whether the motor is blocked.
11		Under or over voltage.	Check if the charger is intact.
12		Overcurrent.	Contact your dealer.
13		Overheating of the control unit.	Park the scooter in the shade and wait until it has cooled down.
30	Overcharging of battery 1	Battery in overcharge protection.	Switch on the headlights for discharging. Check if the charger is faulty or the wrong type.
31	Overcurrent from battery 1	Battery in overcurrent protection.	Stop charging and check if the charger is damaged.
50	Overcharging of battery 2	Battery in overcharge protection.	Switch on the headlights for discharging. Check whether the charger is faulty or of the wrong type.
51	Overcurrent from battery 2	Battery in overcurrent protection.	Stop charging and check whether the charger is damaged.
60	Communication module failure	SIM card identification error.	Contact your dealer.
65		SN code is not written or the Smart Central Controller serial code is not written.	
67		SIM card unpaid or weak signal.	

Error code list			
Error code	Meaning	Cause	Troubleshooting
80	Charging aborted	Charger in over-temperature protection.	Remove the charger and wait until it has cooled down before recharging. If the problem persists, contact your dealer.
81		Charger in over-voltage protection.	Unplug the power cord and plug the charger back in. If the problem persists, contact your dealer.
82		Charger in overcurrent protection.	
99	Failure of the communication wiring harness	Failure of the Smart Central Controller or wiring harness assembly.	Contact your dealer.
110	FOC failure	MOSFET failure.	Contact your dealer.
111	Failure of the FOC verification	non-original controller or communication error.	Restart the scooter. Contact your dealer if it does not work.
120	Engine failure	Motor Hall sensor failure.	Contact your dealer.
		Motor cable disconnected.	
123	Motor control malfunction	Motor signal failure.	Unlock and lock the scooter. If the problem persists, contact your dealer.
130	Overcharging of battery 1	Battery level too low and BMS about to enter protection mode.	Stop driving and recharge the battery.

Error code list			
Error code	Meaning	Cause	Troubleshooting
131	Overcurrent from battery 1	Voltage of battery 1 is too high / low.	Check the charger for malfunctions.
132	Temperature of battery 1 too high	Temperature of battery 1 is too high.	Park the scooter in the shade and wait until it has cooled down.
133	Temperature of battery 1 too low	Temperature of battery 1 is too low.	Charge the battery until it reaches operating temperature.
134	Battery 1 is not discharged / charged	Excessive voltage difference between battery 1 and battery 2.	Contact your dealer.
135	Battery Pack 1 not discharging	Short circuit between positive and negative electrode of the battery pack or external discharge current exceeds the short circuit protection value by external connection.	Contact your dealer
136	Battery Pack 1 not cha rg ing/ discha rg ing	Water influence due to structural reasons or false alarm of the water detection sensor.	
138		Charge of metal oxide semiconductors (MOS) or discharge of metal oxide semiconductors (MOS) damaged.	
139		Battery failure	
140	Twist grip error	Fault of the Hall sensor.	
141		Fault in the rotary handle with open circuit.	
142		Short circuit in the rotary handle	

Error code list			
Error code	Meaning	Cause	Troubleshooting
150	Battery 2 deep discharge	The battery level is too low and the BMS is about to enter protection mode.	Do not drive any further and recharge the battery.
151	Over-voltage battery 2	Battery voltage too high/low.	Check the charger for malfunctions.
152	Temperature of battery 2 too high	Battery temperature is too high.	Park the scooter in the shade and wait until it has cooled down.
153	Temperature of battery 2 too low	Battery temperature is too low.	Charge the battery until it reaches operating temperature.
154	Battery Pack 2 not discharging	Excessive voltage difference between battery 1 and battery 2.	Contact your dealer.
155	Battery Pack 2 not discharging	Short circuit between positive and negative electrode of the battery pack or external discharge current exceeds the short circuit protection value by external connection.	
156	Battery Pack 2 not charging/ discharging	Water influence due to structural reasons or false alarm of the water detection sensor.	
158	Battery Pack 2 not charging/ discharging	Charge of metal oxide semiconductors (MOS) or discharge of metal oxide semiconductors (MOS) damaged.	
161	Vehicle locked	This vehicle has been locked via the server.	
162	Anti-theft failure	Anti-theft failure	Restart the scooter or contact your dealer

Error code list			
Error code	Meaning	Cause	Troubleshooting
183	Charging aborted	Battery charger in over-voltage protection.	Remove the charger and check the battery circuit. Contact your dealer.
190	FOC Communication error	Cannot receive data from the controller.	Contact your dealer.
191	Battery Communication error	BMS cannot return data or returned data is incorrect.	Check that the plug connection is properly connected. Contact your dealer.
192	Communication Exception Battery 2	BMS cannot return data or returned data is invalid.	Check the plug connection of the communication circuit.

Diagnostic Code - 10/11/12/13 on display

Fault Code 10/11/12/13

Fault Code 10: Locked Rotor

- Check FOC Controller indicator status Ref:001
  - Replace FOC Controller Ref:004
- Release Twist grip and restart the scooter again

Fault Code 12 : Battery Over-Current

- Use H1 to check Battery Total Current Ref: H1 User Guide
  - Replace battery if greater than 0.5A
- Check FOC Controller indicator status Ref: 001
  - Replace FOC Controller Ref: 004

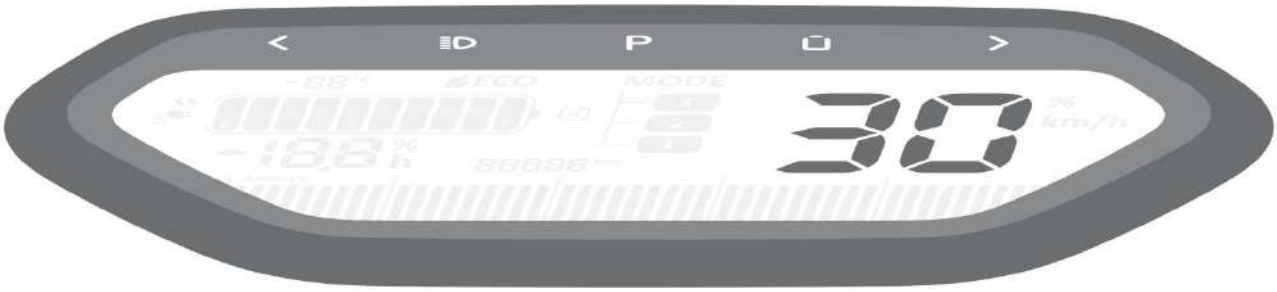
Fault Code 13: Battery/FOC Controller Over-Temperature

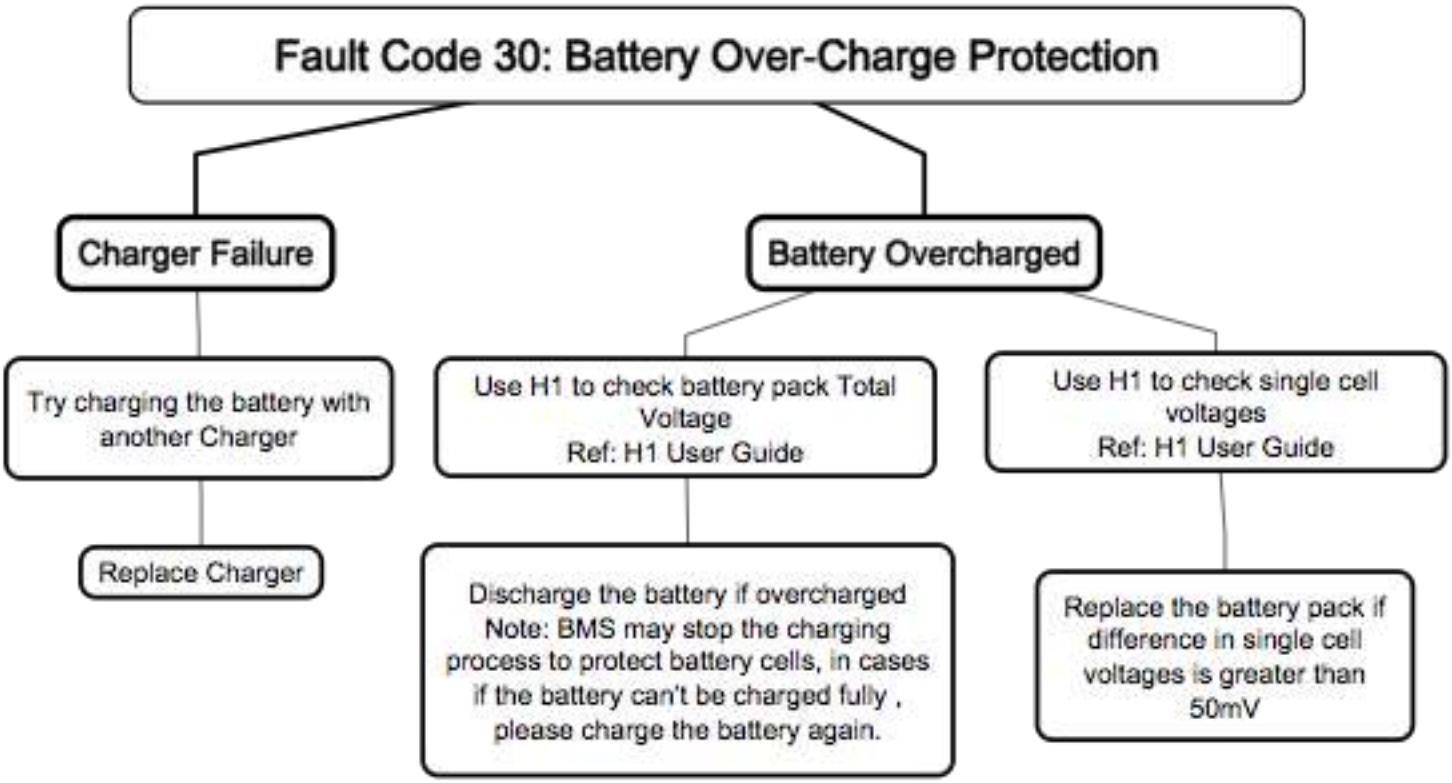
- Use H1 to check battery temperatures Ref: H1 User Guide
  - Disconnect the battery and cool down before reuse
- Check FOC Controller indicator status Ref: 001
  - Replace FOC Controller Ref: 004

Fault Code 11: FOC controller UnderVoltage/ OverVoltage

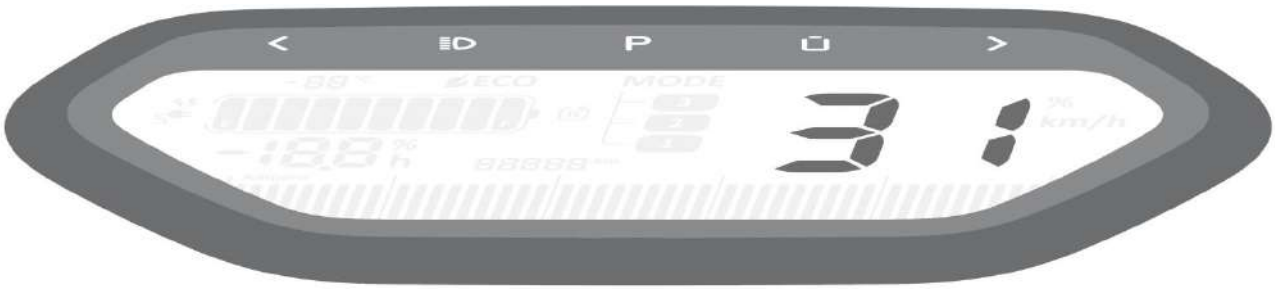
- Slow down if exceed speed limit
  - Use H1 to upgrade BMS Value to 29A Ref: H1 User Guide
    - Use H1 to upgrade FOC Controller program if available Ref: H1 User Guide
- Check battery voltages with H1 Ref: H1 User Guide
  - Charge the battery if low
    - Replace Battery if voltage difference between cells is greater than 50mV
  - Discharge the battery if voltage is high. Check and charger output voltage
    - Replace the Charger
    - Replace Battery if voltage difference between cells is greater than 50mV
- Check Connectors of BMS Controller are properly attached Ref: Contact Supplier
- Check Connectors of FOC Controller are properly attached Ref:004

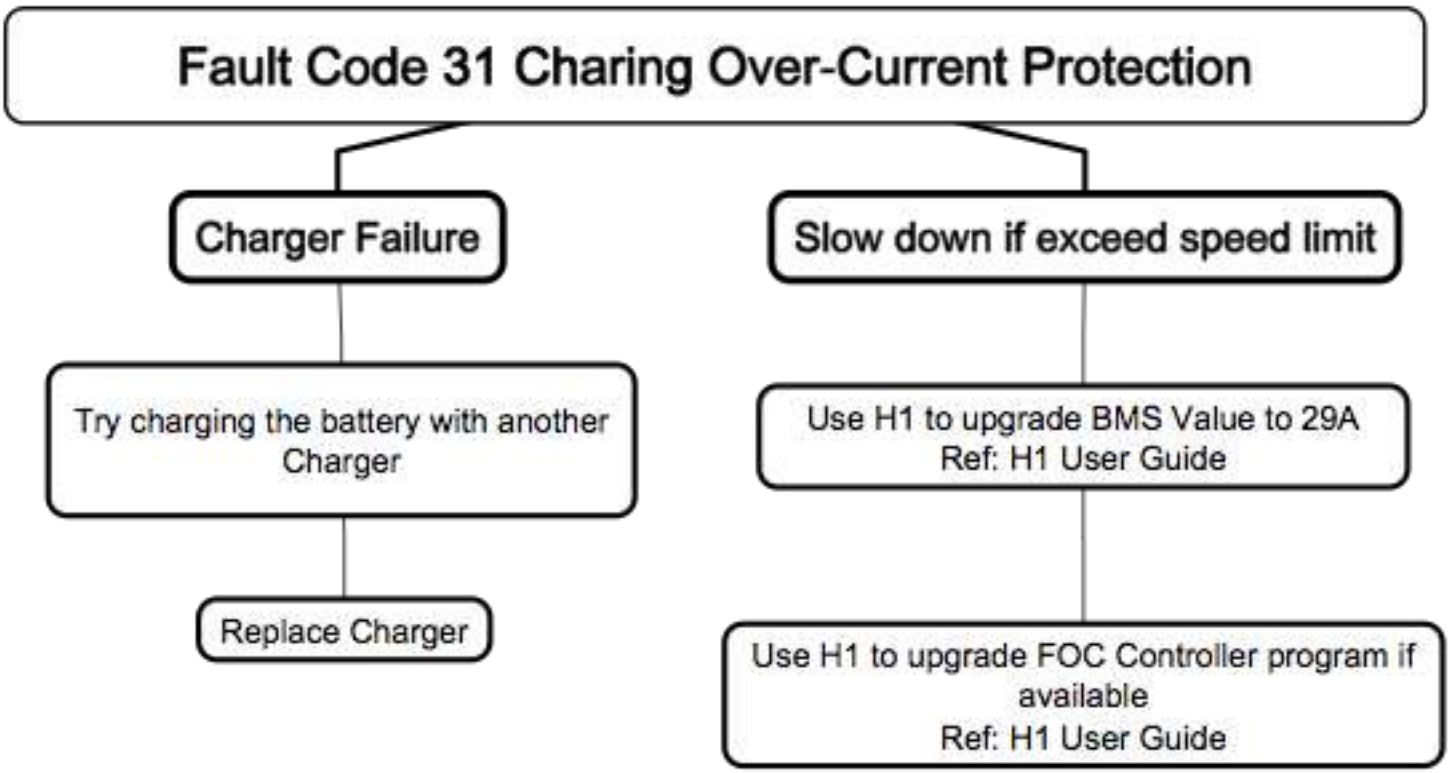
Diagnostic Code - 30 on display





Diagnostic Code - 31 on display





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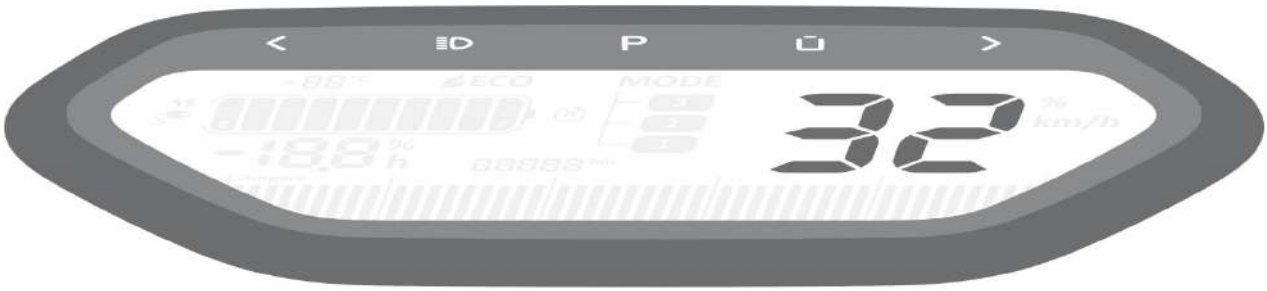
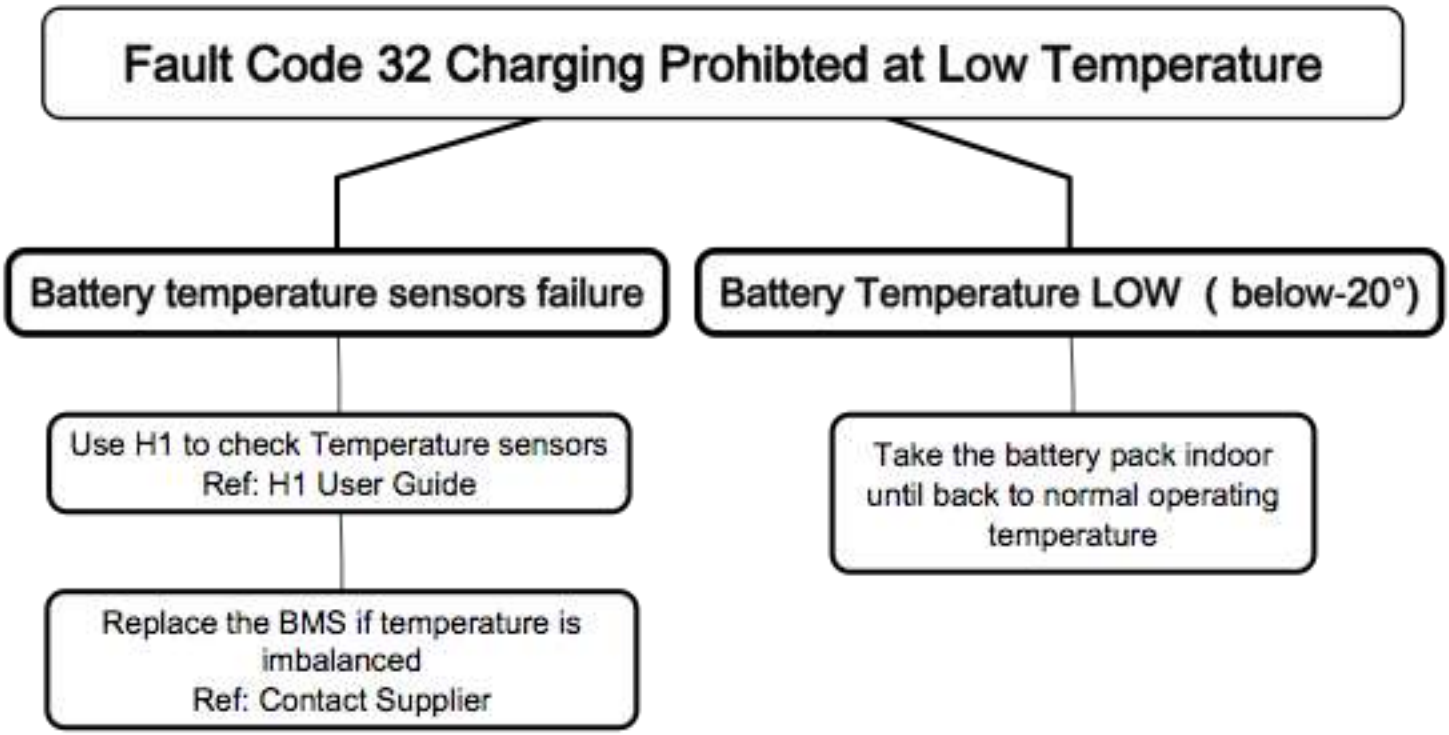
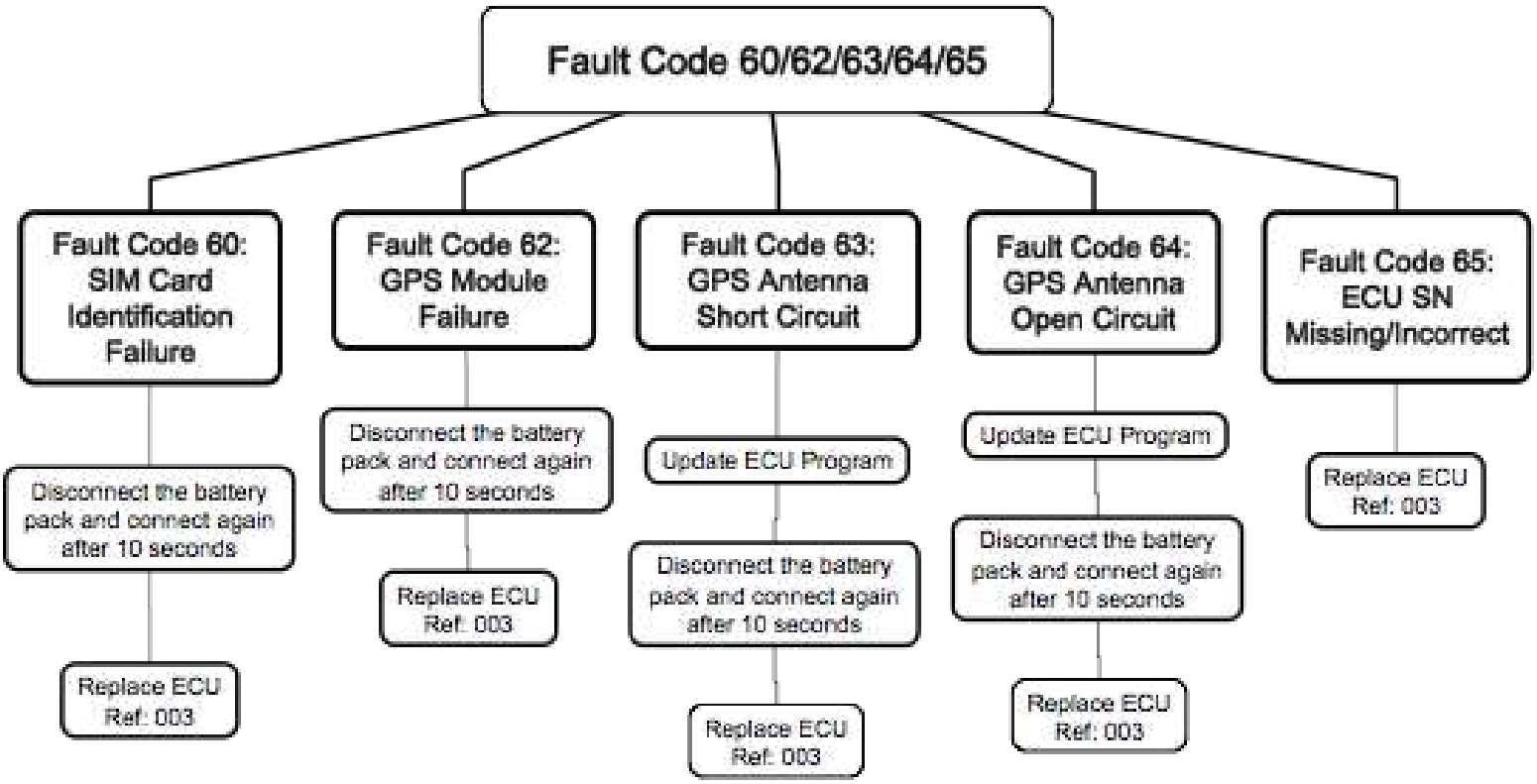
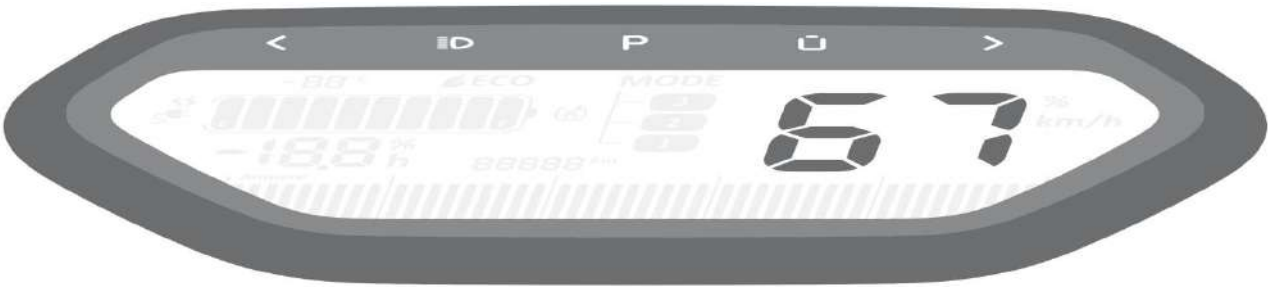


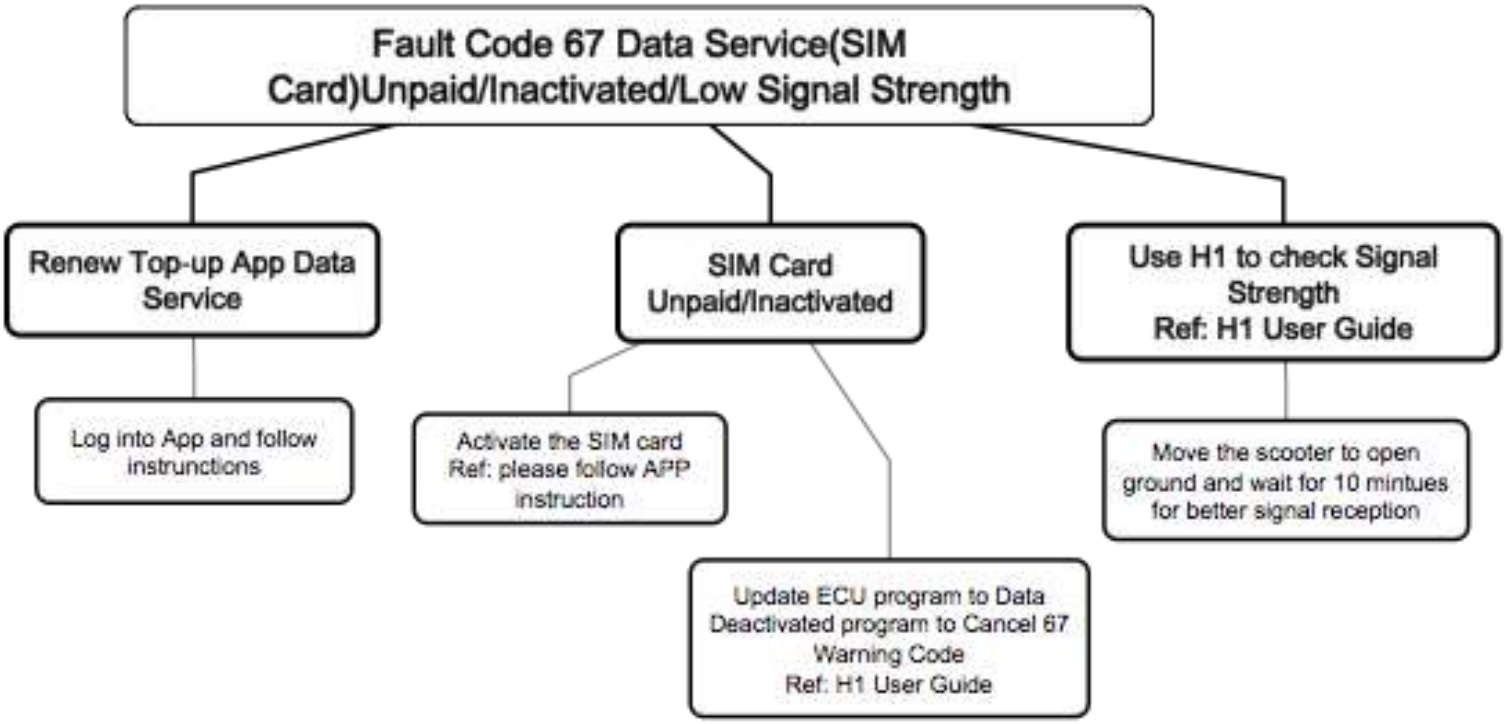


Diagnostic Code - 60/62/63/64/65 on display

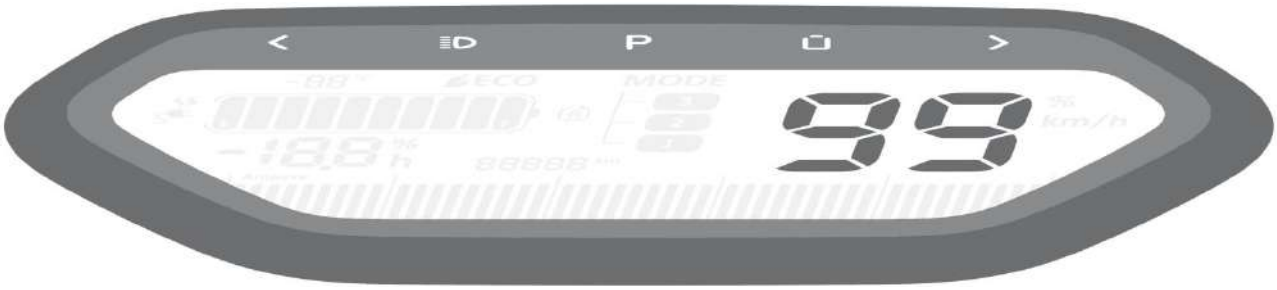


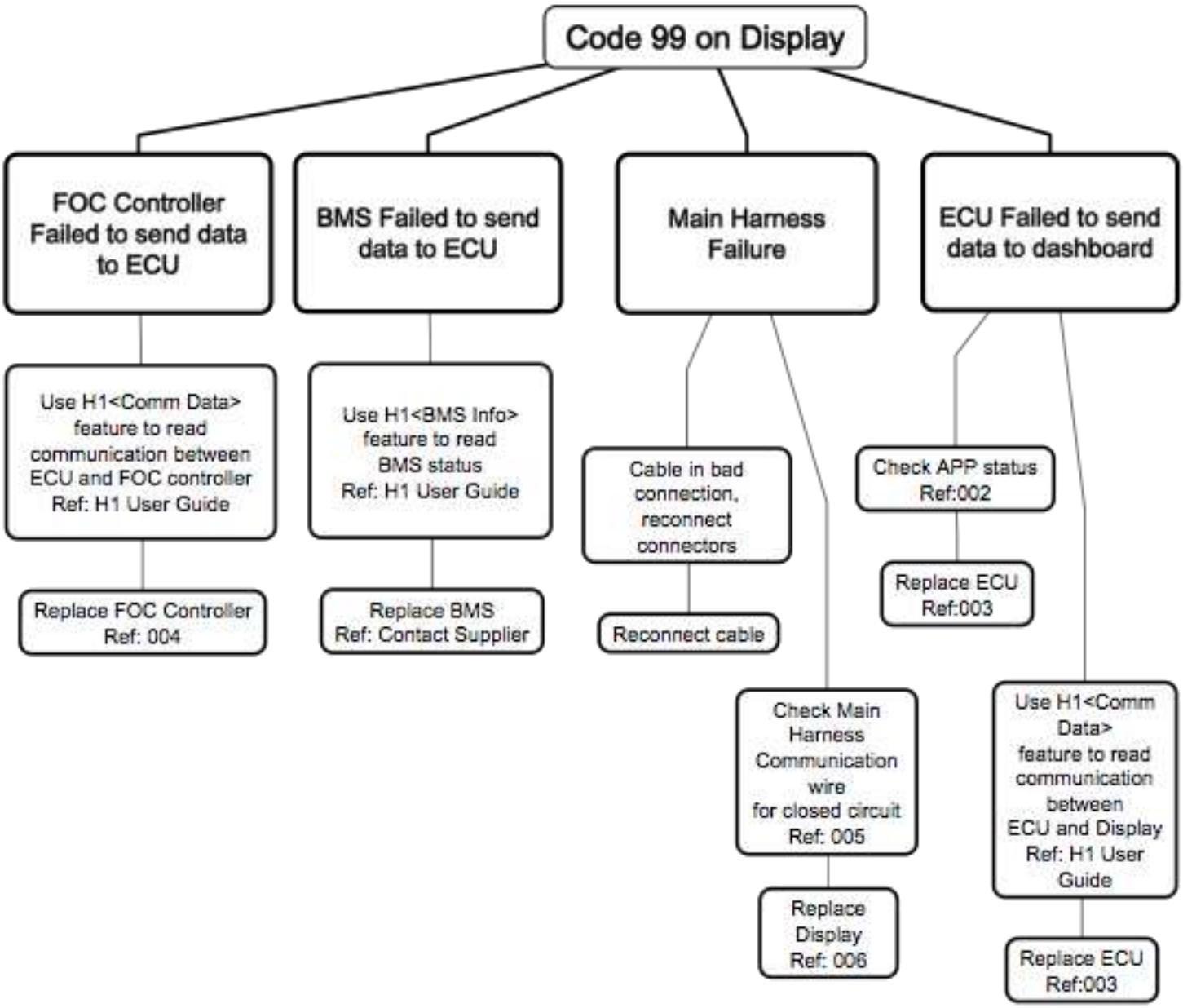
Diagnostic Code - 67 on display



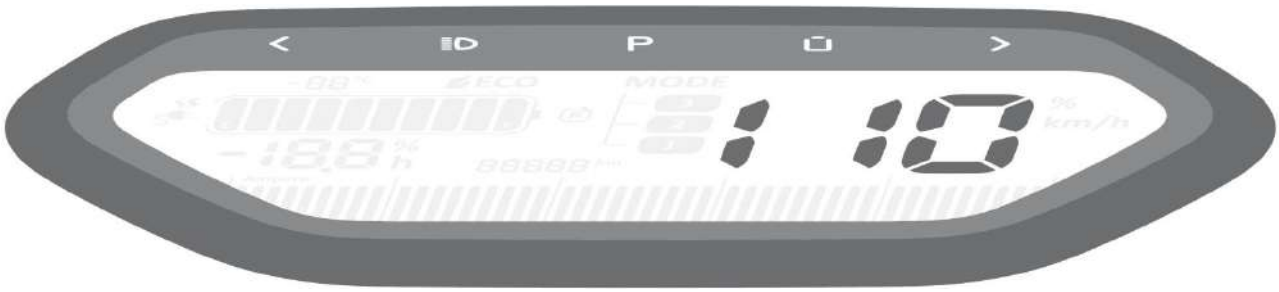


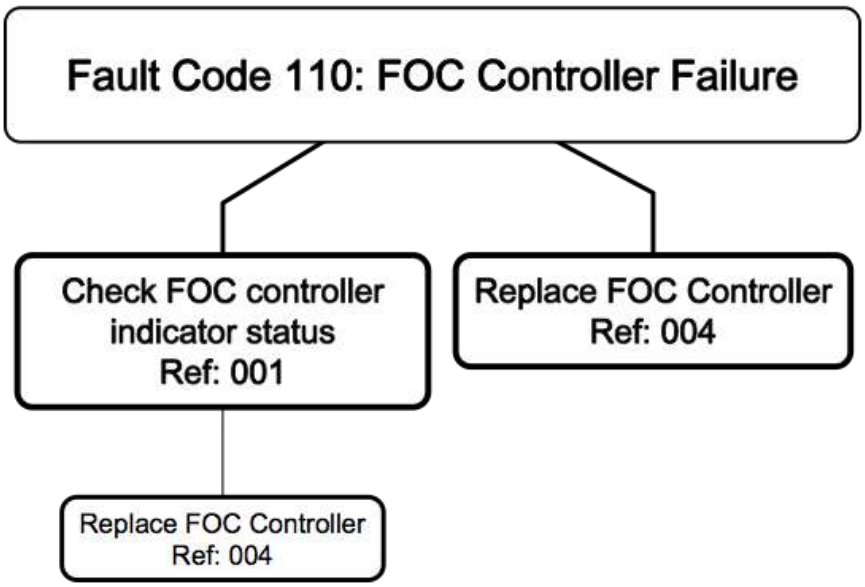
Diagnostic Code - 99 on display



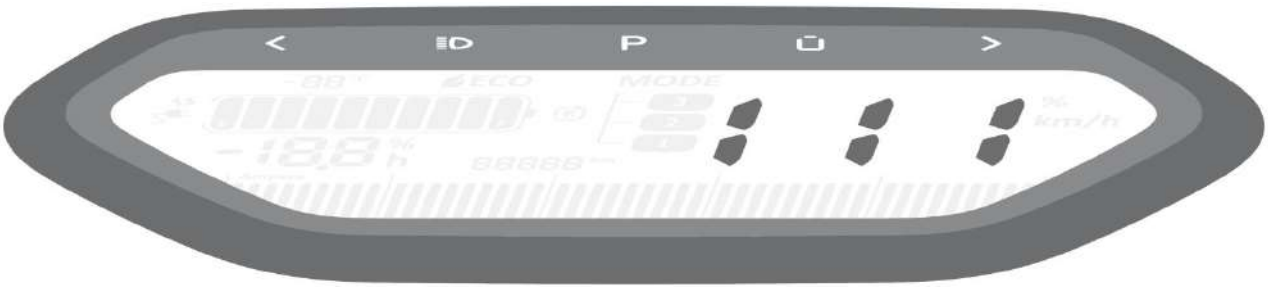


Diagnostic Code - 110 on display





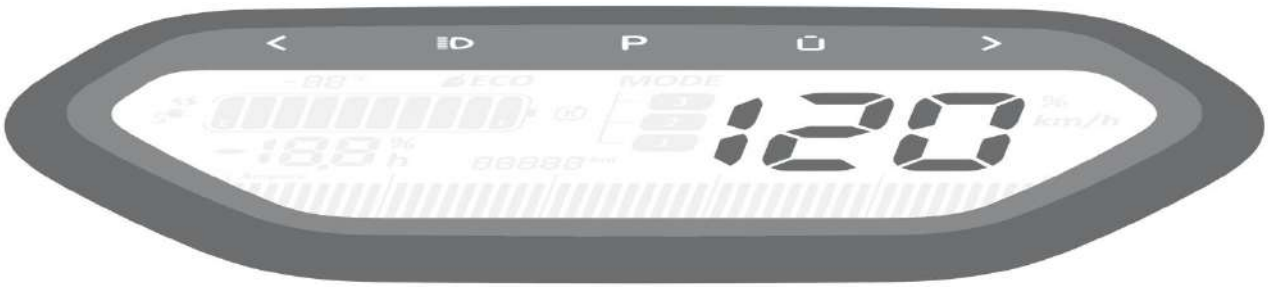
Diagnostic Code - 111 on display

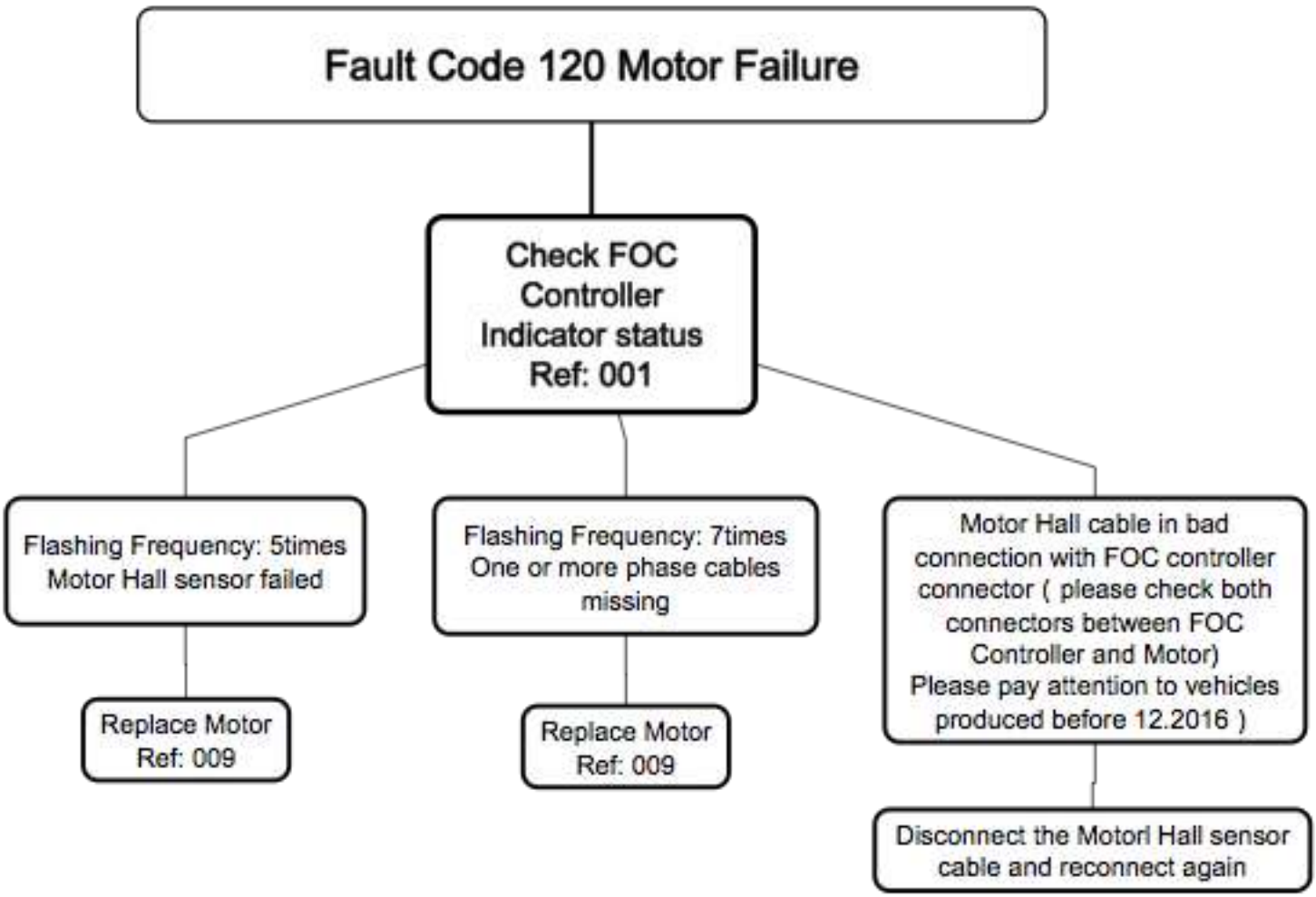


Fault Code 111 FOC : Controller Verification Failure

- Check Headlights, Turning Signal Lights, Tail Lights are working properly
  - Disconnect the battery pack, Reconnect after 10 seconds then restart the scooter
- Check FOC Controller Connector for damage
- Check circuit is closed(FOC Controller<>ECU) Ref: 005
- Check circuit is closed(FOC Controller<>Alarm) Ref: 007
  Check FOC indicator status: turn the power to ON and indicator should flash once, if indicator doesn't flash at all after turning the power ON, then check orange wire for closed circuit.
  - Replace Alarm Ref: 008
- Check Motor Hall Cable Connector for tighteness and damage
  - Disconnect the connetor, check if all PINs are normal, Reconnect again

Diagnostic Code - 120 on display





Diagnostic Code - 130/131/132/133 on display

Fault Code 130/131/132/133

Fault Code 130 : Battery Over Discharged Warning

Battery LOW, Check battery voltages by H1 and charge the battery
Ref: H1 User Guide

Replace the battery if voltage differences between cell is grater than 0.05V

Fault Code 131: Over-Current Discharging Warning

Check the Current of battery with H1
Ref: H1 User Guide

Fault Code 132 : Battery Over-temperature (55°+) Warning

Disconnect the battery pack and check the battery temperature with H1, cool down before using
Ref: H1 User Guide

Replace the BMS if temperature is imbalanced
Ref: Contact Supplier

Fault Code 133: Battery Charge/Discharge prohibted -20° enviroments

Disconnect the battery pack and check the battery temperature with H1
Ref: H1 User Guide

Take the battery back indoor, Charge/Discharge will recover at -15°

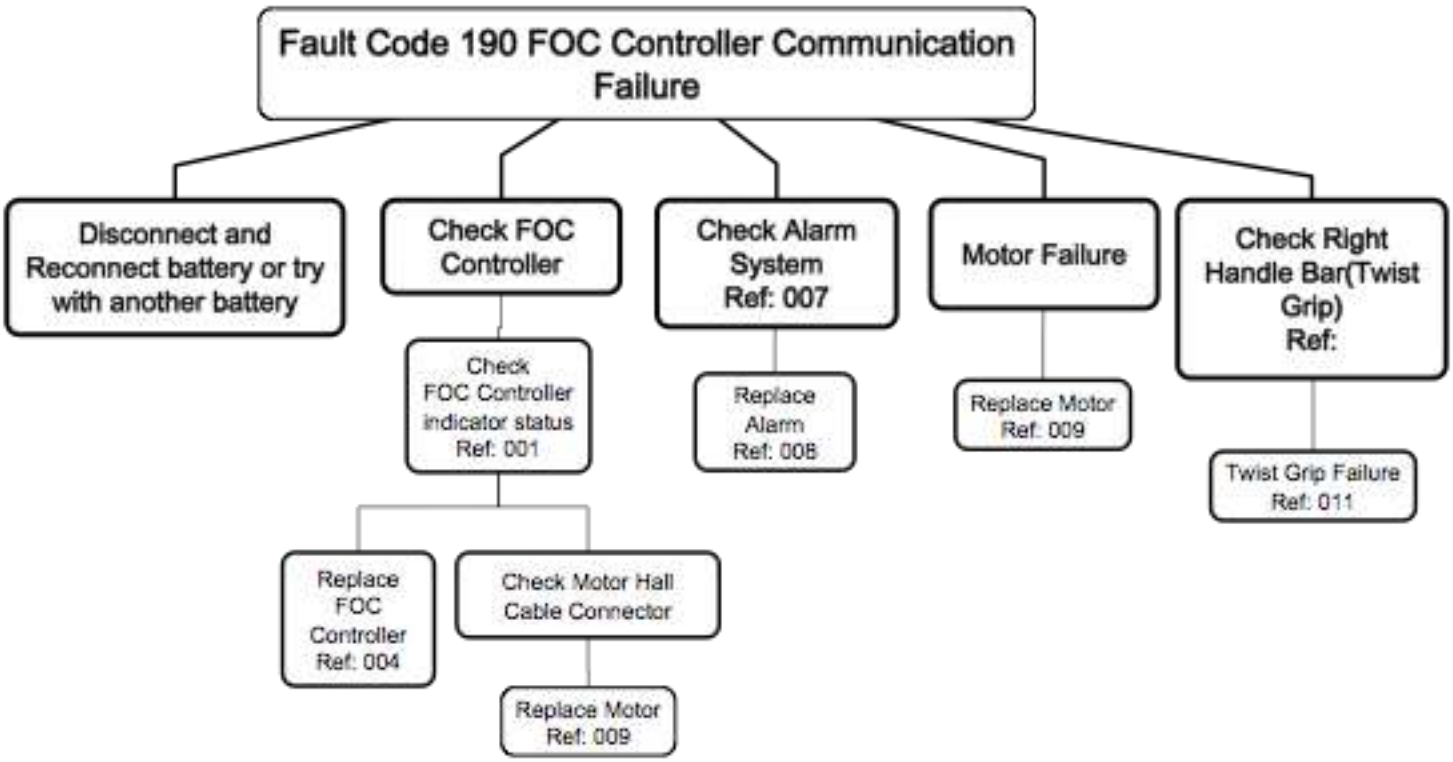
Replace the BMS if temperature is imbalanced
Ref: Contact Supplier

Diagnostic Code - 140 on display

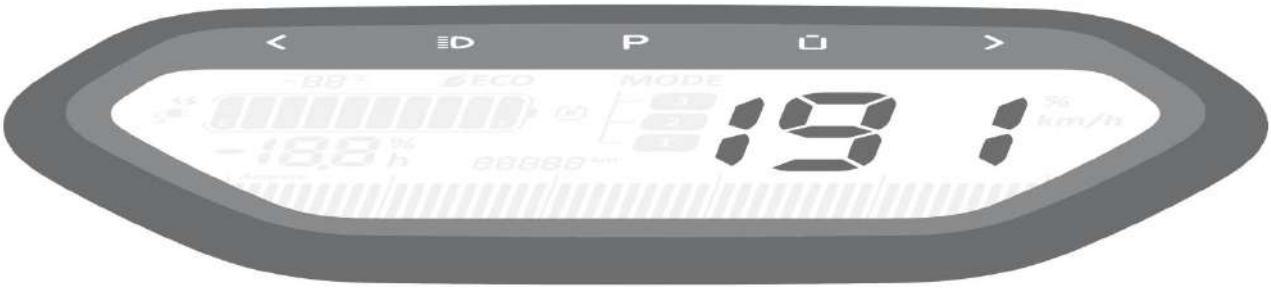
Fault Code 140: Hall Cable Sensor Failure

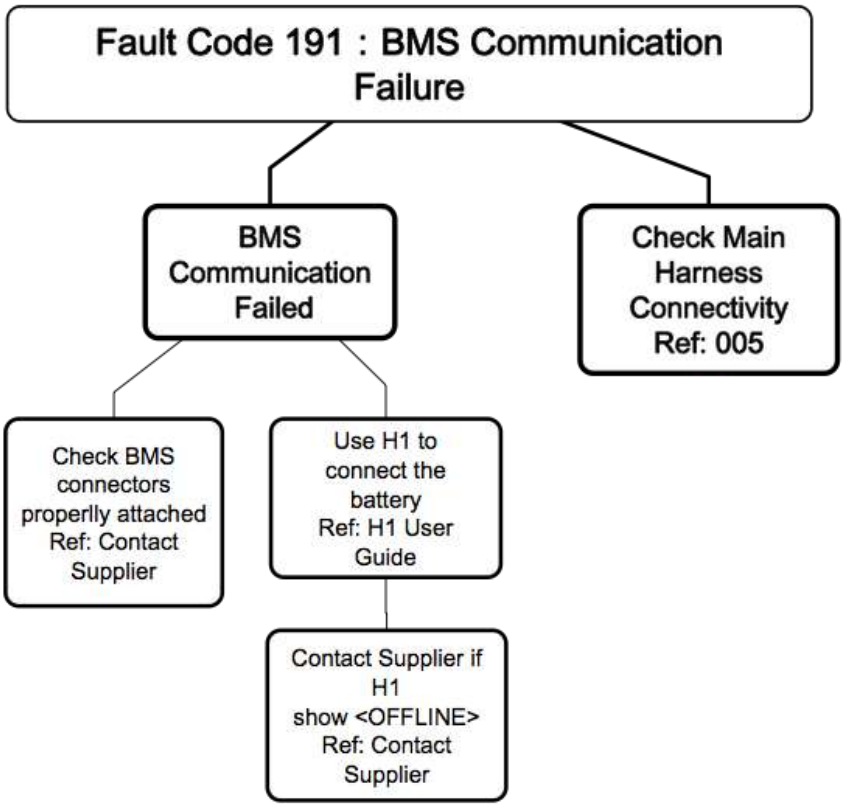
- Check travel distance of twist grip cable and adjust accordingly Ref: 010
- Release the Twist grip fully and turn the power on
- if fault code shows only occasionally, install FOC controller fixing bracket
  - Check main harness <>FOC Controller connector Pin 27 for damage
- Check Hall Cable sensor
  - Check connectors are connected properlly
  - Disconnect Hall Cable Sensor and check if fault code is cancelled
    - Replace Hall Cable Sensor Ref: 012
  - check voltages of hall cable sensor when throttle is Not-applied and when fully applied Ref: 011
    - Replace Hall Cable Sensor Ref: 012

Diagnostic Code - 190 on display



Diagnostic Code - 191 on display





Regular Maintenance Checklist

Overview

The scooter is set on a flat ground before operating.The scooter is inspected, tested, cleaned, adjusted, lubricated or replaced (if necessary) as per items and maintenance cycles specified in the maintenance schedule. The following items require a certain degree of the mechanical knowledge. Some items may require more technical data and tools.

Category	Inspection item	Inspection result
Appearance inspection	Whether there are modifications	
	Appearance of plastic scooter parts	
	Screws and fasteners	
	Front and rear shock absorbers	
	Gap and deformation	
Fixed assembling	Lock and hook assembling	
	Steering inspection	
	Front and rear tires	
	Front wheel and wheel-hub assembly	
	Inspection of the front and rear axles for tightening	
	Side/Central Stands	
	Handrail	
	Left and right handles	
Braking system	Brake fluid volume	
	Assembly clearance	
	Abnormal brake noise	
	Response time	
	Braking distance	
	Appearance inspection	

Regular Maintenance Checklist

Electronic Components	Power lock	
	Lighting inspection	
	Instrument inspection	
	Left/Right Combination Switches	
	Alarm and horn	
	EBS energy recovery	
	Controller inspection	
Wheel-hub motor	Wire connection and appearance	
	Inspection for abnormal noise	
	Startup inspection	
	Tolerance and deformation	
Software	ECU software version	
	FOC software version	
	BMS 29Ah setting (60V29Ah pack only)	

Regular Maintenance Checklist

Inspection of the Accelerator Handle

- Check the accelerator handle for smooth operating.
- Check the accelerator handle for smooth opening and automatic resetting at all steering positions of the steering handle.
- Check the accelerator handle cable if the accelerator handle can not be reset as usual.

Inspection of Brake Pads wearing

- Check the brake pads for wearing.
- The brake pad of a brake that has been worn to the extent indicated by the wearing limit indication groove should be replaced.
- The brake pads should be replaced in pair to ensure uniform pressure on the brake disc.

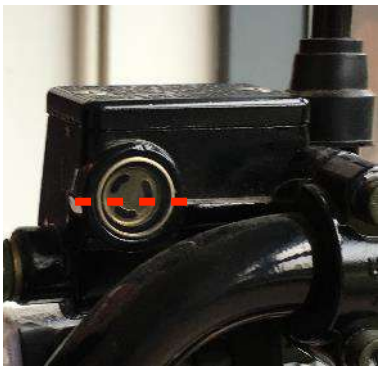
Inspection of Brake Handle

- Check connection of the brake handle for looseness.
- Check the brake handle for excessive free travel or other damages.
- Perform replacement or reparation if necessary.

Inspection of Brake fluid

- The leaking brake can damage coatings, plastics or rubber parts. They should be well covered with cloths or paper sheets during the system maintenance.
- Do not use different types of the brake fluid because they are not compatible with each other.
- Do not let foreign objects enter into the braking system in filling the fluid reservoir with the brake fluid.
- Check the brake pads for wearing if the brake fluid level is around the lower-limit horizontal scale
- A low level of the brake fluid may result from wearing of the brake pads that causes push-out of the brake caliper piston.
- Check the entire system for leakage if a low level of the brake fluid occurs without wearing of the brake pads.

- Lift up the scooter with the central stand.Turn the steering handle reversely to make the fluid reservoir horizontal, and check the brake fluid level in the front brake fluid reservoir through the glass observation hole.



Regular Maintenance Checklist

Inspection of Brake Lamp Switch and Front/Rear Brake

- The brake switch on the brake handle can not be adjusted

- Make sure that the brake lamp turns on in actual application of the brake.Replace the front/rear brake switch or other faulty components in the braking system, if turn-on of the front brake switch is not synchronous with brake application

Inspection of Lamp System and Switches

- Turn on the ignition switch to check left and right combination switches
- Make sure that the corresponding light turns on to actual switch application
- Make sure that the light brightness and flashing are normal
- Make sure the horn sounding is normal
- Make sure the startup button operates normally
- The speed regulation switch operates normally, and the switching between high and low beams is normal

Inspection of Side Stand

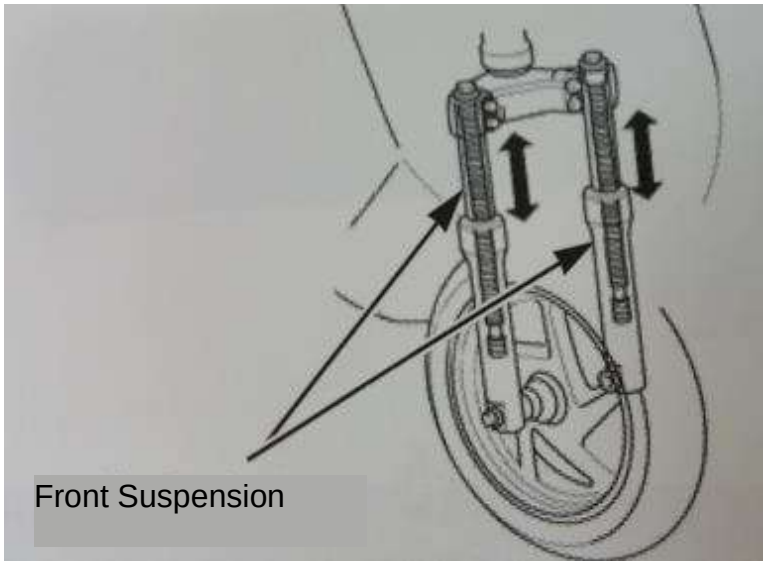
- Lift up the scooter with the Central Stands.
- Check the Side Stand spring for damages or tension loss.
- Check the Side Stand assembly for free movement.
- Lubricate the Side Stand pivot where necessary.

Regular Maintenance Checklist

Inspection of Suspension system

Front suspension

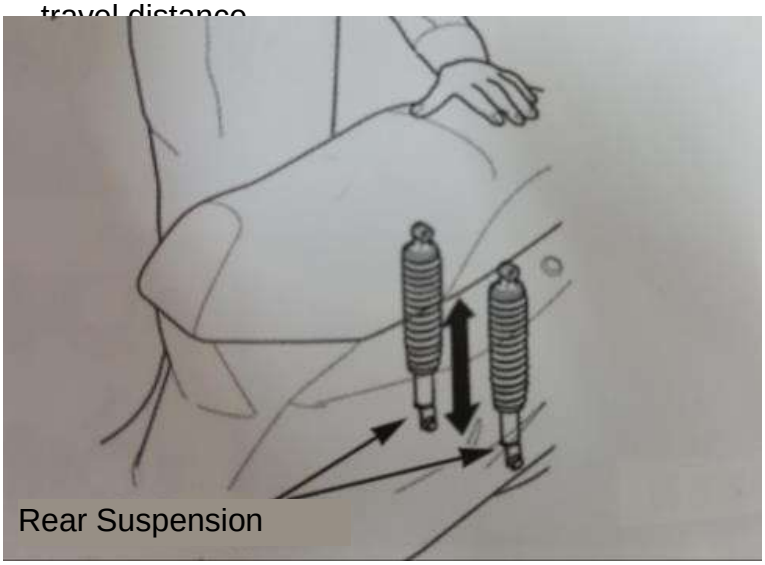
- Operate the front brake and check the front suspension system by pressing down the handle bar for several times to check motion of the fork.
- Check the entire assembly for leakage, damages or loosened fasteners.
- Replace damaged components that can not be repaired.
- Tighten all the nuts and bolts.



Front Suspension

Rear suspension

- Press the rear shock absorber for several times to check its motion.
- Check the entire shock absorber assembly for leakage, damages or loosened fasteners.
- Replace damaged components that can not be repaired.
- Tighten all the nuts and bolts.
- Lift up the scooter with Central Stands.
- Hold both sides of the rear shock absorber and try to move it leftward and rightward to check free travel distance.



Rear Suspension

Regular Maintenance Checklist

Nuts, Bolts and Fasteners

- Make sure that all nuts and bolts on the chassis have been tightened as per correct torque values.
- Make sure that all the split pins, safety clips, hose clamps and wire cables have been placed properly and secured tightly.

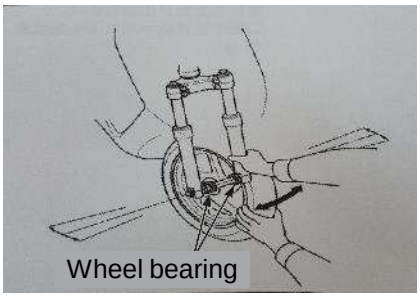
Inspection and maintenance of fasteners

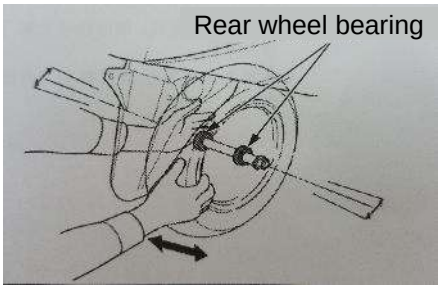
Tightened section and fastener name	Tightening Torque (Nm)
Installation screws on the front hydraulic brake plate	8Nm
Tightening bolts on the front shock absorber	28Nm
Tightening bolts on the fixed handle seat cover	8Nm
Tightening bolts on the welded steering handle assembly	52Nm
Front axle	60Nm
Installation screws on the rear hydraulic brake plate	8Nm
Self-locking nuts on the motor	75Nm
Top bolts on the rear shock absorber	44Nm
Bottom bolts on the rear shock absorber	28Nm
Tightening screws on the hex flange of rear handrail	28Nm
Tightening nuts on the fixed shaft of rear bottom fork	60Nm

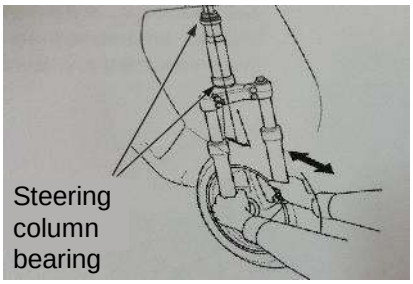
Regular Maintenance Checklist

Inspection of Wheels and Tires

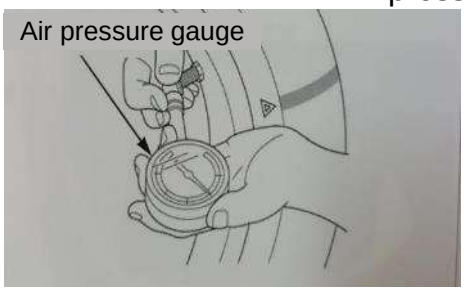
- Support the scooter with the Central Stands.
- Lift up the Front/Rear Wheel to check range of the free travel.
- Hold the Front/Rear Wheel and try to move it leftward and rightward to check the front wheel bearing for wearing.
- Replace the Front/Rear Wheel bearing if it becomes loosened.
- Turn the wheel to make sure that it can be rotated smoothly without an abnormal noise.
- The Front/Rear Wheel bearing should be inspected as long as there are suspicious abnormal conditions.







- Check the tire pressure with the tire pressure gauge when the tire has been cooled down.
- Recommended tire pressure:



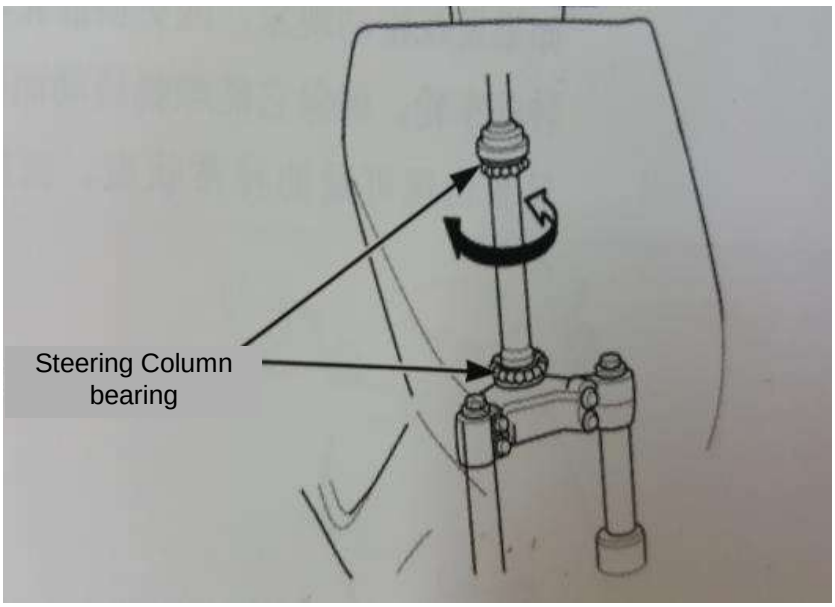
Front tire	
Rear tire	2.3bar

- Check the tire for cuts, embedded nails or other damages.
- Check flatness of the front and rear wheels.
- Check tread depth.

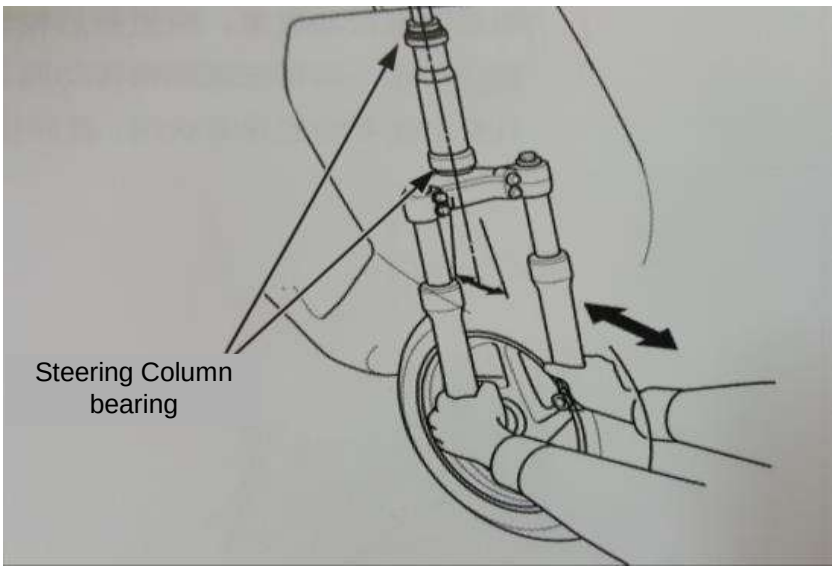
Regular Maintenance Checklist

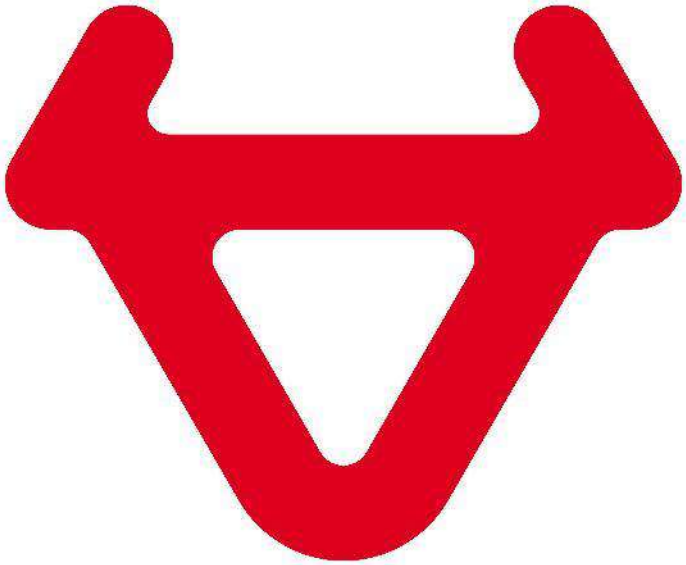
Steering column bearing

- Support the scooter with Central Stands, and lift up the Front Wheel to make it off the ground.
- Make sure that scooter handles can be turned freely to left and right sides.
- Check the steering column bearing, if scooter handles are not moving smoothly or are stuck.



- Fix the scooter and move the fork back and forth to check the steering column bearing for wearing.
- Check the steering column bearing if the steering column is displaced vertically.





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