



# N-GT Scooter

Dual batteries + Fast Charger

## Service Manual

e13\*168/2013\*00546\*00



Jiangsu Niu Electric Technology Co. Ltd



## Foreword

Key points in maintenance of Niu NGT 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 not 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.



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## 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 length 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 rear frame at rear seat cask.



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





## Overall specifications:

**EU approval number:** e13\*168/2013\*00546\*00

| Item          |                                      | Specifications  |
|---------------|--------------------------------------|---|
| Dimensions    | Length × width × height              | 1815×725×1185 mm  |
|               | Wheelbase                            | 1290mm  |
|               | Complete vehicle kerb mass           | 90Kg  |
|               | Ground clearance of the seat cushion | 740mm   |
|               | Ground clearance                     | 140mm   |
| Scooter frame | Type of the scooter frame            | The pedal type made with combined welding of panels and pipes |
|               | Specifications of the front tire     | 90/90-12 44J  |
|               | Type of the front rim                | MT2.15X12 aluminum alloy                                      |
|               | Air pressure of the front tire       | 200KPa  |
|               | Specification of the rear tire       | 120/70-12 56J   |
|               | Type of the rear wheel               | MT3.50X12 wheel-hub motor                                     |
|               | Air pressure of the rear tire        | 225KPa  |
| Suspension    | Front shock absorber                 | Telescopic type with 31mm dual hydraulics                     |
|               | Rear shock absorber                  | Telescopic type with dual hydraulic springs                   |
| Brake         | Type of the front brake              | Single sided hydraulic brake with dual pistons                |
|               | Type of the rear brake               | Opposed sided hydraulic brake with dual pistons               |
|               | CBS                                  | Division of brake force: Front: 30%<br>Rear: 70%              |





## Specifications of the motor controller system

| Item       |                        | Specifications                   |
|------------|------------------------|----------------------------------|
| Motor      | Motor type             | Brushless permanent-magnet motor |
|            | Controller type        | FOC vector control               |
|            | Rated voltage          | DC60V                            |
|            | Rated power            | 3000W                            |
|            | Maximum motor power    | 3500W at 639min <sup>-1</sup>    |
|            | Maximum motor torque   | 52N.M at 630min <sup>-1</sup>    |
| Controller | Rated voltage          | DC60V                            |
|            | Rated output power     | 2500W                            |
|            | Maximum input current  | 70A                              |
|            | Maximum output current | 280A                             |

## Specifications of the battery/charger

| Item                                 |                    | Specifications               |
|--------------------------------------|--------------------|------------------------------|
| Propulsion Battery                   | Type               | Packed lithium battery       |
|                                      | Number of Cells    | 2*(17*10)=340(2 in parallel) |
|                                      | Rated voltage      | 60V DC                       |
|                                      | Rated capacity     | 2*35Ah                       |
|                                      | Mass               | 2*11KG=22KG                  |
| Environmental Propulsion Performance | Energy Consumption | 35Wh/KM                      |
|                                      | Electric Range     | 134KM                        |
| Fast Charger                         | Output voltage     | 35-84V DC                    |
|                                      | Max Output current | 12A                          |



## 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.

#### Section 1. Windshield

1.1 Unscrew two screws on the Windshield (earlier models may have 3 screws)



#### Section 2. Front Neck Cover

2.1 Remove two Front Central Cover Rubber Plugs and unscrew two screws inside



2.2 Remove Front Neck Cover by lifting it at front





## Section 3. Front Panel

3.1 Unscrew two screws on the top of Front Panel



3.2 Take out two Push-in Rivets from the bottom of Front Panel



3.3 Remove Front Panel by pushing it upward





## Section 4. Under Seat Storage Compartment

4.1 Unscrew four screws in the Under Seat Storage Compartment



4.2 Lift up the Under Seat Storage Compartment, disconnect the two connectors



4.3 Pull Battery Compartment Lock cable out







## Section 5. Rear Central Cover

5.1 Unscrew the left side screw



5.2 Unscrew the right side screw



5.3 Pull out the rubber cover and unscrew the screw



5.4 Pull out Rear Central Cover carefully





## Section 6. Battery Compartment Cover and Footrest

6.1 Pull out the footrest plug and unscrew two hexagon flange bolt

6.2 Unscrew four cross recessed pan head tapping screws and remove Battery Compartment Cover

6.3 Unscrew two hexagon flange bolts

6.4 Unscrew right side screw







## Section 6. Battery Compartment Cover and Footrest

6.5 Unscrew left side screw



6.6 Pull out the Footrest





## Section 7. Side Panel

7.1 Unscrew left side screw



7.2 Unscrew two screws in dark side



7.3 Pull out the whole side panel





## Section 8. Handrail

**8.1 Remove four** Hexagon flange bolts marked in the guide photo



**8.2 Pull out the Handrail**





## Section 9. End cap and Body Cover

9.1 Unscrew four cross recessed medium pan head bolts



9.2 Unscrew Cross recessed pan head tapping screw



9.3 Unscrew two cross recessed pan head tapping screws



9.4 Pull out the whole body panel





## Section 10. Left/Right Central Cover and Foot pegs

**10.1 Unscrew the** Cross recessed pan head tapping screw



**10.2 Unscrew the** Cross recessed medium pan head bolt



**10.3 Pull out the whole** Left/Right Central Cover





## Section 10. Left/Right Central Cover and Foot pegs

10.4 Remove two socket head bolts



10.5 Take out the Foot Pegs







## Section 11. Front Left/Right Panel

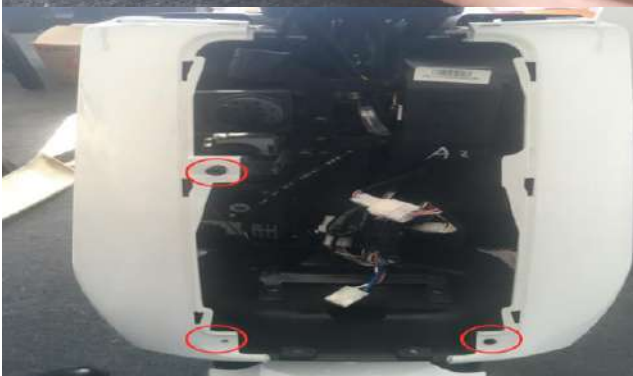
**11.1 Pull out two front glove compartment bolt hole plugs and unscrew the cross recessed pan head tapping screw inside**



**11.2 Take out Plastic Expansion Clips from the bottom of Front Left/Right Panel**



**11.3 Unscrew three screws in the right picture which line out red circle**





## Section 11. Front Left/Right Panel

11.4 Unscrew the screw on the top of Front Right/Left Panel



11.5 Have a close-up view of panel jack and take out panel carefully







## Section 12. Helmet Hook

12.1 Unscrew the cross recessed medium pan head bolt



12.1 Pull the Helmet Hook out





## Section 13. Front Central Cover

13.1 Unscrew two cross recessed pan head bolt



13.2 Unscrew the power lock cover screw and take out the cover



13.3 Unplug USB output cable



13.4 Take out whole Front Central Cover



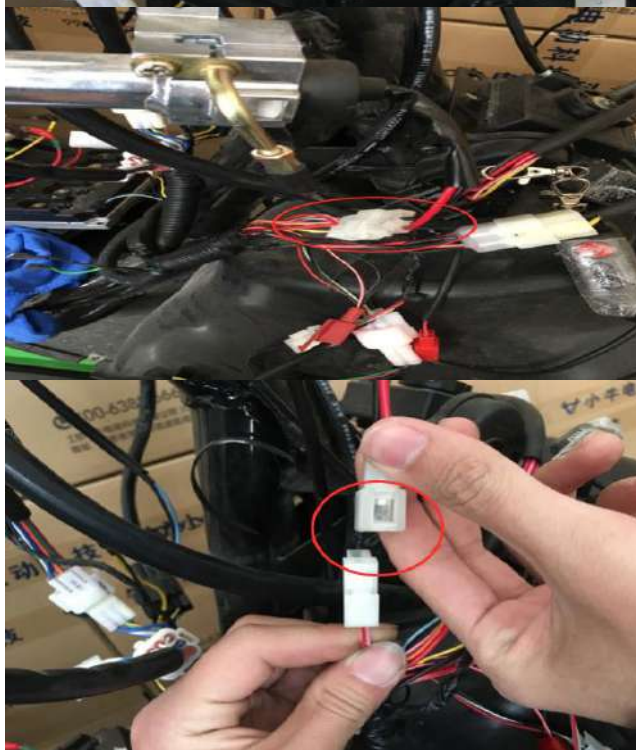


## Section 14. Power Lock

**14.1 Unscrew three** Cross recessed pan head bolts



**14.2 Unplug the Power Lock connector and take out the Power Lock**





## Section 15. Front Wheel Cover

**15.1 Unscrew 2 Cross recessed medium pan head screw and 2 Cross recessed pan head tapping screw**



**15.2 Pull out the whole front wheel cover**





## Section 16. Display

16.1 Unscrew three Hexagon flange nuts



16.2 Unplug dashboard cable and take out the Display







## Section 17. Brake System

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



17.2 Pull out the cover



17.3 Plug Brake connector





## Section 17. Brake System

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



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



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





## Section 18. Side Stand and Side Stand Switch

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



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







## Section 19. Front Fender and Rear Fender

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



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





## Section 20. Motor

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



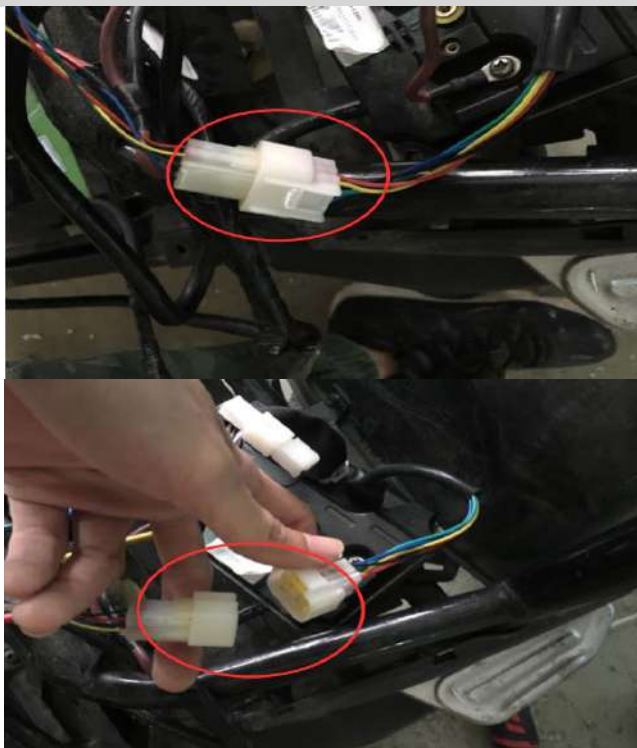
20.2 Remove the motor connectors on FOC controller





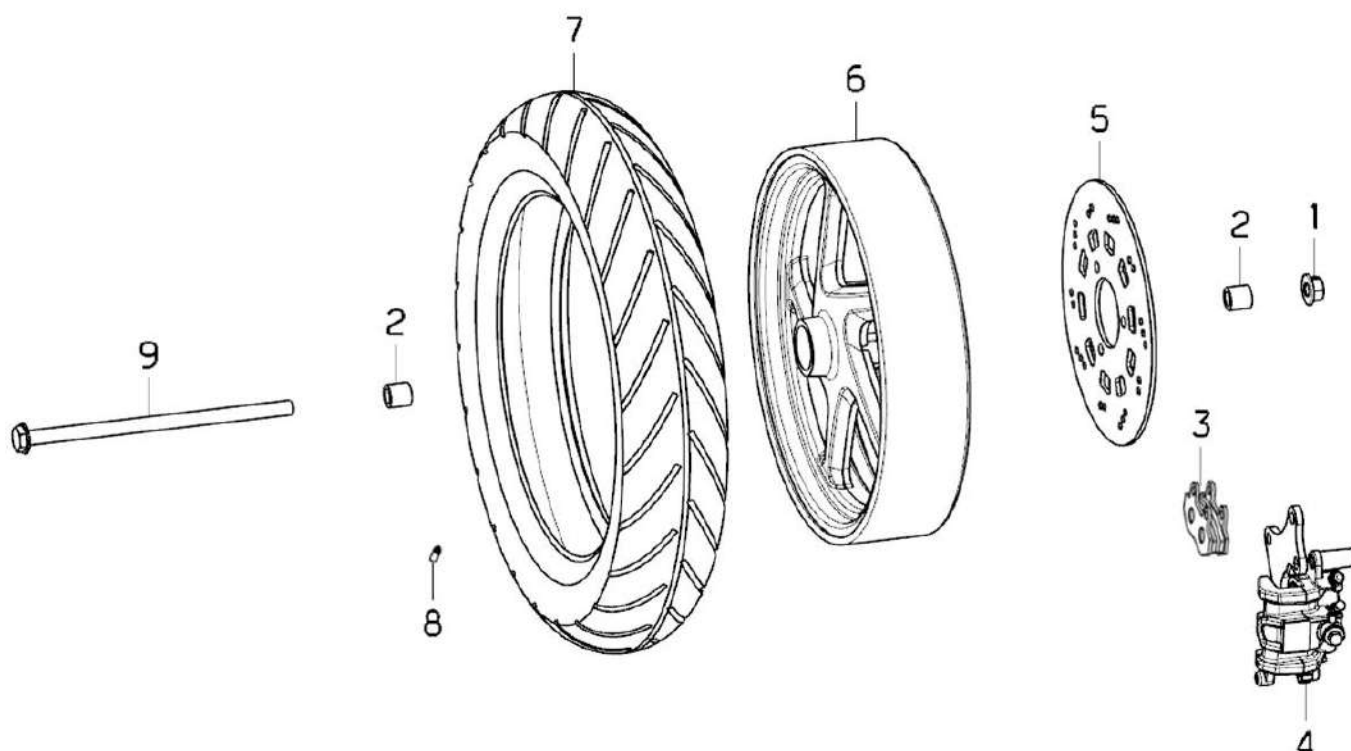
## Section 20. Motor

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





## Front Wheel



1. Hexagon Nuts With Flange, Style 2-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 7. Front tire 8. Valve 9. Front wheel axle

Specifications of the front tire: 90/90-12

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

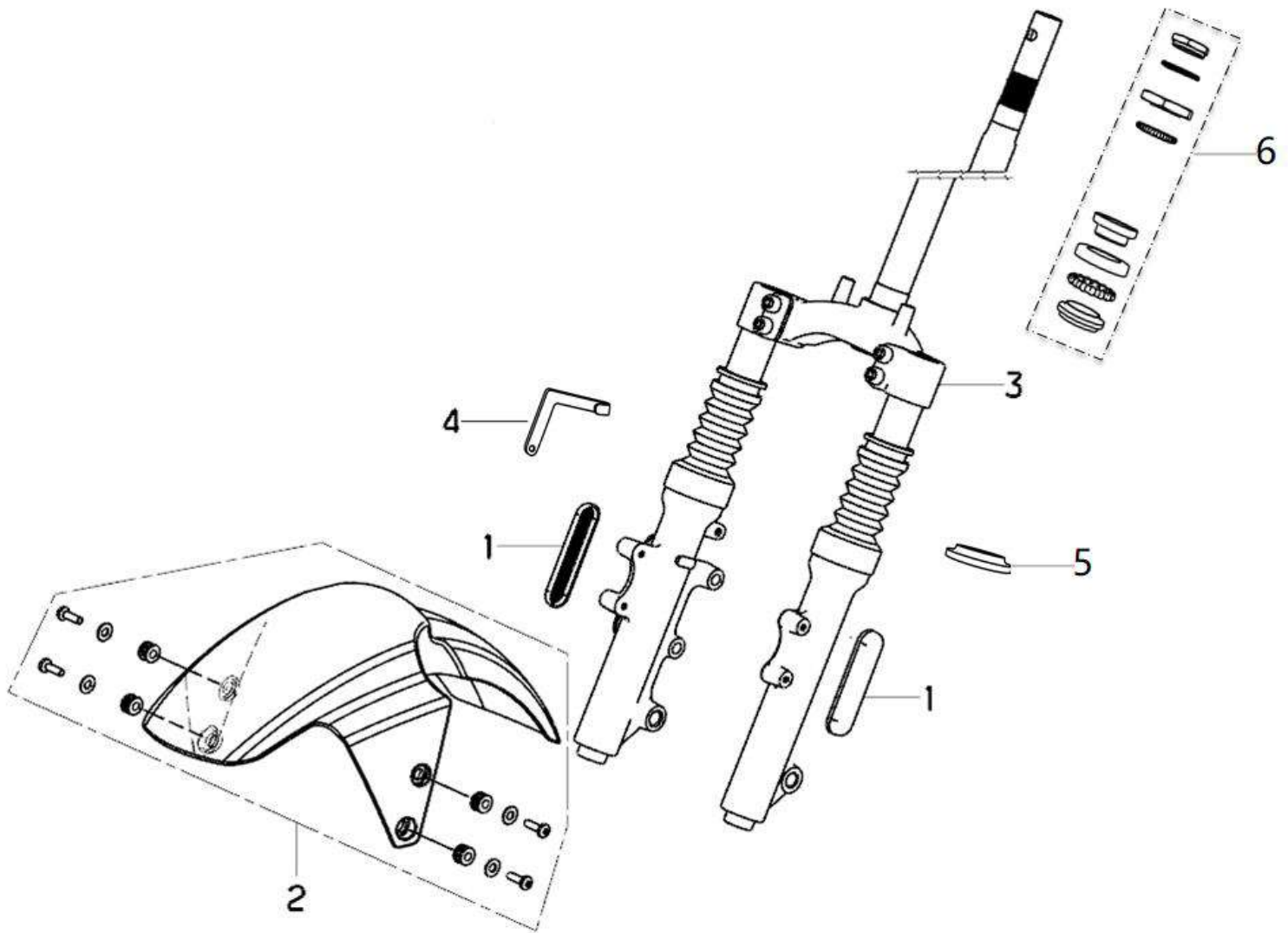
Coming soon...



## 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

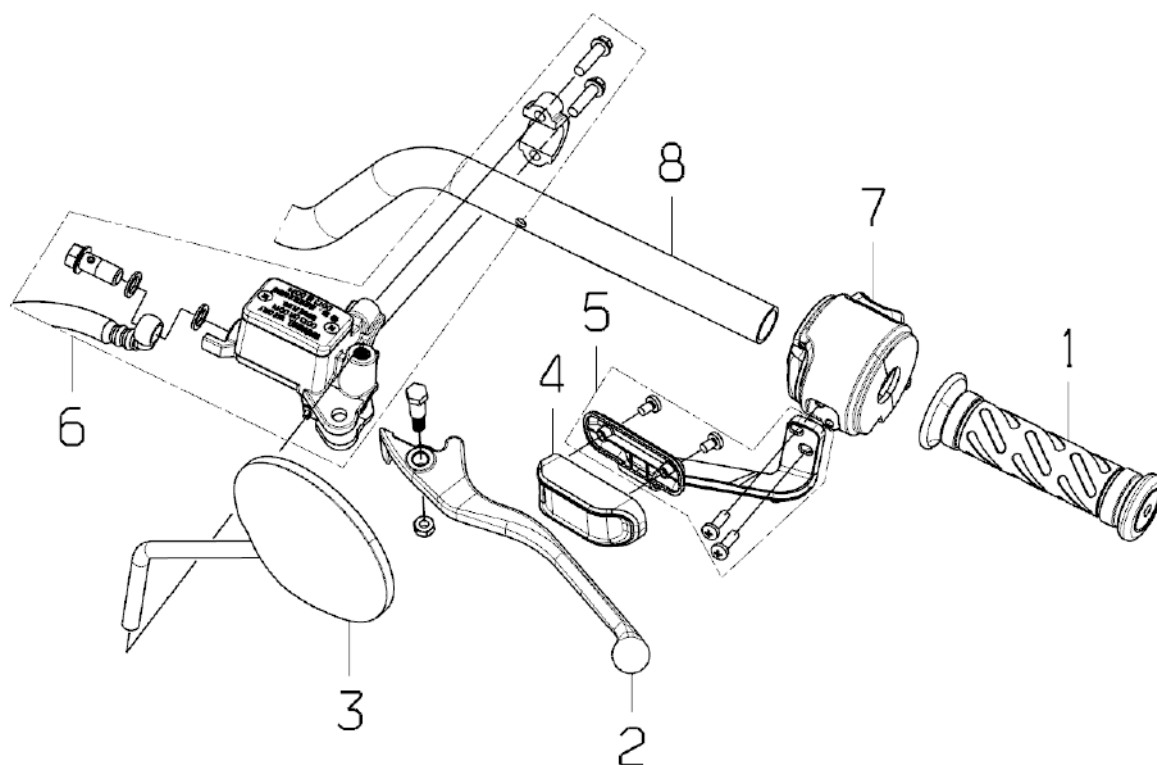
- The front fork is deflected.
- There is an abnormal noise from the front shock absorber.
- Bolts on the shock absorber are loosened.
- The liquid in the front shock absorber is insufficient.

### 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 Left

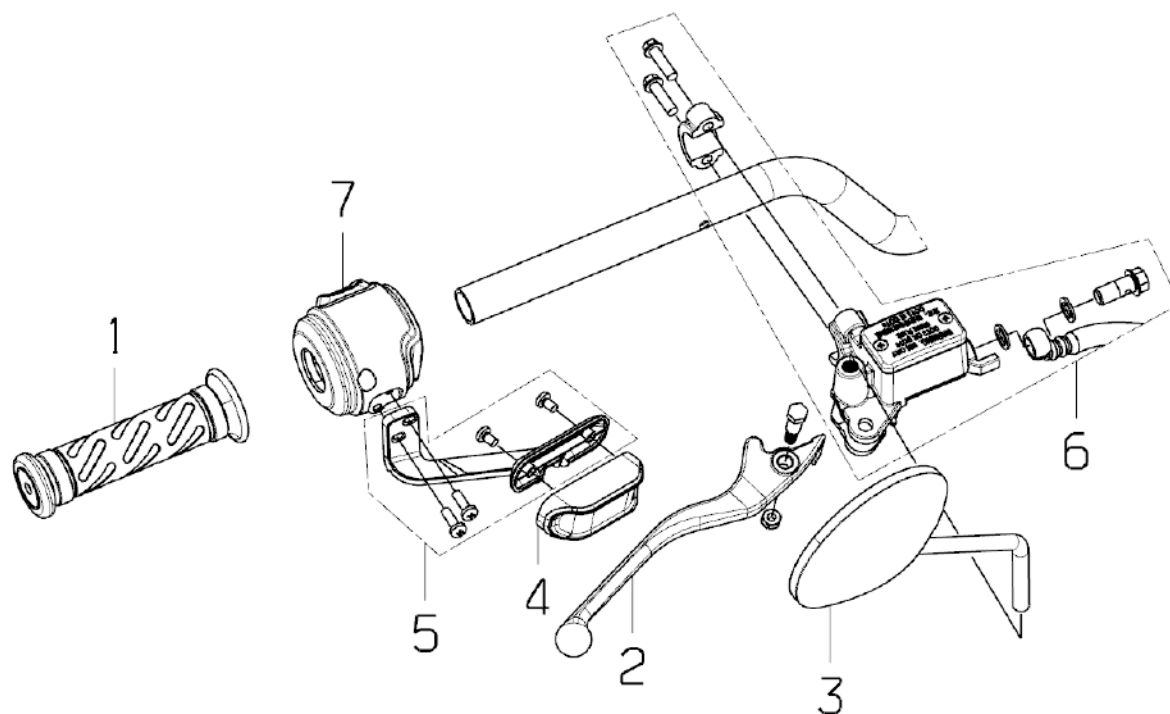


1. Left handle    2. Brake lever    3. Left review mirror    4. left turn signal assembly    5. Fixing bracket of turn signal    6. Rear disc brake Top Fluid Reservoir    7. Combination Switch    8. Handlebar





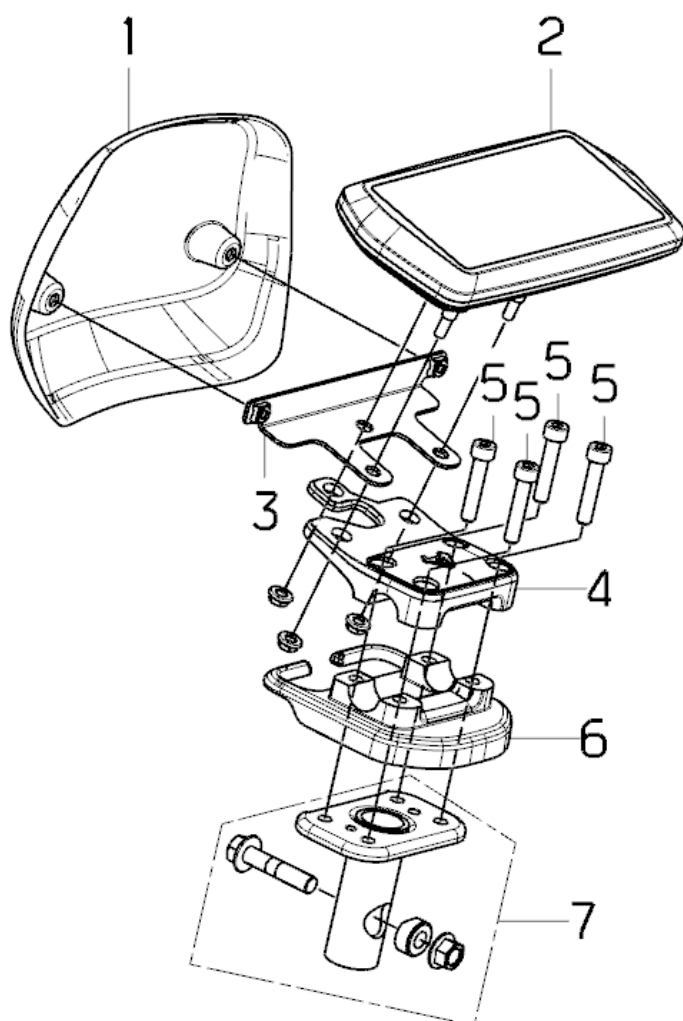
## Steering Handlebar Right



1.Speed regulating steering handle 2. Brake level 3. Right review mirror 4  
Right turn signal assembly 5. Fixing bracket of turn signal 6 Rear disc brake  
Top Fluid Reservoir 7. Right Combination Switch



## Steering Handlebar Middle



1. Dashboard Windshield 2 NGT Dashboard Assembly 3 Dashboard Bracket 4 Handlebar fixing upper block 5 Hexagon socket head stepped bolt 6 Handlebar fixing lower block 7 T-Plate

### Specifications of the Steering Handlebar

Installation torque value for screw 16 in the figure: 52Nm

Front/Rear Brake Lever free travel distance: 7-15mm

Twist Grip free travel distance: 5-10mm



## 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).

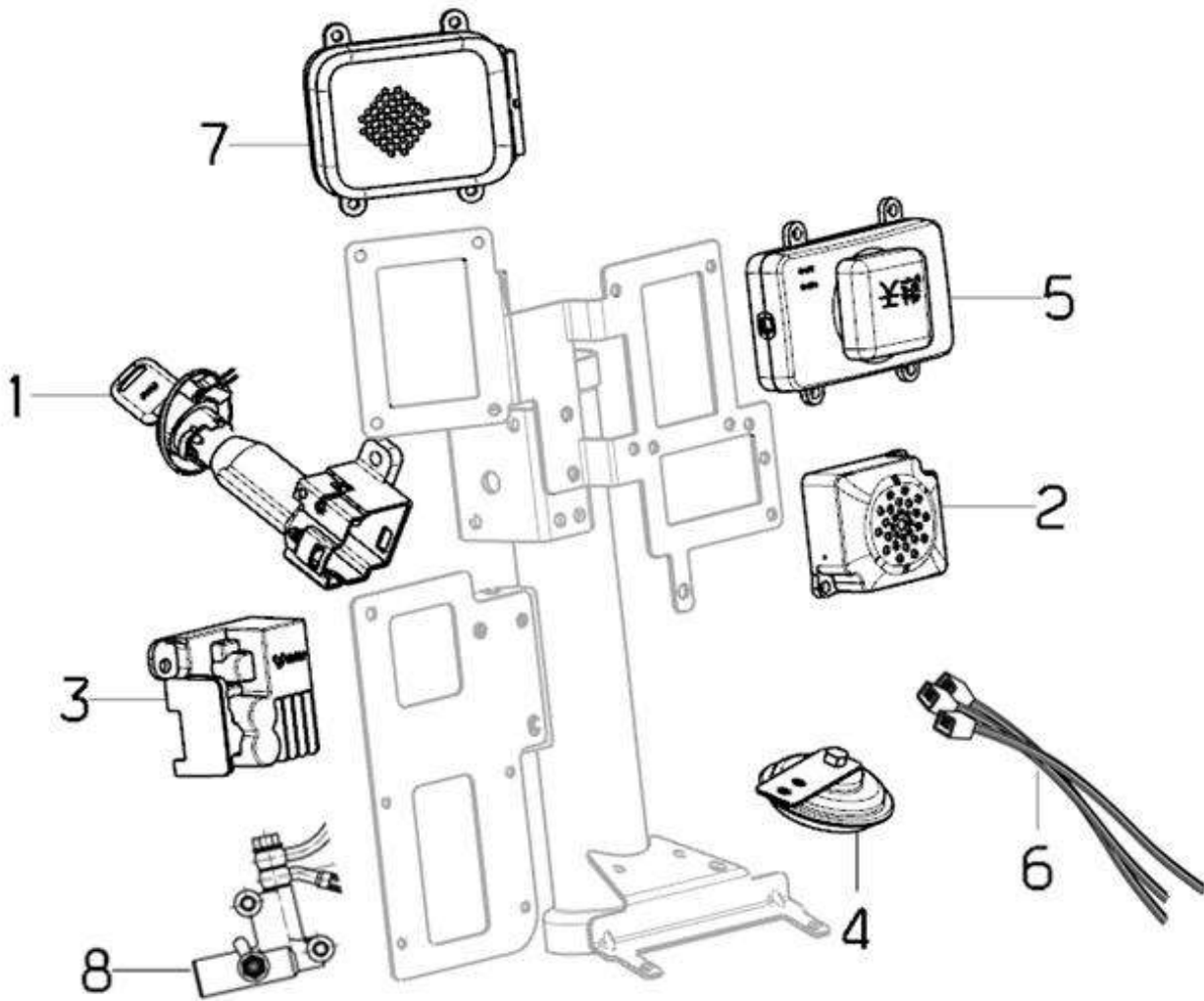
Remove the rear brake (4).

Remove the front brake (10).

Remove upper and lower press blocks (9) and (15) on the scooter handle.



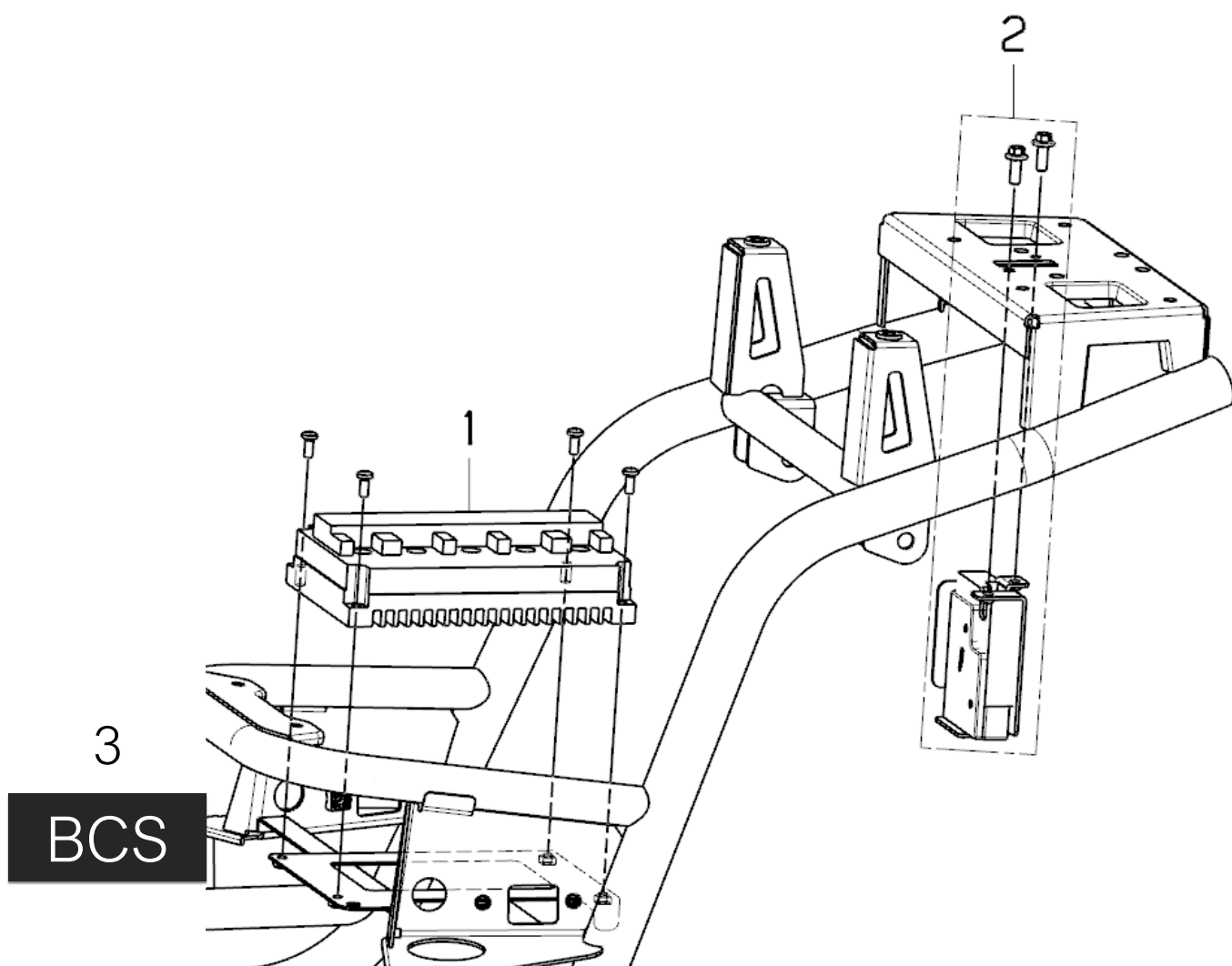
## Electronic Components



1. Power Lock 2. Alarm 3.DC to DC A 4. Horn 5.U3LTE ECU 6. Main harness assembly  
7.LCU 8.CBS



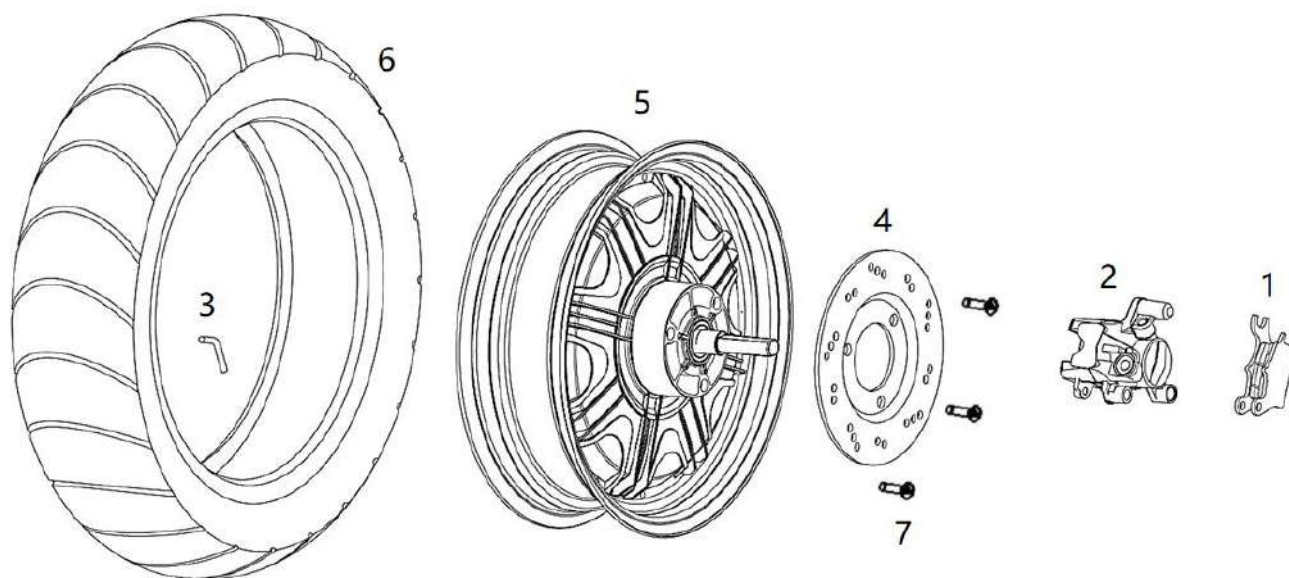
## Rear components



1. FOC motor controller 2 Saddle Lock 3 BCS



## Rear Wheel



1. Rear disc brake pad 2 Rear disc brake lower fluid pump 3 Valve 4 Rear brake disc 5 Motor (3000W) 6 Rear Tire

Diameter of the rear brake disc:  
 $\phi 180\text{mm}$

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

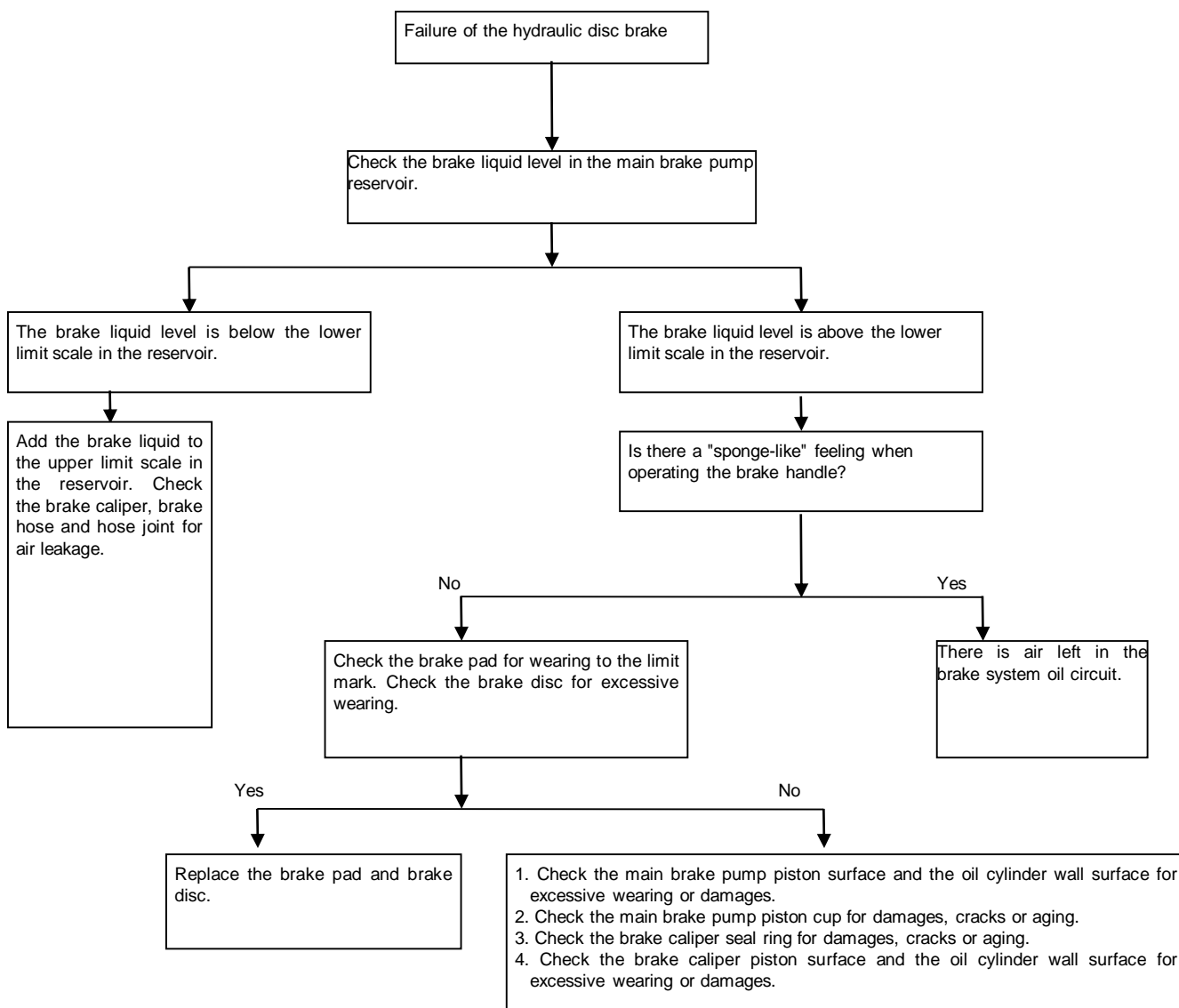
| Item                              | Standard value (mm) | Minimum Thickness(mm) |
|-----------------------------------|---------------------|-----------------------|
| Diameter of the front brake disc  | φ220mm              | -                     |
| Thickness of the front brake disc | 4.0                 | 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

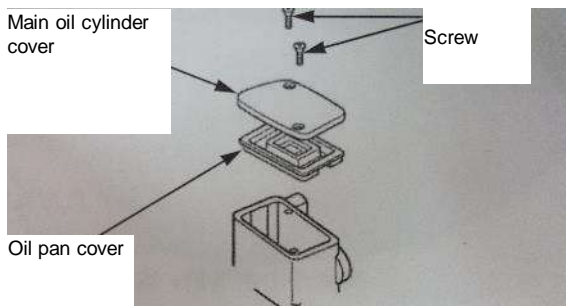
### Brake liquid change/air discharging (for the disc brake type)

#### 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 complete.

Seal thread of the oil drainage screw with a PTFE adhesive-tape, if the air can enter into the air discharge pump.

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.

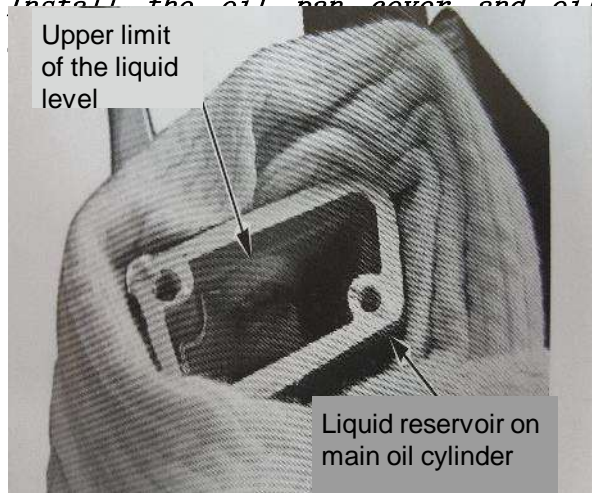
Step2: Loosen the front brake lever slowly until the front brake lever reaches to end of its travel. Wait for several seconds.

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*





# 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 110-240V 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).

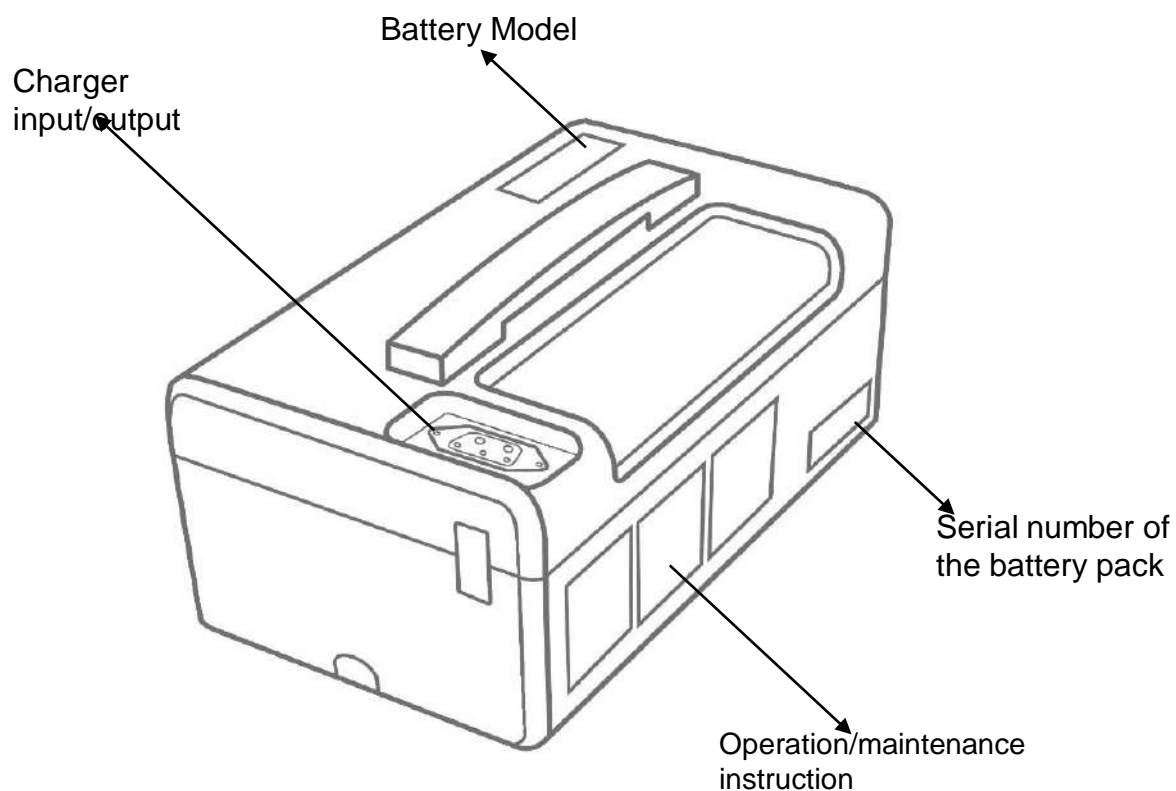
Stop charging immediately if the battery has not been fully charged for more than 24 hours and the red lamp does not turn to green, and then contact the after-sale service for inspection of the charger and battery.

## Snecification

| Item         |                    | Specifications       |
|--------------|--------------------|----------------------|
| Battery      | Type               | lithium battery pack |
|              | Rated voltage      | 60V                  |
|              | Rated capacity     | 2*35Ah               |
| Fast Charger | Output voltage     | 35-84V DC            |
|              | Max Output current | 12A                  |



## Battery Pack



NGT-Battery Capacity:60V 35Ah Panasonic / 18650

Battery Weight: 11KG

Battery Pack Quantity: 2 Max Speed: 70KM/h

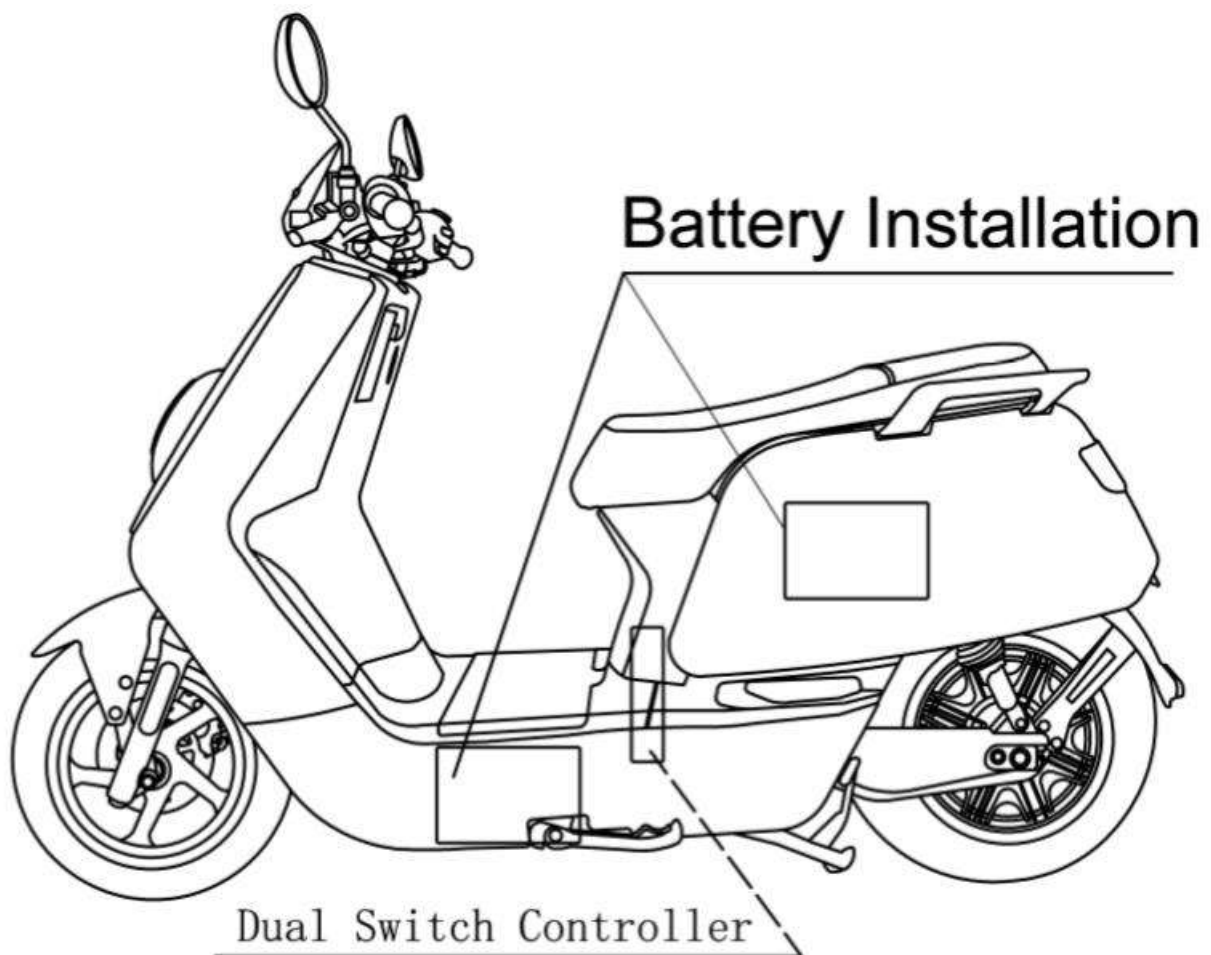
When battery level lower than 15%, the speed will limit to 20KM/h





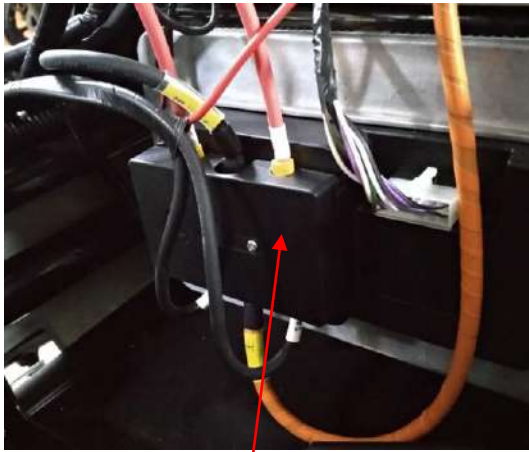
## BCS (Battery Control System- Dual Switch Controller)

The BCS device is used to control the output and input of dual batteries and communicates with ECU.

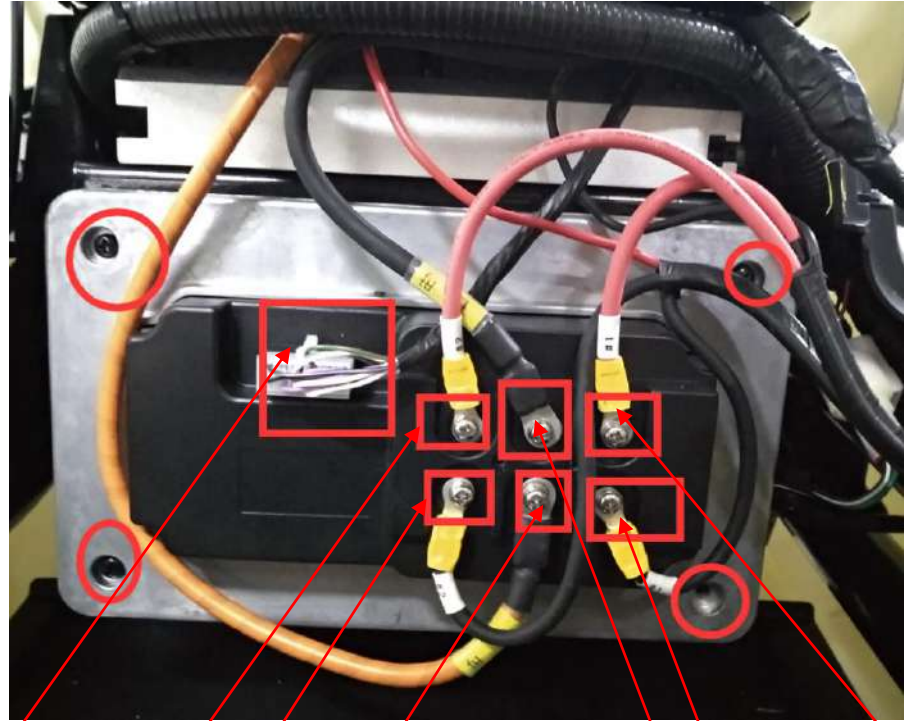




## The cabling diagram of BCS



Remove the cover  
to check the  
cabling



BCS connector with  
Main Harness

S+: BCS output  
positive pole

2+: Battery2  
positive pole

2-: Battery2  
Negative pole

1+: Battery1 positive  
pole

1-: Battery1 Negative  
pole

S-: BCS output  
negative pole



# Fast Charger

Charger Specification: Input: 100-240V AC, 12A max  
Output: 35-84V DC,12A max Operate Temperature: -10-40°C

The charger should be disconnected first from the power supply and then disconnect from the battery.

The fast charger can be used onboard charging port.

- 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



Charger output rated current Charging time

|     |      |    |     |
|-----|------|----|-----|
| 60V | 35*2 | 12 | 6   |
| 60V | 29*2 | 12 | 5   |
| 60V | 29*1 | 12 | 3.8 |
| 60V | 35*1 | 12 | 4   |



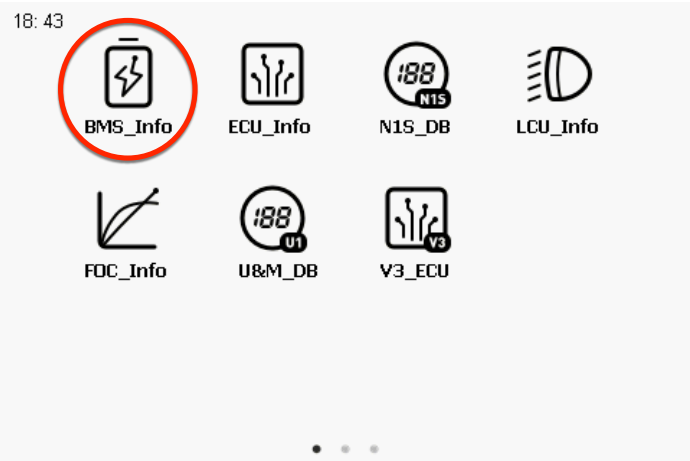
Use H1 can query BMS info to troubleshoot  
for Battery pack

How to use H1, please check H1 User Manual



BMS (Battery Management System) Description

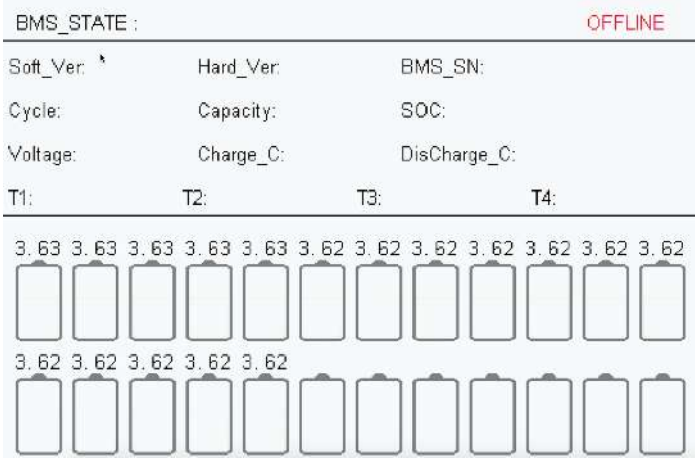
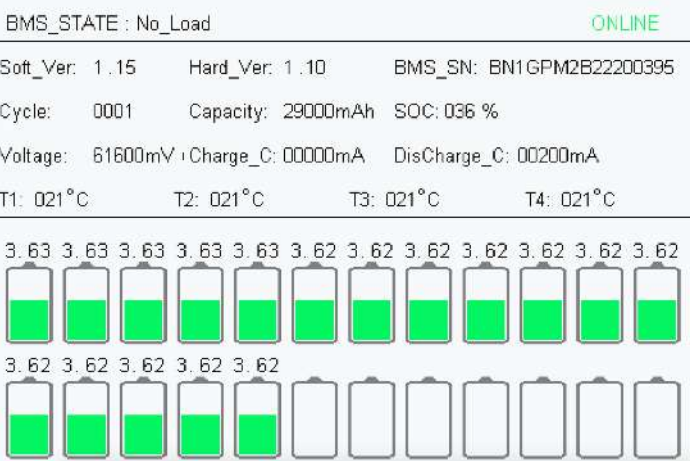
Connect H1 to Battery Pack directly, Press BMS\_Info Icon to Read BMS Information



Please Make Sure The Power Is Turned OFF For More Than 10 Seconds  
You Can Also Connect H1 To Battery Pack Directly  
Press The Screen To Continue

Then press the screen to continue

If BMS is working normal/abnormal, H1 will read Battery Pack info shown as below.  
Replace the BMS if OFFLINE is shown.



BMS\_STATE: No Load  
ONLINE  
Soft\_Ver: 1.15  
Har\_Ver: 1.10  
BMS\_SN: BN1GPM2B22200395  
Cycle: 0001  
Capacity: 29000mAh  
SOC: 036%  
Voltage: 61600mV  
Charge\_C: 00000mA  
DisCharge\_C: 00200mA  
T1: 021°C  
T2: 021°C  
T3: 021°C  
T4: 021°C  
Individual Battery Cell Voltages

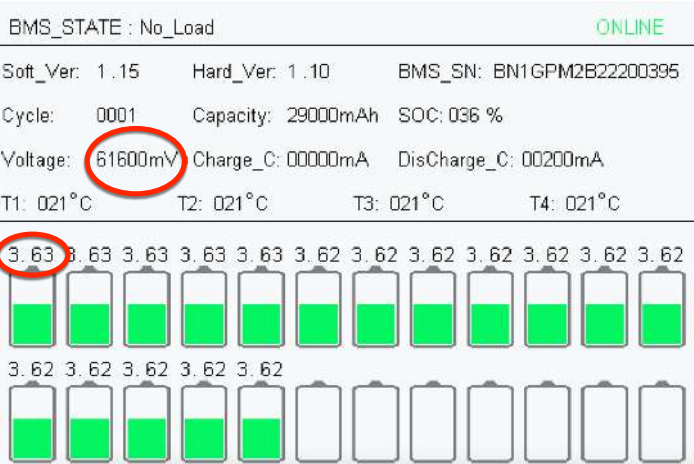
BMS Status: currently not in use  
BMS Functioning, OFFLINE means BMS Failure,  
Replace BMS if necessary  
Software Version: 1.15  
Hardware Version: 1.10  
Battery Serial Number: BN1GPM2B22200395  
Number of Cycles Charged: 0001 Cycles  
Battery Total Capacity: 29Ah  
Remaining Battery Level: 36%  
Battery Total Voltage: 61.6V  
Charging Current: 0mAh  
Discharging Current: 200mAh  
Temperature Sensor 1: 21°C  
Temperature Sensor 2: 21°C  
Temperature Sensor 3: 21°C  
Temperature Sensor 4: 21°C  
Individual Battery Cell Voltages: 3.62V/3.63V





**Table of BMS STATE(BMS Status)**

- No Load:
- Discharging:
- Charging:
- Over-Charged:
- Over-Discharged:
- Charging Over-Current
- Discharging Over-Current
- Over Temperature
- Temperature Low
- Other Warning(Open Circuit detected/ Difference between Cell Voltages is higher than 0.3V.If the difference value is higher than 0.05V and lower than 0.3V, BMS would automatically start voltage balance mode)
- Short Circuit
- Water Detected
- BMS MOS Failure



Connect H1 to Battery Pack directly, Press BMS\_Info Icon to Read battery total voltage and single cell voltage

The max total voltage is 71.4V and max single cell voltage is 4.2V

The max voltage difference is 0.3V

The display will show code 30 (Battery overcharge) when the battery total voltage reached 71.4V or single cell reached 4.2V

Discharging warning code 131 will show on the display when the battery total voltage below 54.4V

BMS will enter protection state when the battery total voltage below 52.7V and single cell will be 3.1V ( +- 0.1V)





For detail about work principle of scooter, [please refer to Circuit Diagram and Wiring Diagram.](#)



## How to check Main Harness communication wire for closed circuit (Ref: 005)

### Check communication between ECU and Battery



- Step 1: Disconnect the main Battery
- Step 2: Disconnect the ECU connector
- Step 3: Connect negative pin of multimeter to pin 5 (White) of ECU female connector
- Step 4: Connect positive pin of multimeter to the pin of power cord shown above( white and grey)
- Step 5: Set multimeter to test closed circuit mode which should beep if the circuit is closed.

Alternative Method: Please refer to <How to Read Vehicle Communication Data> of H1 User Guide.

### Check communication between ECU and FOC controller

- Step 1: Disconnect the main Battery
- Step 2: Disconnect the ECU connector
- Step 3: Connect negative pin of multimeter to pin 3 (grey and violet) of ECU female connector
- Step 4: Connect positive pin of multimeter to the pin 23 of FOC controller connector(grey and violet)
- Step 5: Set multimeter to test closed circuit mode which should beep if the circuit is closed.

Alternative Method: Please refer to <How to Read Vehicle Communication Data> of H1 User Guide



Caution: Please be very careful when checking the FOC controller connector, insert only Thin pin to 62r check up. Do Not damage the connector which may cause bad connection.



## Check communication between ECU and Display

Step 1: Disconnect the main Battery

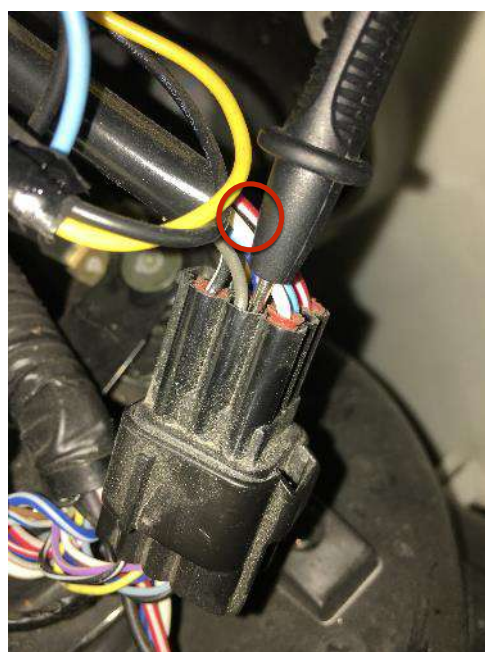
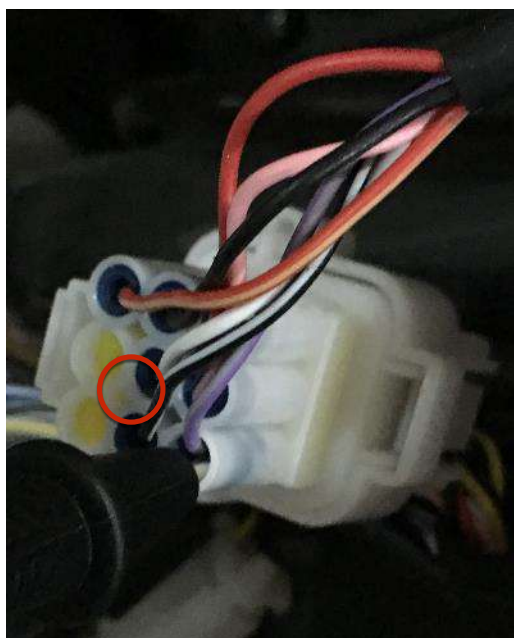
Step 2: Disconnect the ECU connector

Step 3: Connect negative pin of multimeter to pin 3(grey and violet) of ECU female connector

Step 4: Connect positive pin of multimeter to the pin 6(grey and violet) of Display connector

Step 5: Set multimeter to test closed circuit mode which should beep if the circuit is closed

Alternative Method: Please refer to <How to Read Vehicle Communication Data> of H1 User Guide.





## Electrical System

### Motor

The motor used in this scooter is an efficient brushless 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.


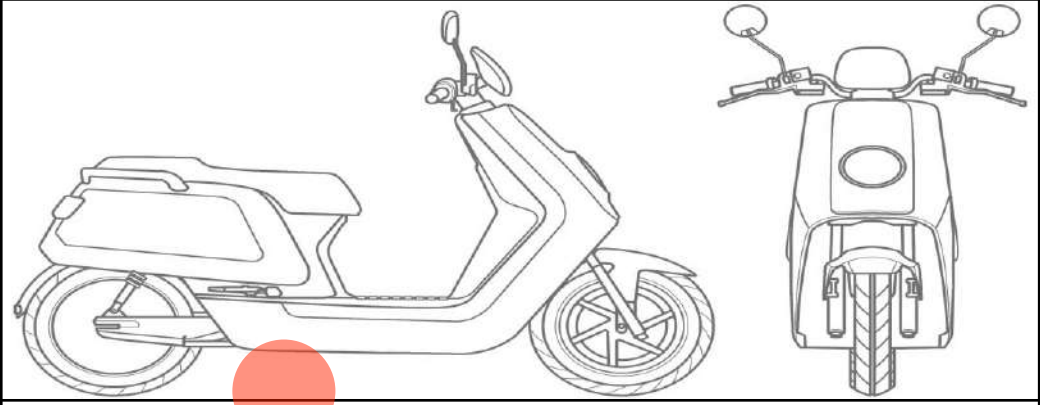

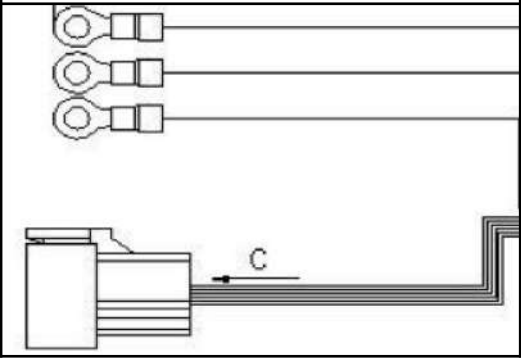
The motor temperature rises higher and faster in a high-altitude area than in a plain area. Thus the scooter operating for a long time will easily result in the situation where the motor becomes abnormally hot and even the motor fails.

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

### Technical Specification

| Item       |   | Specifications                   |
|------------|---|----------------------------------|
| Motor      | Motor type                              | Brushless permanent-magnet motor |
|            | Control method                          | FOC vector control               |
|            | Rated voltage                           | DC60V                            |
|            | Rated power                             | 3000W                            |
|            | Maximum motor power                     | 3500W                            |
| Controller | Rated voltage                           | DC60V                            |
|            | Undervoltage protection                 | 52±1V                            |
|            | Maximum input current of the controller | 70A                              |



|   |        |  |       |
|---|--------|--|-------|
| Component name  | Motor  | Connector code   | J25-A |
|   |        |  |       |
|  |        |  |       |
| Disassembling order: Section 4>20   |        |  |       |
| Connector Definition  |        |  |       |
| PIN   | Color  | Definition   |       |
| 1   | Blue   | Phase  |       |
| 2   | Green  | Phase  |       |
| 3   | Yellow | Phase  |       |
| Motor Hall  |        |  |       |
| 1   | Black  | Power cord   |       |
| 2   | /      |  |       |
| 3   | Red    | Phase  |       |
| 4   | Blue   | Phase  |       |
| 5   | Green  | Phase  |       |
| 6   | Yellow | Negative cord  |       |
|  |        |  |       |





## 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 brushless 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


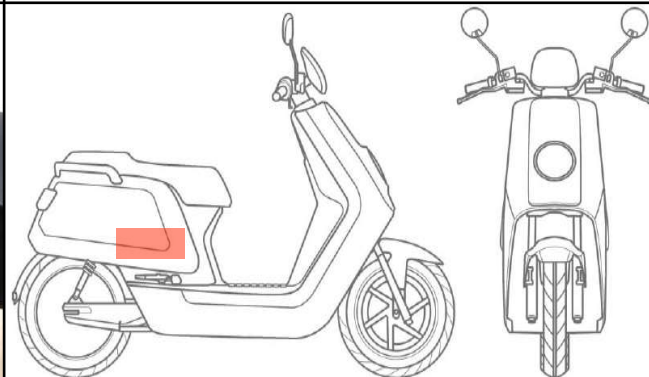
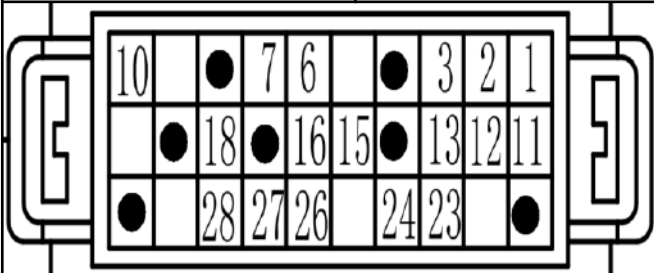
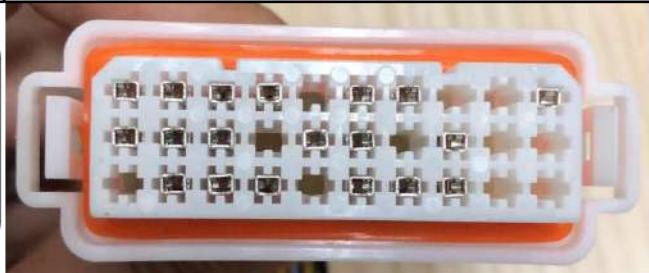
The controller stops the motor automatically to avoid unexpected injuries when the vehicle is being braked or charged.

#### 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.

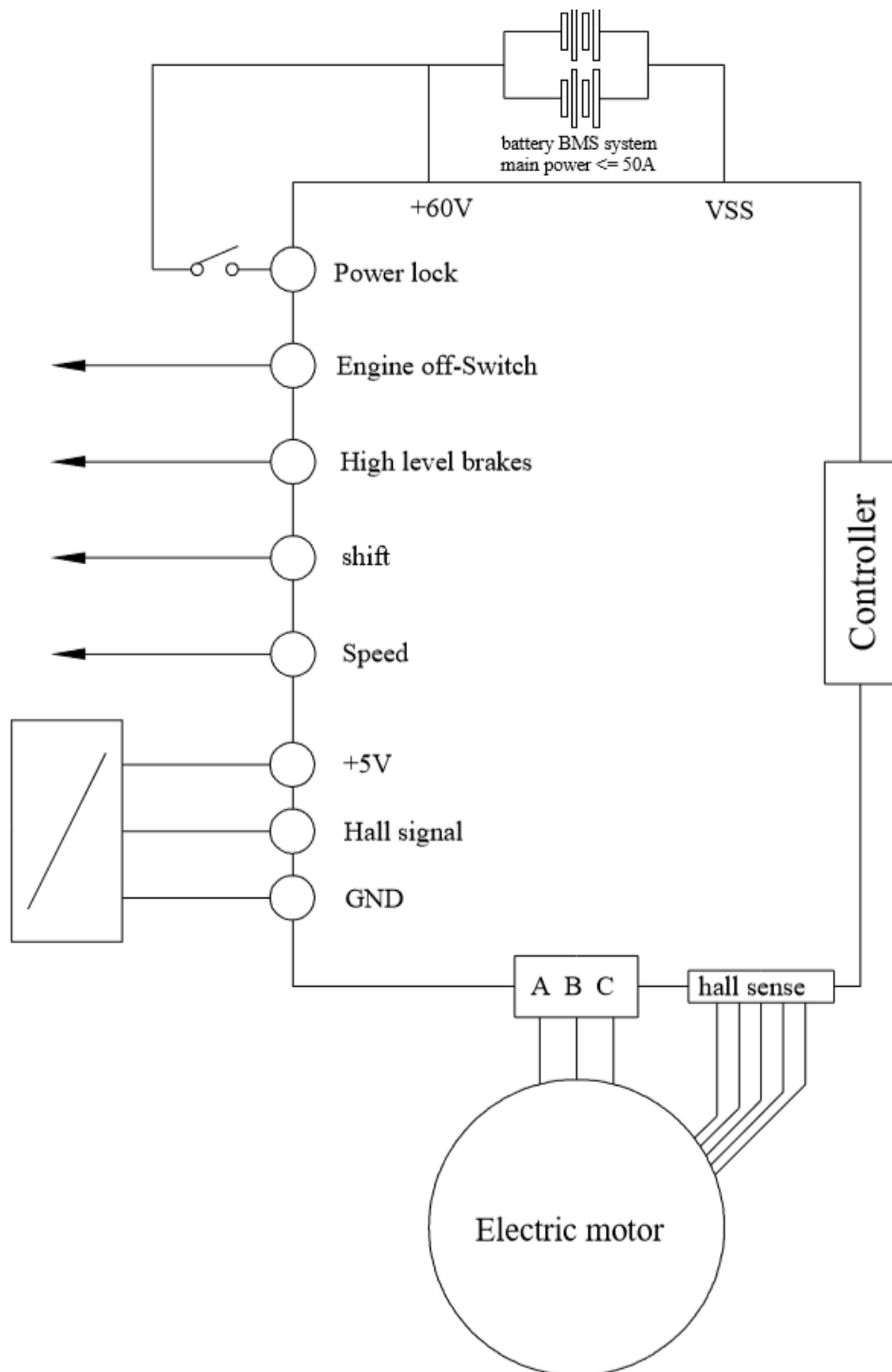


## [E4]FOC controller

|   |                    |  |       |
|---|--------------------|--|-------|
| Component Name  | [E4]FOC Controller | Connector Code   | J26-A |
| Connector Type  |                    | Connector 30P-J2X  |       |
|    |                    |    |       |
| Disassembling order: Section 4  |                    |  |       |
| Connector Definition  |                    |  |       |
| PIN   | Color              | Definition   |       |
| 1   | White and yellow   | Mode 1   |       |
| 2   | White and blue     | Mode 2   |       |
| 3   | White and black    | Mode 3   |       |
| 4   | Blue               | EABS earth   |       |
| 5   | Orange             | ACC power lock   |       |
| 6   | Violet             | Brake lamp   |       |
| 7   | Blue               | EABS   |       |
| 10  | White and grey     | RS485(A)   |       |
| 11  | Yellow             | Side Stand Switch  |       |
| 12  | Black              | BOOST  |       |
| 13  | Black and white    | Earth 485  |       |
| 15  | Black              | Cruise earth   |       |
| 18  | Green and yellow   | Cruise   |       |
| 22  | Violet and gray    | RS485(B)   |       |
| 23  | Brown              | BOOST  |       |
| 24  | Black              | Handle (Twist grip) earth  |       |
| 27  | White and green    | Handle (Twist grip) signal   |       |
|  |                    |  |       |



## Simple Schematic Diagram Circuit





## 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 check FOC Controller power input (Ref: 013)

Step 1: Turn the power OFF.

Step 2: Check voltage of the main power cord by disconnecting the following connectors:

- FOC Controller connector
- Red and Black wires

Step 3: Check DC voltage between the Red wire and Black (Negative) at harness side.

Step 4: Turn the power ON and DC voltage reading on multimeter should be same as battery voltage.







## How to check FOC controller ACC wire of Alarm for closed circuit (Ref: 007)

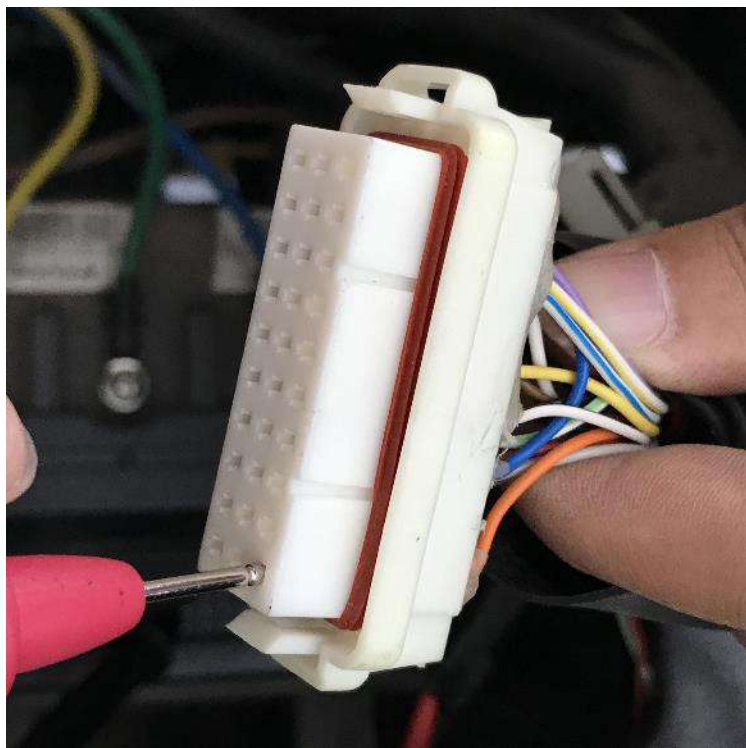
Step 1: Turn the power ON.

Step 2: Check voltage of the PIN 10 orange (ACC power lock) by disconnecting the following connectors:

- FOC Controller connector
- Red and Black wires

Step 3: Check DC voltage between the PIN 10 orange (ACC power lock) and Black (Negative) at harness side.

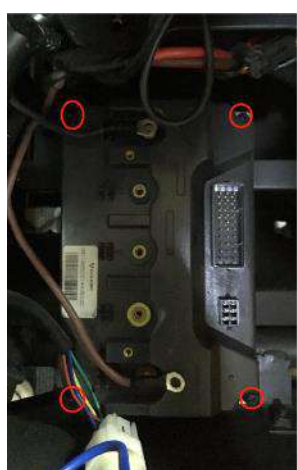
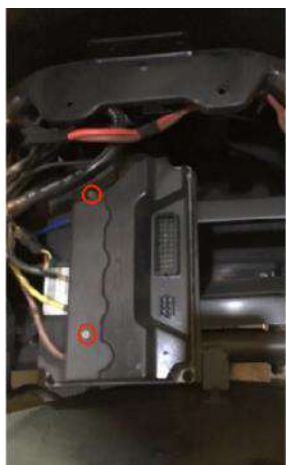
Step 4: Turn the power ON and DC voltage reading on multimeter should be same as battery voltage.






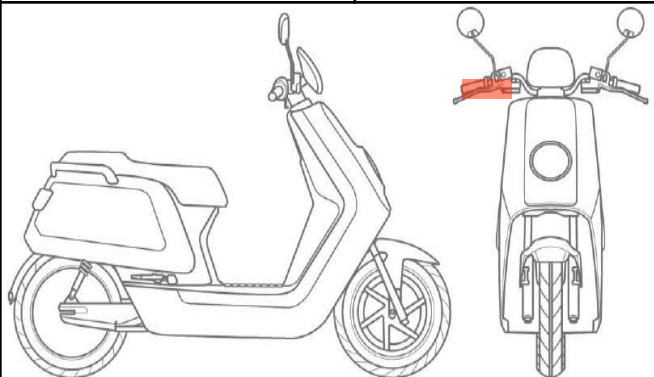

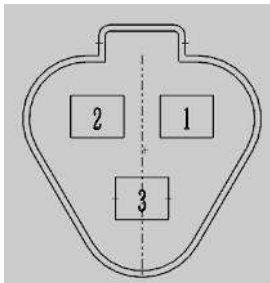


## How to replace FOC controller (Ref: 004)





[E4]Speed regulating steering handle (Right)

|   |  |  |  |
|---|--|--|--|
| Component Name  | [E4]Speed regulating steering handle (right)                                       | Connector Code   |  |
|    |  |  |  |
| Connector Definition  |  |  |  |
| PIN   | Color  | Definition   |  |
| 1   | White and green  | Signal wire  |  |
| 2   | Dark Red   | Power cord (5V)  |  |
| 3   | Black  | Negative electrode   |  |
|  |  |  |  |



## How to check Hall Cable Sensor(Ref: 011)

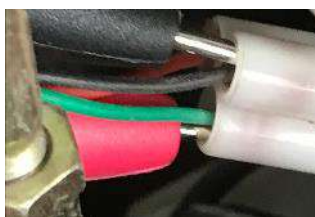
Inspection of the signal output

Step 1: Turn the power lock switch to OFF.

Step 2: Remove the front panel.

Step 3: Connect the multimeter between the white/green signal output wire and the black ground wire on Hall cable sensor.

Turn the ignition switch to ON. Turn the handle slowly from the start angle to the end angle, and check the signal output voltage between them.



Standard: Start angle 0.83 - 0.9V

End angle 3.5 - 3.85V

The voltage should change smoothly between standard values with turning Twist Grip.

## How to check Cable Hall Sensor power input (Ref: 014)

Step 1: Turn the ignition switch to OFF.

Step 2: Disconnect the Hall cable sensor connector.

Step 3: Turn the ignition switch to ON.

Step 4: Check the voltage between the dark red wire and the black wire.



Connection: Dark red (+) - black (-)

Standard: 4.2V-5V

Check the following items if the voltage is not in the standard voltage range:

- The controller failed
- The circuit between controller and Hall cable sensor is in a bad contact or is open circuit.





## How to check Euro 4 Speed regulating steering handle (right)

Inspection of the signal output

Step 1: Turn the power lock switch to ON.

Step 2: Remove the front panel.

Step 3: Connect the multimeter between the white/green signal output wire and the black ground wire on Speed regulating steering handle.

Turn the handle slowly from the start angle to the end angle, and check the signal output voltage between them.

Standard: Start angle 0.83 - 0.9V

End angle 3.5 - 3.85V

The voltage should change smoothly between standard values with turning Twist Grip.





## How to replace Hall Cable Sensor (Ref: 012)



1. Pull out the cable of Twist Grip



2. Unscrew four screws and disconnect the connector of hall cable sensor shown in the picture

3. Reassemble Hall Cable Sensor is reverse order



## CBS: Combined Braking System


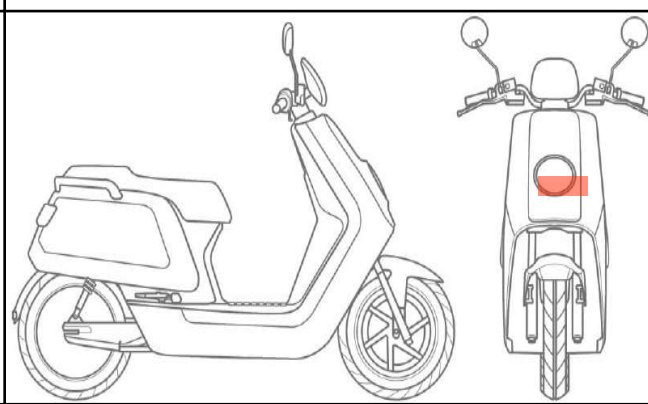


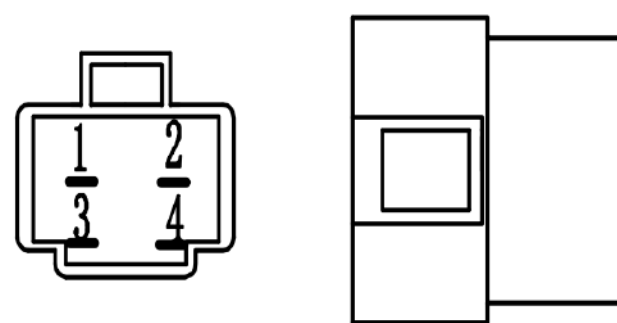
The division of brake force by CBS is front 30% and rear 70%







## DC to DC

|   |   |  |  |  |
|---|---|--|--|--|
| Component Name  | DC-DC Converter   |  |  |  |
|    |   |    |  |  |
| Disassembling order: Section 2>3  |   |  |  |  |
| Connector Code  | J12-A   |  |  |  |
| PIN   | Color   | Definition   |  |  |
| 1   | Red and green   | 60V input wire to the converter  |  |  |
| 2   | Black   | Negative electrode   |  |  |
| 3   | Black   | Negative electrode   |  |  |
| 4   | Red and white   | Power cord (12V)   |  |  |
|  |  |  |  |  |

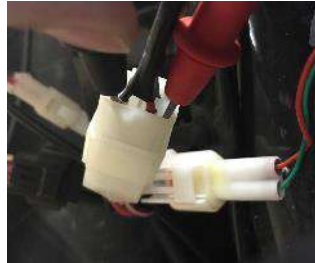


## How to check DC-DC Converter power input (Ref: 015)

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)

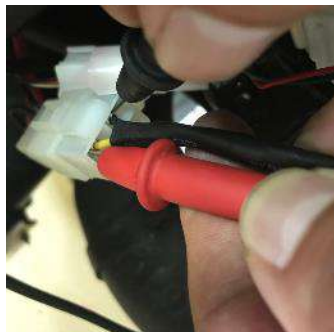


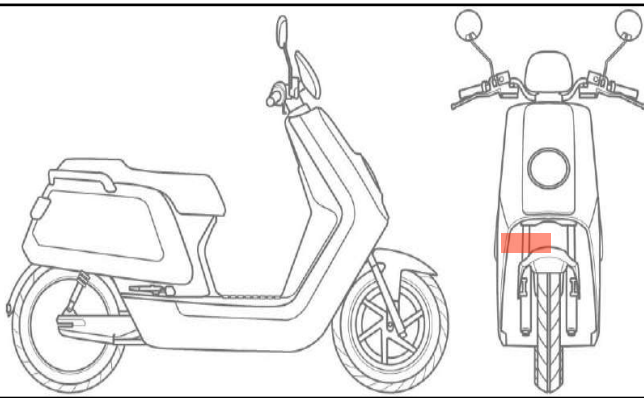


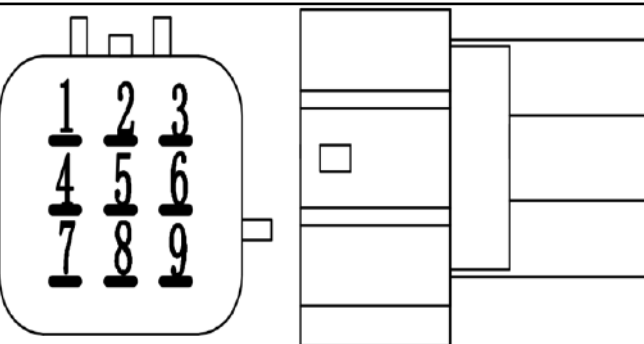
## How to check DC-DC Converter power output (Ref: 016)

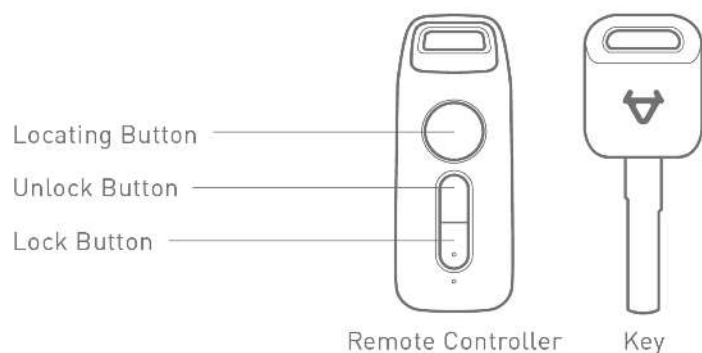
Step 1: Turn the power ON.

Step 2: Check DC voltage between the Yellow and Black (Negative) at component side.

Step 3: DC voltage reading on multimeter should be ~12V



| Component Name  | Alarm   |  |
|---|---|--|
|    |   |    |
| Disassembling order: Section 2>3  |   |  |
| Connector Code  | J3-A  |  |
| PIN   | Color   | Definition   |
| 1   | Red and white   | Power cord (12V)   |
| 2   | Red and green   | DC+  |
| 3   | Red   | Power cord (60V)   |
| 4   | Yellow  | Left turn signal lamp wire   |
| 5   | Pink  | Power Lock   |
| 6   | Yellow 1  | Alarm signal   |
| 7   | Light blue  | Right turn signal lamp wire  |
| 8   | Orange  | Controller ACC   |
| 9   | Black   | Negative electrode   |
|  |  |  |





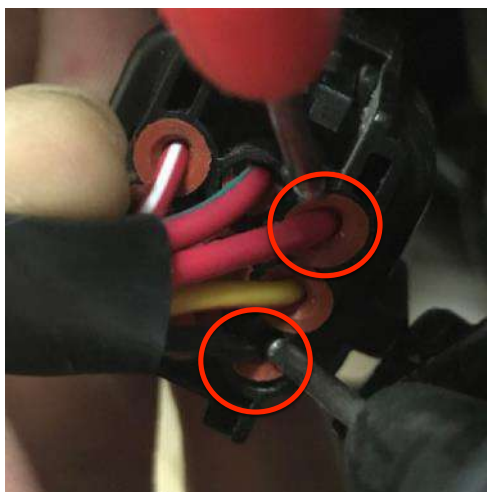
## How to check Alarm (Ref: 017)

Step 1: Press buttons of the remote, the remoter indicator should light up, if not, use the backup remoter or Check the remoter battery

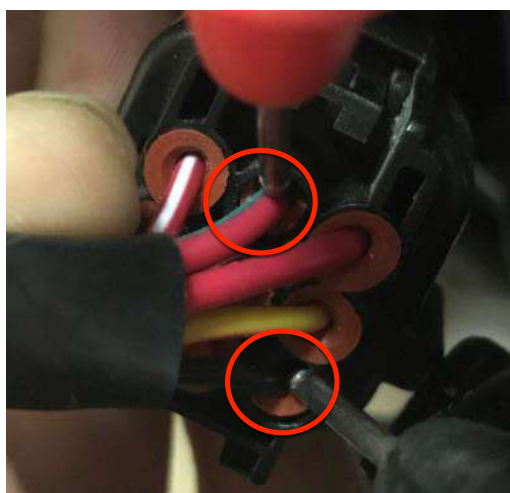
Step 2: if the siren doesn't work after pressing the remote buttons, then replace the alarm

Step 3: if both siren and lights work after pressing remote buttons, then check alarm voltage input/output

Step 4: Use a multimeter and set to DC, measure alarm voltage input(Negative to Black wire, Positive to Red wire), should get result equal to battery voltage.



Step 5: measure voltage output to DC-DC(Negative to Black wire, Positive to Red/Green wire), should get result equal to battery voltage, if not, replace the alarm



## How to adjust Alarm sensitivity (Ref: 018)

Press LOCATING button and hold until start beeping(once is least sensitive and 5times is most sensitive),  
release your finger to select sensitivity setting



## How to replace Alarm (Ref: 008)

1. Unscrew the two screws as guide picture



3. Disconnect the connector of Alarm


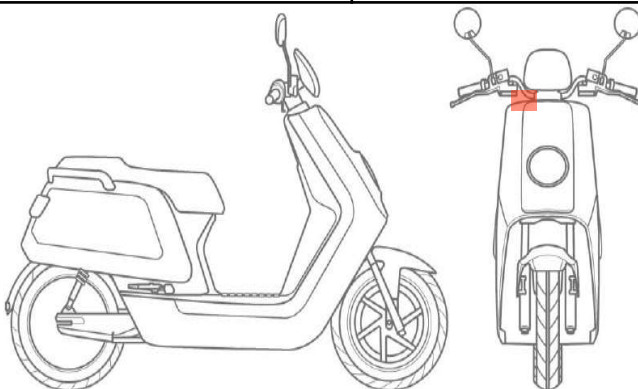


3. Reassemble Alarm is reverse order




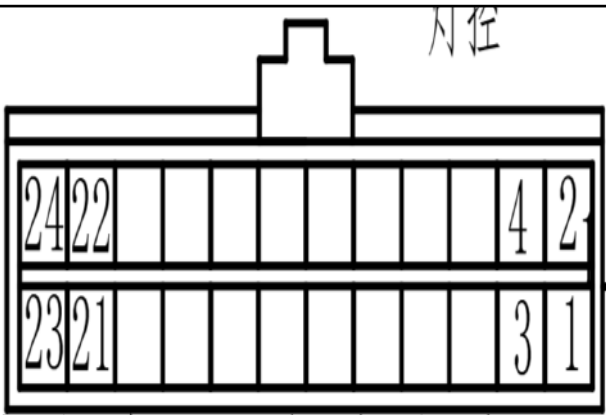
## [E4]Lamp control unit

Euro 4 scooter replace the flasher with LCU (lamp control unit)


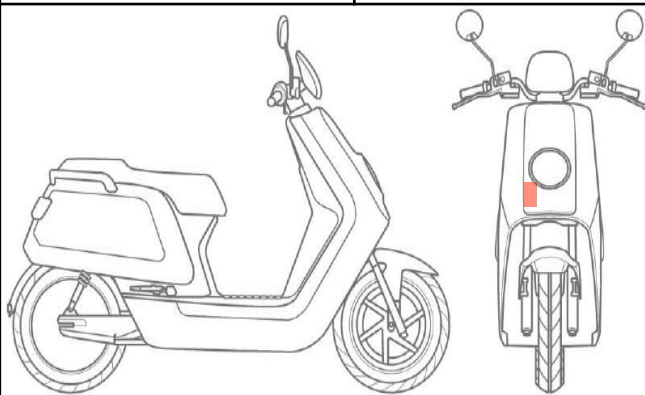
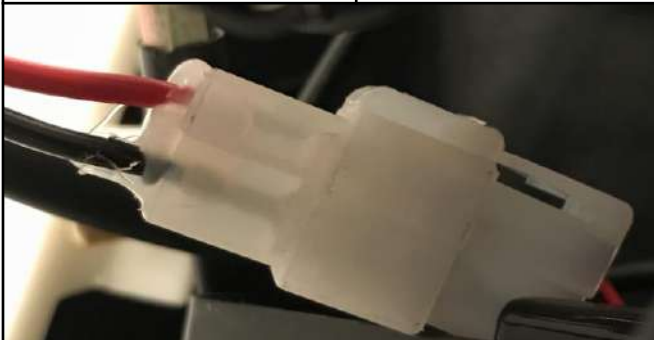
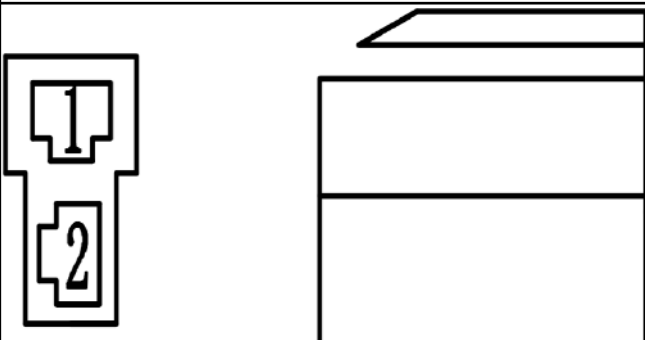
|   |  |                        |       |
|---|--|------------------------|-------|
| Component Name  | [E4] Lamp control unit   | Connector Code         | J14-A |
|  |  |                        |       |
| Disassembling order: Section 2>3  |  |                        |       |
| PIN   | Color  | Definition             |       |
| 1   | Blue 1   | Distance light         |       |
| 2   | White 1  | Switch overtaking      |       |
| 3   | Black  | Cathode                |       |
| 4   | Yellow 1   | Turn switch left       |       |
| 6   | Light blue 1   | Turn switch right      |       |
| 7   | Gray   | Turn off the steering  |       |
| 8   | Light Green  | Double flash of switch |       |
| 9   | Purple gray  | 485 B                  |       |
| 10  | Black white  | 485 Ground             |       |

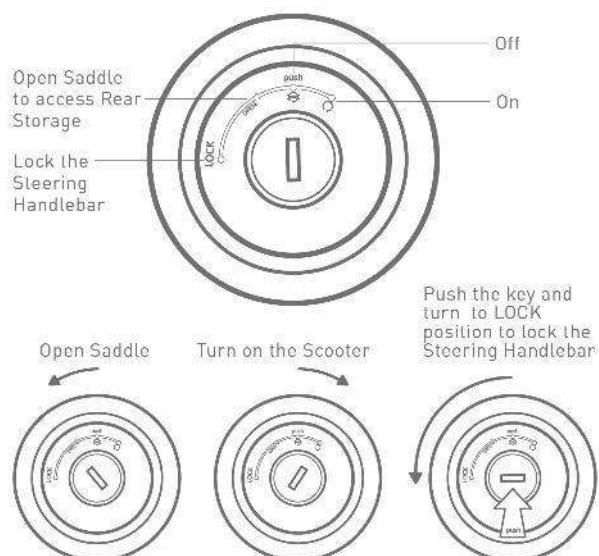




|   |                   |  |
|---|-------------------|--|
| 11  | Light sensation 1 |  |
| 12  | White             | 485 A  |
| 13  | Light sensation 2 |  |
| 14  | Pink              | Electric lock key  |
| 15  | Red white         | 12V  |
| 16  | Red white         | 12V  |
| 17  | Black             | Ground   |
| 18  | Light blue        | Turn right   |
| 19  | Black             | Ground   |
| 20  | Yellow            | Turn left  |
| 21  | Black 1           | Lock hole lamp   |
| 22  | White             | Lower beam   |
| 23  | Red 1             | Lock hole lamp 1   |
| 24  | Blue              | Upper beam   |
|  |                   |  |



| Component Name  | Power Lock | Connector Code   | J11-A |
|---|------------|--|-------|
|    |            |    |       |
| Disassembling order: Section 2>3>4>5>6>7>11>14                                      |            |  |       |
| Connector Code  | J11-A      | Component side   |       |
| PIN   | Color      | Definition   |       |
| 1   | Red        | Power cord (60V)   |       |
| 2   | Black      | Power Lock On/Off  |       |
|   |            |  |       |
| Connector Code  | J11-B      | Harness side   |       |
| PIN   | Color      | Definition   |       |
| 1   | Red        | Power cord (60V)   |       |
| 2   | Pink       | Electrical lock key  |       |
|  |            |  |       |



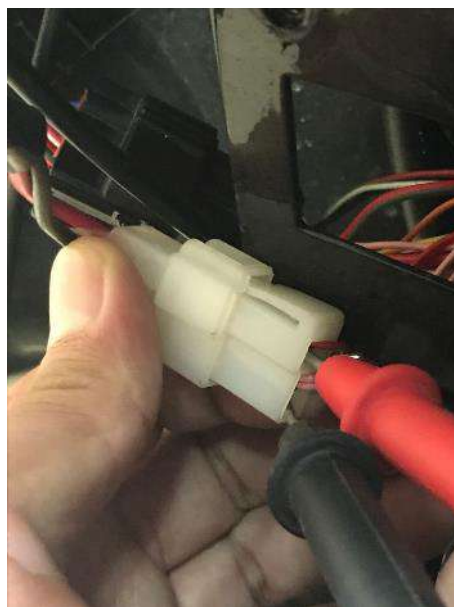



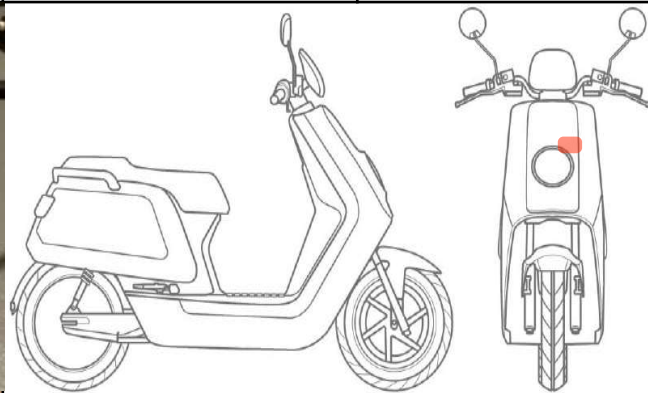
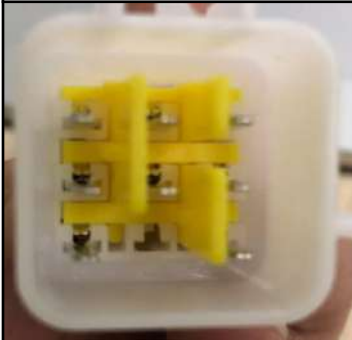
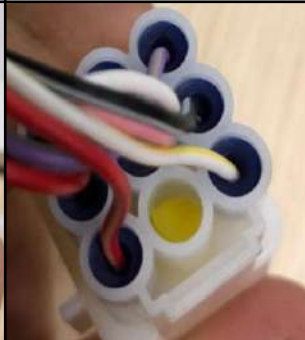
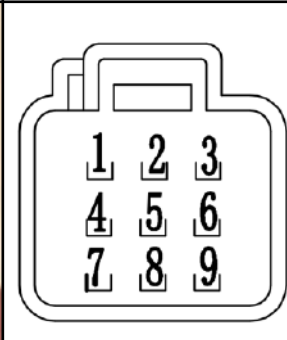
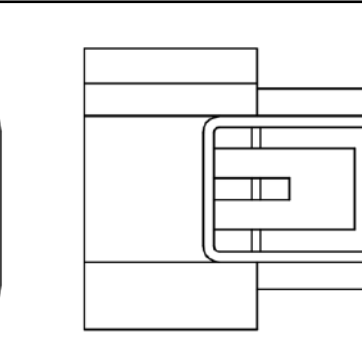
## How to check Power Lock (Ref: 020)

Step 1: Check DC voltage between Pink wire and Red wire

Step 2: DC voltage reading on multimeter should be same as battery voltage

If battery voltage does not exist, replace the power lock.



| Component Name  | U3 LTE           | Connector Code  | J2-A |
|---|------------------|---|------|
|    |                  |     |      |
| Disassembling order: Section 2>3  |                  |   |      |
| Connector Definition  |                  |   |      |
| PIN   | Color            | Definition  |      |
| 1   | Red              | Power cord(60V)   |      |
| 2   | Pink             | Power Lock On/Off   |      |
| 3   | Violet and Grey  | Communication B   |      |
| 4   | Black            | Negative electrode  |      |
| 5   | White and Grey   | Communication A   |      |
| 6   | Black and white  | 485 Ground wire   |      |
| 7   | Yellow and Red   | Alarm signal  |      |
| 8   | /                |   |      |
| 9   | Yellow and white | Front Wheel Speed Sensor  |      |
|  |                  |    |      |
|   |                  |   |      |
|   |                  |  |      |



## 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.



External GPS Antenna.  
Please keep it tightening up.

### 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.**



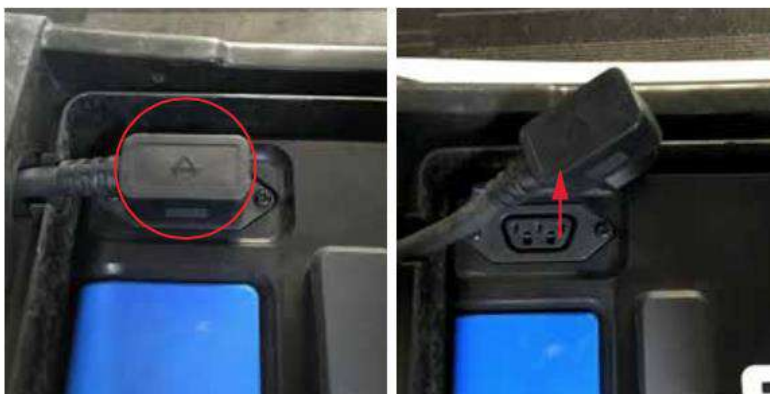


## How to check ECU by checking App Data (Ref: 002)

- 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. Disconnect the Battery



2. Remove two Front Glove Compartment Bolt Hole Plugs and unscrew two screws inside



3. Remove Front Neck Cover by lifting it at front



4. Unscrew two screws on the top of Front Panel







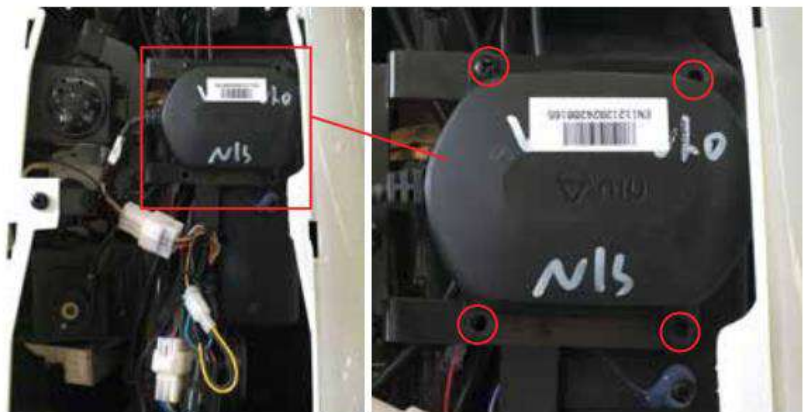
5. Take out two Plastic Expansion Clips from the bottom of Front Panel



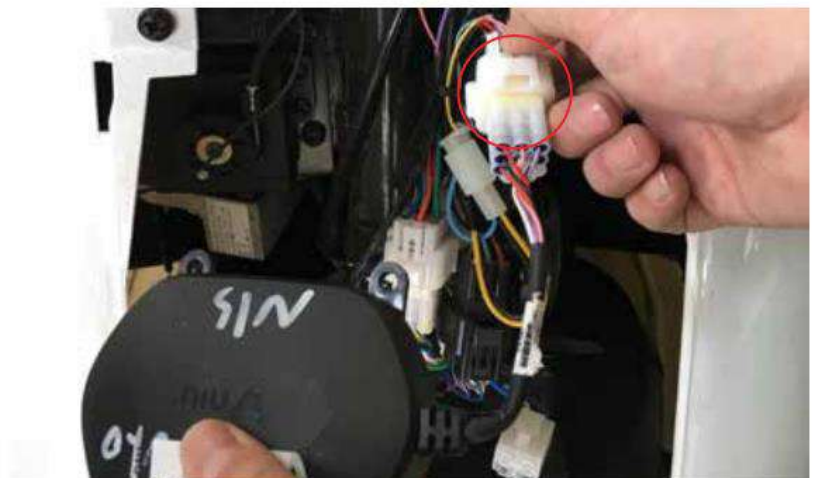
6. Remove Front Panel by pushing it upward



7. Unscrew four screws on Smart Central Controller



8. Deattach the connector of Smart Central Controller and replace a new one

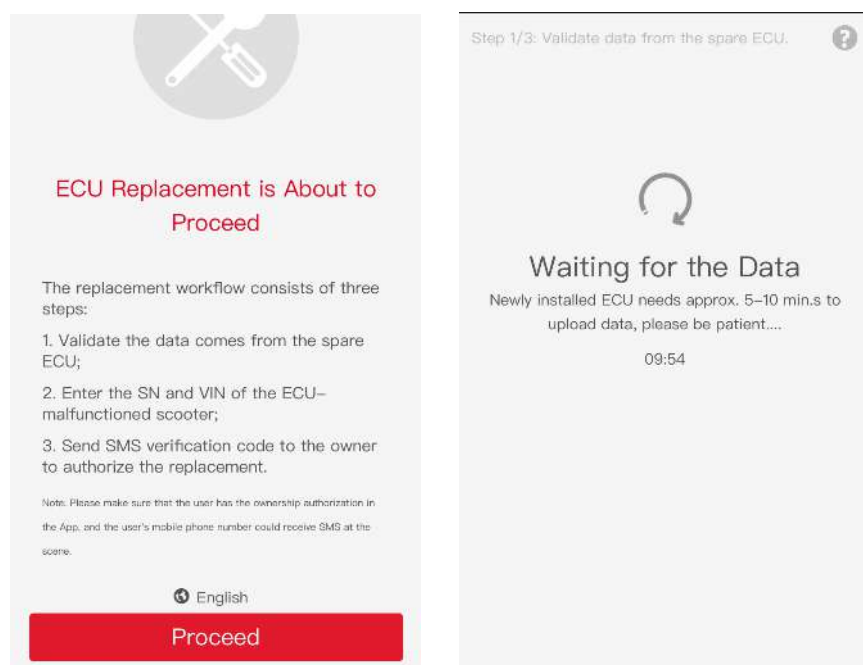




Step 9: Use a smart phone to scan the QR code of the spare part ECU



Step 10: 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.


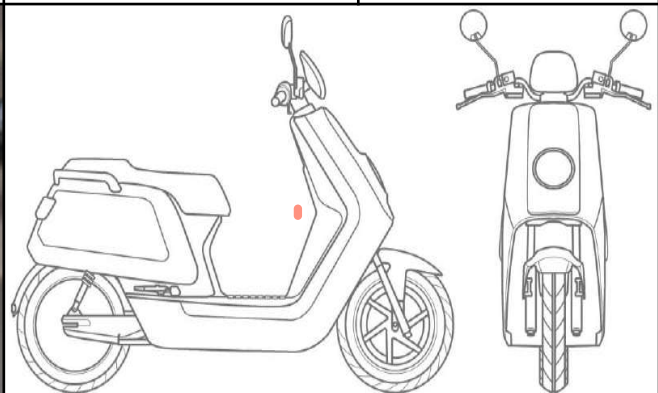


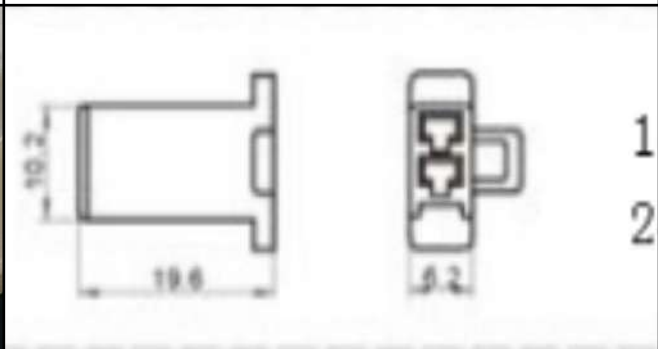


Step 10: Update ECU with latest program by H1

Step 11: Check App status after 24 hours or contact [questions@niu.com](mailto:questions@niu.com) for help.


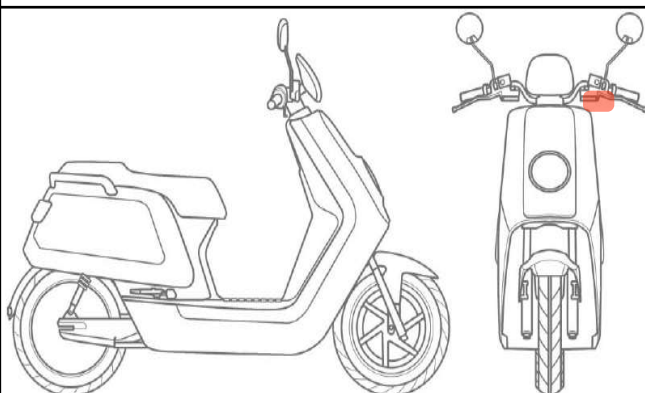
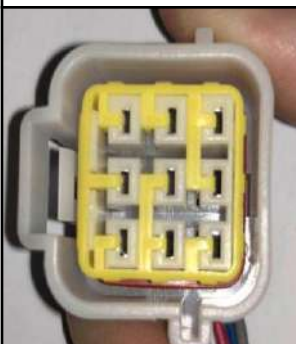

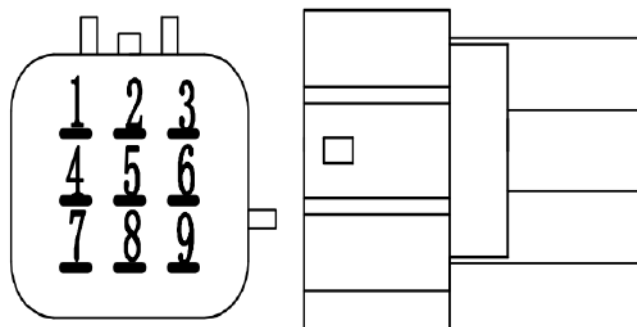


USB Port

|  |  |   |      |
|--|--|---|------|
| Component Name   | USB  | Connector Code  | J5-A |
|   |  |   |      |
| Disassembling order: Section 2>3>4>5>6>7>11>12>13                                  |  |   |      |
| Connector Definition   |  |   |      |
| PIN  | Color  | Definition  |      |
| 1  | Red  | Power cord (60V)  |      |
| 2  | Black  | Negative electrode  |      |
|  |  |  |      |



## [E4] Left combination switch

|   |   |  |      |
|---|---|--|------|
| Component Name  | [E4]Left combination switch   | Connector Code   | J1-A |
| Connector Type  |   |  |      |
|    |   |    |      |
| Disassembling order: Section 2>3  |   |  |      |
| Connector Definition  |   |  |      |
| PIN   | Color   | Definition   |      |
| 1   | Blue 1  | Distance light   |      |
| 2   | White 1   | Headlight overtaking   |      |
| 3   | Black   | Cathode  |      |
| 4   | Dark green  | Horn   |      |
| 5   | Red white   | 12V  |      |
| 6   | Light blue 1  | Turn switch right  |      |
| 7   | Yellow 1  | Turn switch left   |      |
| 8   | Grey  | Flashing   |      |
| 9   | Green and yellow  | Cruising   |      |
|  |  |  |      |





## 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


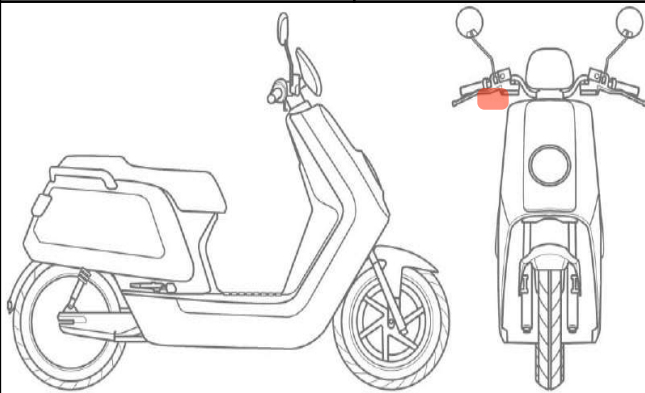
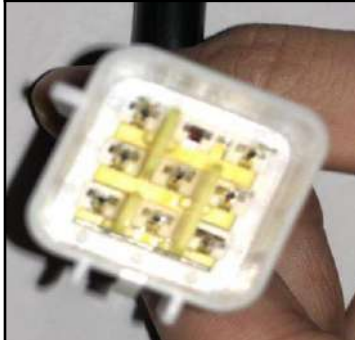

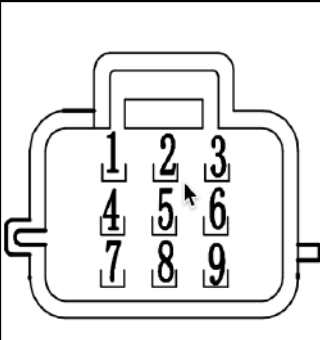
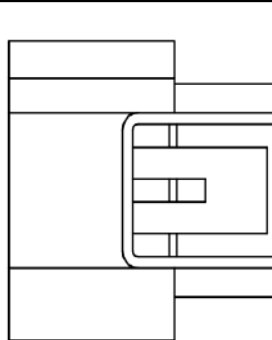
Other switch detection methods are the similar,check the corresponding wire and DC voltage should be around stable 12V.

Note: DC Voltage reading will be dynamic when checking Signal lamps due to Flasher





## [E4] Right combination switch

|   |   |  |      |
|---|---|--|------|
| Component Name  | [E4]Right combination switch  | Connector Code   | J2-A |
|    |   |  |      |
| Disassembling order: Section 2>3  |   |  |      |
| Connector Definition  |   |  |      |
| PIN   | Color   | Definition   |      |
| 1   | White and yellow  | Shift down   |      |
| 2   | White and blue  | Shift up   |      |
| 3   | Black   | Cathode  |      |
| 4   | Black   | Cathode  |      |
| 5   | /   | /  |      |
| 6   | Black   | Cathode  |      |
| 7   | Light green   | Double flash   |      |
| 8   | /   | /  |      |
| 9   | Brown   | Startup button   |      |
|  |  |   |      |





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

example:

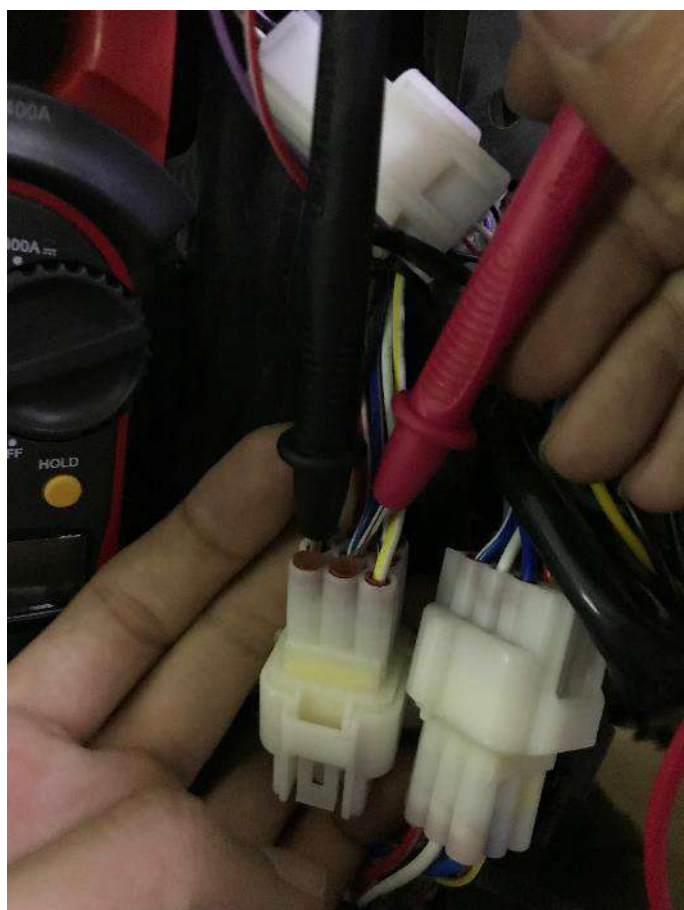
Check the Hazard Light Switch

Step 1: Turn the power ON

Step 2: Check for closed circuit between PIN 5 Blue/White wire (Hazard Lights) and Black wire


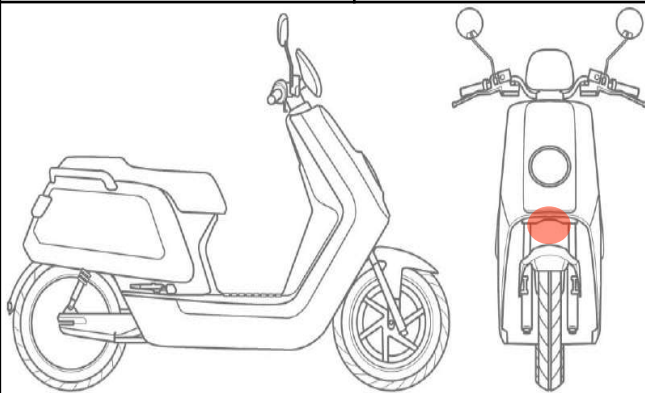


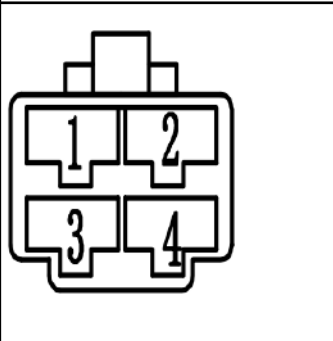
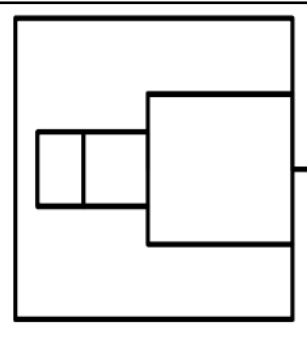
Step 3: the multimeter should beep if the circuit is closed.

Other switch detection methods are the similar.





## NGT Headlight- Same type with N1S Sport

| Component Name  | Headlight   | Connector Code   | J13-A   |
|---|---|--|---|
|    |   |  |   |
| Disassembling order: Section 2>3  |   |  |   |
| Connector Definition  |   |  |   |
| PIN   | Color   | Definition   |   |
| 1   | White   | Low beam   |   |
| 2   | Blue  | High beam  |   |
| 3   | Red and white   | Power cord (12V)   |   |
| 4   | Black   | Negative electrode   |   |
|  |  |  |  |



## How to check Headlight Power Input (Ref: 023)

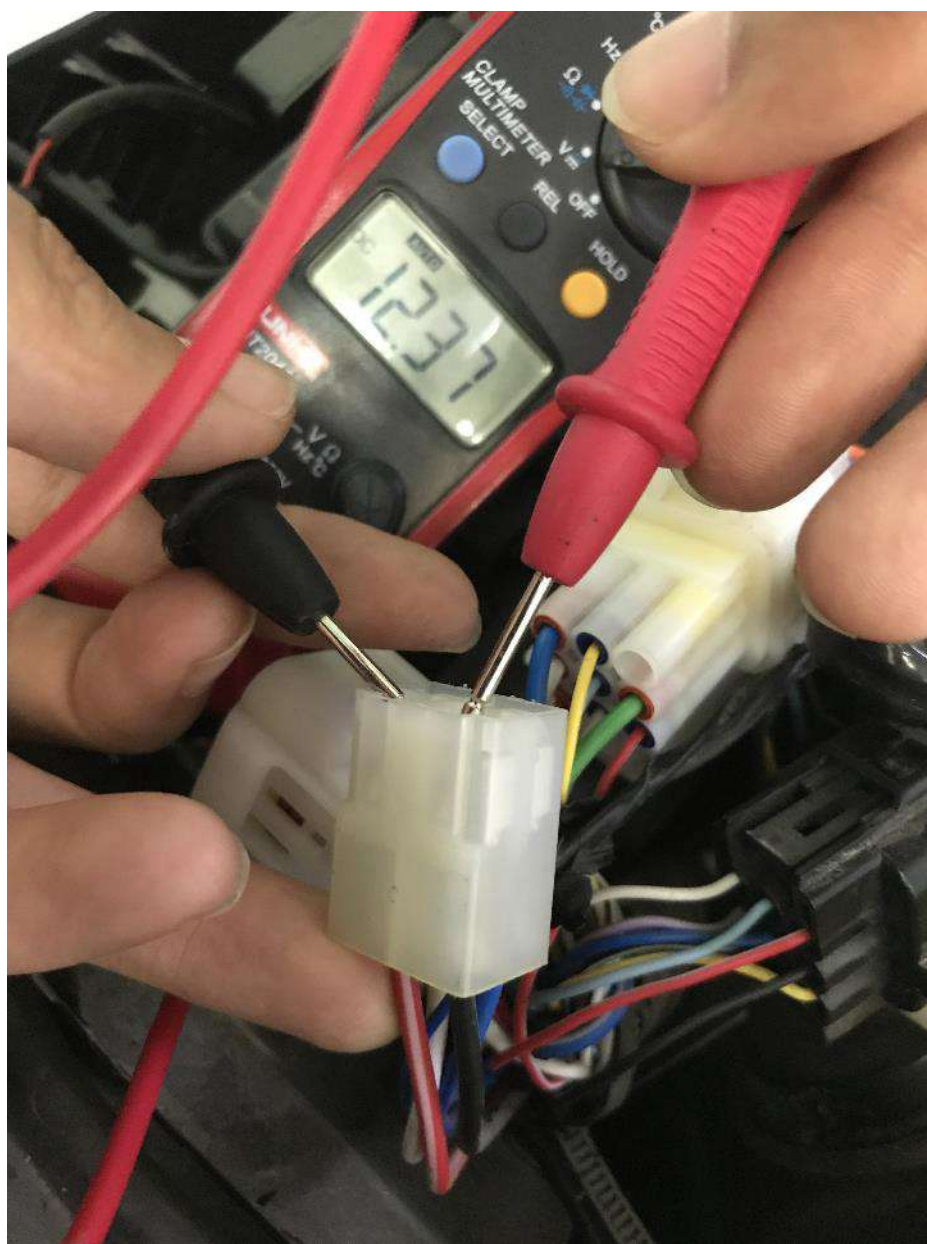
Step 1: Turn the power ON

Step 2: Check DC voltage between Red-White wire and Black wire


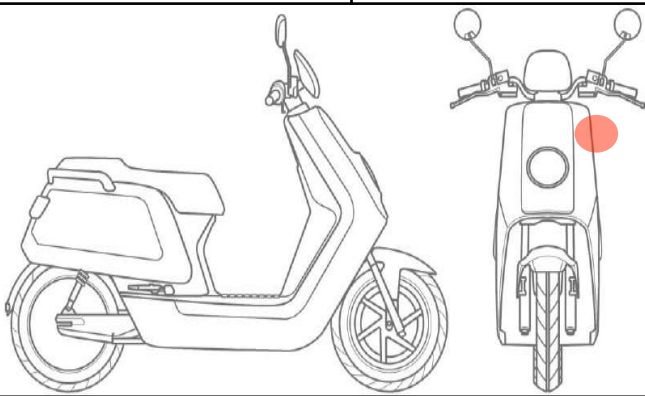
Step 3: DC voltage reading on multimeter should be ~12V

If 12V exist but Headlight does not illuminate, replace Headlight

If 12V does not exist, harness is broken



# Direction Indicators


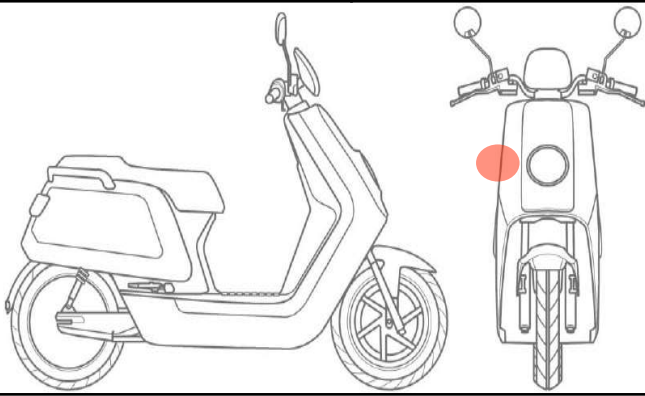
| Component Name  | Left/Right turn signal lamp | Connector Code   | J7-A |
|---|-----------------------------|--|------|
|  |                             |  |      |

Disassembling order: Section 2>3

## Connector Definition

| PIN | Color  | Definition            |
|-----|--------|-----------------------|
| 1   | Yellow | Left turn signal lamp |
| 2   | Black  | Negative electrode    |

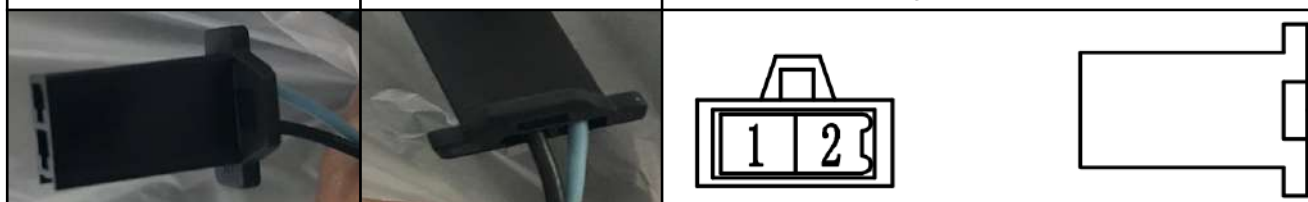


| Component Name  | Right turn signal lamp | Connector Code   | J8-A |
|---|------------------------|--|------|
|  |                        |  |      |

Disassembling order: Section 2>3

## Connector Definition

| PIN | Color      | Definition             |
|-----|------------|------------------------|
| 1   | Light blue | Right turn signal lamp |
| 2   | Black      | Negative electrode     |

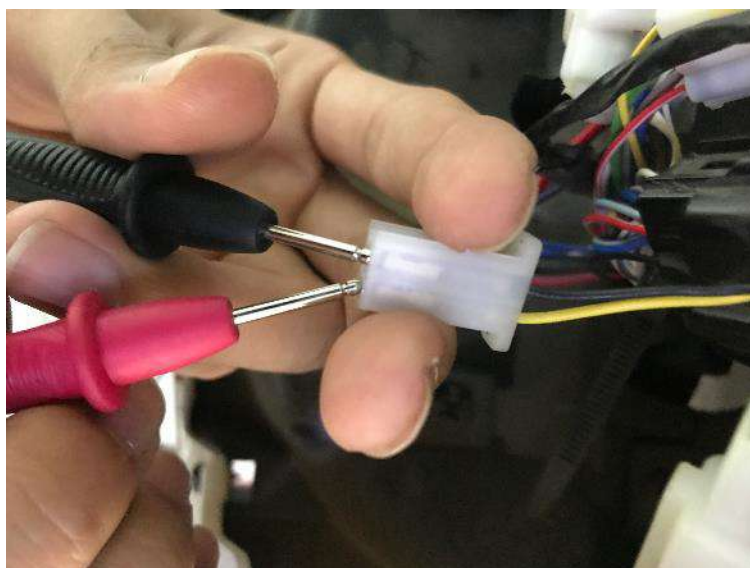






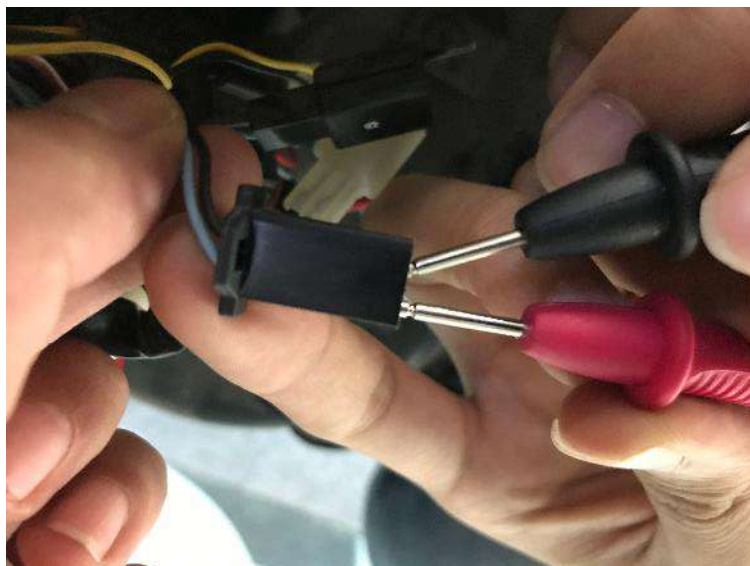
## How to check Left turn signal lamp (Ref: 024)

- 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




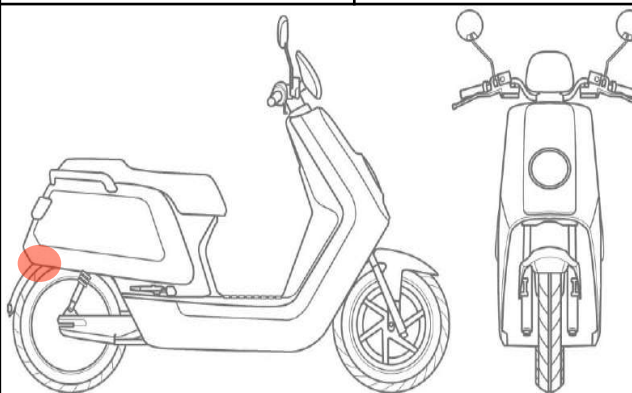
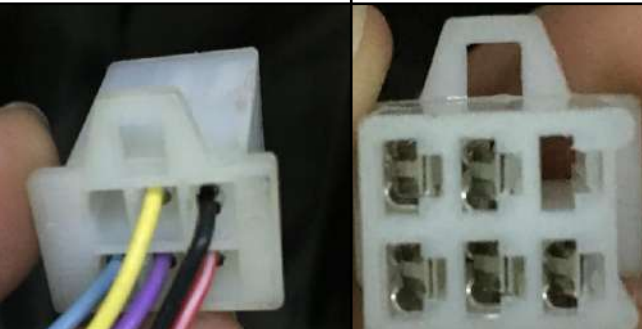
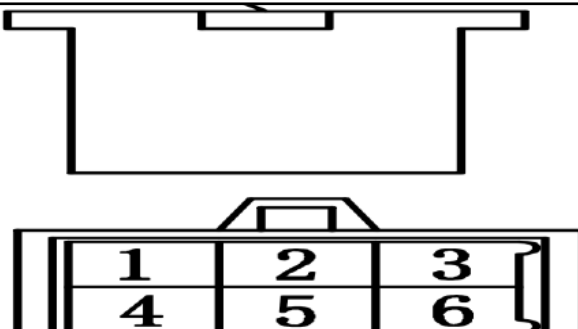
## How to check Right turn signal lamp (Ref: 025)

- 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





## 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   |      |
|  |               |  |      |



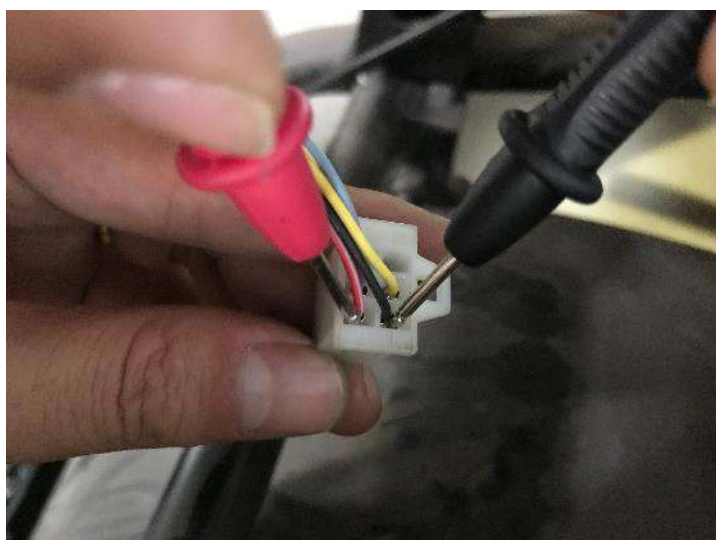


## How to check Tail Light power input (Ref: 026)

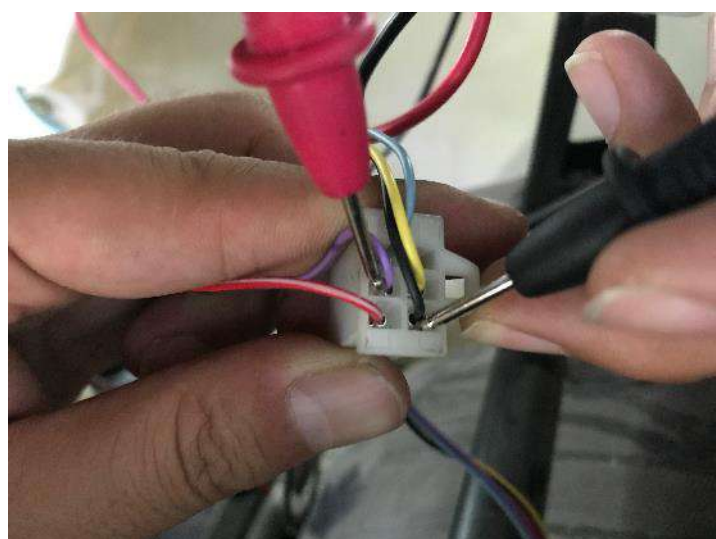
Step 1: Turn the power ON

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


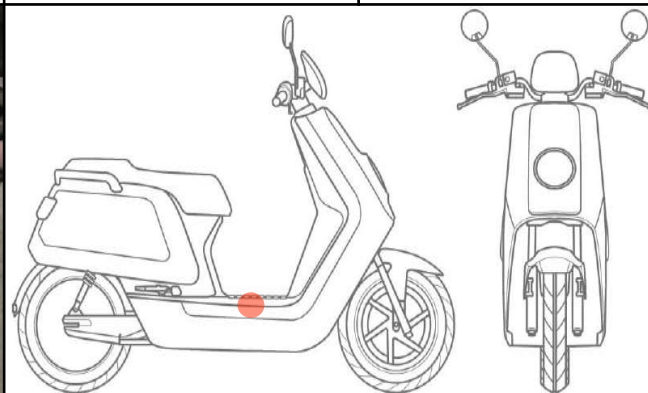


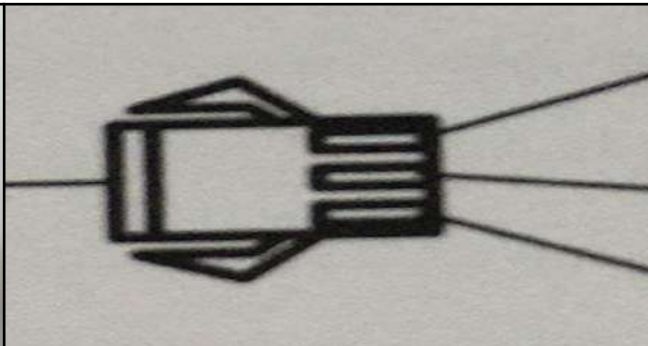

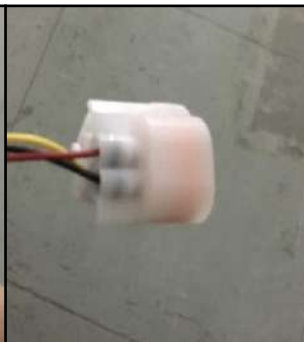
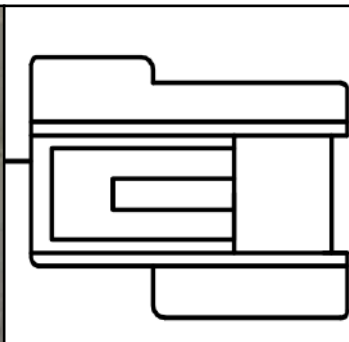



Step 4: Press the brake, DC voltage reading on multimeter should also be around~12V  
If 12V exist and Tail light does not illuminate, then replace the taillight





## 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 Switch (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


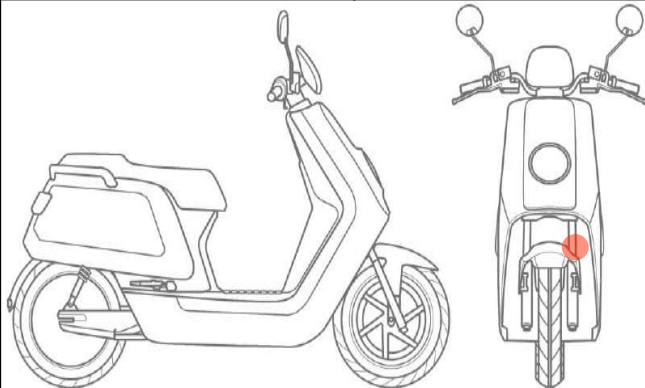
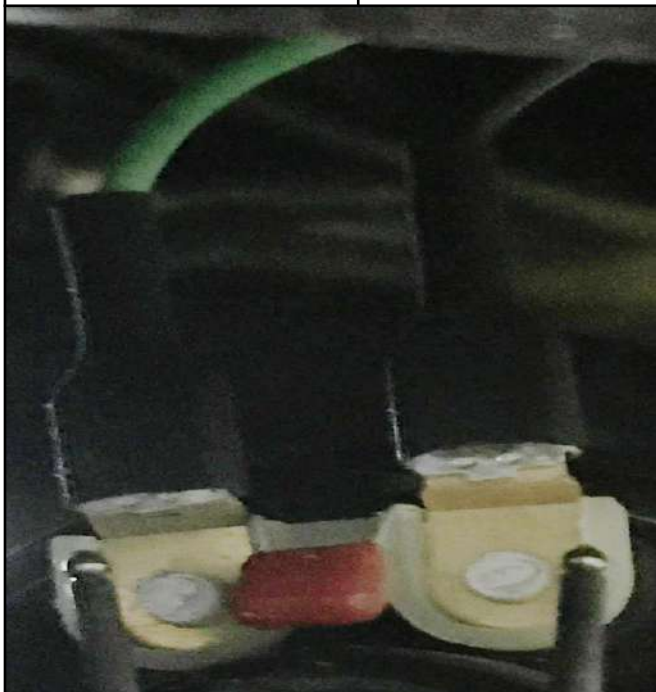
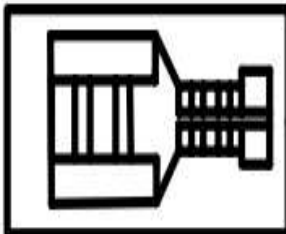
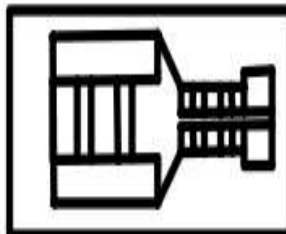
Step 3: Connect the connector to Check DC voltage between Yellow wire and Black wire on component side

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.



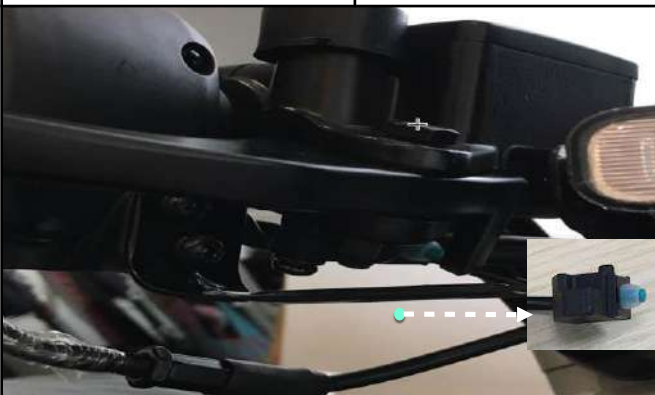
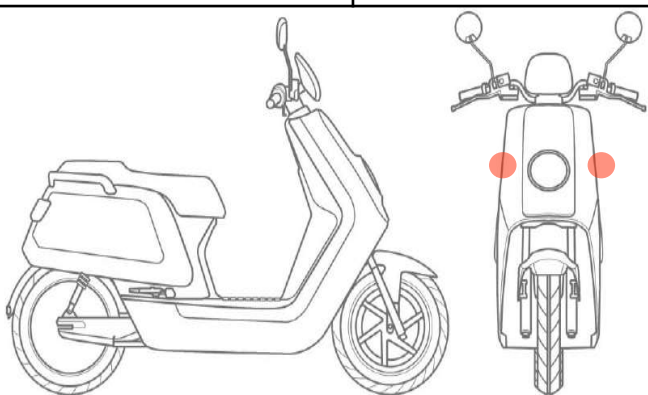

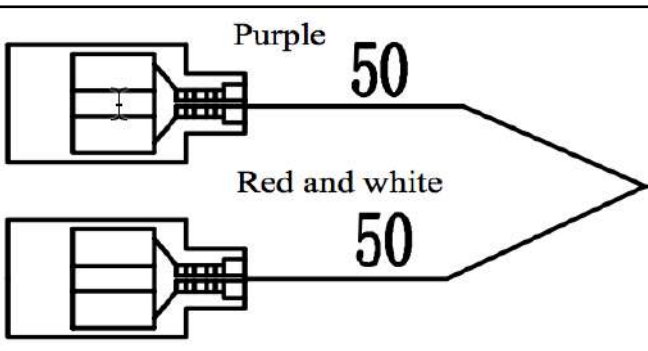


# Horn

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



# Brake Switch

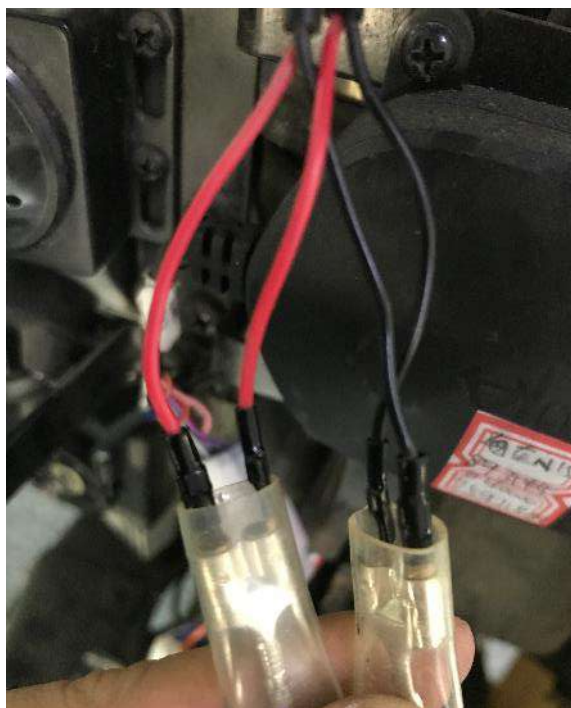
|  |                         |   |       |
|--|-------------------------|---|-------|
| Component Name   | Left/right brake Switch | Connector Code  | J16-B |
|   |                         |   |       |
| Disassembling order: Section 2>3   |                         |   |       |
| Connector Definition   |                         |   |       |
| 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)


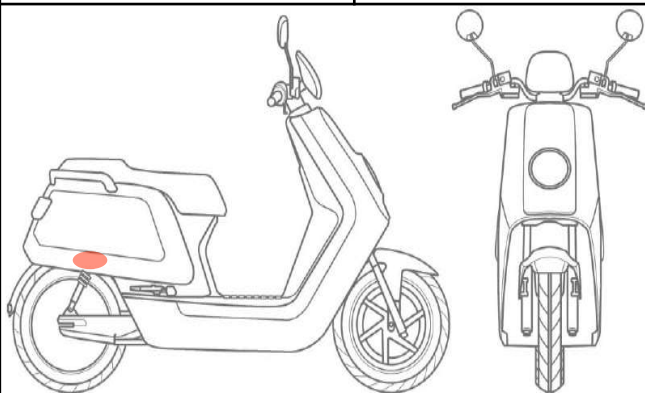
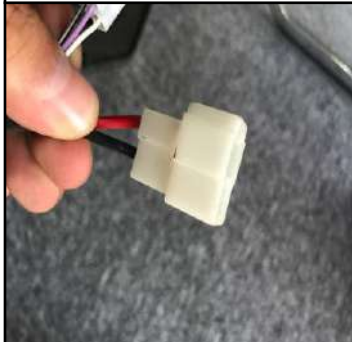
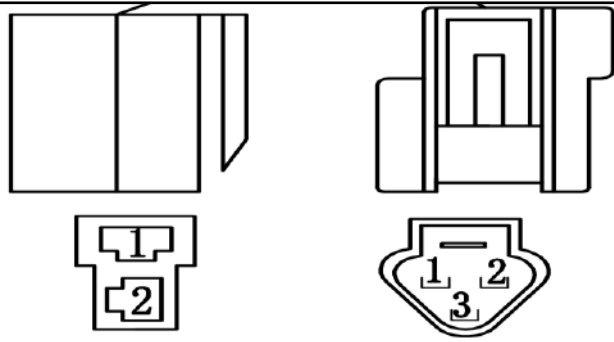

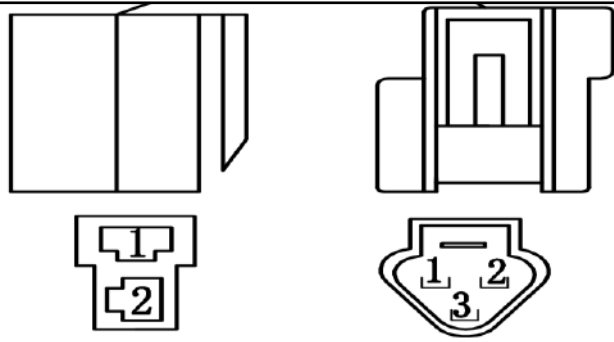

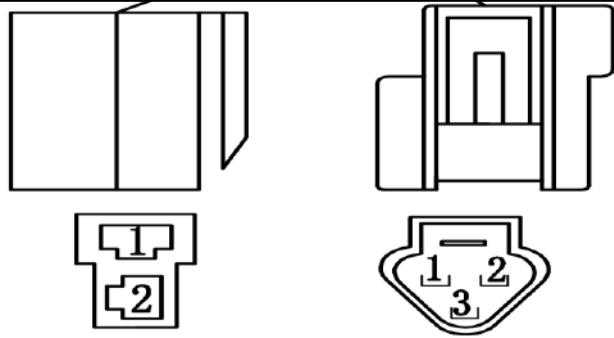

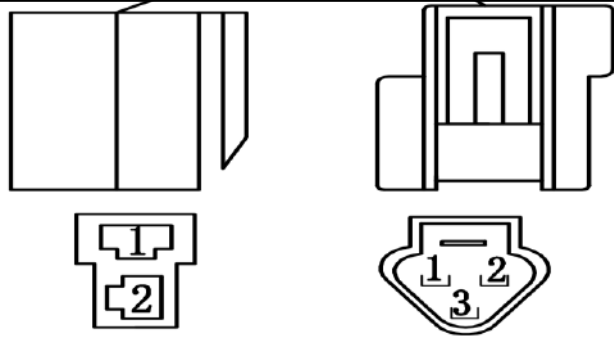
Step 1: Disconnect the Red and Black wires of the Brake Switch connector



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  |       |  |  |
|  |                 |  |       |  |  |
|  |                 |  |       |  |  |
|  |                 |  |       |  |  |
|  |                 |  |       |  |  |



## How to check Charging Port closed circuit (Ref: 029)

Step 1: Remove the Under Seat Storage Compartment and find the charging port connector


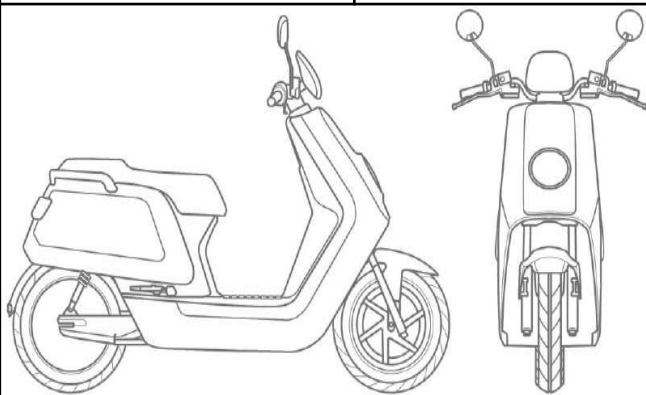
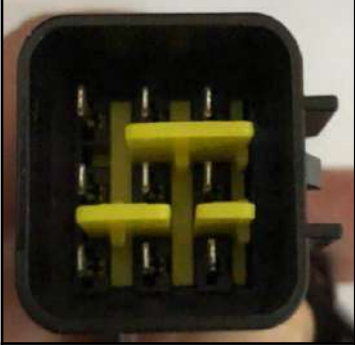

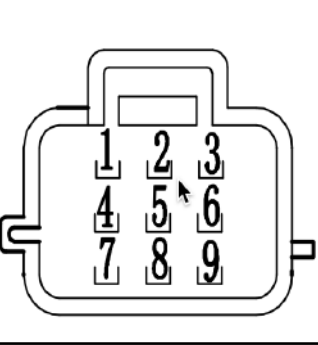
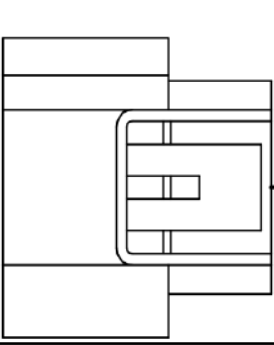
Step 2: Test closed circuit between Positive side in the seat storage and the component side

Step 3: Multimeter should beep if Charging port working normally





## Dashboard

| Component Name  | Display Assembly  | Connector Code   | J6-A  |
|---|---|--|---|
|    |   |  |     |
| Disassembling order: Section 2>3  |   |  |   |
| Connector Definition  |   |  |   |
| PIN   | Color   | Definition   |   |
| 1   | Red and white   | Power cord (12V)   |   |
| 2   | Light blue  | Right turn lamp  |   |
| 3   | White and grey  | Communication A  |   |
| 4   | Black   | Negative electrode   |   |
| 5   | Blue  | High beam  |   |
| 6   | Violet and gray   | Communication B  |   |
| 7   | Yellow  | Left turn lamp   |   |
| 8   | Pink  | Ignition signal  |   |
| 9   | Black and white   | Earth 485  |   |
|  |  |  |  |





## Dashboard

NGT 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.



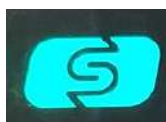
## Status in Charging







## 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



## About the color vary of the display





## About the color vary of the display

0 70 10      255 255 150

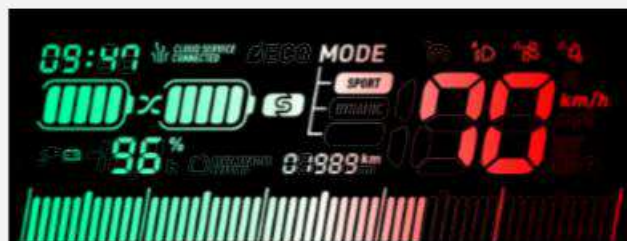


电量 81~100%

速度 45 km/h

255 255 255

255 0 0



电量 81~100%

速度 70 km/h

0 70 10

255 255 150



电量 21~80%

速度 45 km/h

255 255 255

255 0 0



电量 21~80%

速度 70 km/h

100 0 30

255 255 150



电量 0~20%

速度 45 km/h



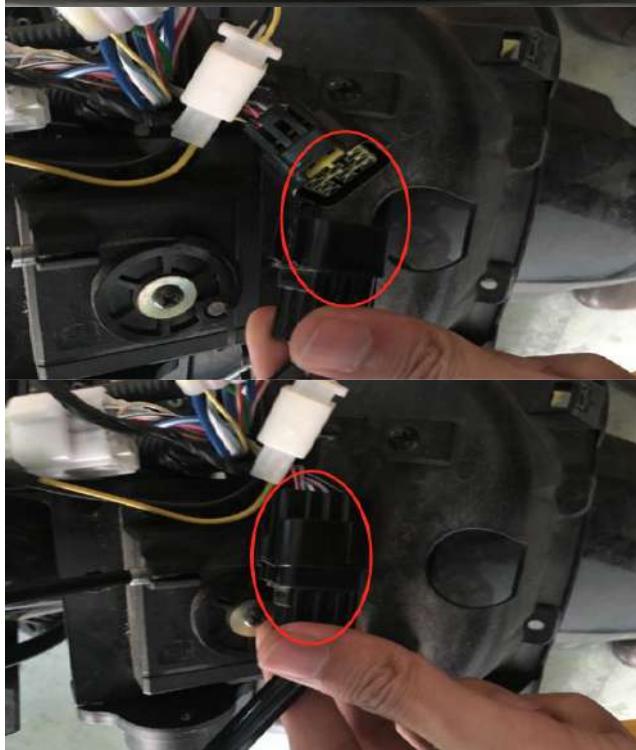
## How to replace Display (Ref: 006)

Display

1. Disconnect the battery first then  
Unscrew three Hexagon flange nuts



2. Disconnect the connector and replace a  
new one







# Diagnostic Code List

| Priority level | Fault Code | Definition  |
|----------------|------------|---|
| 1              | 121        | BCS MOSFET damaged                                  |
| 2              | 138        | Battery 1 MOS transistor damaged                    |
| 3              | 136        | Battery 1 drop in water                             |
| 4              | 135        | Battery 1 short-circuit protection warning          |
| 5              | 134        | Battery 1 open circuit or imbalance warning         |
| 6              | 158        | Battery 2 MOS transistor damaged                    |
| 7              | 156        | Battery 2 drop in water                             |
| 8              | 155        | Battery 2 short-circuit protection warning          |
| 9              | 154        | Battery 2 open circuit or inbalance warning         |
| 10             | 31         | Battery 1 charging over-current protection warning  |
| 11             | 51         | Battery 2 charging over-current protection warning  |
| 12             | 130        | Battery 1 over-discharge protection warning         |
| 13             | 150        | Battery 2 over-discharge protection warning         |
| 14             | 132        | Battery 1 over-heat protection warning              |
| 15             | 152        | Battery 2 over-heat protection warning              |
| 16             | 133        | Battery 1 low-temp protection warning               |
| 17             | 153        | Battery 2 low-temp protection warning               |
| 18             | 131        | Battery 1 discharge over-current protection warning |
| 19             | 151        | Battery 2 discharge over-current protection warning |
| 20             | 110        | Controller power fault                              |
| 21             | 120        | Motor fault   |
| 22             | 140        | Throttle twist fault                                |
| 23             | 183        | Fast charging power short-circuit protection        |
| 24             | 10         | FOC controller Locked rotor                         |
| 25             | 11         | FOC controller undervoltage or overvoltage          |
| 26             | 12         | FOC controller over-current                         |
| 27             | 13         | FOC controller over-heart                           |
| 28             | 22         | BCS over-heart                                      |
| 29             | 23         | BCS low-temp  |
| 30             | 30         | Battery 1 over-charge protection warning            |
| 31             | 50         | Battery 2 over-charge protection warning            |
| 32             | 80         | Fast charger power temp protection                  |





|    |     |  |
|----|-----|--|
| 33 | 81  | Fast charger power over-voltage protection         |
| 34 | 82  | Fast charger power over-current protection         |
| 35 | 67  | ECU no network or lack credit                      |
| 36 | 65  | ECU no SN for recognition                          |
| 37 | 191 | Battery 1 communication fault                      |
| 38 | 192 | Battery 2 communication fault                      |
| 39 | 190 | FOC controller Communication fault                 |
| 40 | 194 | BCS communication fault                            |
| 41 | 99  | Main harness issue                                 |
| 42 | 161 | Remote lock  |
| 43 | 111 | FOC controller verification failed                 |
| 44 | 60  | Communication module failure. Sim cannot recognize |



# Error codes of batteries and BCS



|   | Battery-1 | Battery-2 |
|---|-----------|-----------|
| MOSFET Damaged                            | 138       | 158       |
| Drop in water                             | 136       | 156       |
| Short Circuit protection warning          | 135       | 155       |
| Open Circuit or imbalance warning         | 134       | 154       |
| Charging over-current protection warning  | 31        | 51        |
| Discharge over-current protection warning | 131       | 151       |
| Over-charge protection warning            | 30        | 50        |
| Over-discharge protection warning         | 130       | 150       |
| Over-heat protection warning              | 132       | 152       |
| Low-temp protection warning               | 133       | 153       |
| Communication Failure                     | 191       | 192       |

| Fault                        | BCS |
|------------------------------|-----|
| MOSFET Damaged               | 121 |
| Over-heat protection warning | 22  |
| Low-temp protection warning  | 23  |
| Communication Failure        | 194 |

Troubleshooting: Use fine related charger and correct batteries to related scooters.

Discharge Temperature: -20°C-70°C  
Charge Temperature: 0°C-55°C

Over current protection in Charge and Discharge

Voltage protection in Charge and Discharge

Temperature protection in Charge and Discharge

Troubleshooting: For communication and mosfet failure ,please replace BMS or BCS.



# Error codes of Fast Charger

| Fault                    | Fast Charger |
|--------------------------|--------------|
| Short-circuit protection | 183          |
| Temperature protection   | 80           |
| Over voltage protection  | 81           |
| Over current protection  | 82           |

Troubleshooting: Please use it in right environment and charge the related batteries. If it still reports error, please replace the charger.



# Error codes related FOC Controller

| Fault                           | Fast Charger |
|---------------------------------|--------------|
| Motor locked rotor              | 10           |
| FOC undervoltage or overvoltage | 11           |
| FOC over current                | 12           |
| FOC over temperature            | 13           |

Trouble shooting: Please try to re-plug battery and re-plug FOC connector. If it is still error, please replace FOC.

|                       |     |
|-----------------------|-----|
| FOC power fault       | 110 |
| FOC verification fail | 111 |

Trouble shooting: Please try to re-plug battery and re plug FOC connector. If it is still error, please replace FOC.

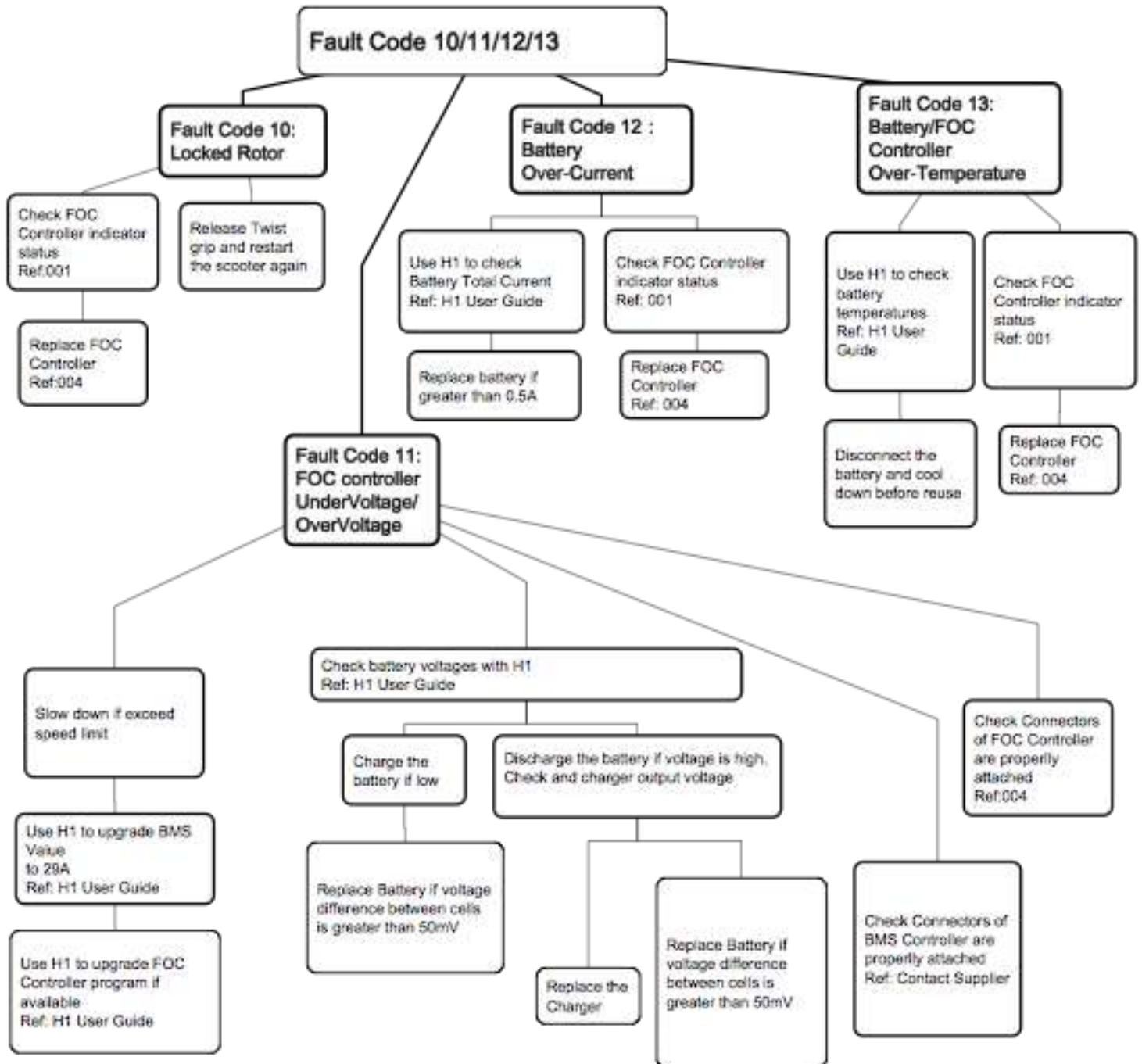
|                  |     |
|------------------|-----|
| Motor Hall Fault | 120 |
|------------------|-----|

Trouble shooting: Please try to re-plug battery and re plug FOC connector. If it is still error, please replace Motor.

|                         |     |
|-------------------------|-----|
| FOC communication error | 190 |
|-------------------------|-----|



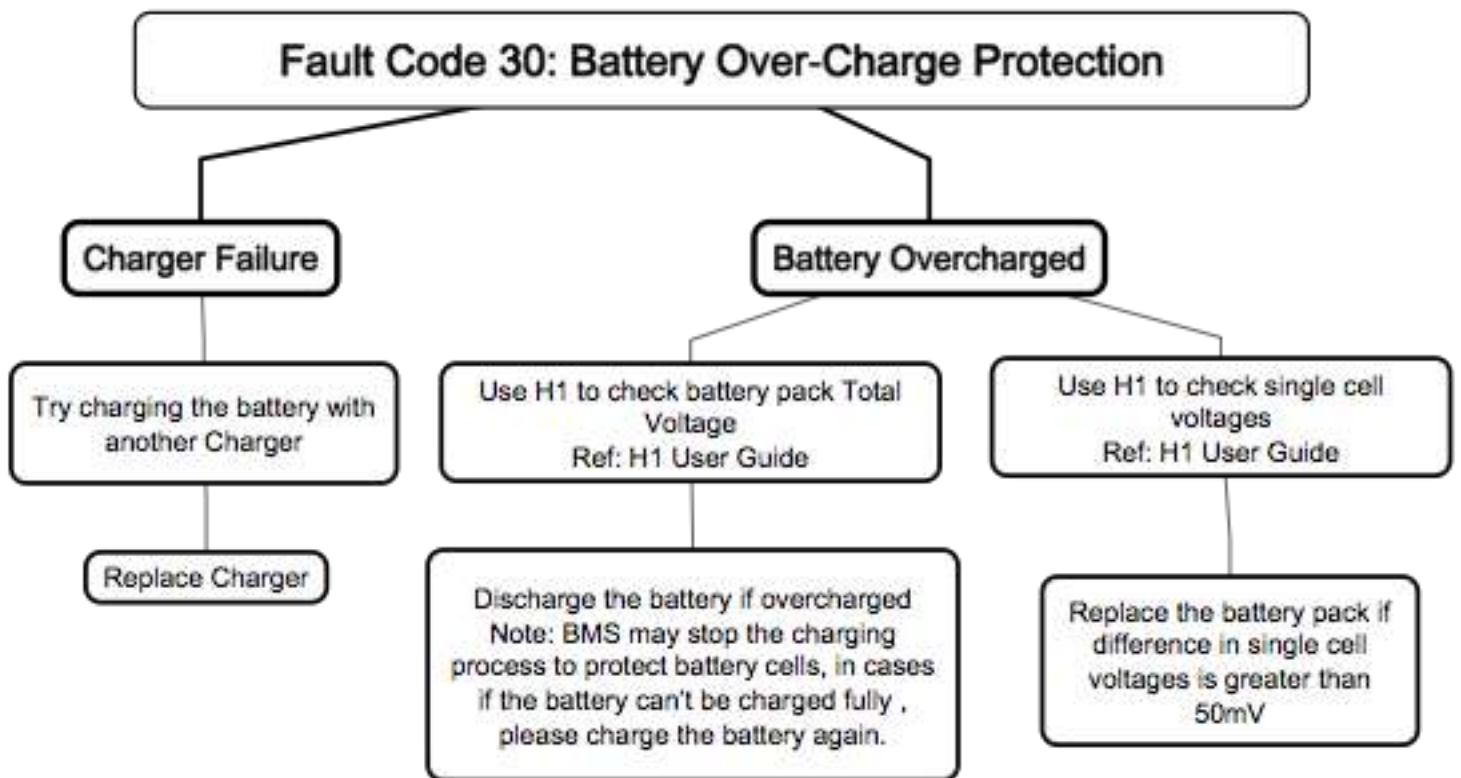
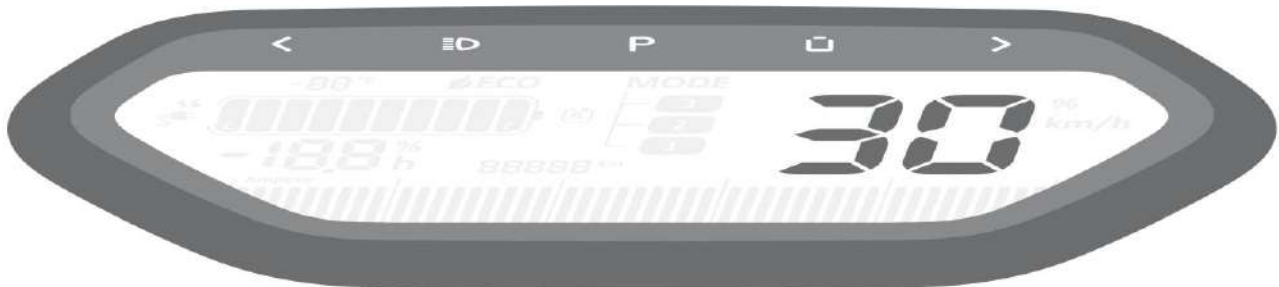
## Diagnostic Code - 10/11/12/13 on display





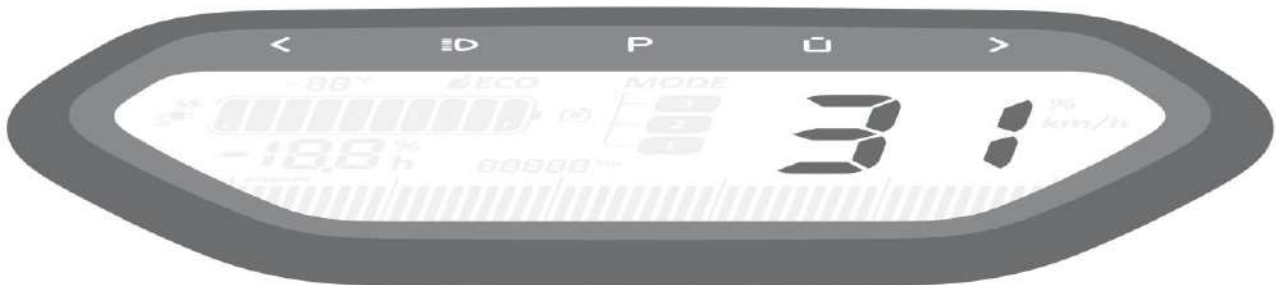


## Diagnostic Code - 30 on display





## Diagnostic Code - 31 on display



### Fault Code 31 Charing Over-Current Protection

Charger Failure

Try charging the battery with another  
Charger

Replace Charger

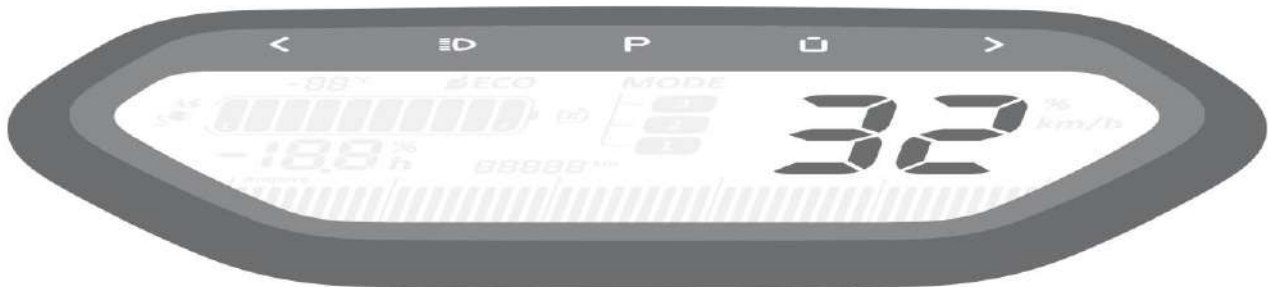
Slow down if exceed speed limit

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



## Diagnostic Code - 32 on display



### Fault Code 32 Charging Prohibited at Low Temperature

#### Battery temperature sensors failure

Use H1 to check Temperature sensors  
Ref: H1 User Guide

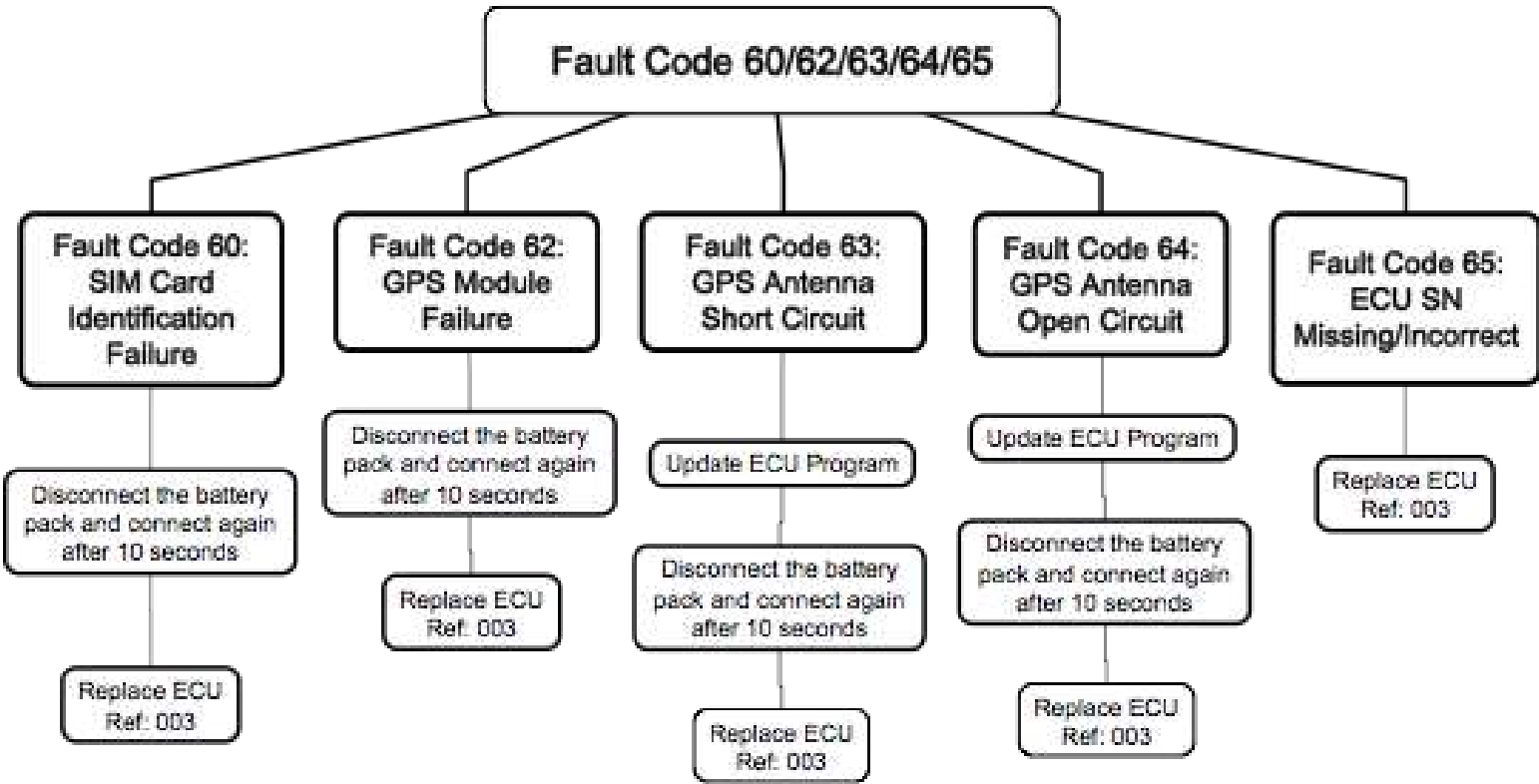
Replace the BMS if temperature is  
imbalanced  
Ref: Contact Supplier

#### Battery Temperature LOW ( below-20°)

Take the battery pack indoor  
until back to normal operating  
temperature

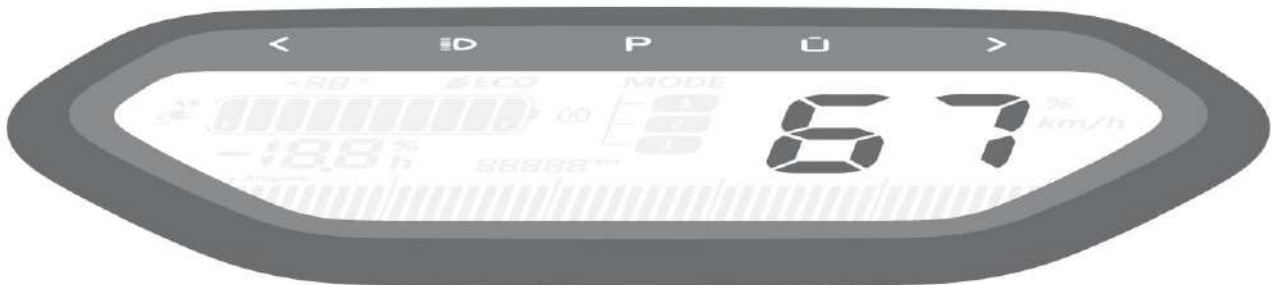


Diagnostic Code - 60/62/63/64/65 on display





## Diagnostic Code - 67 on display



### Fault Code 67 Data Service(SIM Card)Unpaid/Inactivated/Low Signal Strength

#### Renew Top-up App Data Service

Log into App and follow instructions

#### SIM Card Unpaid/Inactivated

Activate the SIM card  
Ref: please follow APP instruction

Update ECU program to Data  
Deactivated program to Cancel 67  
Warning Code  
Ref: H1 User Guide

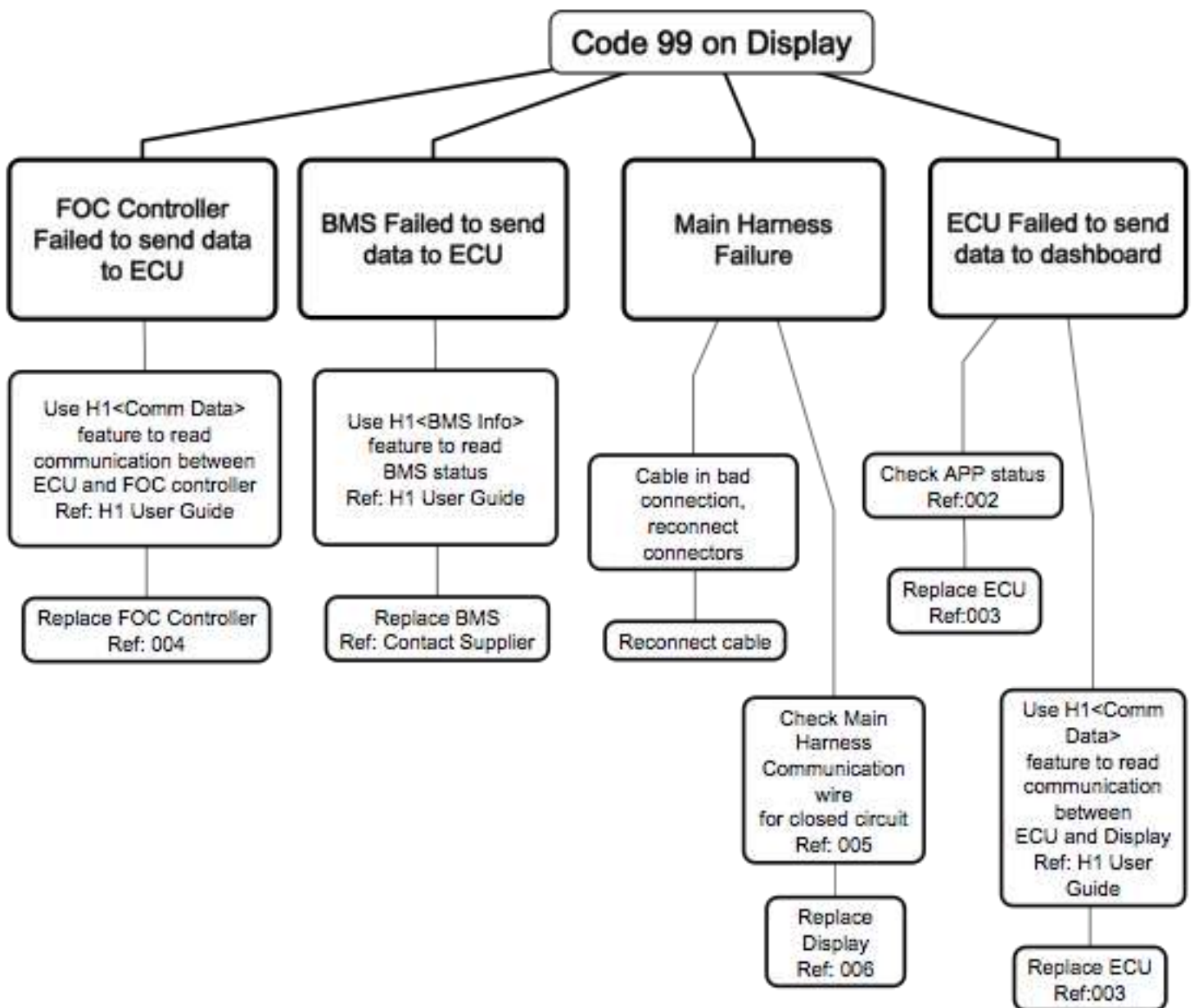
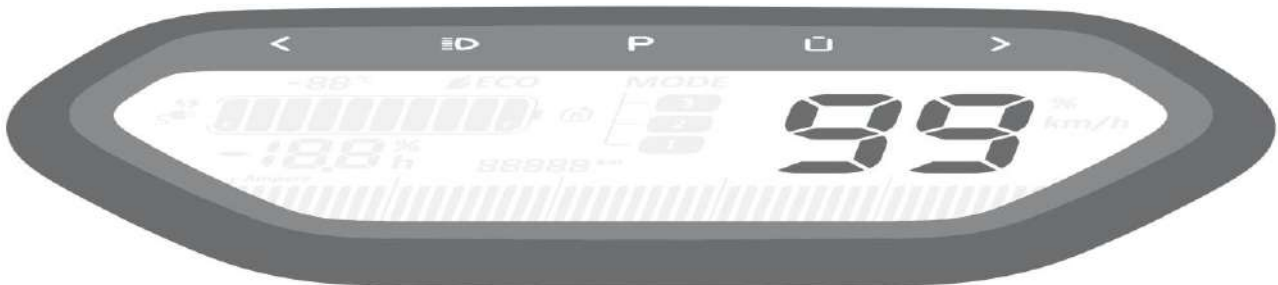
#### Use H1 to check Signal Strength Ref: H1 User Guide

Move the scooter to open ground and wait for 10 minutes for better signal reception



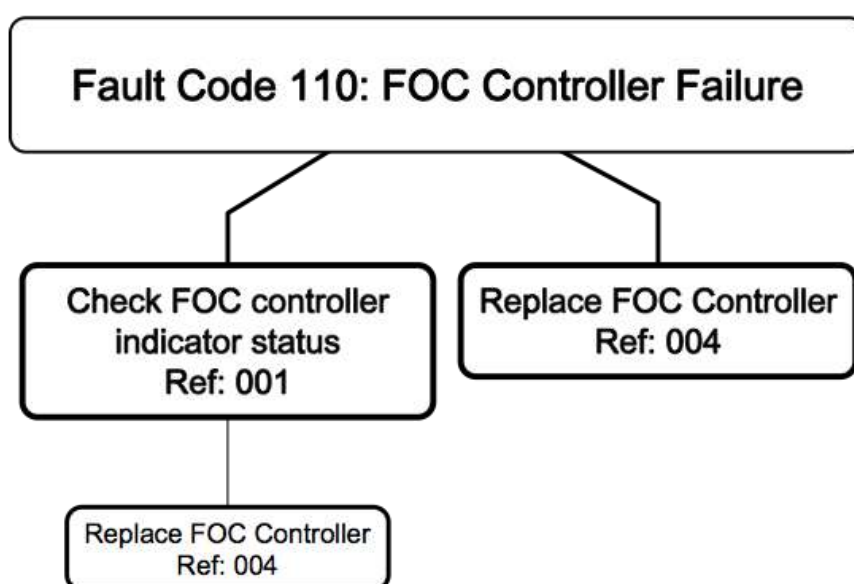


## Diagnostic Code - 99 on display



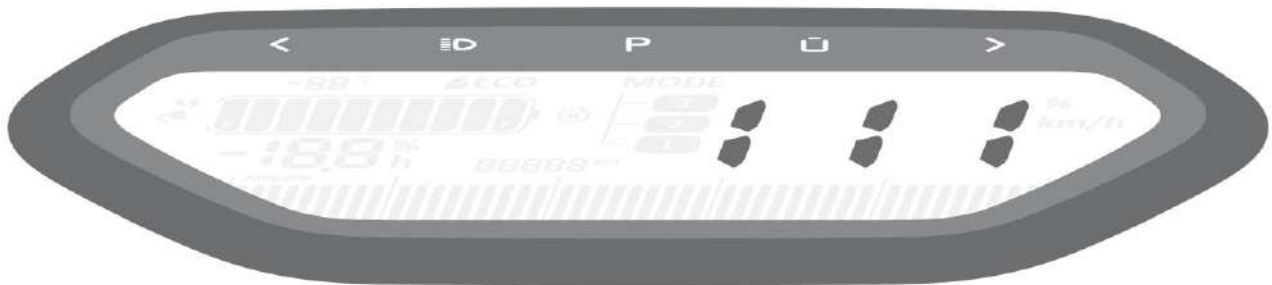


## Diagnostic Code - 110 on display

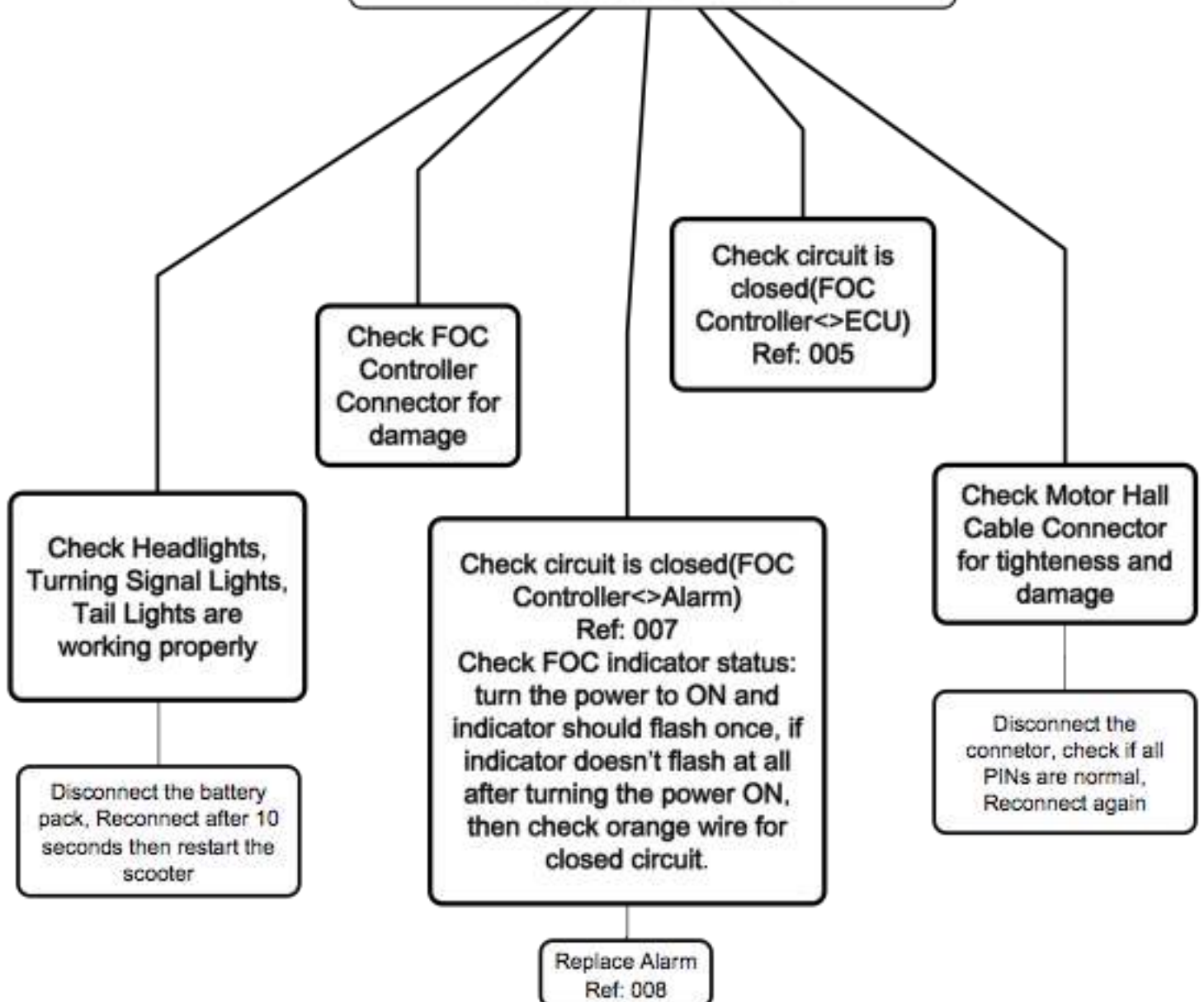




## Diagnostic Code - 111 on display

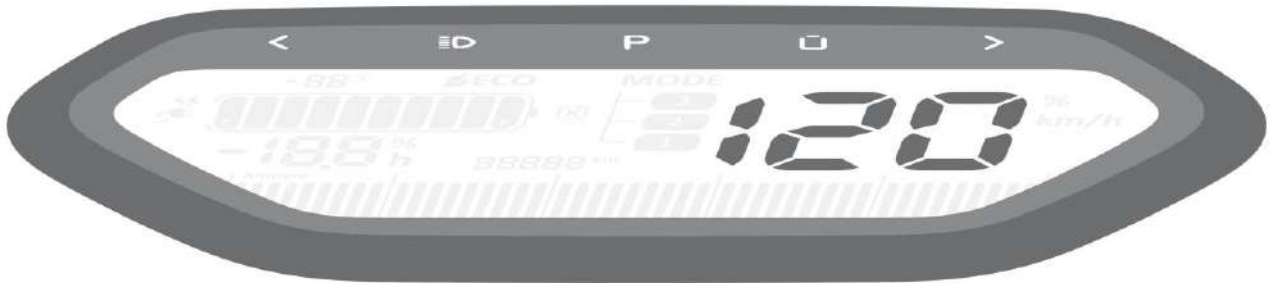


### Fault Code 111 FOC : Controller Verification Failure





## Diagnostic Code - 120 on display



### Fault Code 120 Motor Failure

Check FOC  
Controller  
Indicator status  
Ref: 001

Flashing Frequency: 5times  
Motor Hall sensor failed

Replace Motor  
Ref: 009

Flashing Frequency: 7times  
One or more phase cables  
missing

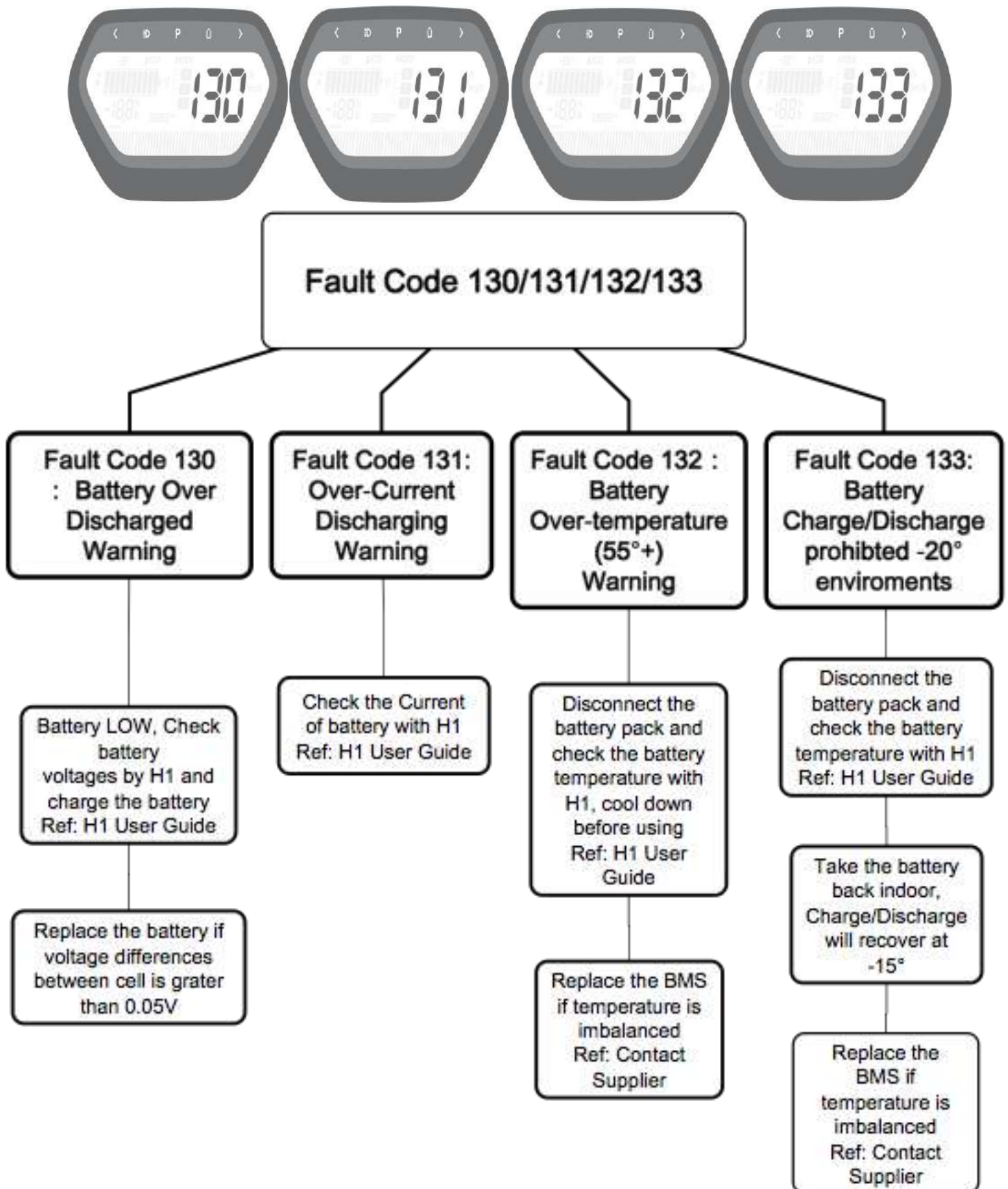
Replace Motor  
Ref: 009

Motor Hall cable in bad  
connection with FOC controller  
connector ( please check both  
connectors between FOC  
Controller and Motor)  
Please pay attention to vehicles  
produced before 12.2016 )

Disconnect the Motor Hall sensor  
cable and reconnect again



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



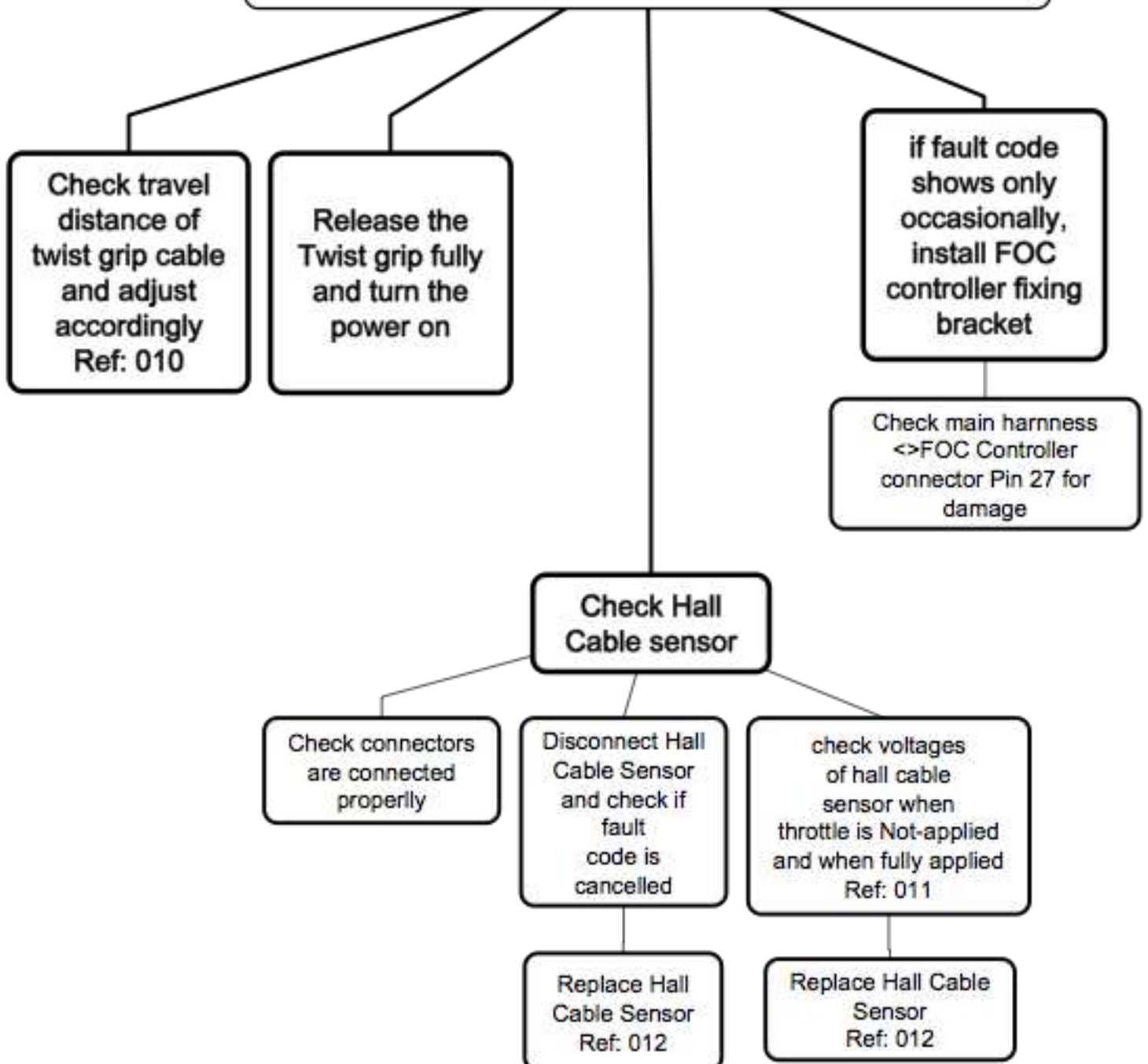




## Diagnostic Code - 140 on display

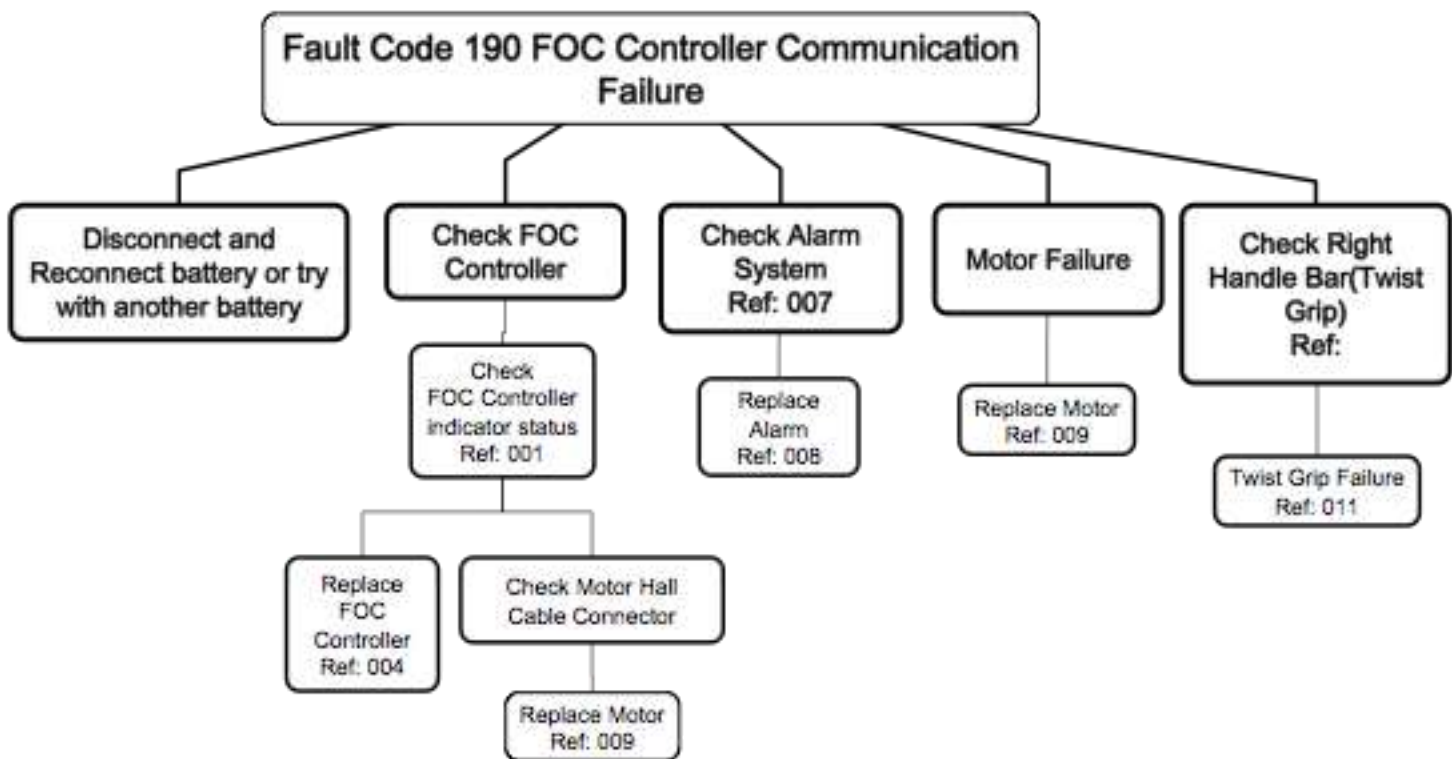


### Fault Code 140: Hall Cable Sensor Failure



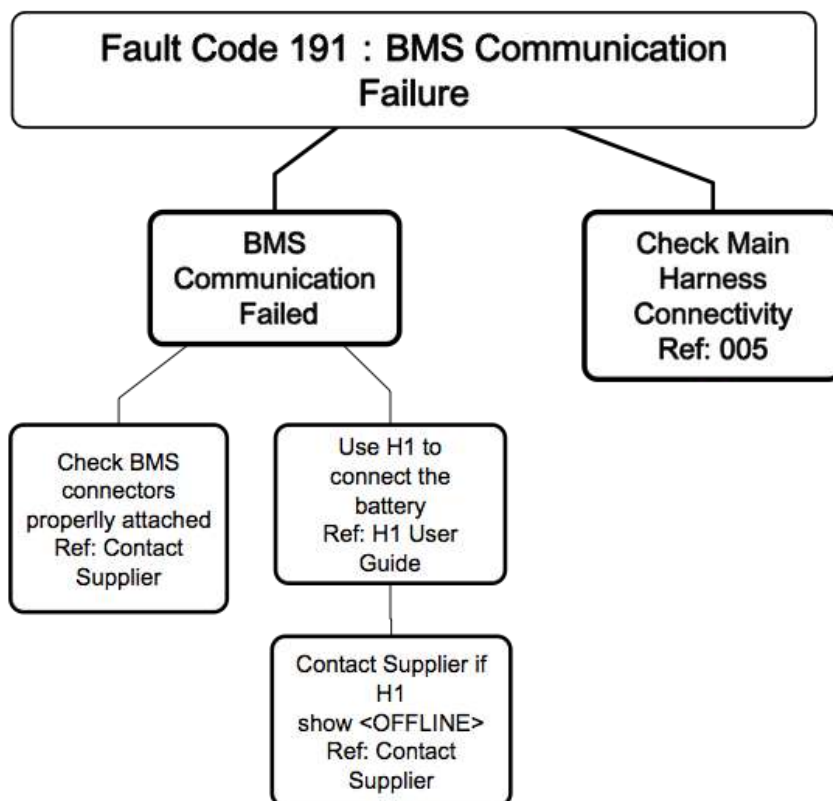
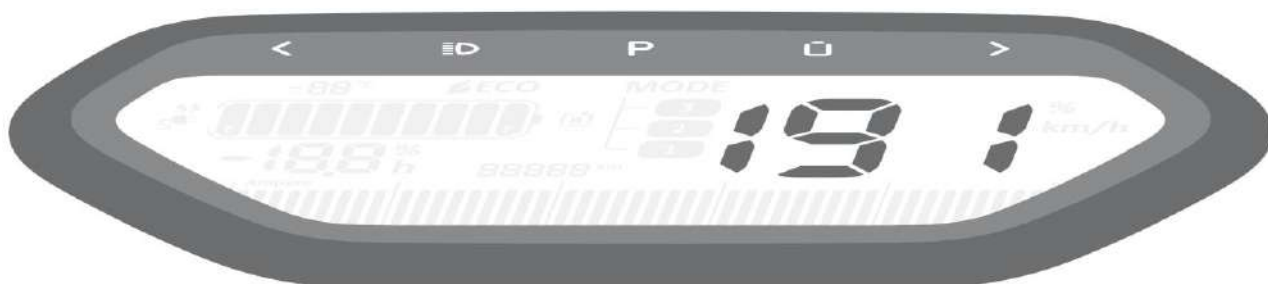


Diagnostic Code - 190 on display





## 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

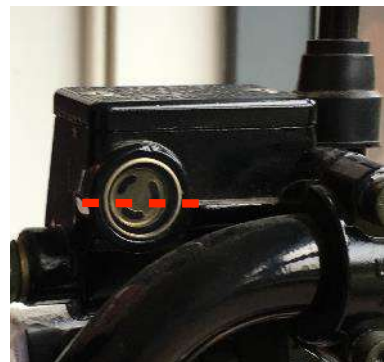
- Check the brake pads for wearing.
- The brake pad of a brake that has been worn to the extent indicated by the wearing limit indication groove should be replaced.
- The brake pads should be replaced in pair to ensure uniform pressure on the brake disc.

### 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.



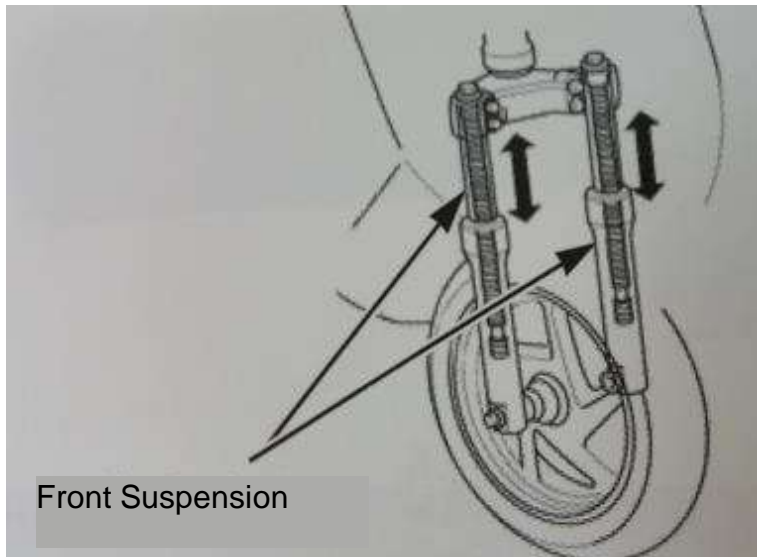


## Regular Maintenance Checklist

### Inspection of Suspension system

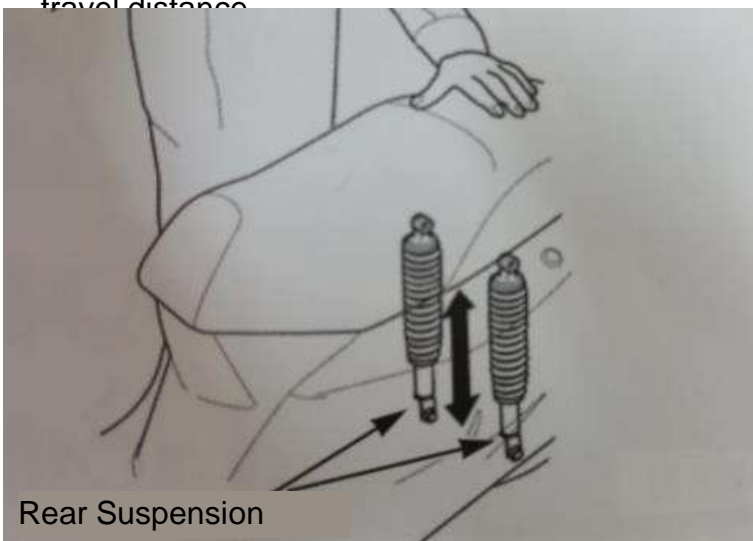
#### Front suspension

- 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.



#### 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.





## 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

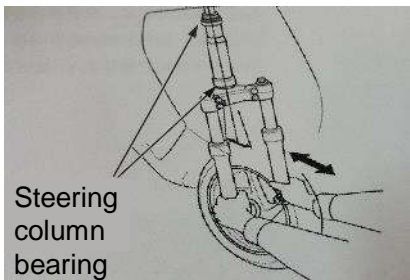
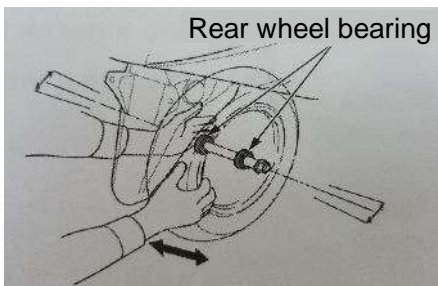
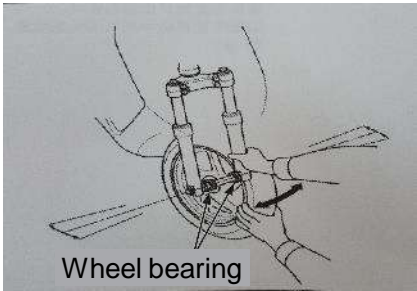
| Tightened section and fastener name                     | Tightening Torque (Nm) |
|---|------------------------|
| Installation screws on the front hydraulic brake plate  | 8Nm                    |
| Tightening bolts on the front shock absorber            | 28Nm                   |
| Tightening bolts 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

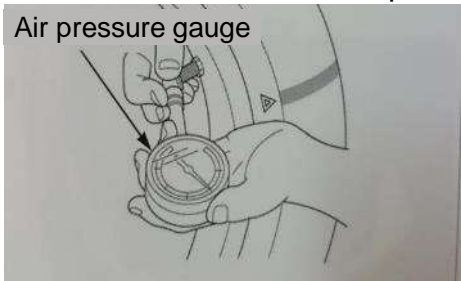
## Inspection of Wheels and Tires

- 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 | 20-25psi |
| Rear tire  | 26-32psi |



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

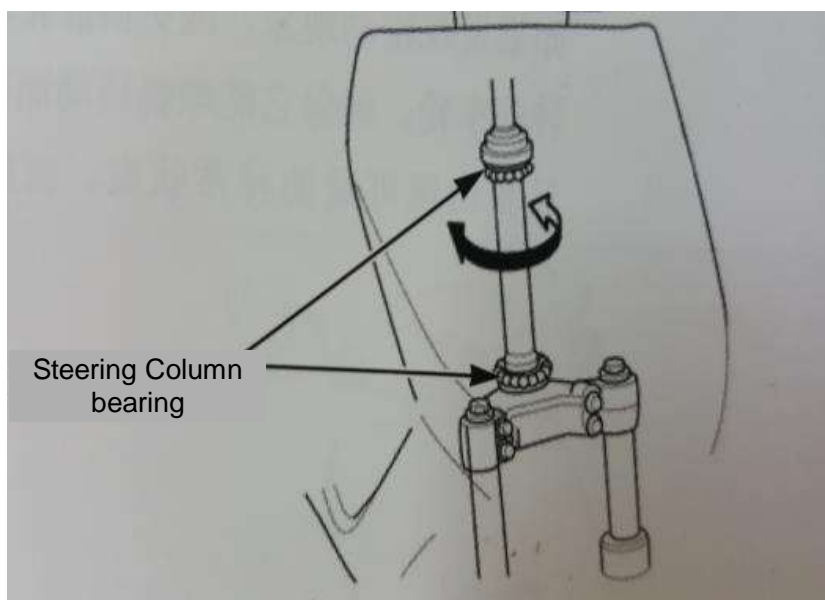




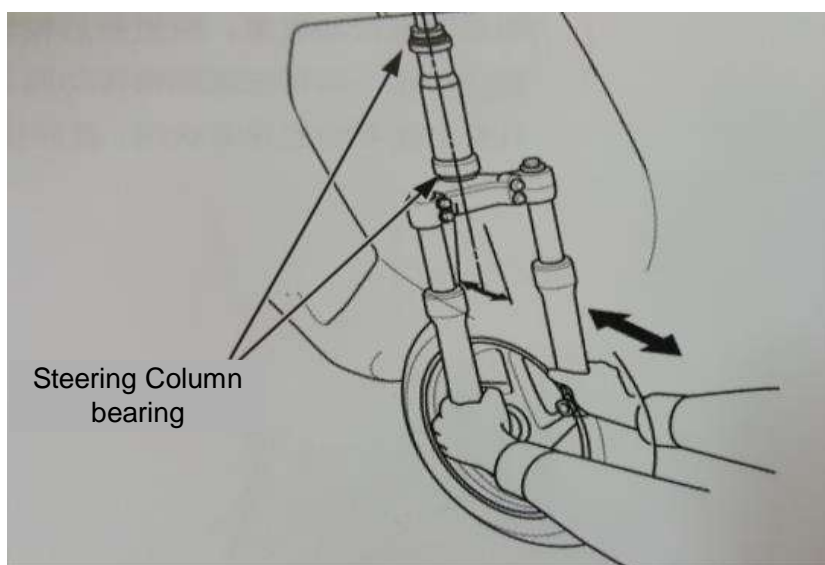
## Regular Maintenance Checklist

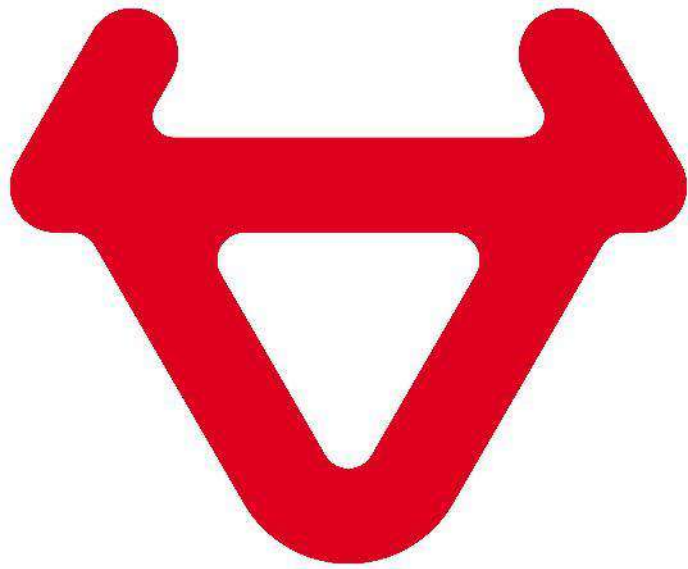
### Steering column bearing

- 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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