



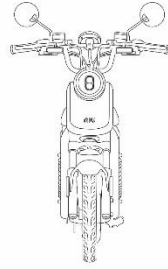
Service Manual

U Series Scooter

Updated on Nov 2018



Jiangsu Niu Electric Technology Co. Ltd





Foreword

Key points in maintenance of Niu U1 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 highly 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

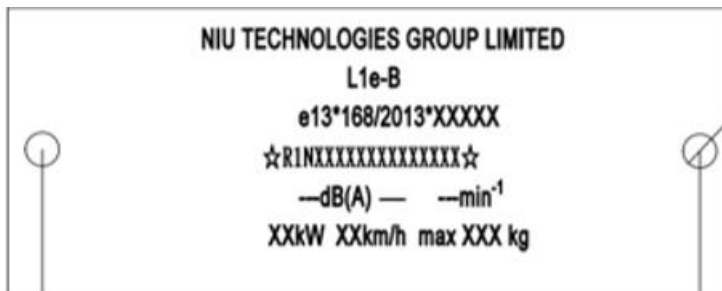
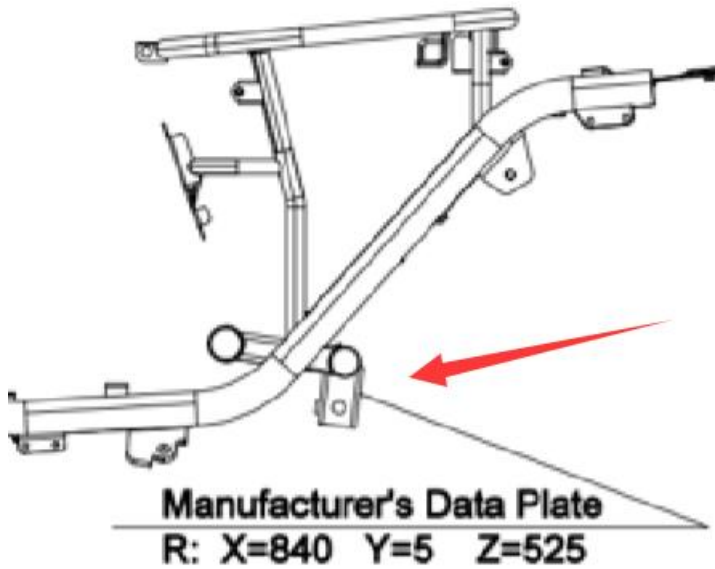


- The scooter frame identification code (VIN) is made on the below of the front central cover



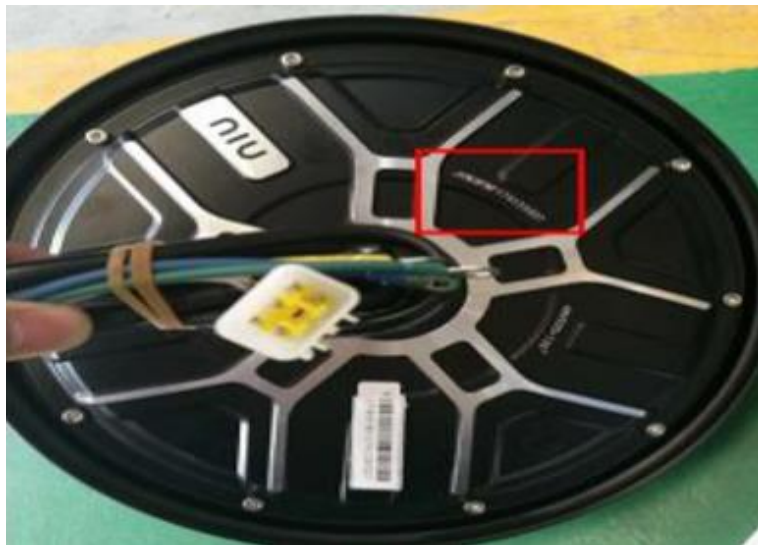


The Manufacturer's Data Plate is riveted above the side supports **at right side of the frame**



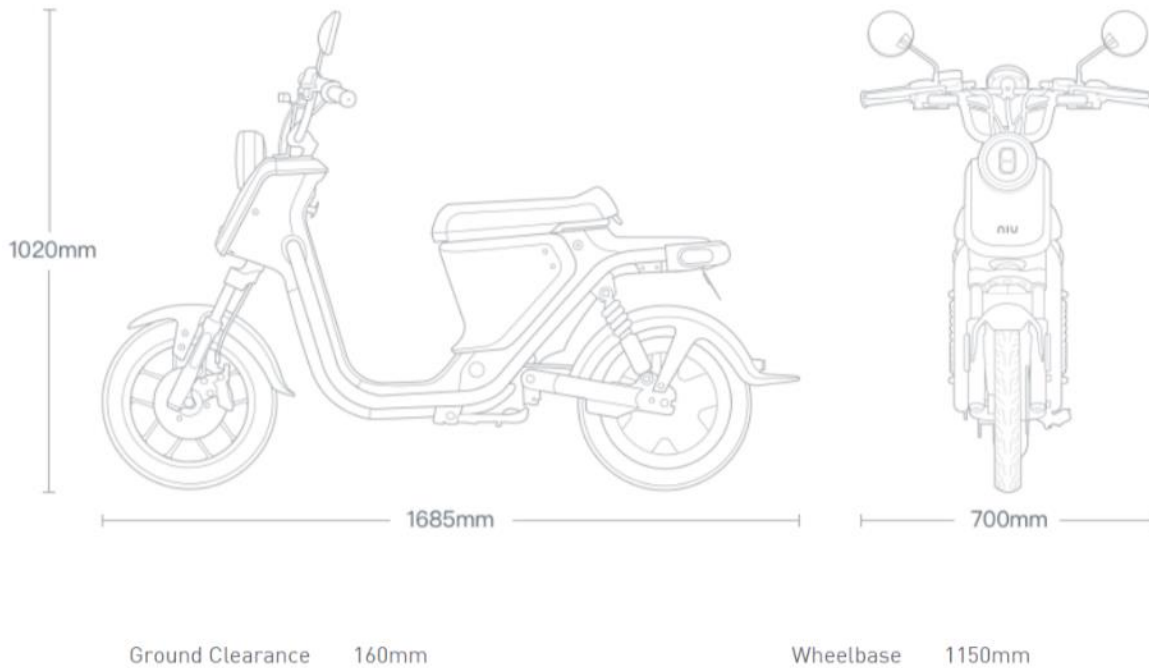


The motor code is made at left side of the wheel-hub motor.





Overall specifications



Item		Specifications
Dimensions	Length x width x height	1685*700*1020 mm
	Wheelbase	1150mm
	Complete vehicle kerb mass	52KG
	Ground clearance of the seat cushion	710mm
	Ground clearance	160mm
Frame	Type of the scooter frame	Truss Type
Tire	Specifications of the front tire	65/95-12
	Type of the front rim	1.5*12
	Air pressure of the front tire	250KPa
	Specification of the rear tire	65/95-12
	Type of the rear rim	1.5*12
	Air pressure of the rear tire	250KPa
Suspension	Front shock absorber	Oil Damping Direct Acting Shock Absorber
	Rear shock absorber	Oil Damping Direct Acting Shock Absorber
Brake	Type of the front brake	180 mm Dual-Piston Hydraulic Disk Brake
	Type of the rear brake	180 mm Dual-Piston Hydraulic Disk Brake



Specifications of the Power System

Item		Specifications
Motor	Motor type	Brushless permanent-magnet motor Tailored Motor by Bosch GmbH
	Controller type	Magnetic field oriented control FOC
	Rated voltage	DC48V
	Rated power	800W
	Maximum motor power	1500W
	Maximum motor torque	24N·m
Controller	Rated voltage	DC48V
	Undervoltage protection	
	Maximum current of the controller	30A

Specifications of the Battery and Charger

Item		Specifications
Battery	Type	Packed lithium battery
	Rated voltage	48V
	Rated capacity	21Ah
Charger	Rated output voltage	54.6V
	Rated output current	4.0±10%A/5.2±10%A



Specifications of the Braking System

Item	Standard value (mm)	Minimum Thickness(mm)
Diameter of the front brake disc	φ180mm	-
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 front brake disc	4.0	3.0
Thickness of the front brake pad	4.0	3.0

Breaking stopping distance : Dry state 1.3m (Measured results at 20km/h)
Wet state 1.7m (Measured results at 20km/h)

Specifications of the Lighting/Display/switch

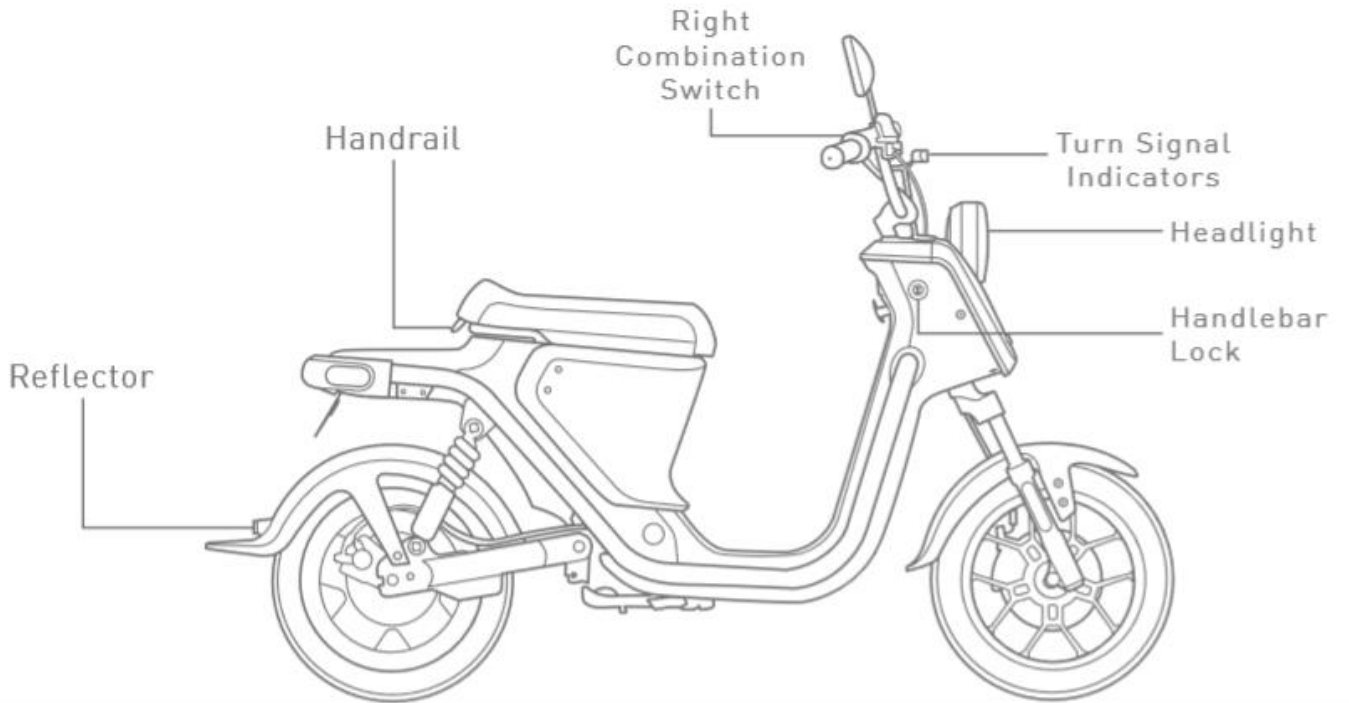
Electric system	
Item	Specifications
Front headlight	12V LED
Turn signal lamp	12V LED
Rear tail lamp	12V LED
Brake lamp	12V LED
Display	12V LCD
Central control unit(ECU)	12V
USB charging interface	5V/1A

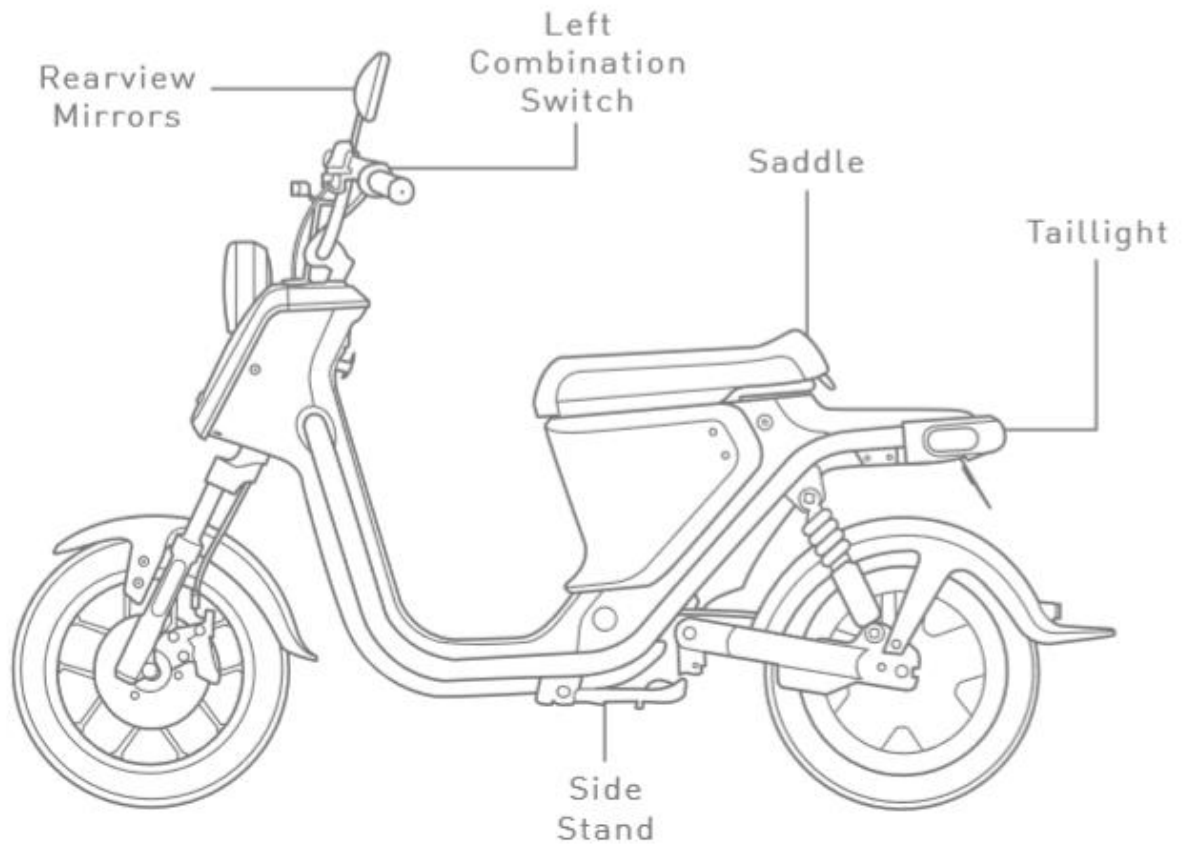


Part Names

Scooter body/scooter body panel

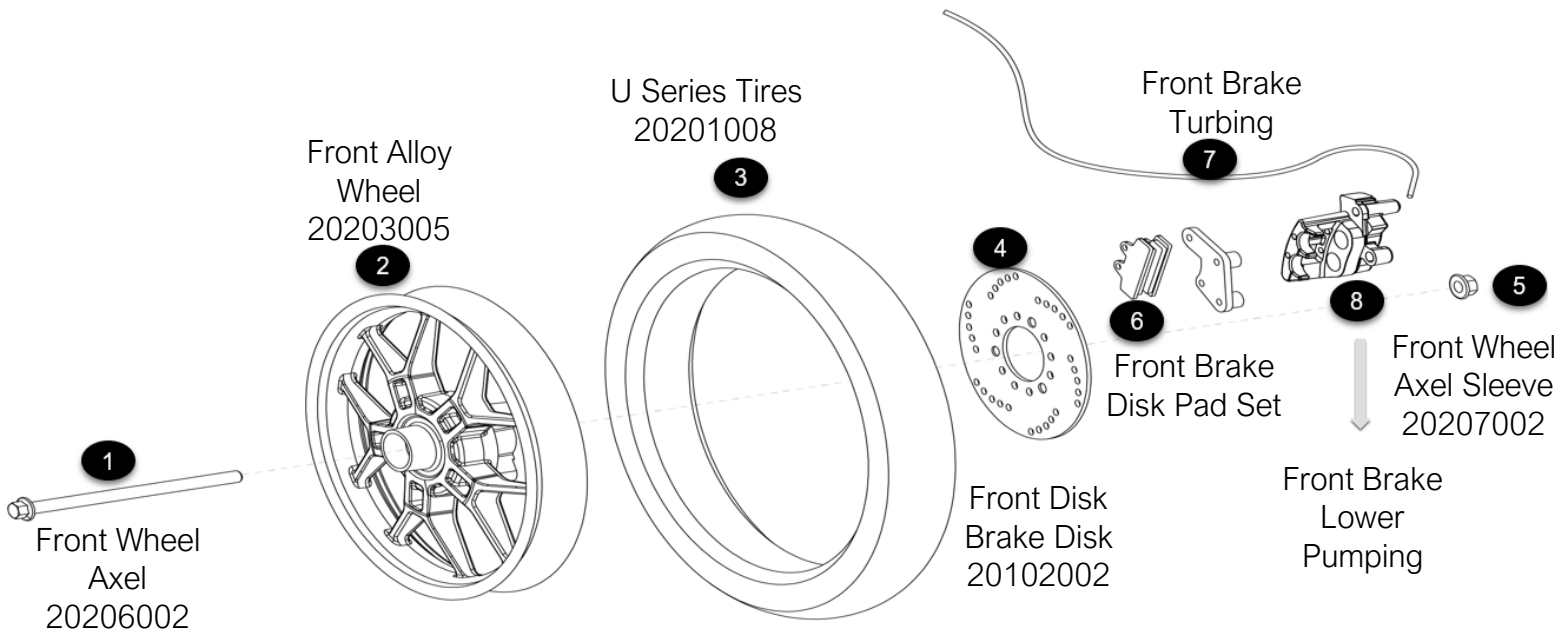
Parts Info





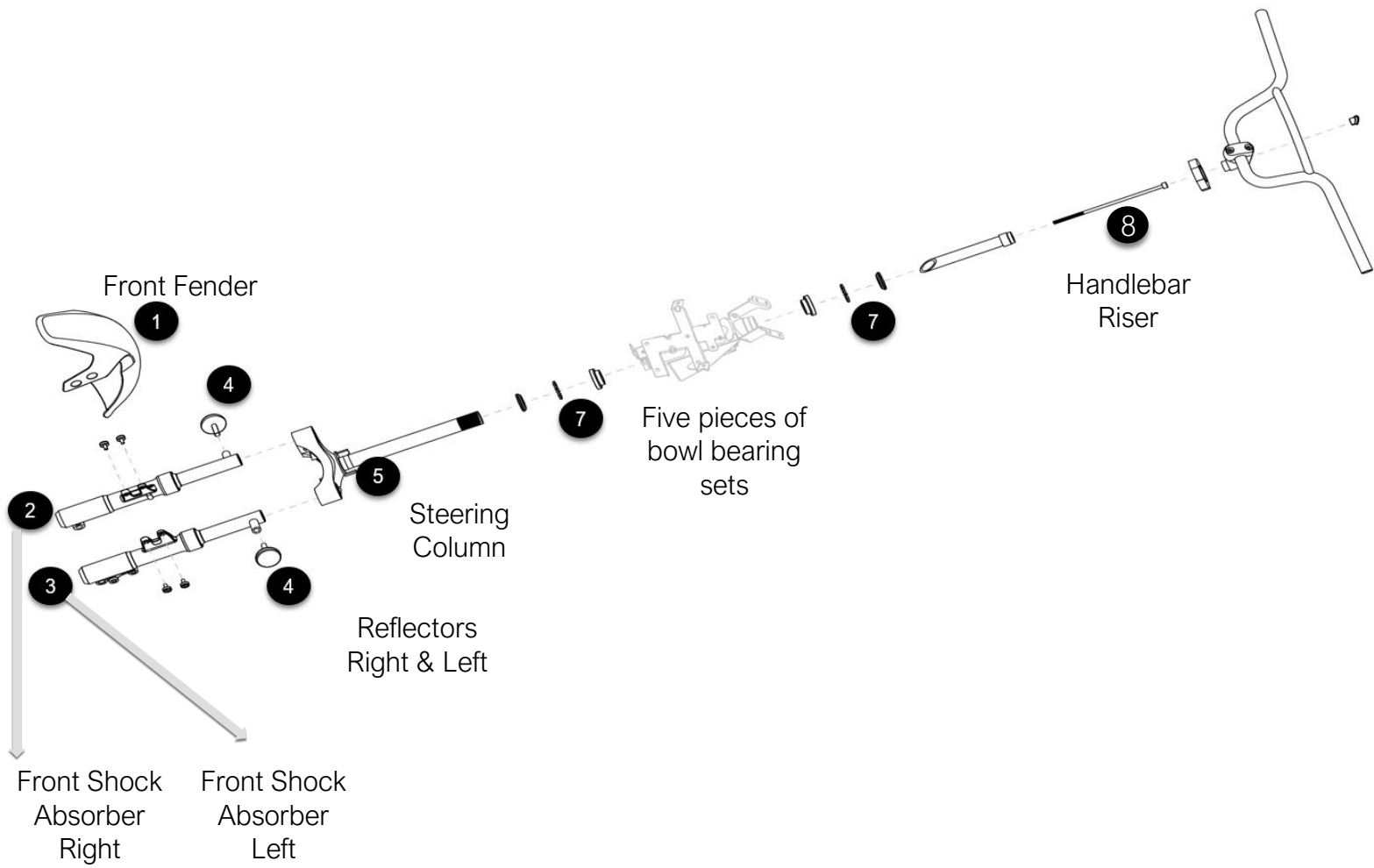


Front Wheel



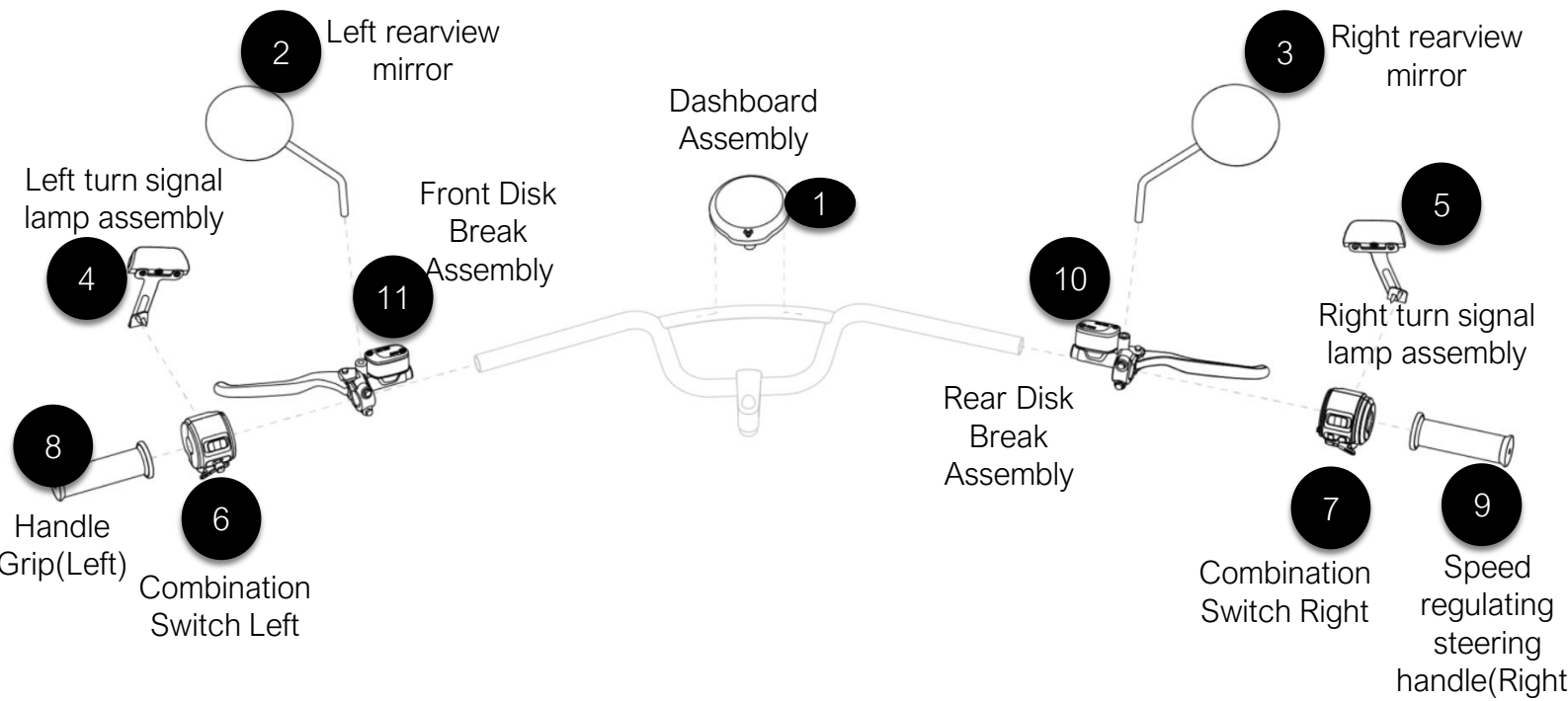


Front Fork



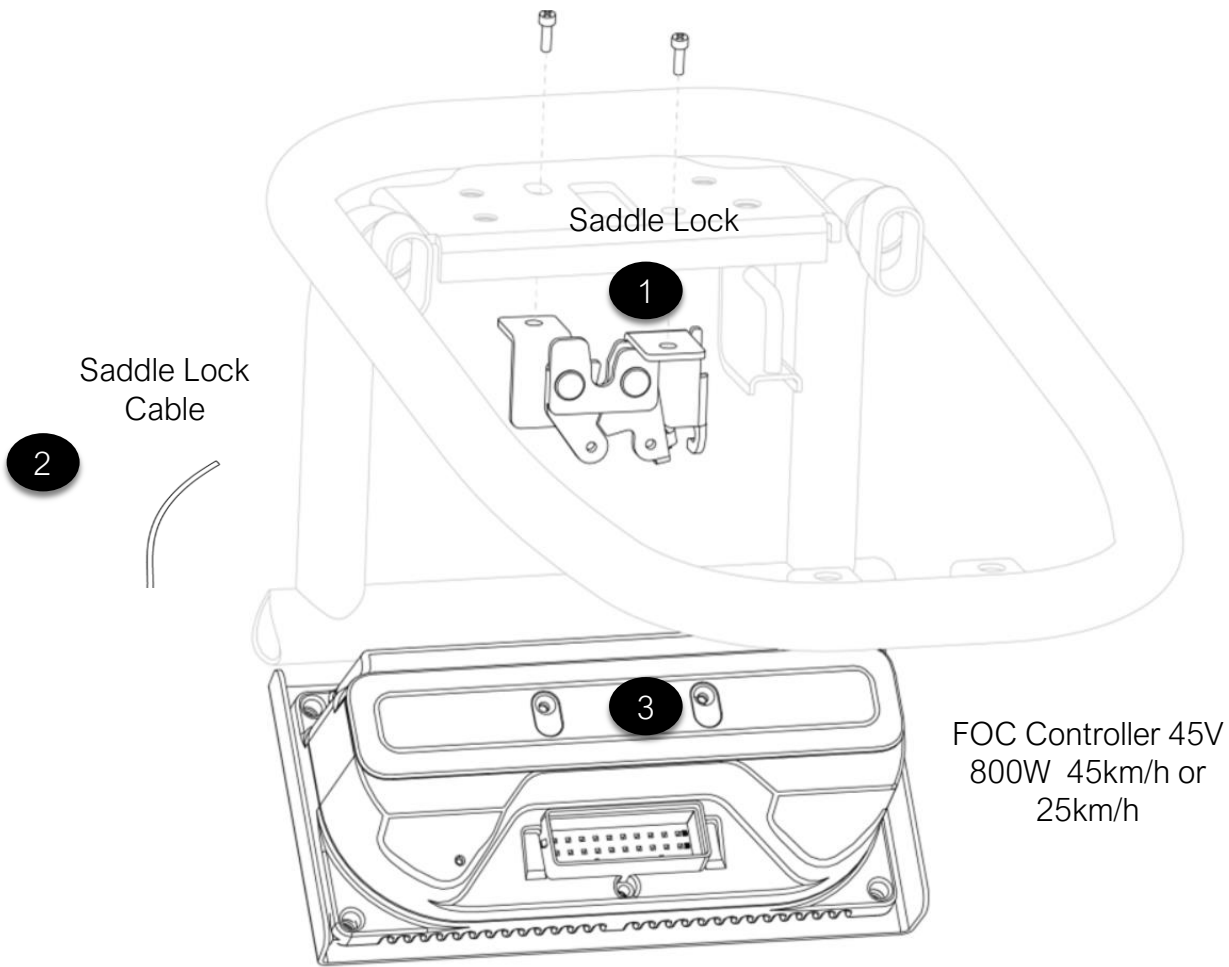


Handlebar Front



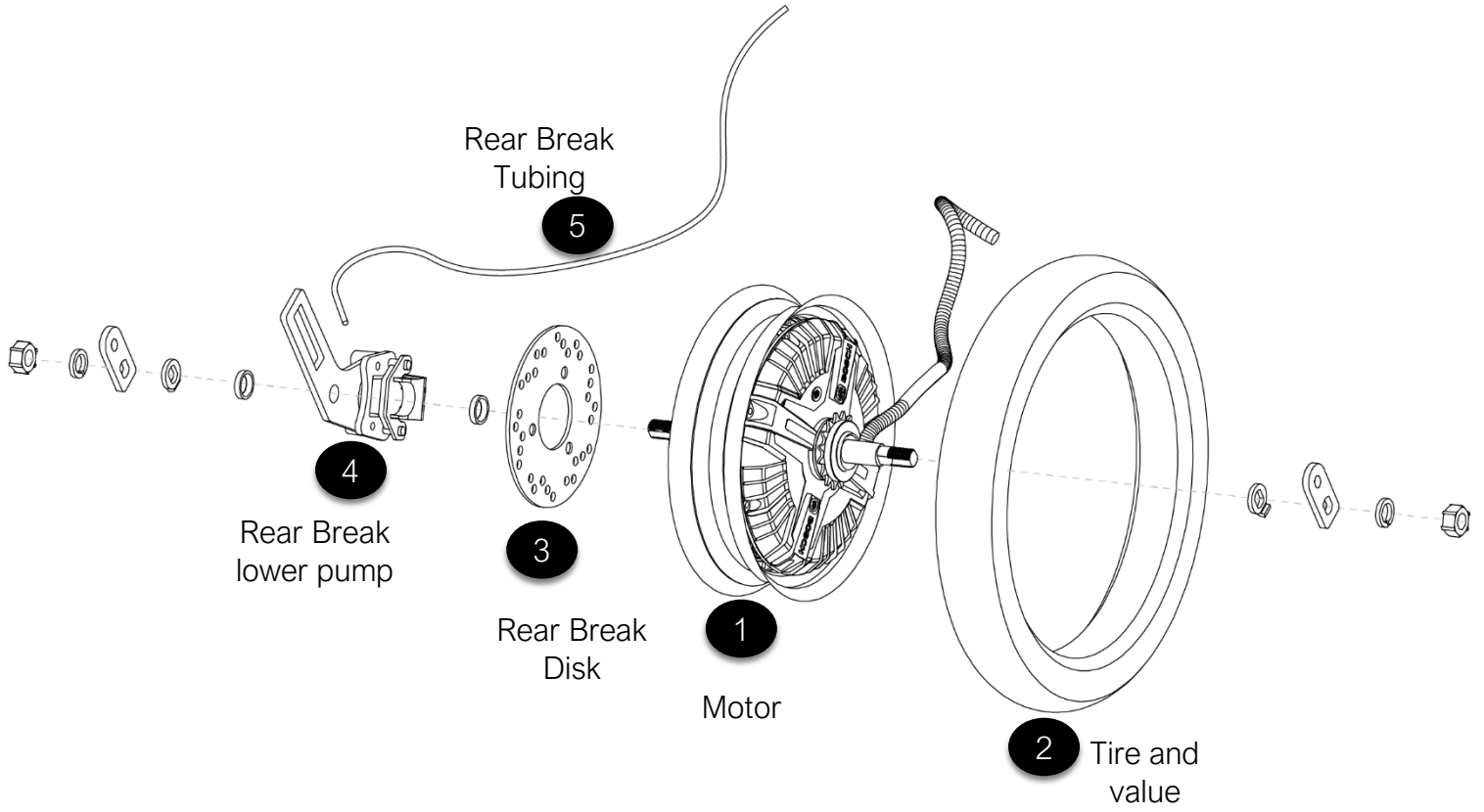


Rear Components



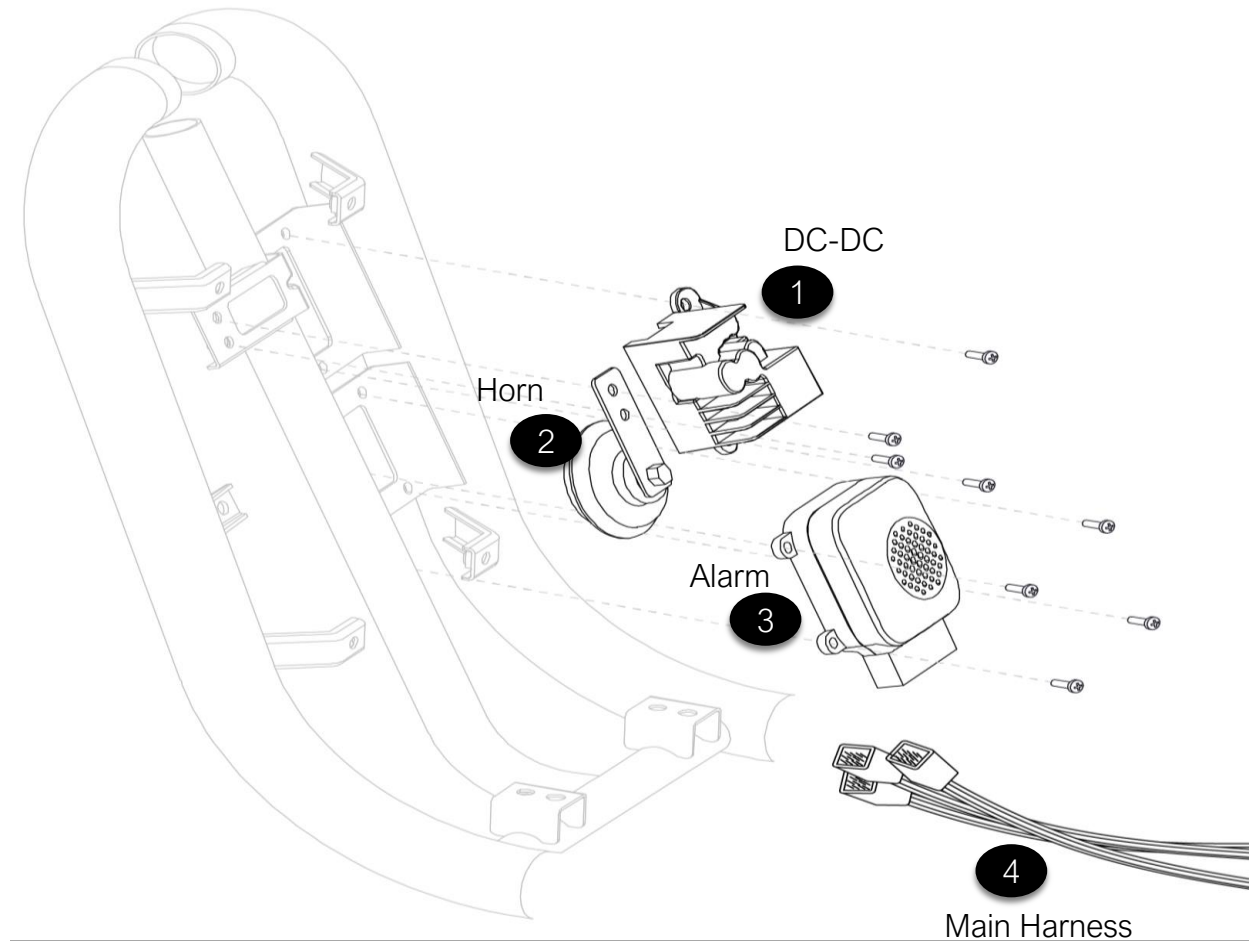


Rear Wheel





Electronic Components





Parts Dismount and Mount Procedure

Front Part : Neck Cap-Front Neck Cover-Front Panel- Front Headlight-ECU-DC to DC Converter- Left & Right Combination Switch-Dashboard assembly-Front Disk Brake-Steering Column-Handlebar Riser

Rear Part: Saddle Assembly-Helmet Bucket-Rear Armrest-FOC controller-Motor-Rear cover-Tail light assembly-Rear bottom cover-Body panel decorative cover-Body panel-Footrest-Front central cover assembly-Alarm-Horn-Front panel left and right-Bottom panel front-Bottom panel middle-Bottom panel rear-Rear Fender-Rear swing arm

You can dismount separately: Front Fender, Front rim, Front shock absorber, Rear shock absorber, Side stand



Parts Dismount and Mount Procedure

Procedures for removal and installation of scooter body panels are described in this section.

The ignition switch must be turned to OFF before disconnection or connection of Electric Units.

And disconnect the scooter battery then turn on switch again to let the rest charge go.

Finally turn off the switch.

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.

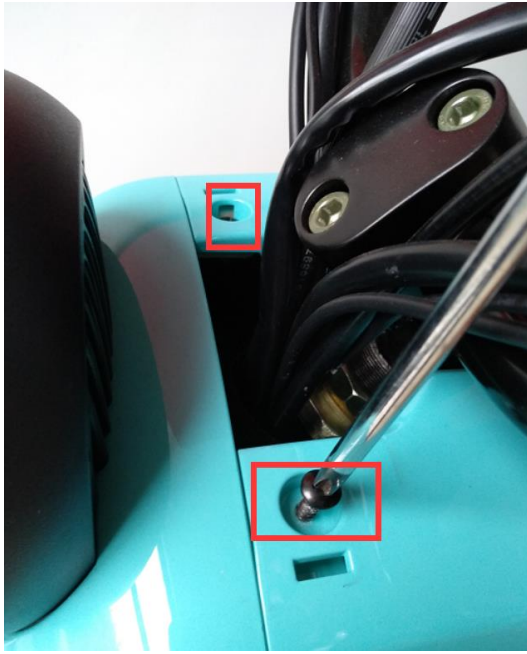
Section 1 Neck Cap
Dismount: Gently pull up to remove

Mount: Put it on the original
position and gently press it down.



Neck Cap

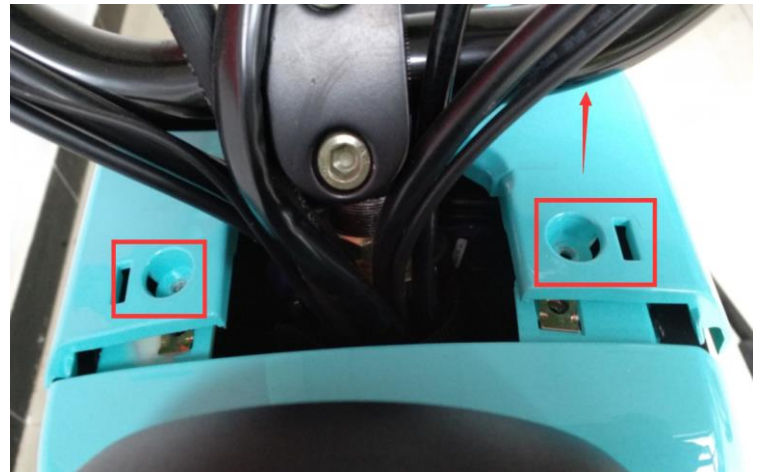




Front neck cover

Dismount: Unscrew two screws and pull it back and forth to pull it out.

Mount: In the reverse order of the dismount





Front Panel

Dismount: Unscrew total 8 pieces of screws and gently forward open the two sides a little then gently pull it out.

Mount: In the reverse order of the dismount.





Saddle Assembly

Dismount: Unscrew the two fixed nuts then can remove the saddle assembly.

Mount: In the reverse order of the dismount.



Helmet Bucket

Dismount: Unscrew the **six** screws to remove the seat.

Mount: In the reverse order of the dismount.



Rear Armrest

Dismount: Unscrew the two screws to remove the rear armrest.

Mount: In the reverse order of the dismount.





Rear Cover

Dismount: Unscrew the three screws and gently backward pull out to remove it.

Mount: In the reverse order of the dismount.





Taillight Assembly

Dismount: Unscrew the related 6 screws, plug out the taillight connector then gently pull backward.

Mount: In the reverse order of the dismount.

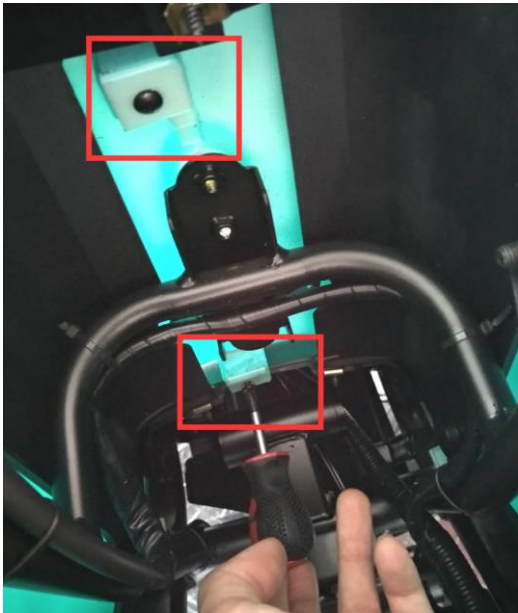




Left & Right Body Panel Decorative Cover

Dismount: Unscrew the related **FOUR hexogen socket** screws and two fastening screws, gently pull forward to open a little gap then remove it.

Mount: In the reverse order of the dismount.

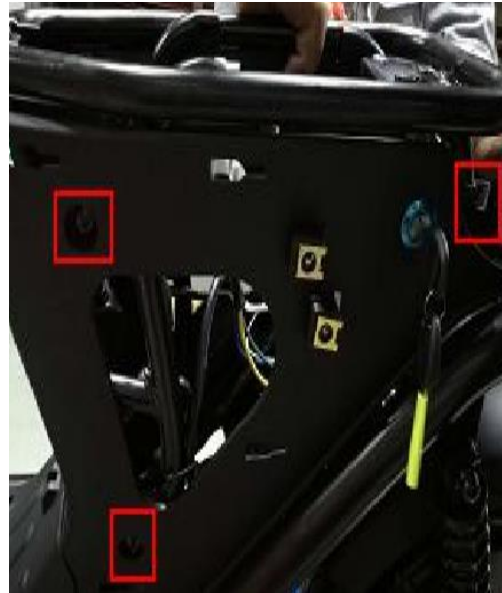




Left & Right Body Panel

Dismount: Unscrew the related 9 screws then remove it.

Mount: In the reverse order of the dismount.





Footrest

Dismount: Unscrew the related 4 caps and screws then remove the footrest

Mount: In the reverse order of the dismount.

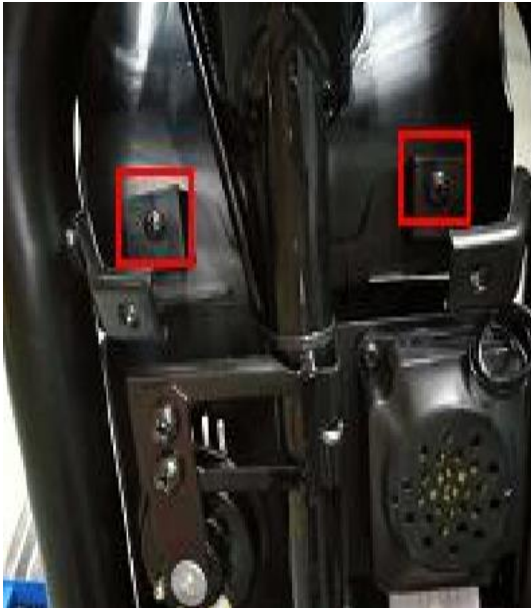


Front Central Cover

Dismount: Dismount the helmet hook and storage compartment cover first(5 screws). Then unscrew the rest 8 screws to remove the front central cover.



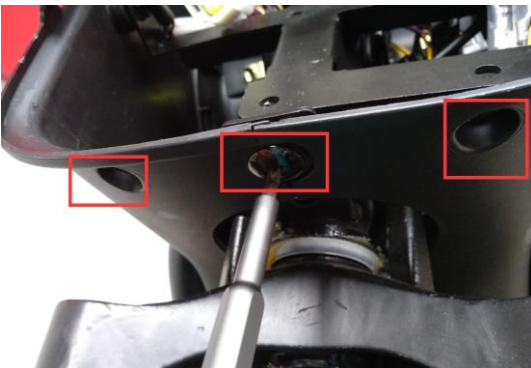
Mount: In the reverse order of the dismount.



Front Left and Right Panel

Dismount: Unscrew the 6 screws can remove the left and right panel. Notice: If unscrew the bottom screw need **firstly remove the front fender**.

Mount: In the reverse order of the dismount.

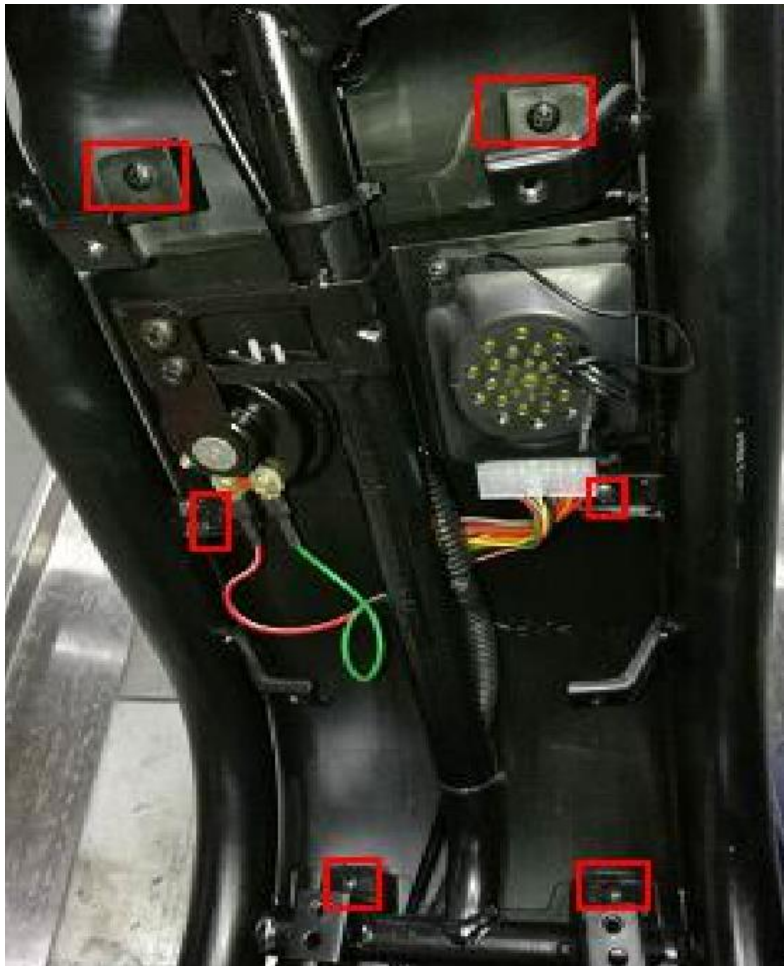




Bottom Cover (Front)

Dismount: Unscrew the 6 screws can remove the bottom cover front. Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.

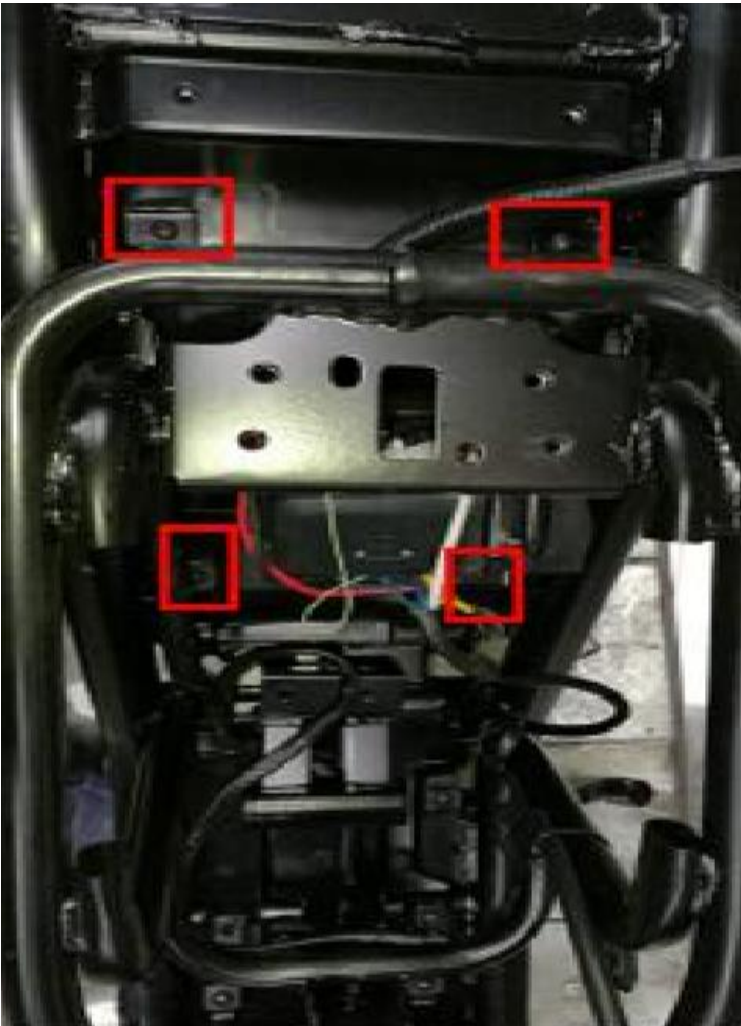




Bottom Cover (Middle)

Dismount: Unscrew the 4 screws can remove the bottom cover middle. Notice: If unscrew the bottom screw need firstly remove the fender.

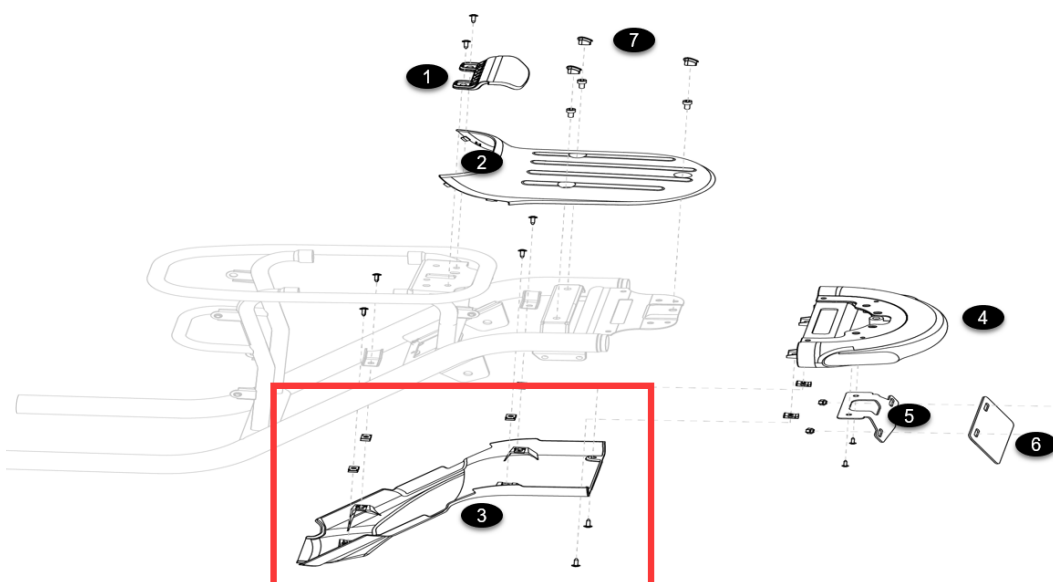
Mount: In the reverse order of the dismount.



Bottom Cover (Rear)

Dismount: Unscrew the 4 screws can remove the bottom cover rear.
Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.





Motor



Dismount: Unscrew the 3 screws can remove motor phase cables from the motor controller. And disconnect the hall sensor to take the cable out. Then unscrew the screws on the motor to dismount it.

Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.



Motor 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.



Handlebar

Dismount: dismount left and right combination switch, speed calculating steering handle, front and rear brake upper pumps and the dashboard assembly. Then dismount the handlebar riser fixed socket.

Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.





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.



Handlebar Riser

Dismount: Unscrew the three screws to dismount the riser.

Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.





Front fork

Dismount: Dismount the brake lower pump and fixing nut to remove the front fork.

Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.





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.



Front shock absorber

Dismount: Get rid of front wheel axle to remove the front wheel then unscrew the bolts of front shock absorber.

Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.





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.



Rear swing arm

Dismount: Remove the motor by unscrews the following bolts then you can remove the rear swing arm.

Notice: If unscrew the bottom screw need firstly remove the fender.

Mount: In the reverse order of the dismount.





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

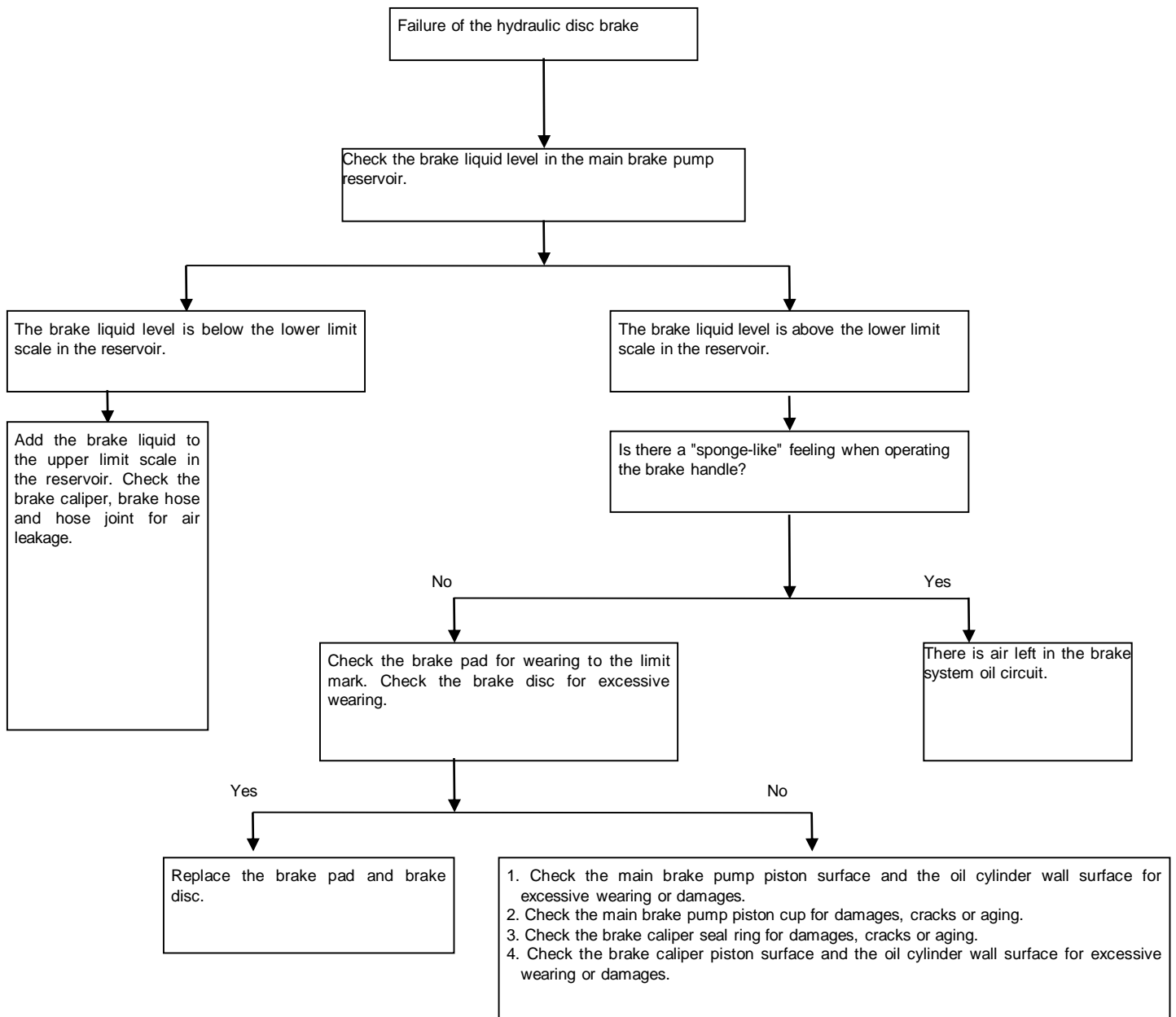
Item	Standard value (mm)	Minimum Thickness(mm)
Diameter of the front brake disc	φ180mm	-
Thickness of the front brake disc	4.0	3.0
Thickness of the front brake pad	4.0	3.0
brake fluid	DOT3 or DOT4	
Diameter of the rear brake disc	φ110mm	-
Thickness of the rear brake disc	3.5	2.5
Thickness of the rear 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 wheel.



Brake System

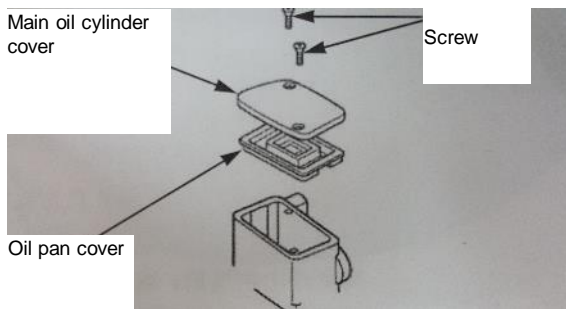
Brake liquid change/air discharging (for the disc brake type)

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 port.

Tighten the oil drainage screw, and operate the brake handle. Repeat the air discharging operation if there is still a soft feeling.

Tighten the oil drainage screw on brake caliper after the air has been discharged completely.



Brake liquid injection/air discharging

The following operation steps can be performed if air discharge pumps are not available.

Hold the front brake handle tightly and pressurize the system until there are no air bubbles from the liquid reservoir hole and the resistance to the front brake handle is felt.

Connect the oil drainage hose to the oil drainage screw, and perform air discharging from the system as per the following steps:

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

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

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

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

Tighten the oil drainage screw on brake caliper after the air has been discharged completely.

Add the DOT3 and DOT4 brake liquid that has been sealed completely into the liquid reservoir, and add it to the upper limit of the liquid level.

Install the oil pan cover and oil pan diaphragm. Tighten screws on the main oil cylinder.





Lithium battery/charger

Overview

The charger will 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 indoors 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 more than a week, Charge the battery to approximately 50% of its capacity and store it at a room temperature.

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

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

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

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

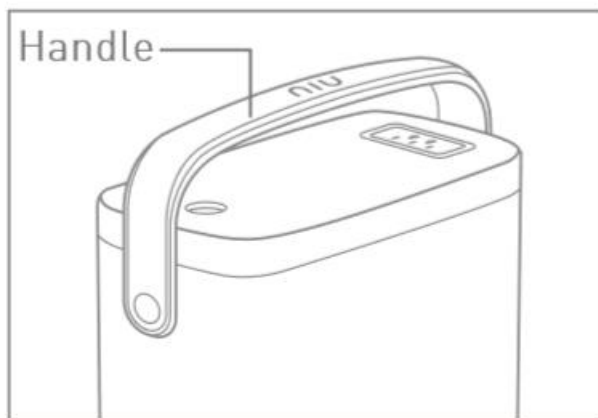
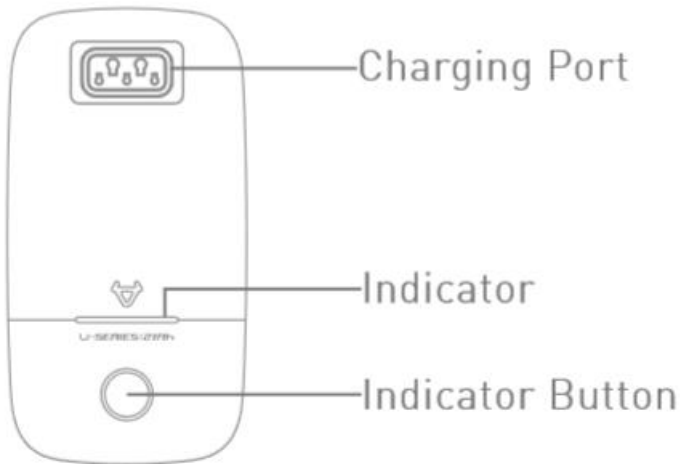
Stop charging immediately if the battery has not been fully charged for more than 24 hours and the red lamp does not turn to green, and then contact the after-sale service for inspection of the charger and battery.

Specification

Item		Specifications
Battery	Type	lithium battery pack
	Rated voltage	48V
	Rated capacity	21Ah
Charger	Rated output voltage	54V
	Rated output current	3~4A



Battery Pack (48V 21Ah)



Li-ion Battery

48 VDC Rated Voltage	53.5 VDC Max Charging Voltage	21Ah <small>(1000Wh)</small> Capacity	≤80%RH Operating Humidity	0°C~35°C Chargin Temperature	-10°C~45°C Operating Temperature	0°C~20°C Storage Temperature	30%~70% Storage Battery Level
--------------------------------	---	---	-------------------------------------	--	--	--	---



Caution!

1. When the battery is not in use for more than one week, please disconnect the battery from the vehicle and perform a full charge at least one time every 2 months.
2. The battery should only be used and stored under recommended environment to ensure the service life.
3. In order to extend the lifetime of the battery, it is optimal to charge the battery before the charge level falls below 20% capacity.
4. The charging unit is inoperable below 0°C.

Warning!

1. Using non-original NIU charging device may cause battery leakage, overheating, smoke, and fire.
2. Do not disassemble any part of the pattery pack as this may result in electric shock, chemical leakage, overheating, smoke, and fire.
3. The battery should be protected from piercing by sharp devices and dropping, piercing and dropping may result in electric shock, chemical leakage, overheating, smoke, and fire.

Vorsicht!

1. Wird die Batterie länger als eine Woche nicht verwendet, trennen Sie die Batterie vom Fahrzeug und laden Sie den Akku mindestens alle 2 Monate.
2. Die Batterie sollte nur in den entsprechenden Umgebungstemperaturen gelagert und verwendet werden.
3. Um die Lebensdauer der Batterie zu verlängern, ist es empfehlenswert, die Batterie zu laden, bevor der Ladestand 20% unterschreitet.
4. Das Ladegerät darf nicht unter einer Umgebungstemperatur von 0°C verwendet werden.

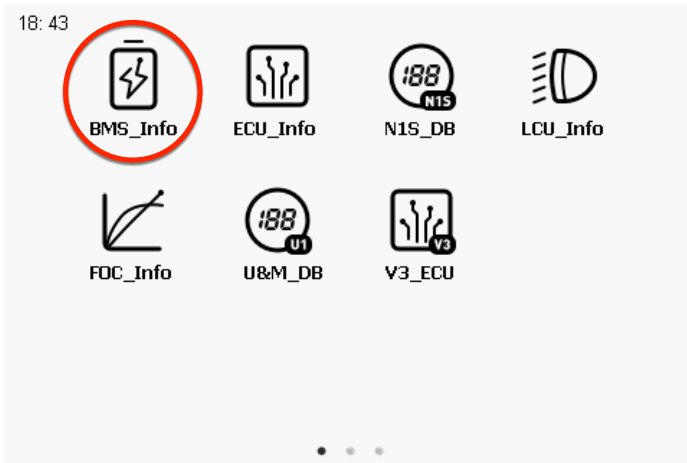
Warnung!

1. Bei Verwendung von nicht originalen Ladegeräten, kann es an der Batterie zu Undichtheiten, Überhitzung, Rauch oder Feuer kommen.
2. Versuchen Sie nicht, die Batterie zu zerlegen oder zu öffnen, da dies zu Stromschlägen, Undichtheiten, Überhitzung, Rauch oder Feuer führen kann.
3. Die Batterie sollte vor spitzen Gegenständen ferngehalten werden und keine groben Stöße erleiden. Dies kann zu Kurzschluss, Undichtheiten, Überhitzung, Rauch oder Feuer führen.



BMS (Battery Management System) Description

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

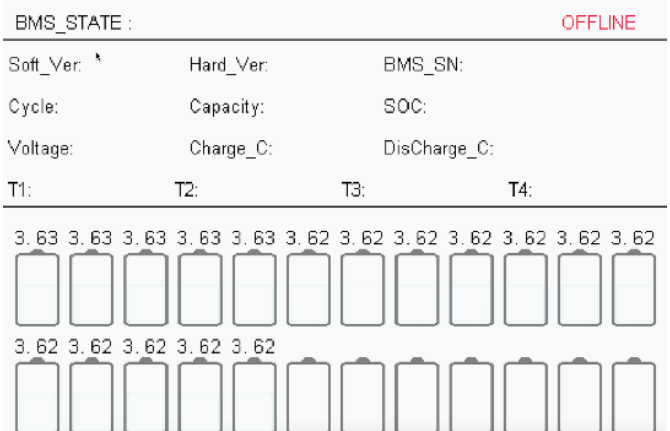
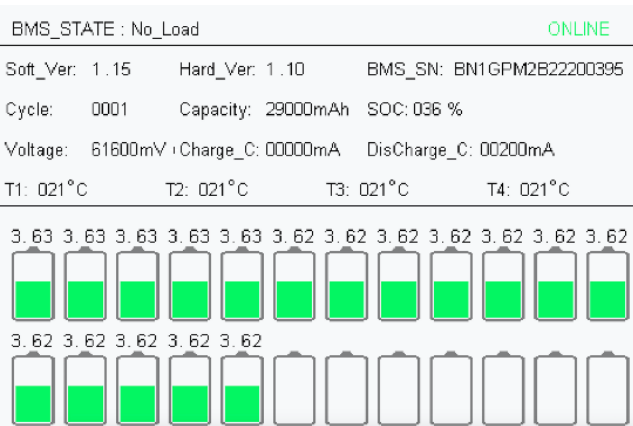


Please Make Sure The Power Is Turned OFF For More Than 10 Seconds
 You Can Also Connect H1 To Battery Pack Directly
 Press The Screen To Continue

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

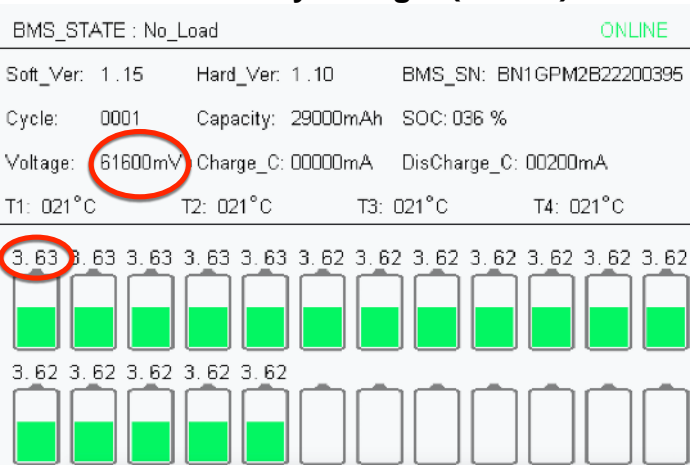
Other Warning(Open Circuit detected/ Difference between Cell Voltages is higher than 0.3V)

Short Circuit

Water Detected

BMS MOS Failure

How to read Battery voltage (Ref 30)



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

The max total voltage is 53.5V and max single cell voltage is 4.2V

The max voltage difference is 0.3V

The display will show code 30 (Battery over charge) when the battery total voltage reached 51.5V or single cell reached 4.2V

Discharging warning code 131 will show on the display when the battery total voltage below 39V

BMS will enter protection state when the battery total voltage below 39V and single cell will be 3.1V (+- 0.1V)

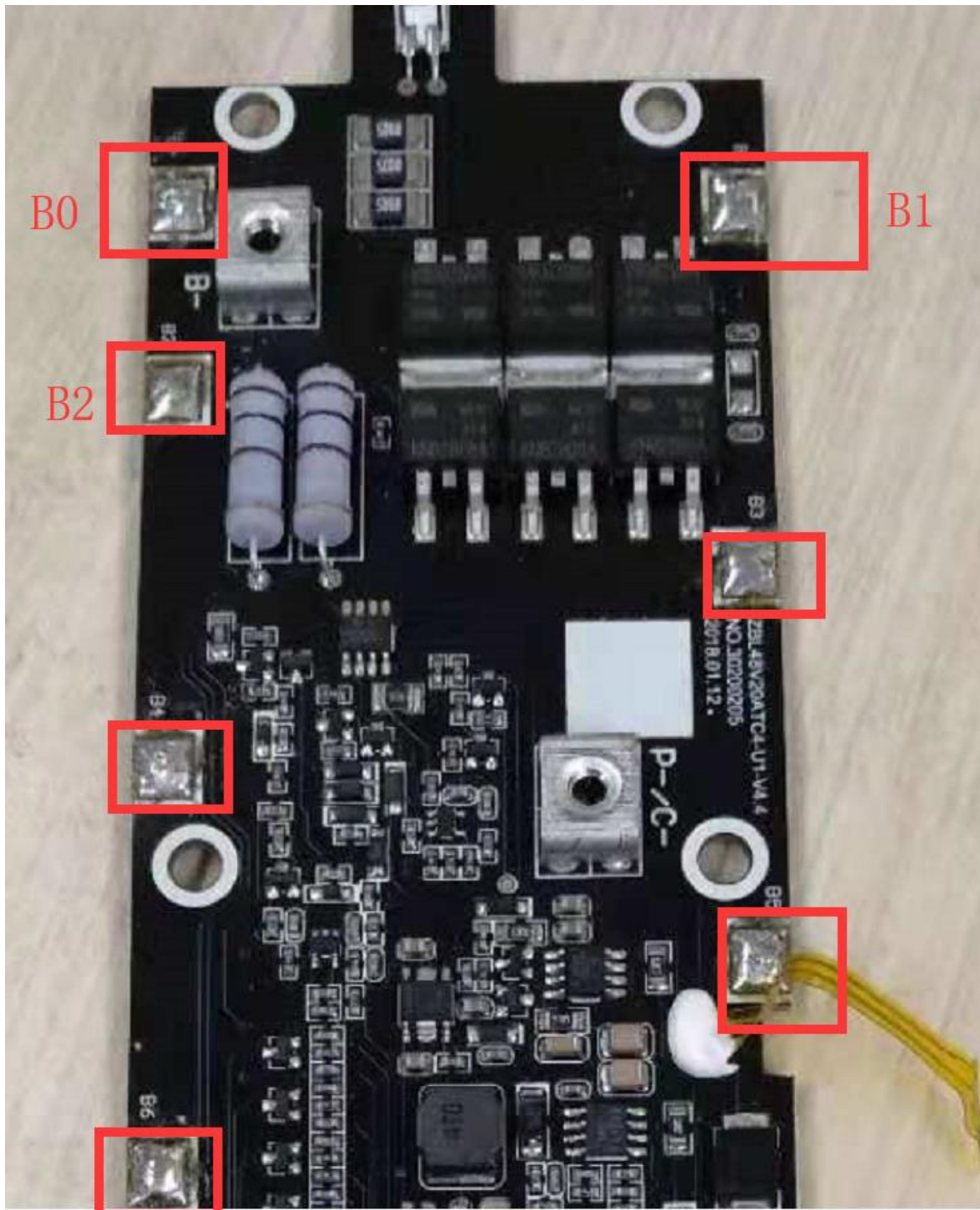


BMS

Battery Management System PCB

String Voltage :

When remove the battery housing, you can see the BMS board. The welding spots means different string cell voltage. Total 13 strings. Different string voltage like B0-B1,B1-B2,B2-B3 ...B13 should be the same value. The threshold should no more than 0.1V.





BMS



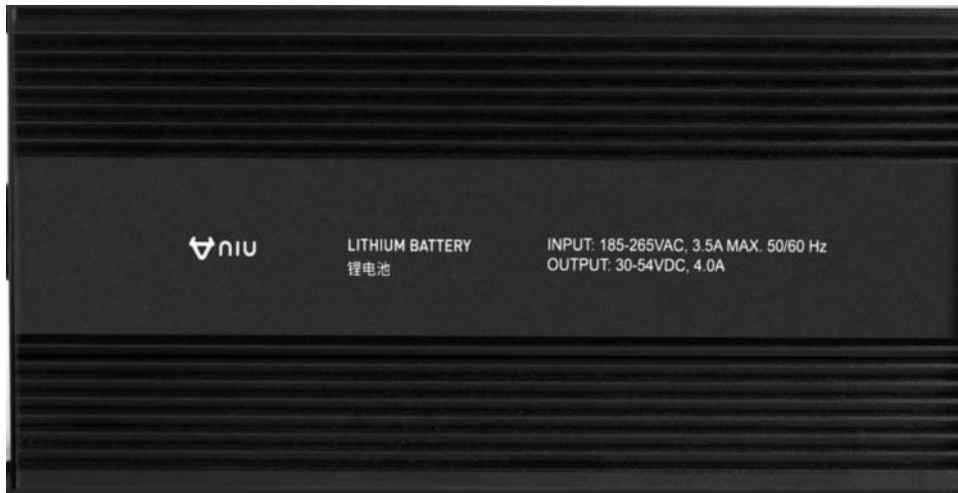


Charger

When the charger is connected with battery. The indicator of charger illuminates as Red means charging. It will turn to Green when the battery is fully charged.

Charger Specification: Input: 185-265VAC, Output: 30-54VDC, 4.0A

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





NIU Charger Adapter



What is it?

It is a kind of hub that allows H1 to measure the voltage of charger to diagnose if any damage on the chargers. It can measure rated power 60 V (N series) and 48V (M U series) charger.

How to use it?

Connect the charger and H1 like below picture:





Then turn on H1 click Voltage feature. You can get the real time output voltage from the charger.



3- What is the normal data?

Reference value for 60V charger:

Max Voltage: 71.8V

Min Voltage: 71V

Reference value for 48V charger:

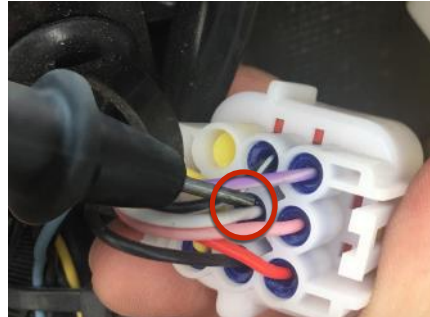
Max Voltage: 53.9V

Min Voltage: 53.1V



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

Check communication between ECU and Battery



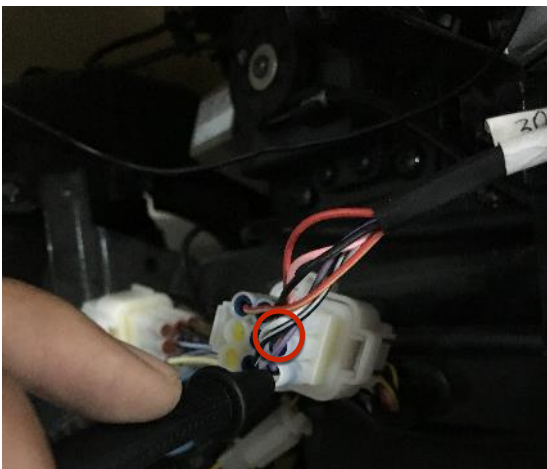
- Step 1: Disconnect the main Battery
- Step 2: Disconnect the ECU connector
- Step 3: Connect negative pin of multimeter to pin 5 (White) of ECU female connector
- Step 4: Connect positive pin of multimeter to the pin of power cord shown above(white and grey)
- Step 5: Set multimeter to test closed 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
60r check up. Do Not damage the connector which may cause bad connection.



Check communication between ECU and Display

Step 1: Disconnect the main Battery

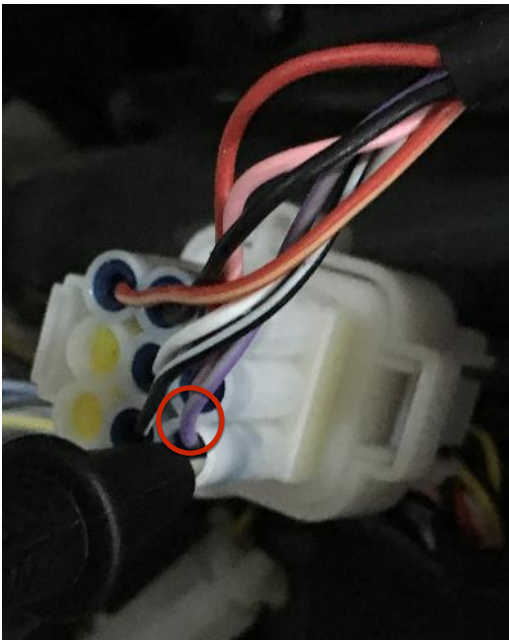
Step 2: Disconnect the ECU connector

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 7(white) and pin 9 (purple and grey) 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

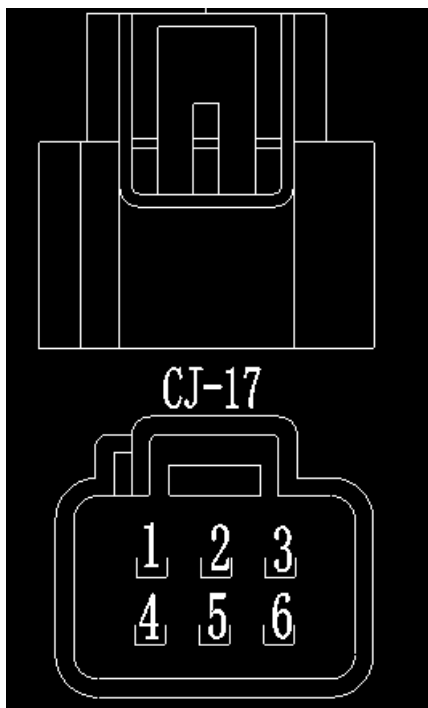
	Item	Specifications
Motor	Motor type	Brushless permanent-magnet motor
	Control method	FOC vector control
	Rated voltage	DC48V
	Rated power	800W
	Maximum motor power	1200W
	Maximum motor torque	95Nm
Controller	Rated voltage	DC48V
	Maximum current of the controller	30A



Motor



1-Yellow- Phase U	2-Green- Phase V	3-Blue- Phase W	4-Hall Sensor
----------------------	---------------------	--------------------	------------------



1-Slim Black- Hall GND	2-	3-Slim Red- Hall 5V
4-Slim Blue- Hall C	5-Slim Green-Hall B	6-Slim Yellow-Hall A



FOC Controller

The motor 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

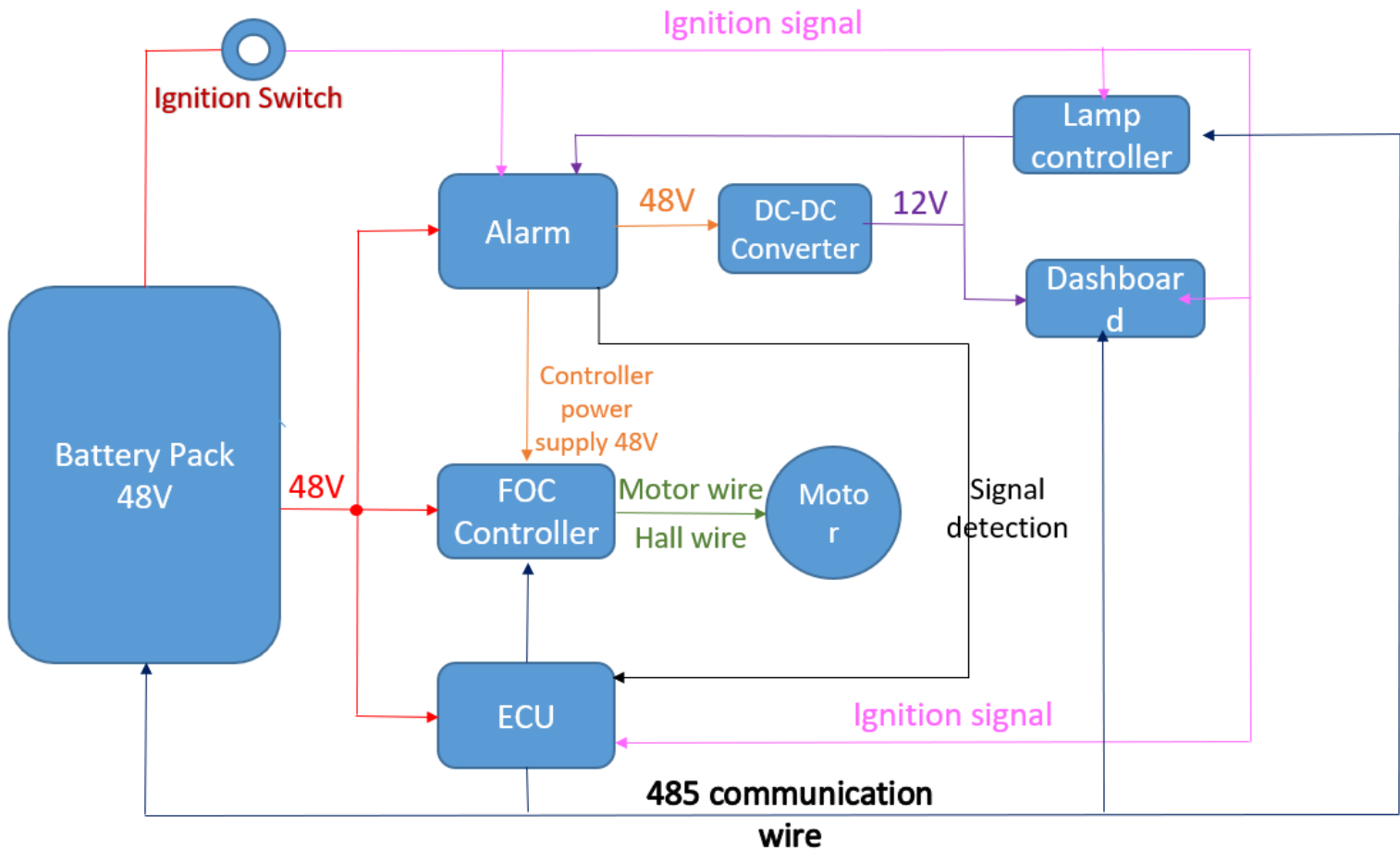
The controller stops the motor automatically to avoid unexpected injuries when the vehicle is being braked or charged.

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.

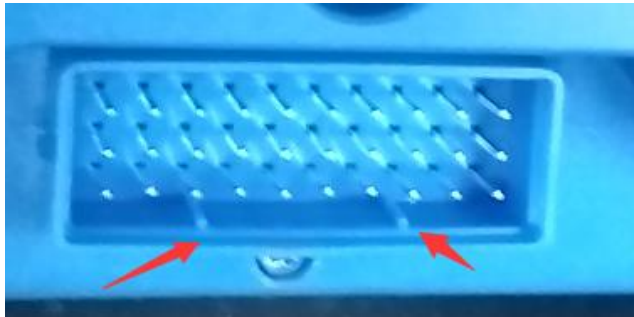
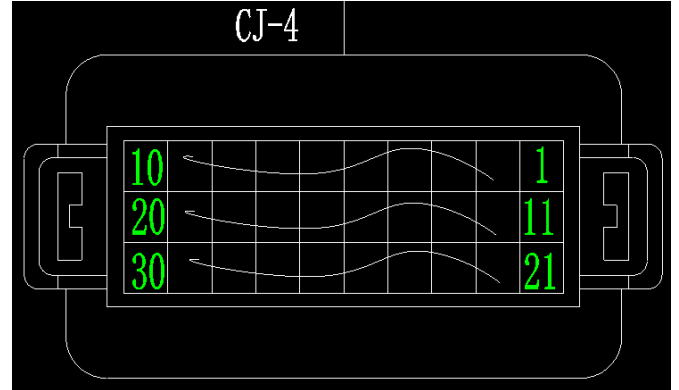


Simple Principle Circuit Diagram





FOC Controller



Notice don't plug it in reverse

10-Orange-ACC			7-Black-GND	6-Slim Black-Hall GND		4-Slim Red-Hall 5V	3-White Blue-Up Shift	2-White Yellow-Down Shift	1-Yellow-Hall A
		18-Brown		16-Black-GND	15-yellow-Side stand		13-White-Comm A	12-Slim Green-Hall B	11-Purple-brake 12V
		28-Red-Speed Regulating 5V	27-White Green-Speed Regulating Signal	26-Black-Speed Regulating-GND		24-Brown-P button	23-Purple Grey-Comm B	22-Slim Blue-Hall C	



How to check FOC controller itself problem by 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

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(-) at harness side.





Step 4: Turn the power ON, check the AC voltage between ACC(10) and GND(7).

Both of them should be the same with the battery voltage.

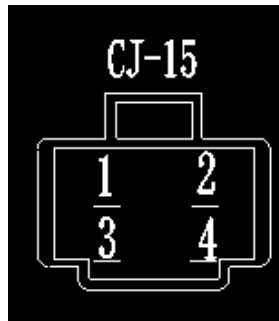
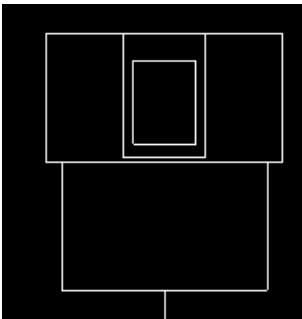


DC-DC module

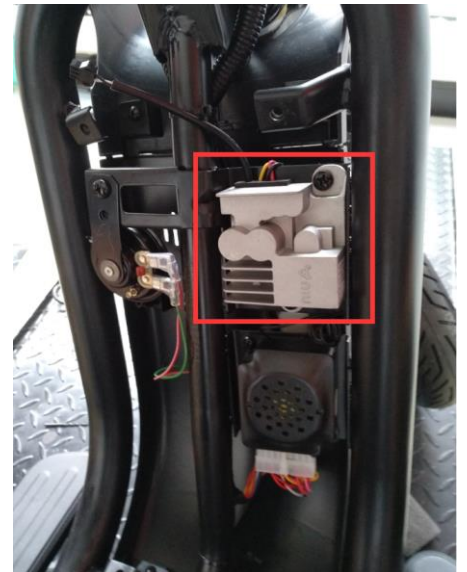


1-Red Green-DC+  (48V)	3-Black-Negative 
2-Black-Negative 	4-Red White-12V 

On Harness Side Connector



On DC-DC Side Connector





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

Step 1: Turn the power ON

Step 2: Check DC voltage between PIN1 (DC+) and PIN2 (GND) on harness side connector

Step 3: Compare if it is the 48V (same with the battery output voltage)

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

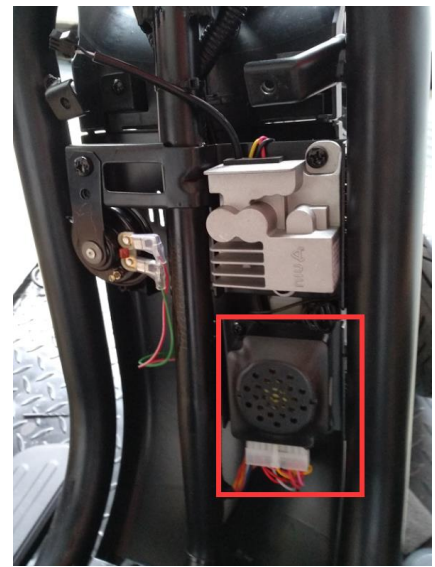
Step 1: Turn the power ON.

Step 2: Check DC voltage between PIN4(12V out) and PIN3 (GND)at component side.

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

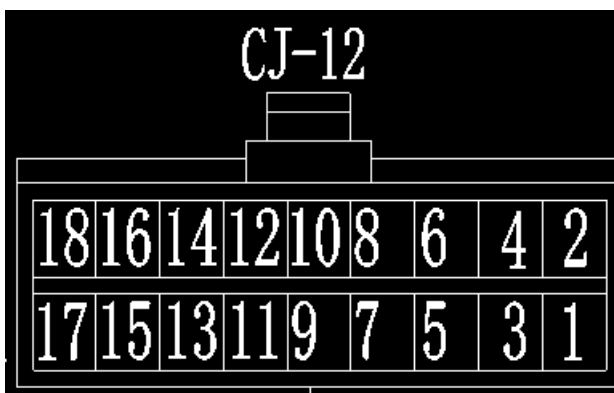


Anti-theft Alarm



18	16	14-Red White- 12V	12-Light Blue- Right Turning	10- Yellow- Left Turning	8-Black- Negative	6-Red Green- DC+	4- Orange- ACC	2-(Thick Red)- 60V
17-Red 1-Outer ring light	15-Red 2-Inner ring light	13	11-White Grey- Button Switch	9-Green Grey- Button power lock	7	5-Red Yellow- Anti- theft Signal	3-Pink- Lock power Key	1

On Harness Side Connector





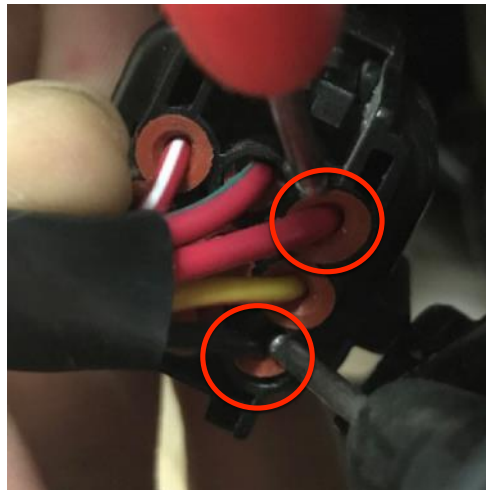
How to check Alarm (Ref: 017)

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

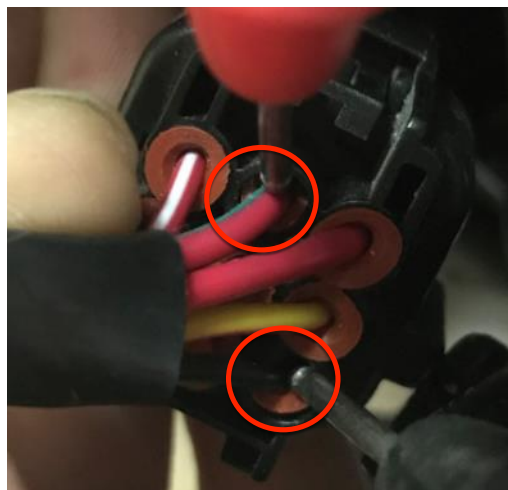
Step 2: if the siren doesn't work after pressing the remote buttons, then replace the alarm

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: Then 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



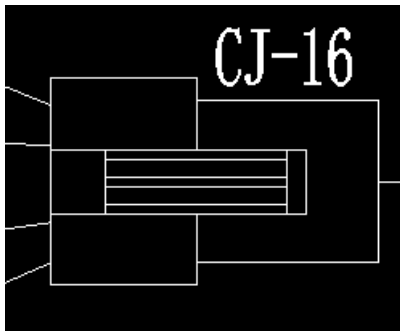
How to adjust Alarm sensitivity (Ref: 018)

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

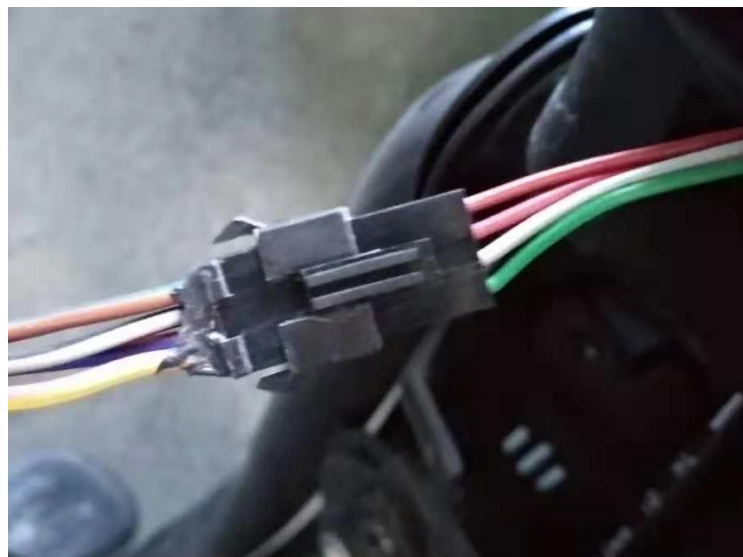
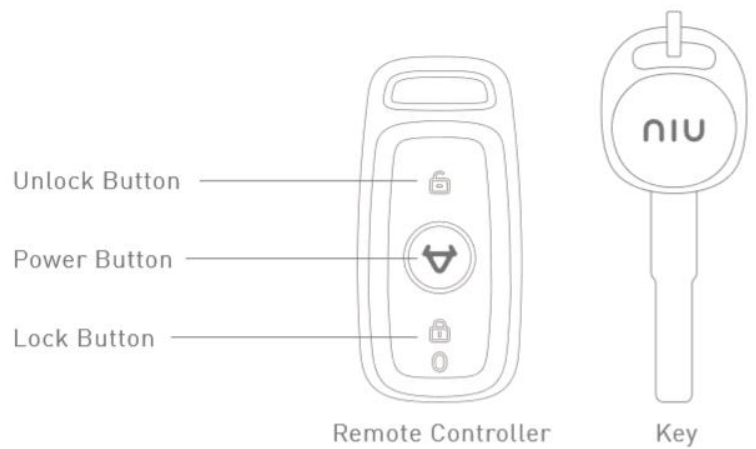


Power lock unit

1-Red1-Outer ring light
2-Red2-Inner ring light
3-White Grey- Button Switch
4-Green Grey-Button power



On Harness Side Connector



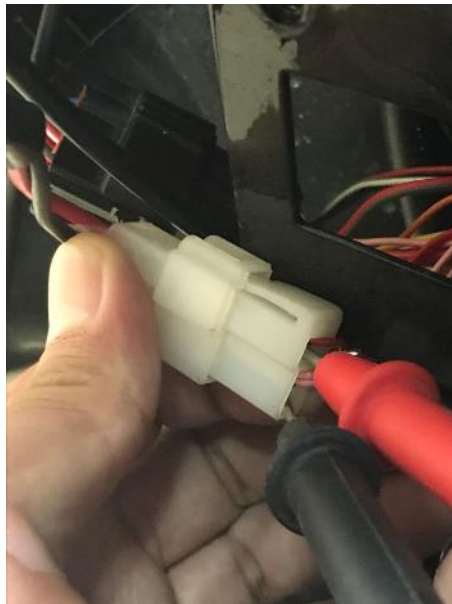


How to check Power Lock (Ref: 020)

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

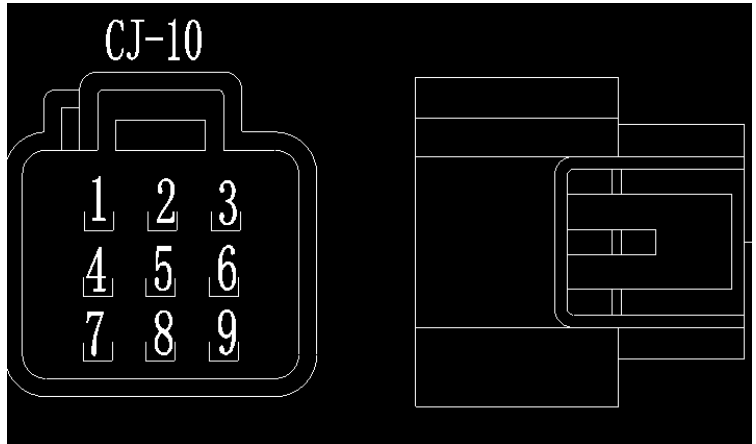
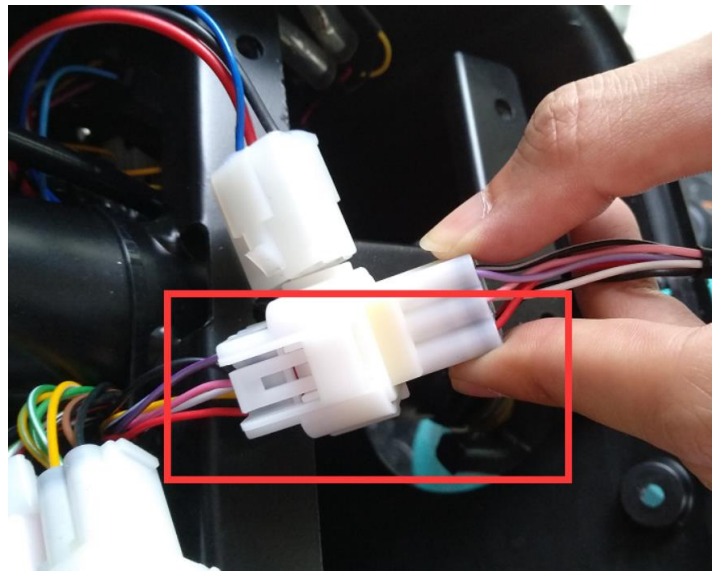
Step 2: DC voltage reading on multimeter should be same as battery voltage

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

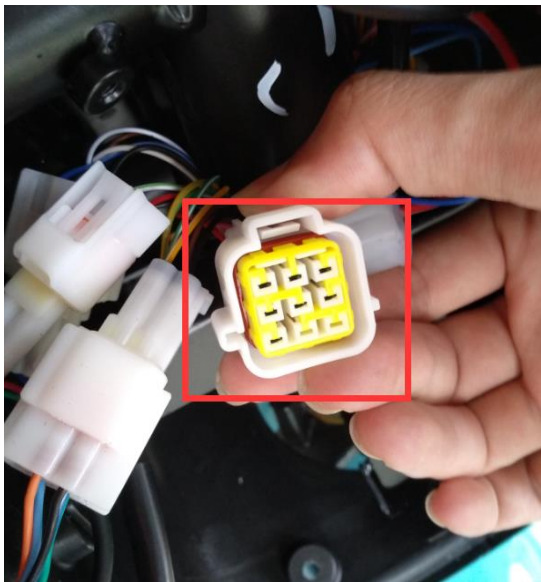




ECU-Electronic Control Unit



ECU connectors between main harness and ECU side



1-Red-48V	2-Pink-Power lock	3-Purple Grey-Comm B
4-Black-Negative	5-White-Comm A	6-Black White-485 GND
7-Red Yellow-Anti Theft Signal	8	9-

ECU hardware: V2.0

Current firmware:TRA01C14(Released on 21th Aug 2018)



Cloud ECU

As the intelligent core of the U-Series, the Cloud ECU acts like a private scooter analyst, helping you complete the collection, diagnosis, and processing of your driving data. Using the cloud connection after each ride, the data analysis optimizes the intelligent riding experience by learning about your driving habits.

How to check ECU by checking App Data

- This method only applied to scooter with activated Vodafone 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

- 1- Disconnect the power and remove the front panel**
- 2-Found the ECU and disconnected it from the scooter.**
- 3- Use a fine spare ECU to install it on. And connect the power.**
- 4- Use a smart phone to scan the QR code of the spare part ECU.**
- 5-Follow the process to finish binding the new ECU.**

Notice: Don't mix up the SN and VIN numbers.

Normally the SN starts from NAXXX

VIN starts from VIN..

Total lasting time is around 10 minutes depending on the network.

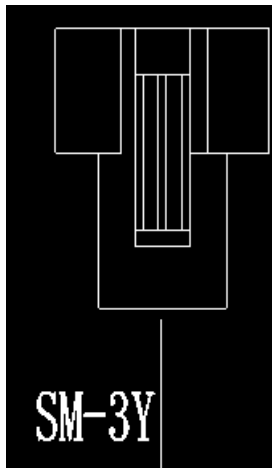
Please place the scooter in a good communication signal place.



DC 5V- (SM-3A)

Connected with USB Charger on the
Scooter- (SM-3Y)

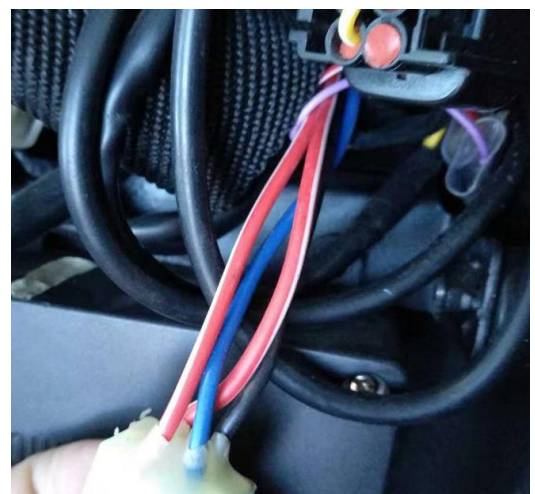
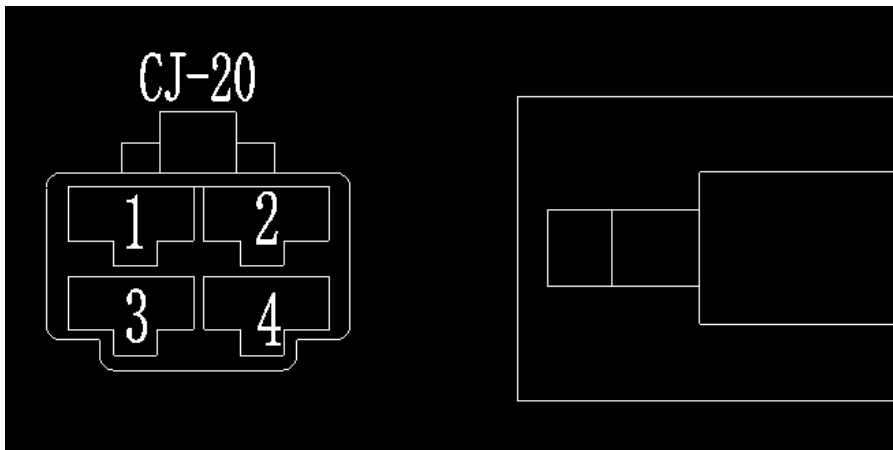
1-Red3-5V	3-Black-GND
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Headlamp

1-Grey-12V	2-Blue2-High Beam
3-Red-12V	4-Black-Negative





How to check Headlamp Power Input

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

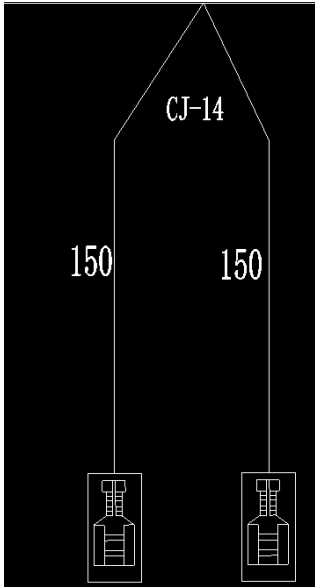
If 12V exist but Headlight does not illuminate, replace Headlight

If 12V does not exist, harness is broken





Horn



Black-Negative	Green-
----------------	--------

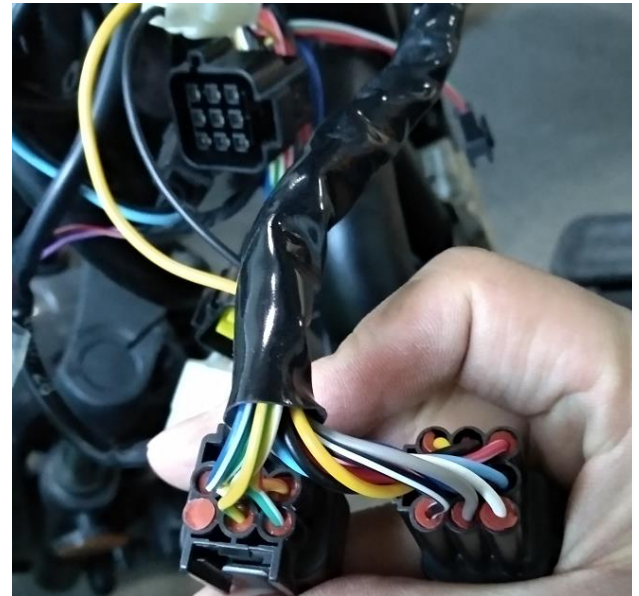




Dashboard

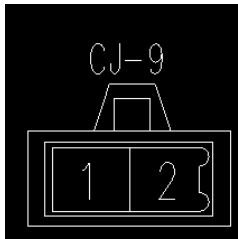
CJ-21

1-Red White-12V	2-Light Blue-Right Direction(CJ-8-1)	3-White-Comm A
4-Black-Negative	5-Blue2-High Beam	6-Purple Grey-Comm B
7-Yellow-Left Direction(CJ-9-1)	8-Pink-Power lock	9-Black White-485 GND

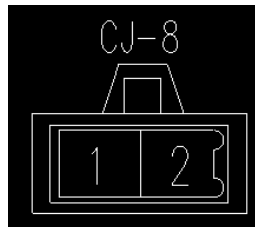


Please note there is no separate LCU part in U series instead it is integrated into dashboard.

Left Direction connector

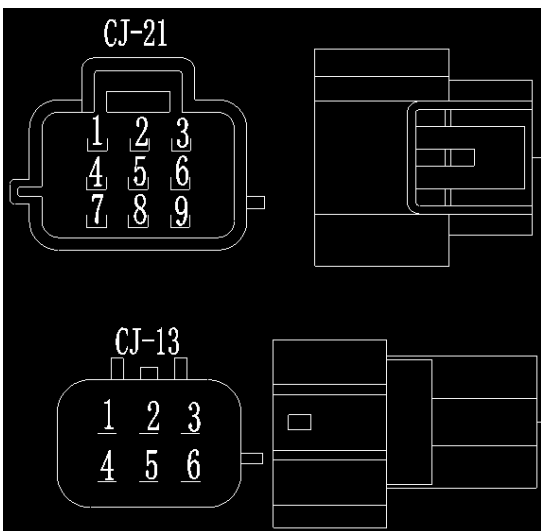


Right Direction connector



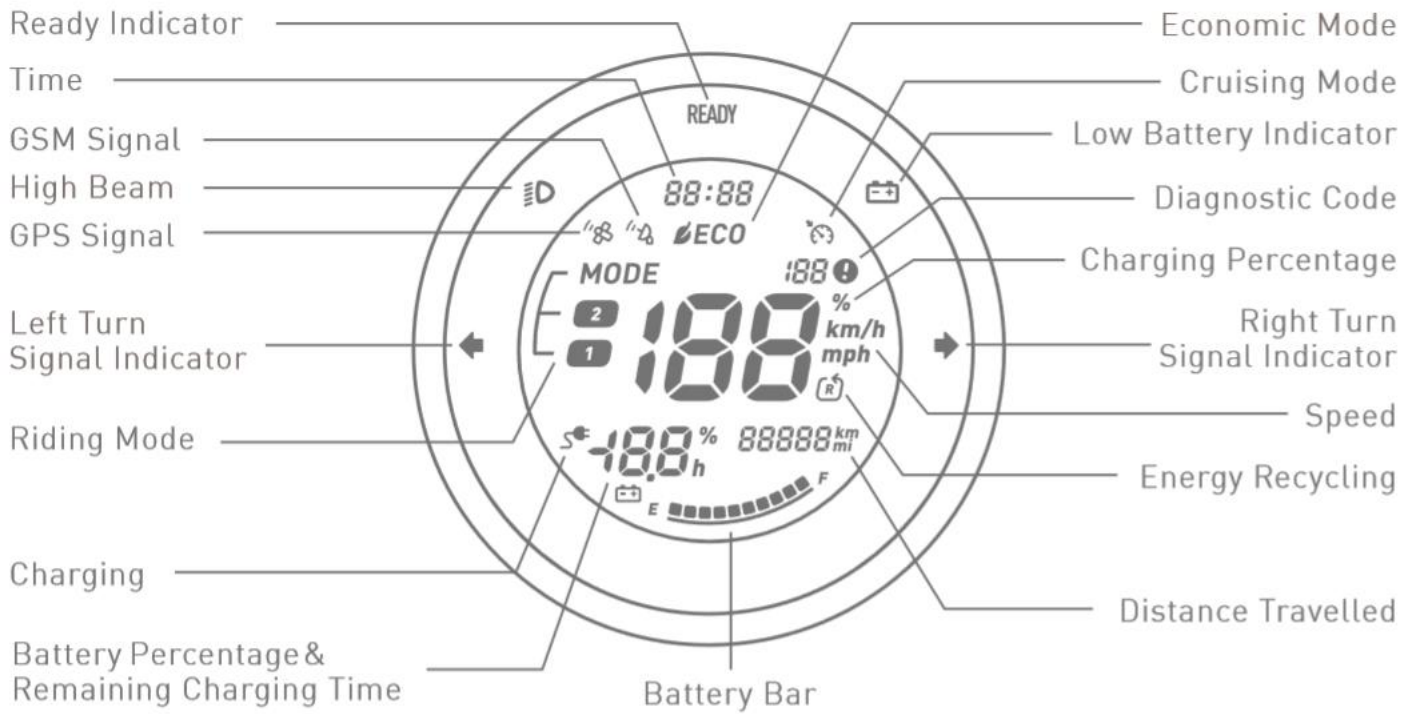
CJ-13

1-Yellow White-Left Turning on	2-Blue 1-High Beam	3-Light Green-Hazard Light
4-	5-Yellow Green-Turn Off turning	6-Green White-Right turning on














Dashboard Display Info












Dashboard Display Info

	Left Turn Signal Indicator	The Left Turn Signal Indicator is on.
	Right Turn Signal Indicator	The Right Turn Signal Indicator is on.
	High Beam	The High Beam is on.
	Parking Indicator	In Parking Mode.
	Low Battery Indicator	Battery level less than 20%.
	Time	Now is 12:00 pm.
	Economic Mode	Ideal energy consumption status.
	Energy Recycling Status	Energy is being recycled from braking.
	Riding Mode	Mode 2 is selected.

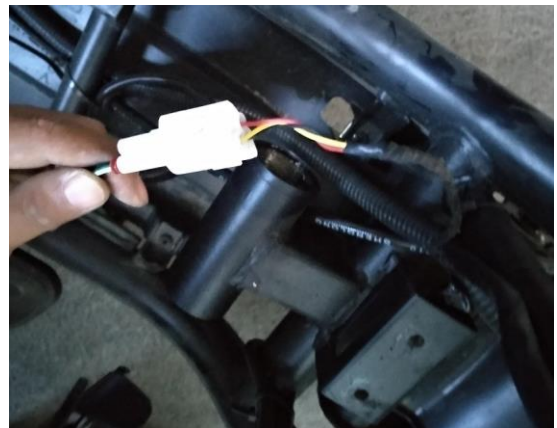
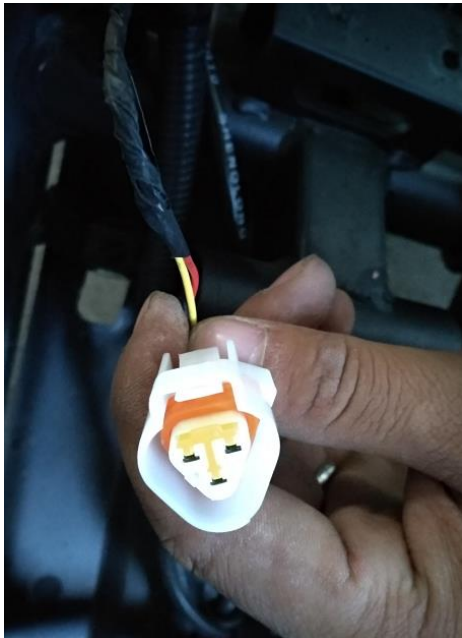
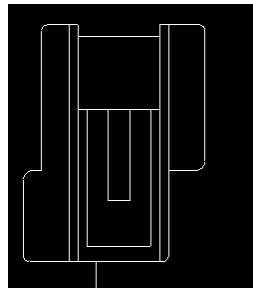
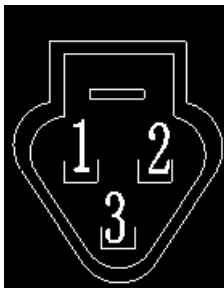
Dashboard Display Info

	Speed	Current speed is 26km/h.
	Charging Percentage (Large)	Current battery charging progress is 13%.
	Battery Bar	Current battery level. E: Low battery (less than 10%) F: Full battery (more than 90%)
	Battery Percentage (Small)	Battery level in percentage is 89%.
	Remaining Charging Time	The remaining charging time is 3.2 hours.
	Charging	The battery is being charged.
	Distance Travelled	Distance Travelled is 802km.



Side Switch

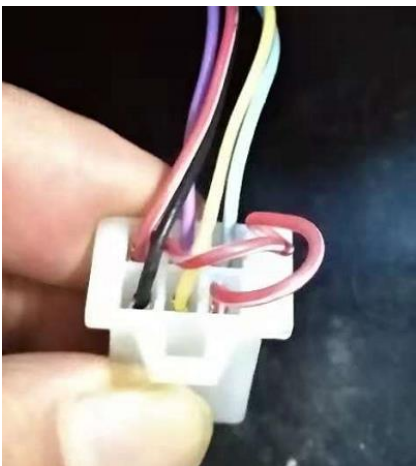
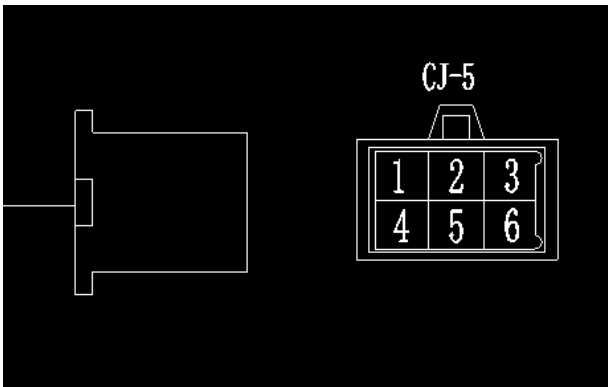
1-Slim Red-Side Switch 5V	2-Yellow-Side Switch Signal
3-Black-GND	





Tail Light Assembly

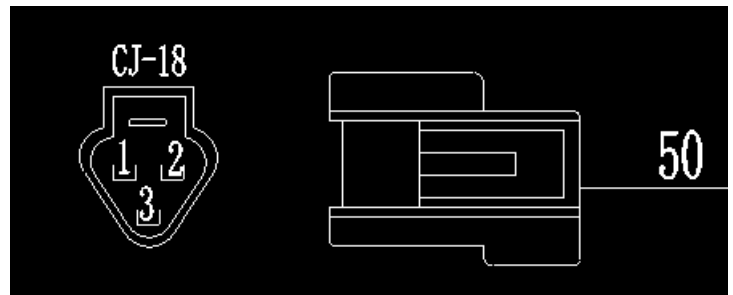
1-Black-Negative	2-Yellow-Left Turning Light on	3-Red White-12V
4-Red White-12V	5-Purple-Brake	6-Light Blue-Right Turning On





Speed Regulating Steering handlebar

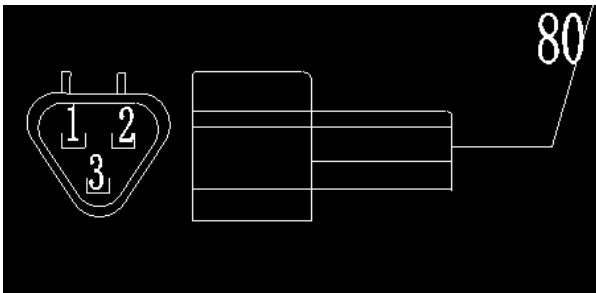
1-White Green-Signal	2-Slim Black-GND of speed regulating	3-Dark Black-5V
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Speed Sensor in front wheel

1-Black-GND	2-Yellow White-Hx	3-Dark Black-5V
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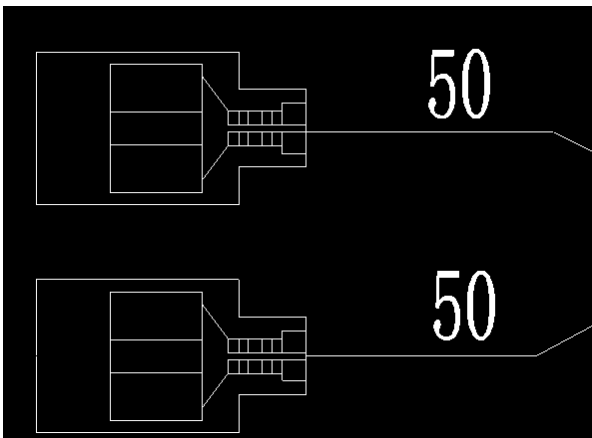
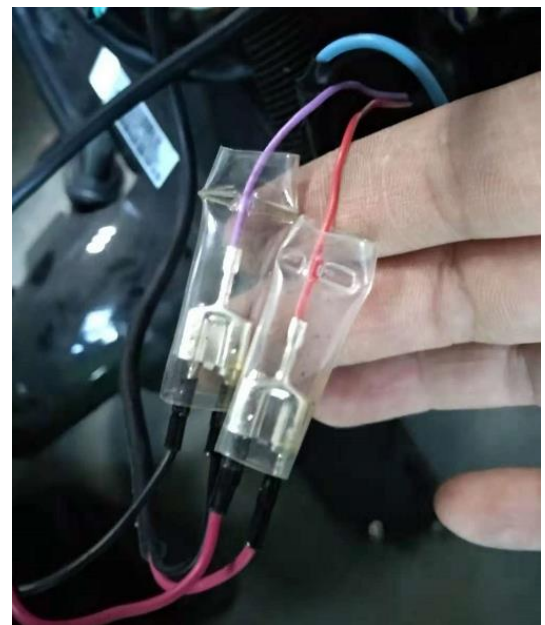
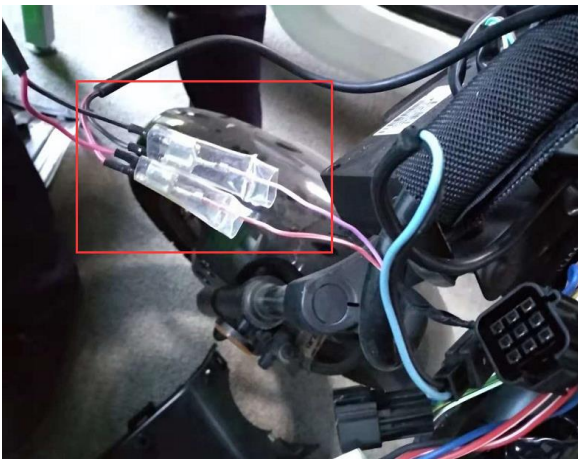




Power off switch for Brake

1-Purple-Brake

2-Red White-12V





Troubleshooting List

Regular Maintenance Checklist	
Regular Safety and Performance Check	Brakes
	Lights
	Horn
	Electric Parts
	Tyres
Structural Check	Lubrication
	Wheel Bearing
	Vibration Damper
	Side Stand
	Steering Bearing
Major Parts	Battery
	Main Wiring Harness
	Control System



Fault Code List

Troubleshooting List		
Malfunction Description	Causes	Troubleshooting
No output when switched on	<ol style="list-style-type: none"> 1. Dead battery 2. Battery not connected 3. Alarm failure 	<ol style="list-style-type: none"> 1. Charge the battery. 2. Check if it's properly connected 3. Replace Alarm
Motor failure when turning the twist grip after switched on	<ol style="list-style-type: none"> 1. Battery voltage is low 2. The power off switch is enabled when pulling the brake lever 3. The Parking Mode has not been turned off yet 	<ol style="list-style-type: none"> 1. Charge the battery. 2. Do not pull the brake lever when twisting the twist grip. 3. Check "Start the Scooter" section. Check if the side stand is on.
Battery charge failure	<ol style="list-style-type: none"> 1. Not properly connected 2. Battery temperature is too high or too low 	<ol style="list-style-type: none"> 1. Check whether the plug is loosened. 2. Wait for it to achieve normal temperature

Troubleshooting List		
Malfunction Description	Causes	Troubleshooting
Dropping speed or range	<ol style="list-style-type: none"> 1. Low battery level 2. Under-inflation of tyres 3. Frequent braking and overload 4. Battery aging or normal capacity loss 5. Low battery capacity resulting from low temperature 	<ol style="list-style-type: none"> 1. Charge the battery and check if the plug is properly plugged in and whether the charger is damaged. 2. Check the tyre inflation every time. 3. Develop good riding habits. 4. Replace the battery. 5. Normal situation.
Sudden stop during a ride	Dead battery	Charge the battery.
	Identify the fault causes in reference to the meter panel fault codes.	



Fault Code List

Troubleshooting List		
Malfunction Description	Causes	Troubleshooting
00 displayed	Communication failure or Dashboard failure	1. Disconnect the battery and reconnect it after 30 seconds. 2. Check whether the wires are loosened. 3. Contact your dealer for professional checks.
10 displayed	FOC Controller locked rotor	Stop the scooter and restart later.
11 displayed	FOC Controller undervoltage/overvoltage	Stop the scooter and restart later.
12 displayed	FOC Controller overcurrent	Contact your dealer for professional checks.
13 displayed	FOC Controller over-temperature	Disconnect the battery and cool it down before reuse.
20 displayed	Motor overtemperature	Stop the scooter and restart when cooled down.

Troubleshooting List		
Malfunction Description	Causes	Troubleshooting
30 displayed	Battery overcharged	Turn on the headlight and hazard light to discharge until the code disappear.
31 displayed	Charging overcurrent	Stop charging the battery and check if the charger is failed.
32 displayed	Charging at low temperature	Take the battery indoor until back to normal operating temperature.
60 displayed	SIM card identification failure	Contact your dealer for professional checks.
62 displayed	GPS module failure	
63 displayed	GPS antenna short circuit	
64 displayed	GPS antenna open circuit	
65 displayed	ECU SN missing/incorrect	



Troubleshooting List

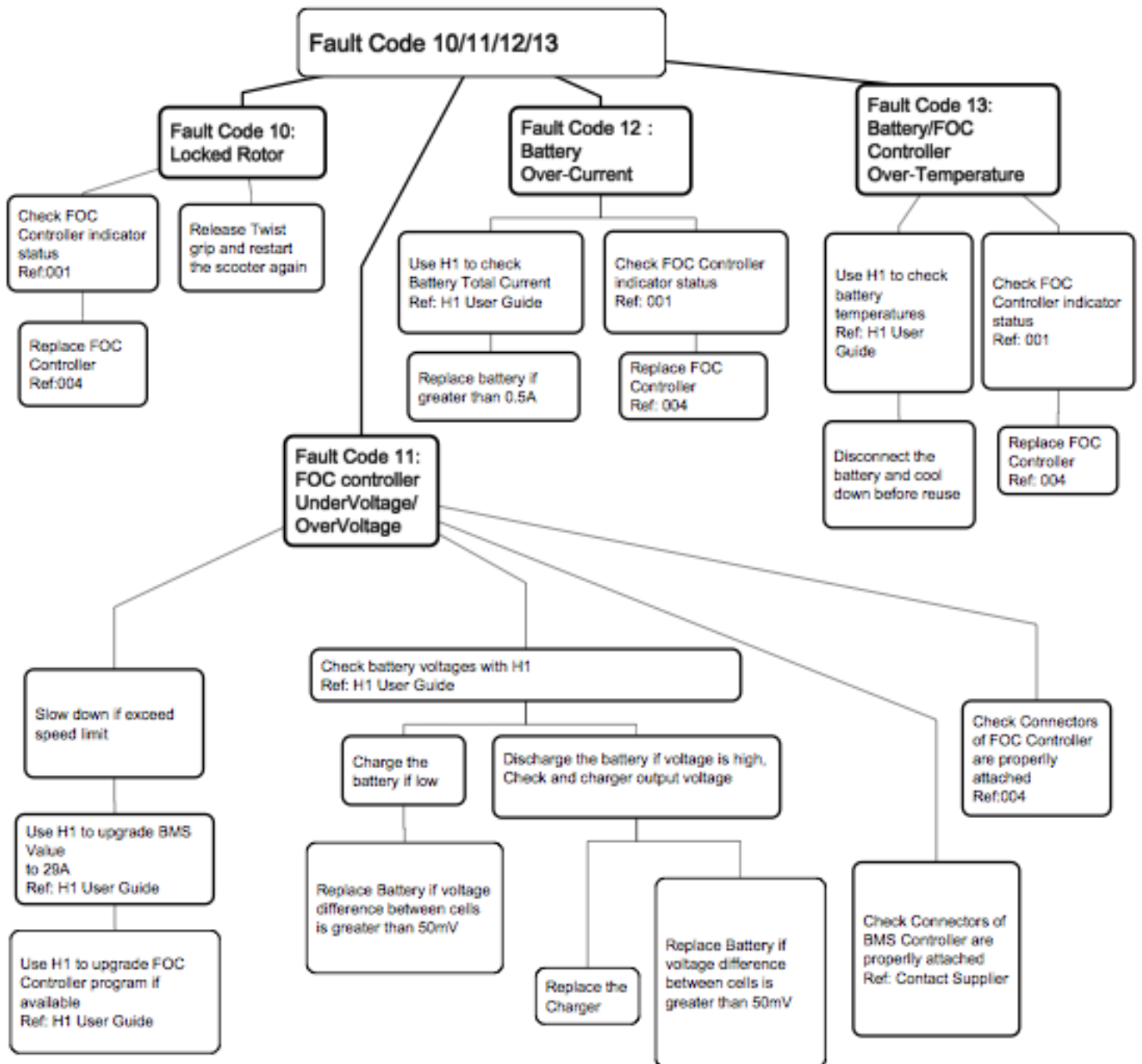
Malfunction Description	Causes	Troubleshooting
67 displayed	SIM card unpaid/inactivated/ low signal strength	Contact your dealer for professional checks.
99 displayed	Electronic components communication failure	Contact your dealer for professional checks.
110 displayed	FOC Controller failure	Contact your dealer for professional checks.
111 displayed	1. The scooter is locked 2. FOC Controller verification failure	1. Press unlock button on the Remote. 2. Contact your dealer for professional checks.
120 displayed	Motor failure	Contact your dealer for professional checks.
130 displayed	Battery overdischarged	Charge the battery.
131 displayed	Over-current discharging	Stop the scooter and restart later.

Troubleshooting List

Malfunction Description	Causes	Troubleshooting
132 displayed	Battery overtemperature	Stop riding and let battery cool down.
133 displayed	Battery undertemperature	Charge the battery after it reaches the operating temperature range.
140 displayed	Twist grip failure	Please check the wires of the twist grip or contact your dealer for professional checks.
161 displayed	The scooter is locked by remote command	Contact your dealer for professional checks.
190 displayed	Controller communication failure	Contact your dealer for professional checks.
191 displayed	BMS communication failure	Contact your dealer for professional checks.

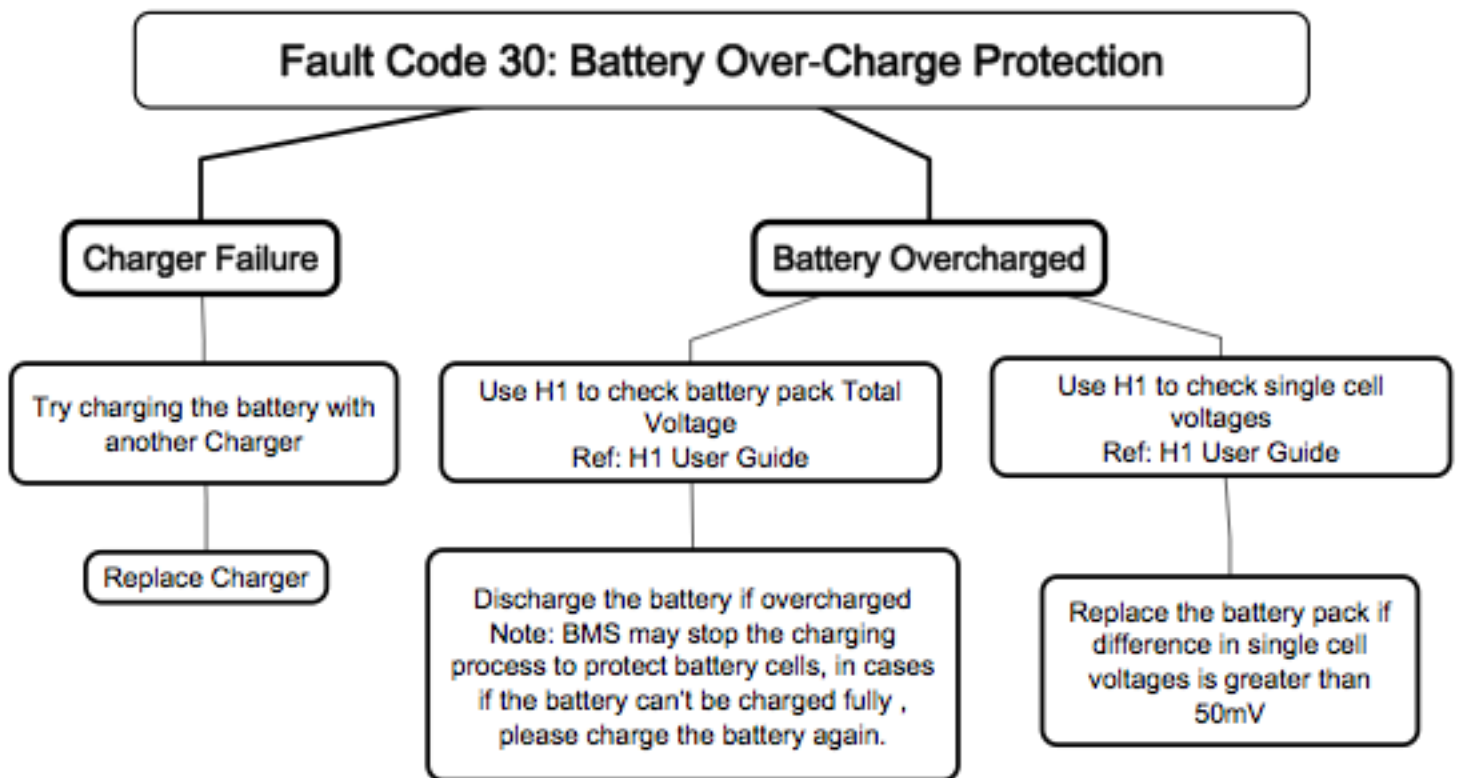
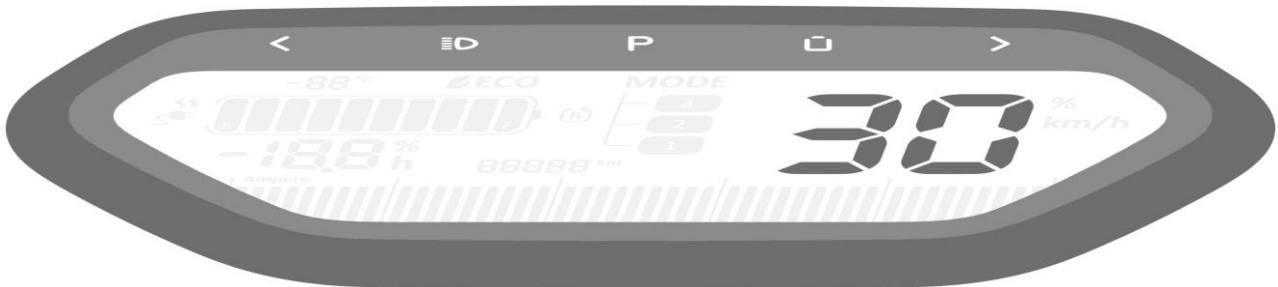


Diagnostic Code - 10/11/12/13 on display



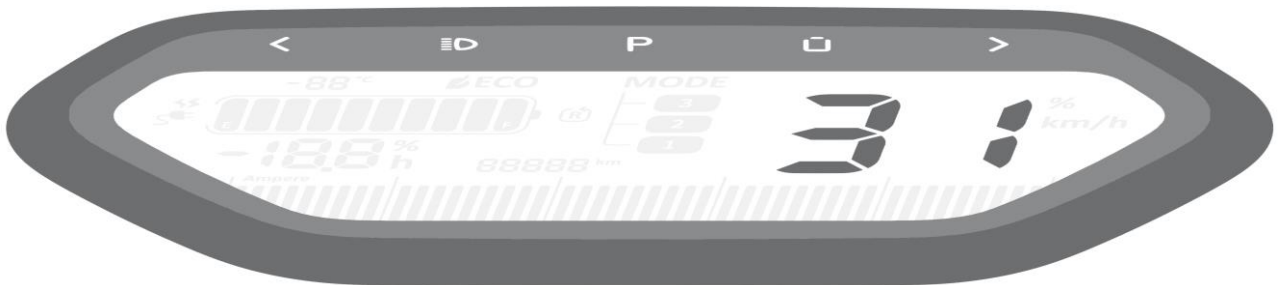


Diagnostic Code - 30 on display





Diagnostic Code - 31 on display



Fault Code 31 Charing Over-Current Protection

Charger Failure

Try charging the battery with another
Charger

Replace Charger

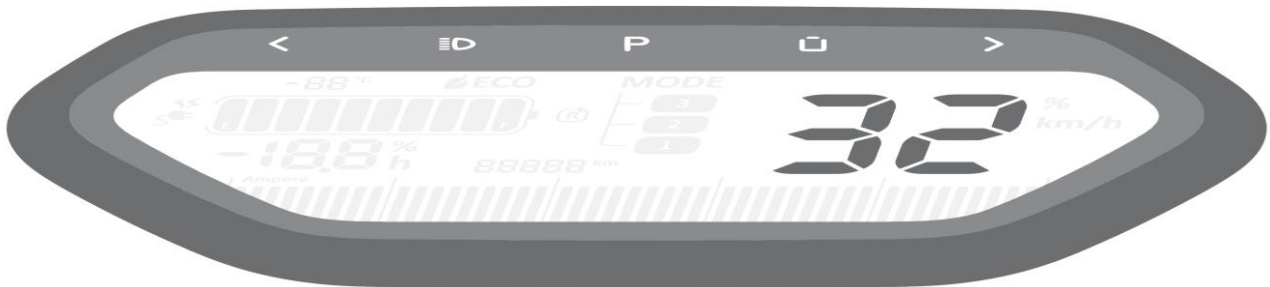
Slow down if exceed speed limit

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



Fault Code 60/62/63/64/65

**Fault Code 60:
SIM Card
Identification
Failure**

Disconnect the battery
pack and connect again
after 10 seconds

Replace ECU
Ref: 003

**Fault Code 62:
GPS Module
Failure**

Disconnect the battery
pack and connect again
after 10 seconds

Replace ECU
Ref: 003

**Fault Code 63:
GPS Antenna
Short Circuit**

Update ECU Program

Disconnect the battery
pack and connect again
after 10 seconds

Replace ECU
Ref: 003

**Fault Code 64:
GPS Antenna
Open Circuit**

Update ECU Program

Disconnect the battery
pack and connect again
after 10 seconds

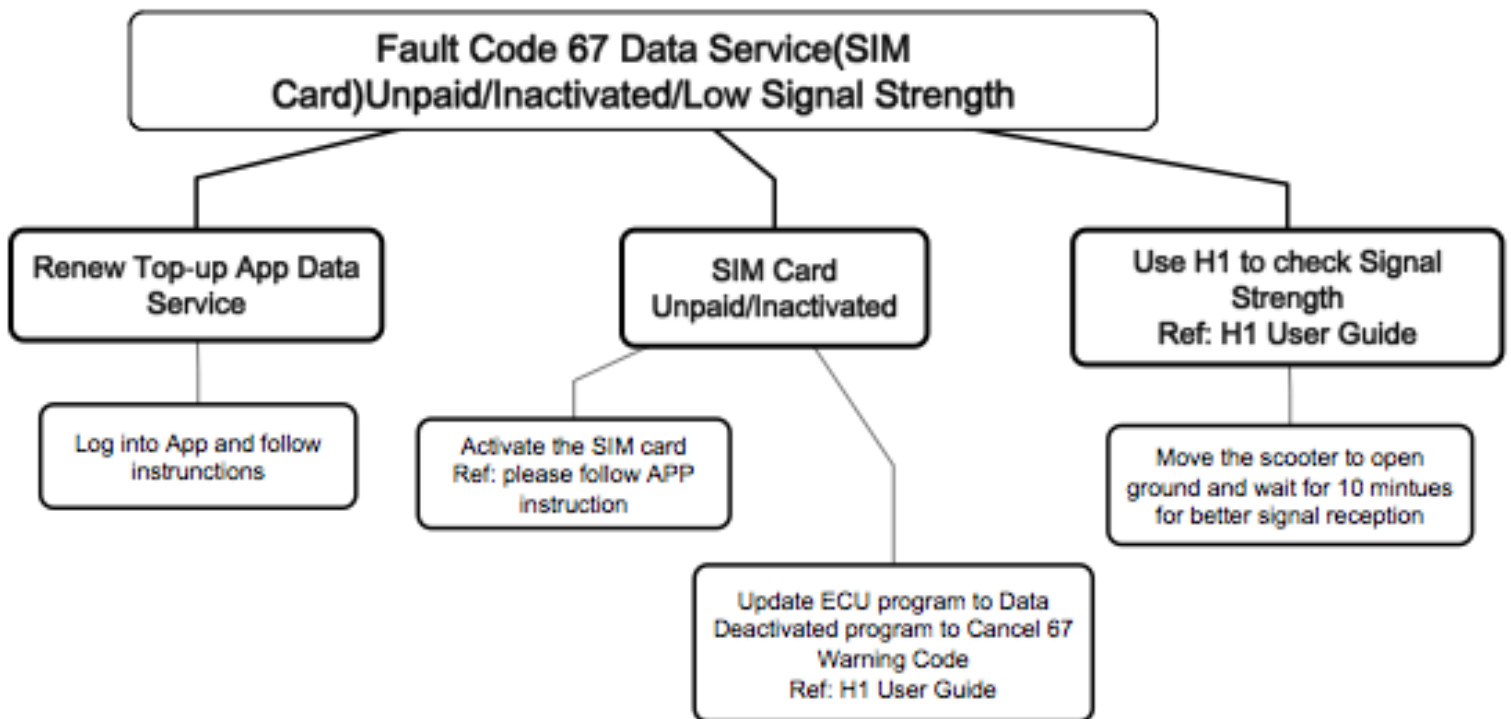
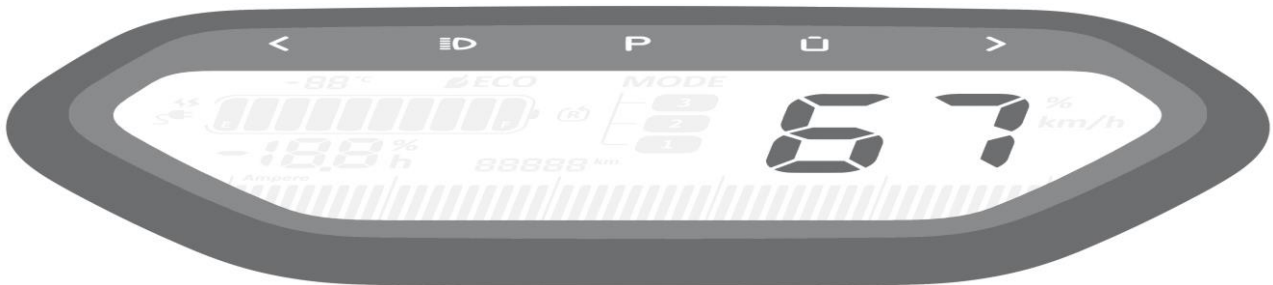
Replace ECU
Ref: 003

**Fault Code 65:
ECU SN
Missing/Incorrect**

Replace ECU
Ref: 003

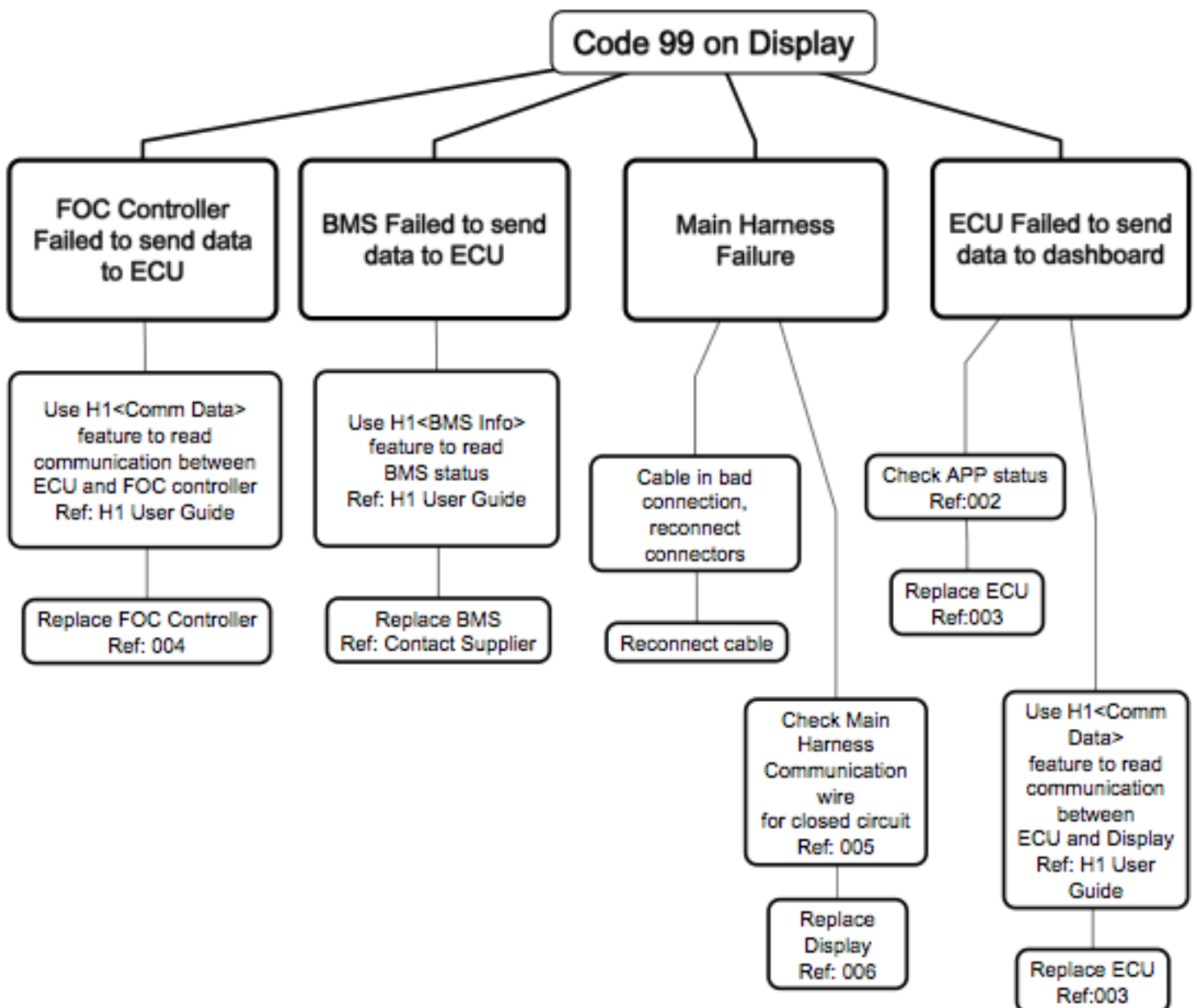
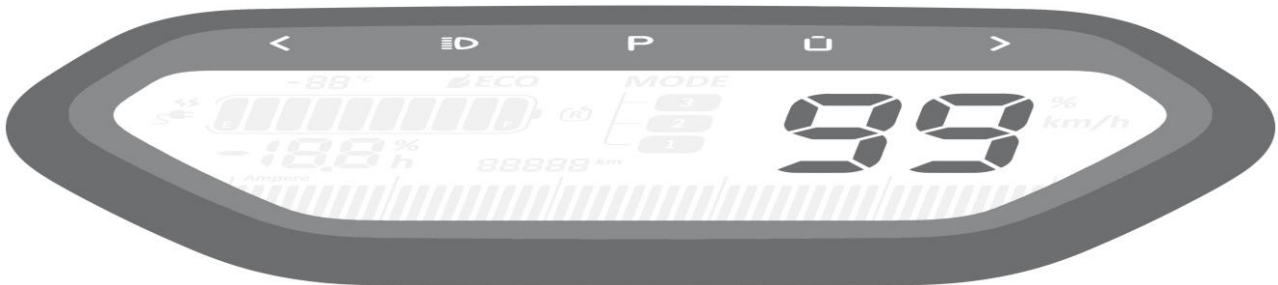


Diagnostic Code - 67 on display



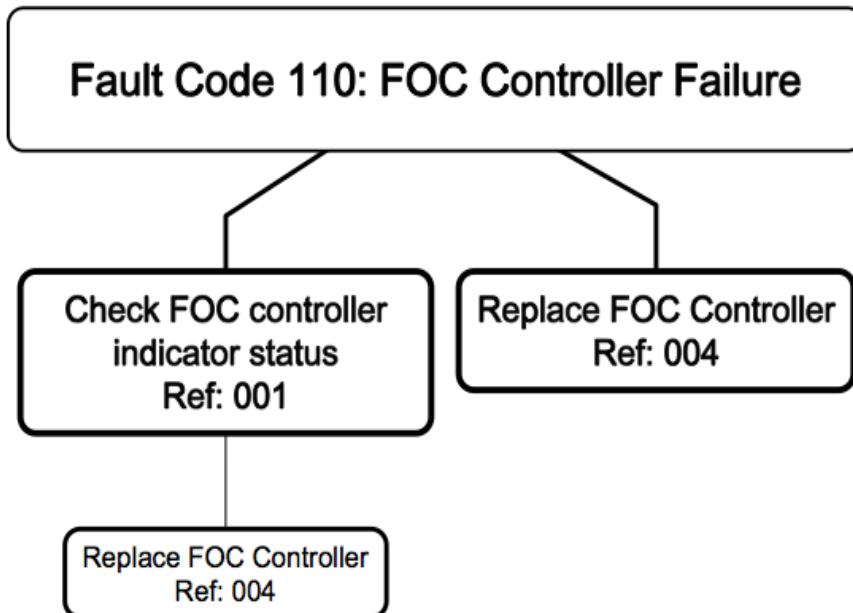
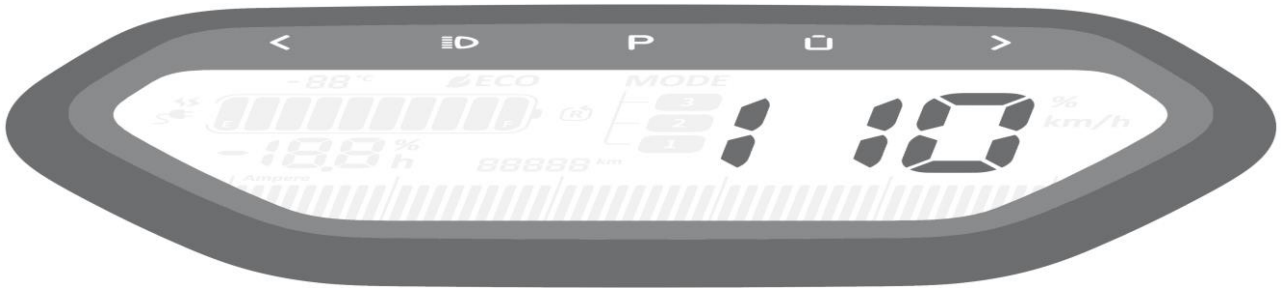


Diagnostic Code - 99 on display



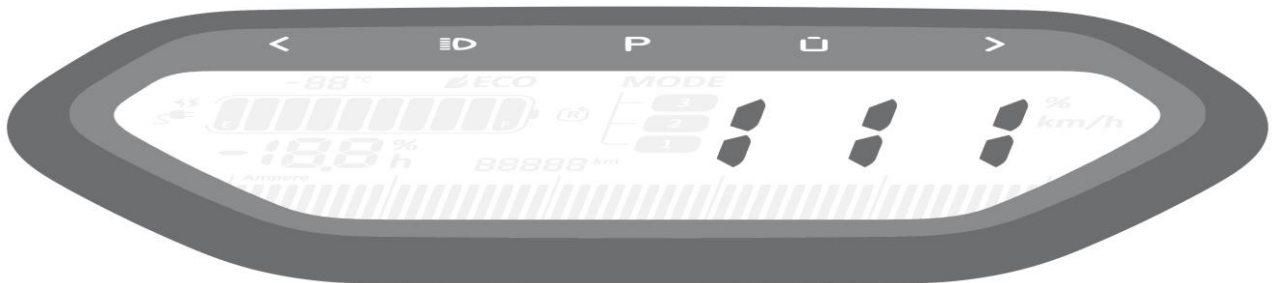


Diagnostic Code - 110 on display

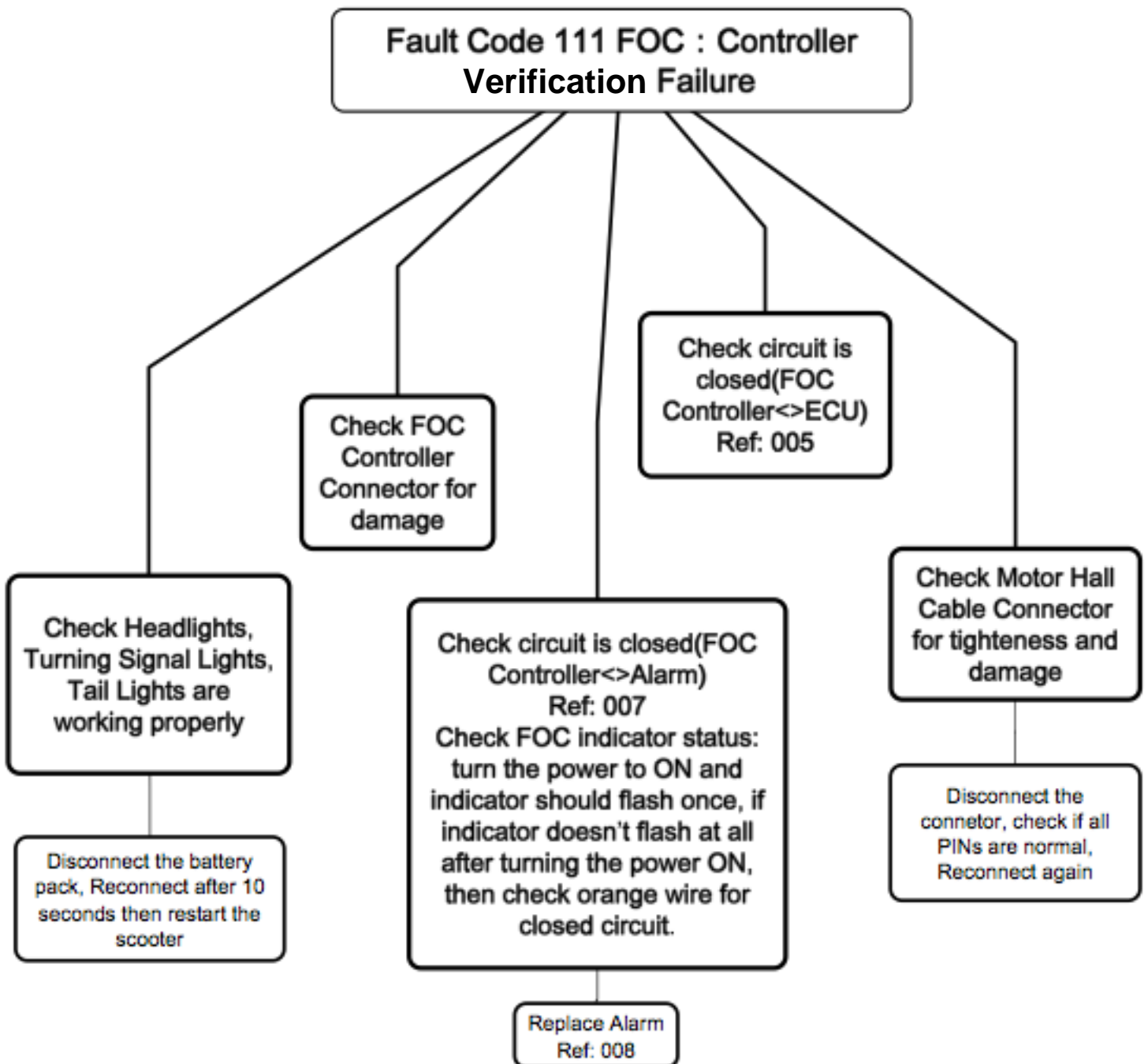




Diagnostic Code - 111 on display

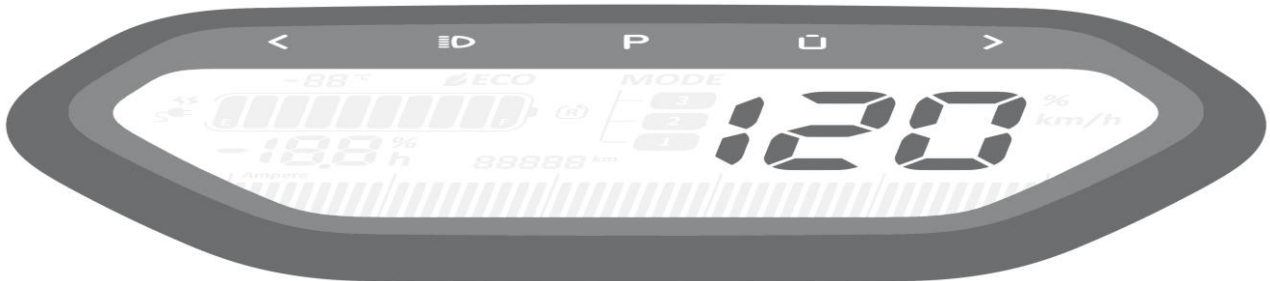


Fault Code 111 FOC : Controller Verification Failure





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)

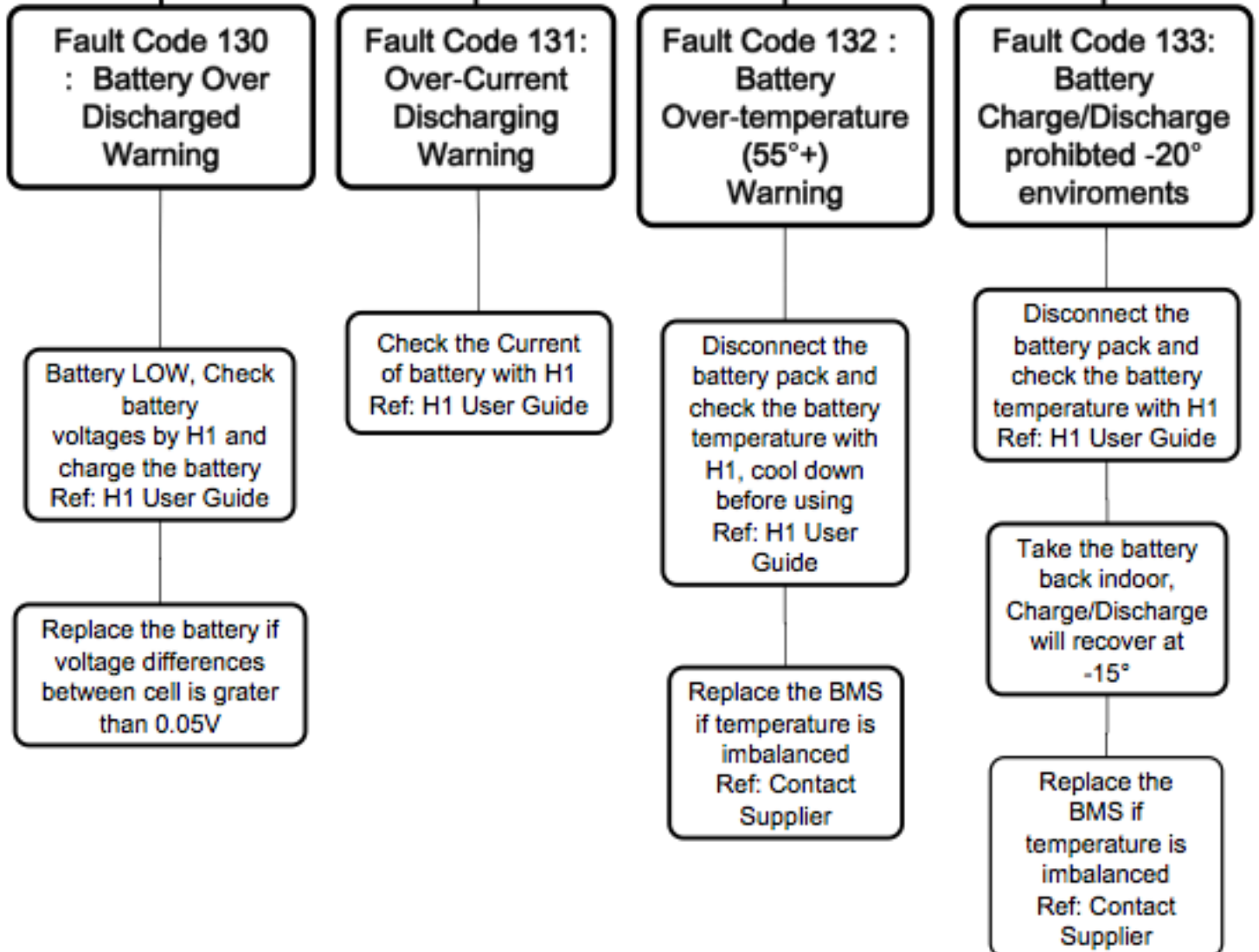
Disconnect the Motor Hall sensor
cable and reconnect again



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



Fault Code 130/131/132/133

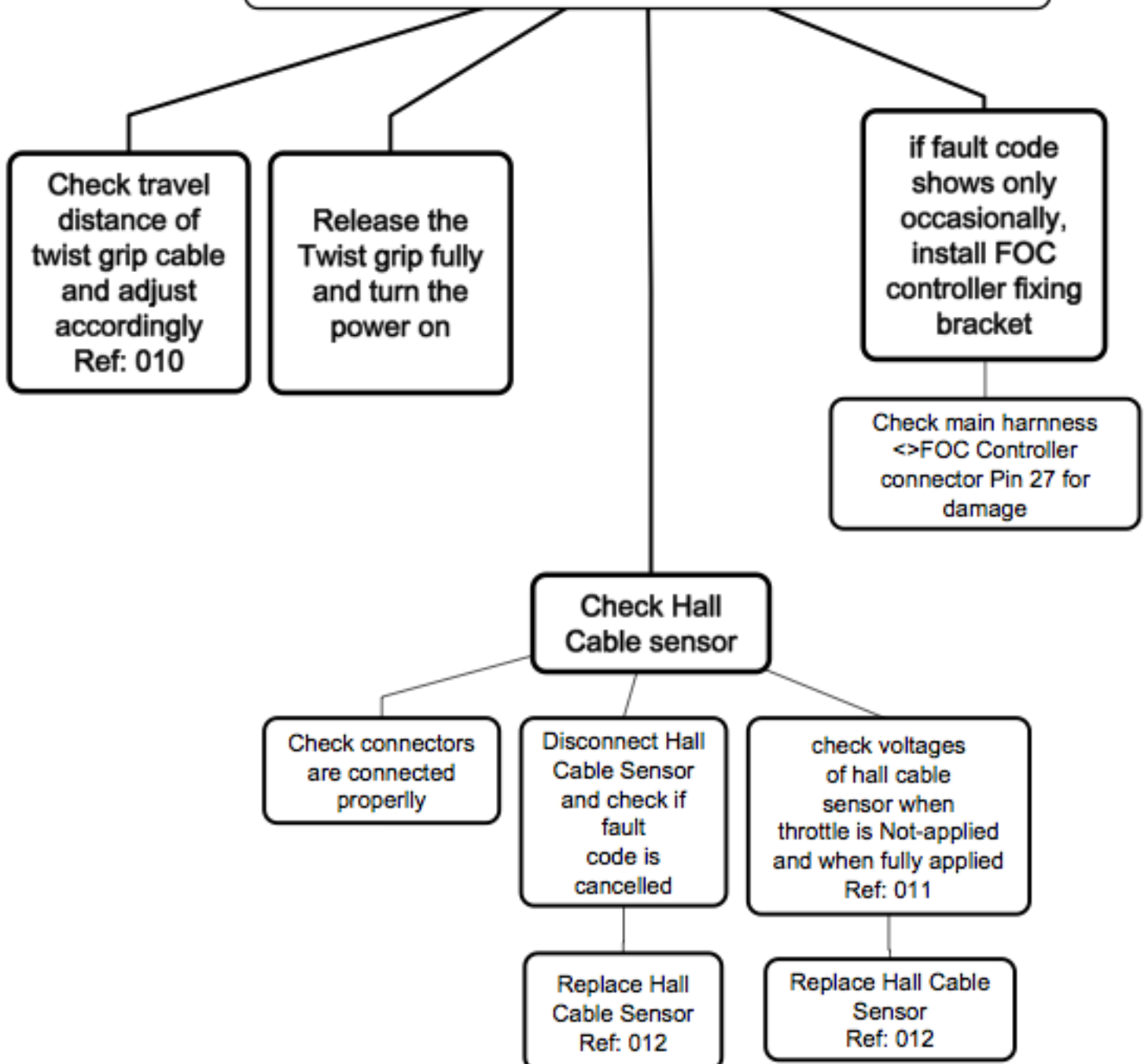




Diagnostic Code - 140 on display



Fault Code 140: Hall Cable Sensor Failure





Diagnostic Code - 161 on display

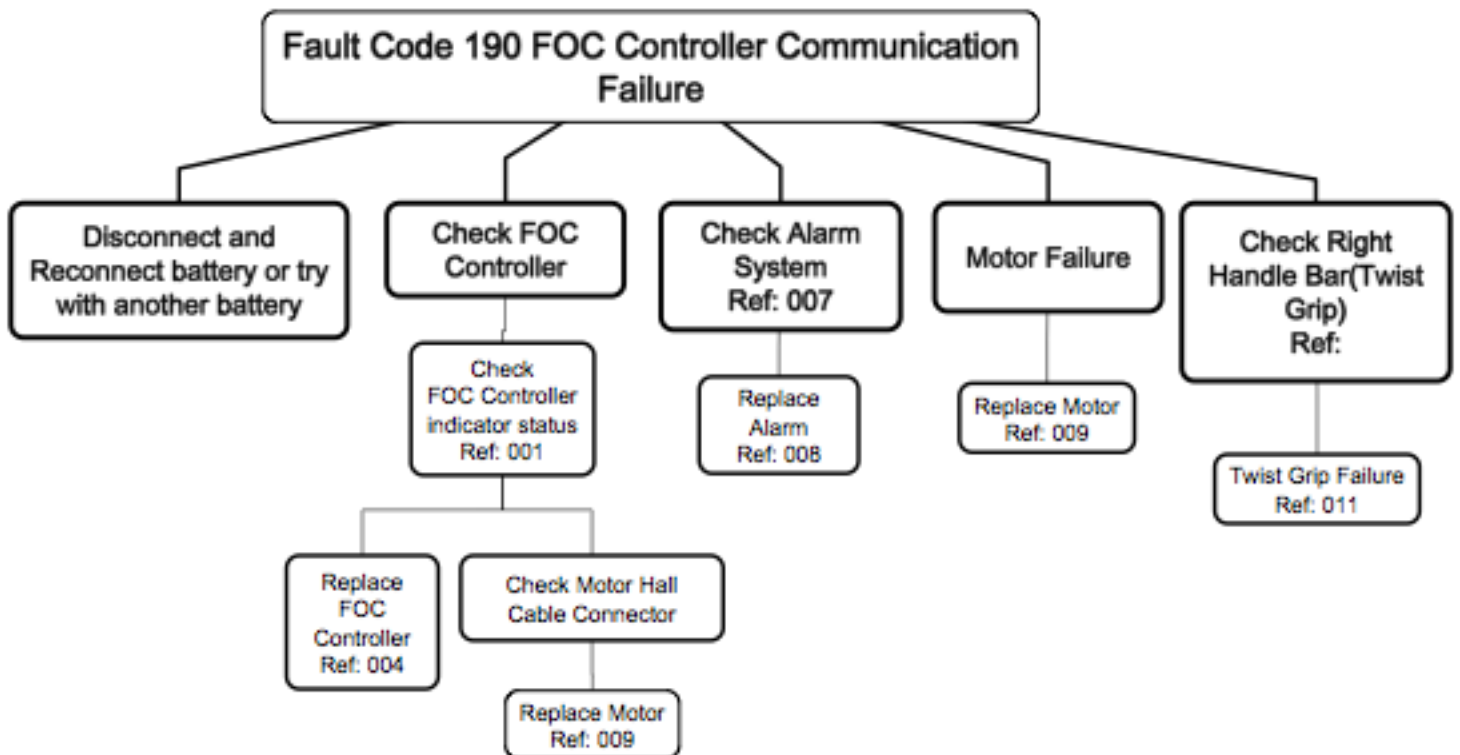


Fault Code 161: Scooter has been locked by remote command

Contact Supplier to unlock

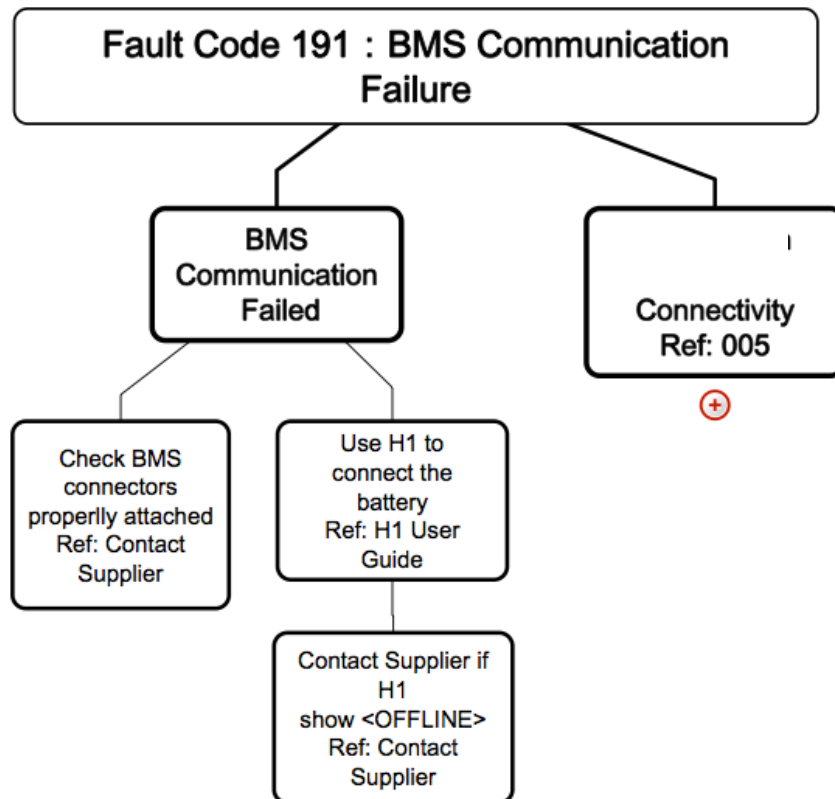
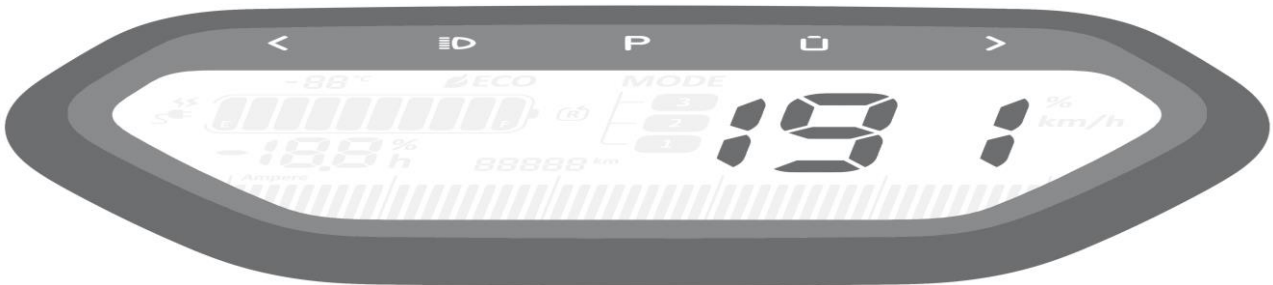


Diagnostic Code - 190 on display





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	Every two year suggest to replace
	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	



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.

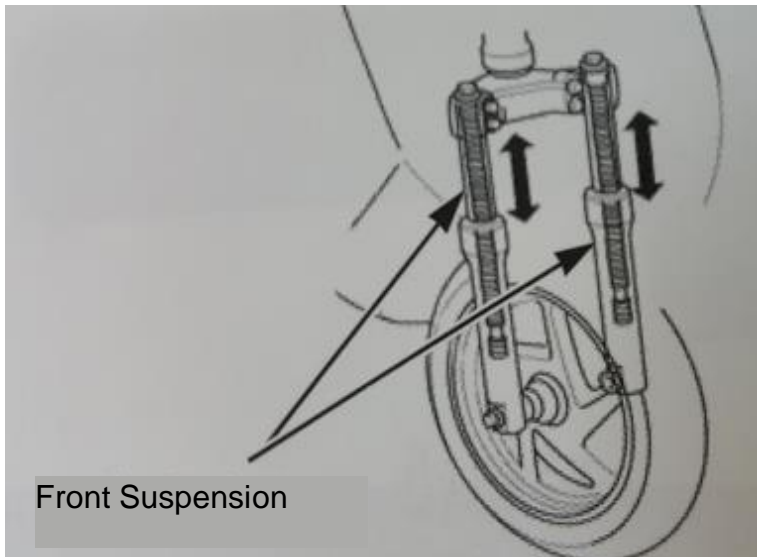


Regular Maintenance Checklist

Inspection of Suspension system

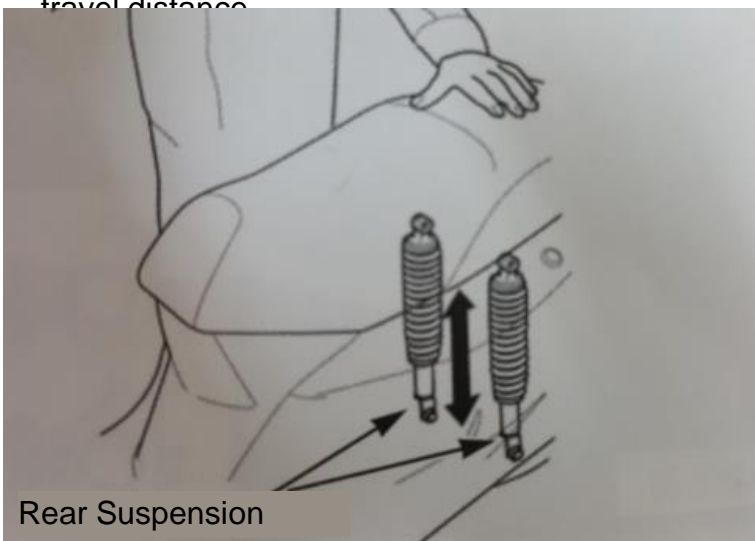
Front suspension

- 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

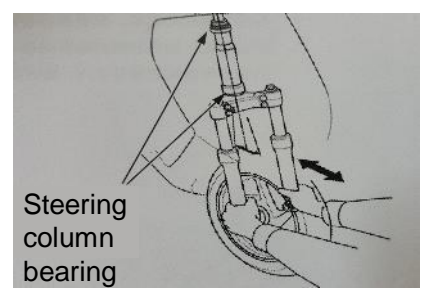
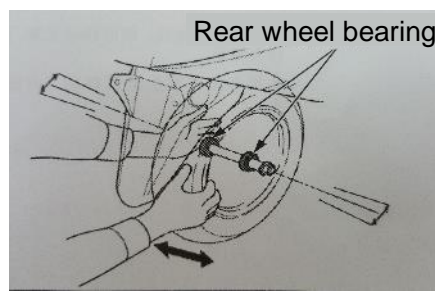
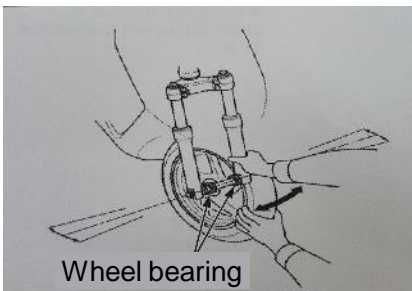
Tightened section and fastener name	Tightening Torque (Nm)
Installation screws on the front hydraulic brake plate	8Nm
Tightening bolts on the front shock absorber	28Nm
Tightening bolts on the fixed handle seat cover	8Nm
Tightening bolts on the welded steering handle assembly	52Nm
Front axle	60Nm
Installation 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

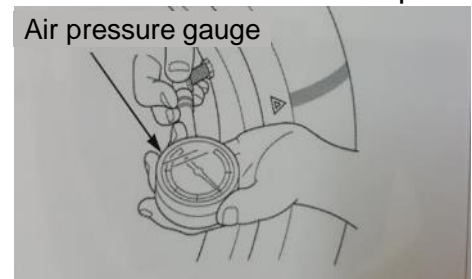
- Support the scooter with the Central Stands.
- Lift up the Front/Rear Wheel to check range of the free travel.
- Hold the Front/Rear Wheel and try to move it leftward and rightward to check the front wheel bearing for wearing.
- Replace the Front/Rear Wheel bearing if it becomes loosened.
- Turn the 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.

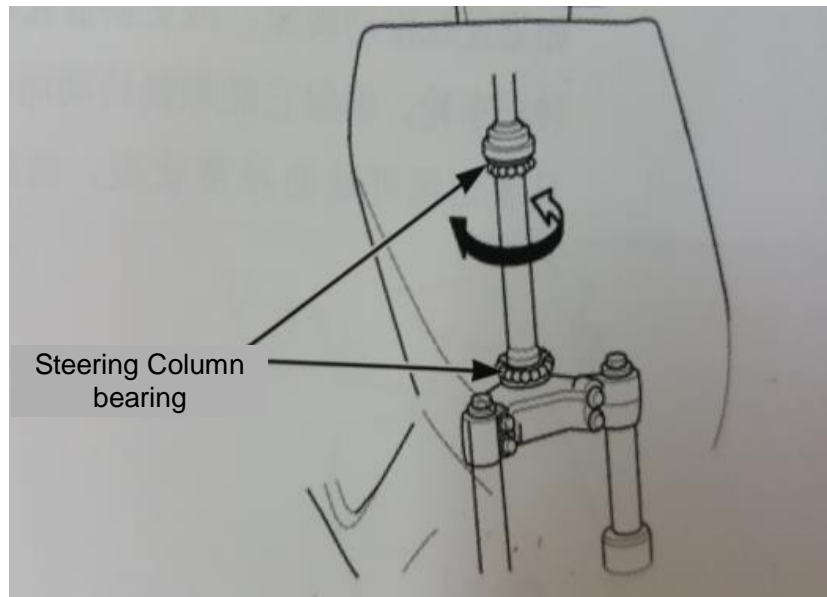




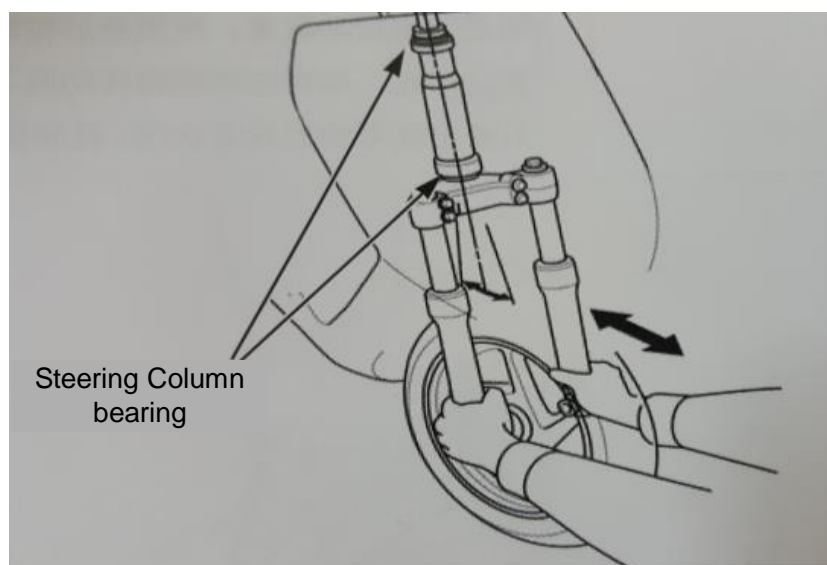
Regular Maintenance Checklist

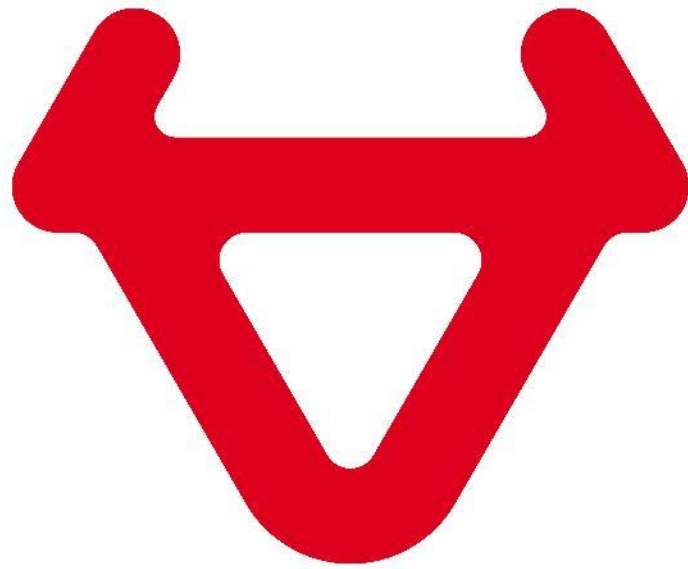
Steering column bearing

- 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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