EN 80V E-BIKE 20INCHES Service manual

OVB917 **www.greenworkstools.com**

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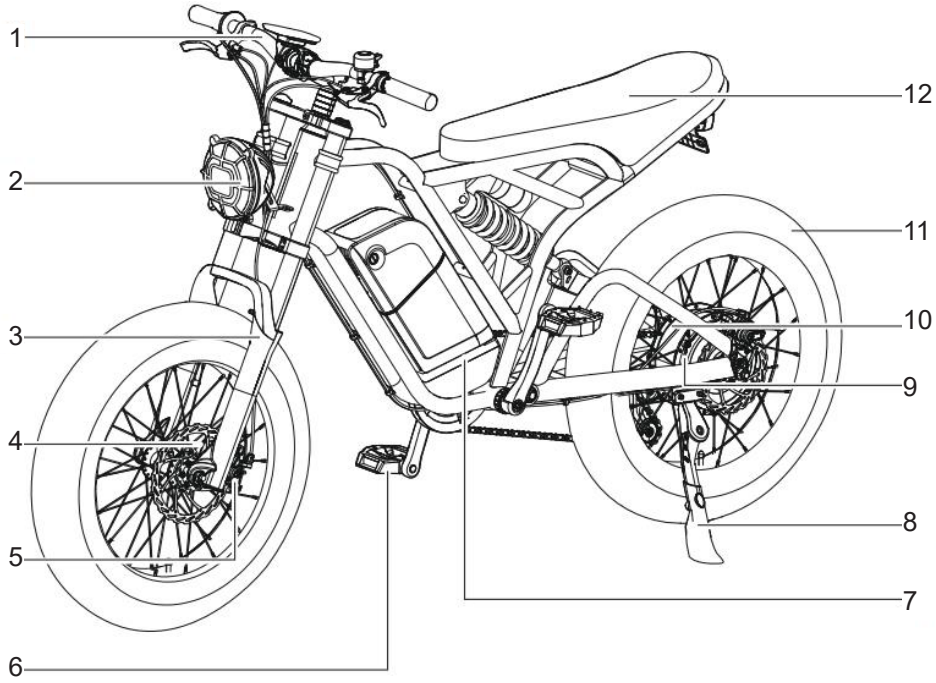
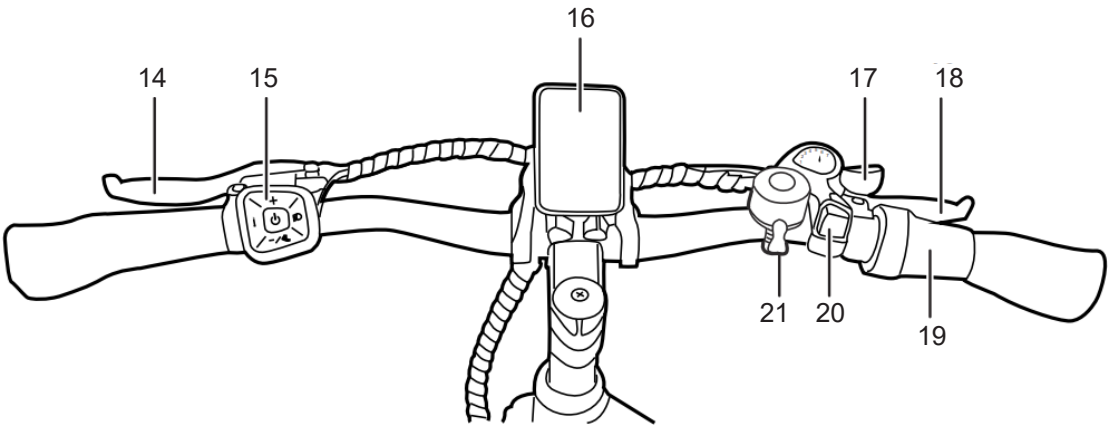
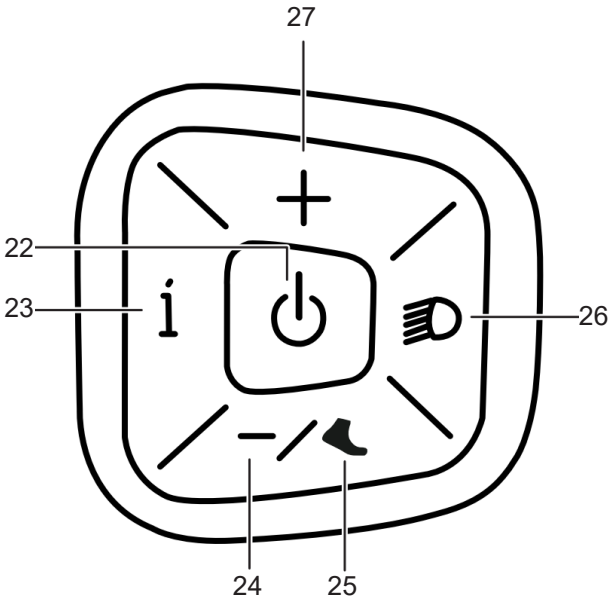
1. Component location



1. Handlebar
2. Headlight
3. Front fork
4. Front disc brake
5. Brake caliper
6. Pedal
7. Battery box
8. Kickstand
9. 7-speed derailleur
10. Rear-hub motor
11. Tire
12. Saddle



14. Front brake lever
15. Button panel
16. LCD display
17. Gear shift lever (-)
18. Rear brake lever
19. Throttle
20. Gear shift button (+)
21. Bell



22. On/off button
23. Parameter setting button
24. PAS (Pedal-assist sensor) decrease button
25. Walk-assist button
26. Headlight button
27. PAS (Pedal-assist sensor) increase button

2. Warning

2.1. All disassembly, replacement, repair, and maintenance operations must be performed by professional operators who have read this manual.

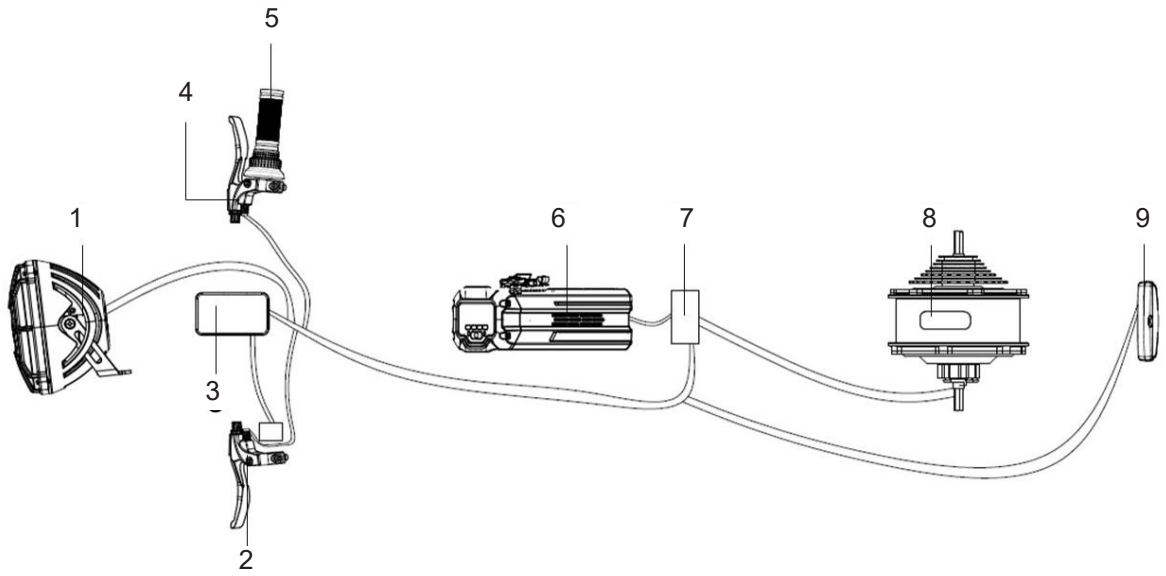
2.2. For the ease of quick disassembly and maintenance, you are advised to: before disassembly, put the machine in a suitable work area; prepare the necessary disassembly tools beforehand; remove the bolts in an appropriate order; put the disassembled parts in a clean work area.

2.3. In addition to obeying the conventional procedures for most repairing processes, there are some other special reminders:

- Before any maintenance work, the start switch must be turned off, and if necessary, disconnect the main power supply of the vehicle.
- Do not put dangerous (flammable or explosive) items on the battery compartment.
- When replacing sharp and dangerous parts, protective gloves or other protective measures must be used.
- No operations shall be carried out before all the moving parts have come to a standstill.
- To avoid any personal injury or death, make sure that no one other than the maintenance operators is near the vehicle under repair or touches the mechanical parts by accident.

3. Electrical system

3.1 Schematic diagram of electrical components connection for the entire vehicle



1. Headlight
2. Left brake lever
3. LCD display
4. Right brake lever
5. Speed regulation switch
6. Battery pack
7. Controller
8. Motor
9. Taillight

3.2 Description of instrument display

1. Battery level
2. Error
3. Speed
4. Walk-assist symbol
5. Trip distance
6. Odometer
7. Maximum speed
8. Average speed
9. Headlight
10. Bluetooth
11. Cruise control
12. PAS level

3.3 Error codes

Error Codes	Error Contents	Possible Solution
E001	Controller fault	1. Check if the fault is eliminated after replacing the controller. 2. If the fault persists, contact the after-sales service team.
E002	Communication fault	1. Unplug and plug the connector between the instrument and the main line, and check whether the fault is eliminated. 2. If the fault persists, replace the instrument first, if it still doesn't work, replace the controller. 3. If the fault persists, contact the after-sales service team.
E003	Hall fault	1. Disconnect the connector between the motor line and the controller, check if the plug-in pin is not crooked and free of any foreign matter inside. If so, then connect the connector. 2. If the fault persists, replace the motor. 3. If the fault persists after changing the motor, contact the after-sales service team.
E004	Handle fault	1. First turn off the power, turn the handle to check whether it can normally return to the initial state. 2. If it can return to the initial state, turn on the power, and check whether the fault is eliminated. If the fault persists, replace the speed regulation handle. 3. If the fault persists after replacing the speed regulation handle, contact the after-sales service team.
E005	Brake lever fault	1. Pinch and release the brake handle for 3-5 times, and check whether the brake handle is completely back to the initial position and whether the rebound is strong. 2. If the brake is not smooth after releasing, pull the brake in the direction of the return position and check whether the fault disappears. 3. If the fault persists, replace the brake handle. 4. If the fault persists, contact the after-sales service team;
E006	Motor phase loss	1. Check whether the motor connector is in good contact, pull out the motor connector and visually check whether there is any foreign matter inside, if it is normal, replace the motor. 2. If the fault persists after replacing the motor, contact the after-sales service team.
E012	Abnormal communication between battery pack and controller	1. Check whether the connector between the controller and the battery pack is in good contact, unplug and plug it in. 2. If the fault persists, contact the after-sales service team.
E013	Battery pack over temperature	1. Disconnect the power of the whole vehicle, stop using the battery pack, and contact the after-sales service team.
E014	Abnormal battery pack undervoltage	1. Check whether the battery specification is consistent with that in the service manual, if not, replace with a battery of the specification specified in the service manual. 2. If the battery specification is correct, check whether the battery level is low by observing the power percentage on the battery pack. If the power is insufficient, connect the charger to charge the battery. 3. If the fault persists after charging, contact the after-sales service team.

Note: The above parts replacement and checking shall be operated after removing the battery, insert the battery after operation, and then press the power-on switch.

4. Body and Structures System

4.1 Frame Assembly

4.1.1 Bell

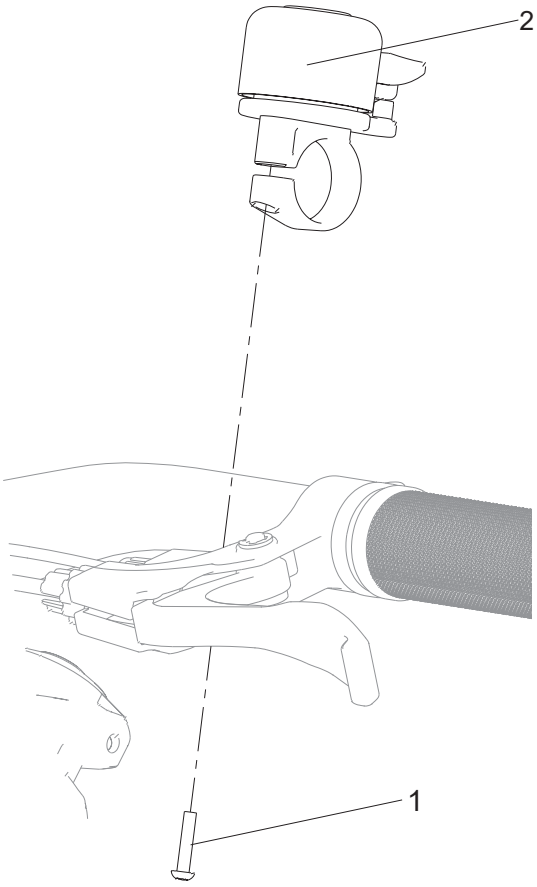


Fig.1

1. Screw M4*2 2. Bell

Disassembly:

1. Remove the fixing screws (1) that hold the bell to the handle bar with a cross screwdriver to take out the old bell (2).

Assembly:

1. Install the new bell (2) on the handle bar and tighten it with the screw (1).

4.1.2 Pedal

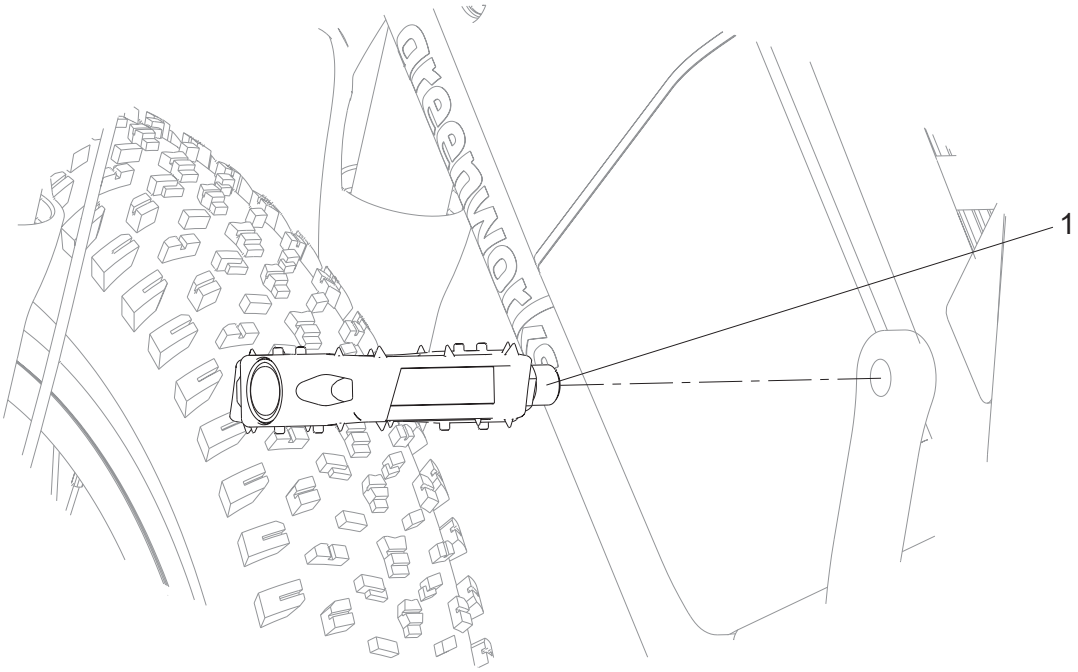


Fig.2

1. Pedal

Disassembly:

1. Loosen the fixed connection between the pedal (1) and the crank with a wrench to the pedal (1).

Assembly:

1. Install the new pedal (1) on the crank and tighten it with a wrench.

Note:

1. Remove the left pedal clockwise;
2. Remove the right pedal counterclockwise;
3. Torque value: pedal (1) is ≥30N·m.

4.1.3 Chain

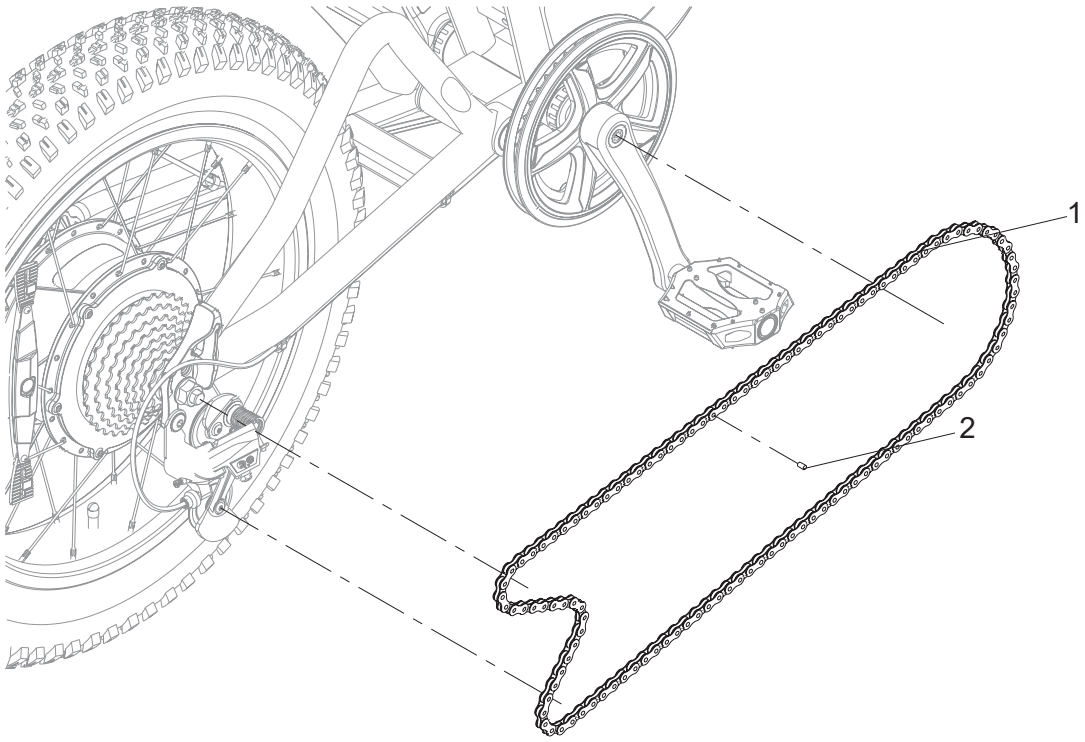


Fig.3

1. Chain 2. Pin

Disassembly:

1. Locate the interface of the chain (1) (first find the place marked with a symbol, which is the interface);
2. Align the opening of the chain cutter with the pin (2) at the interface of the chain (1) and press down to remove the pin (2);
3. Loosen the chain interface and remove the chain.

Assembly:

1. Install the new chain (1) back into place;
2. Align the opening of the chain cutter with the pin (2) at the interface of the chain (1) and press down to install the pin (2) in place.

4.1.4 Kickstand

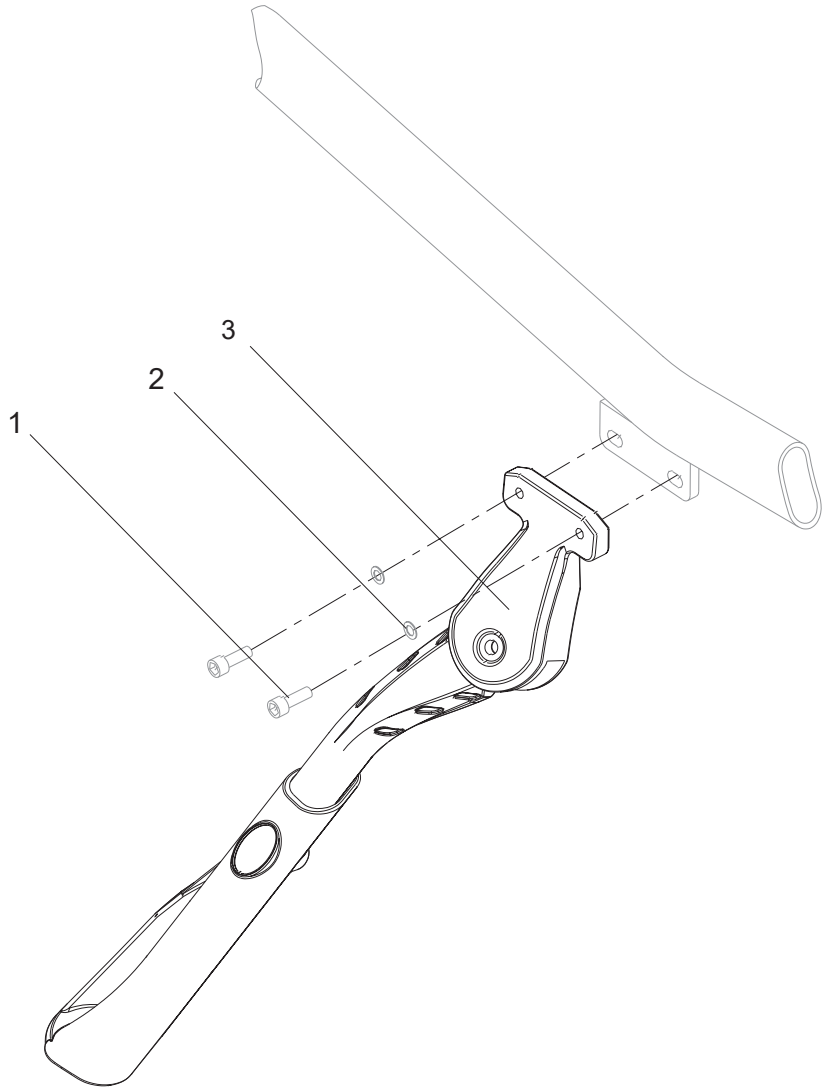


Fig.4

1. Hexagon socket head cap screw M6*15 2. Spacer φ6*1.5T 3. Kickstand

Disassembly:

1. Remove the two fixing screws (1) and the two spacers (2) of the kickstand (3) with a 5mm Allen wrench to remove the kickstand (3).

Assembly:

1. Install the kickstand (3) on the frame and tighten it with two screws (1) and two spacers (2).

4.1.5 Wheel reflectors

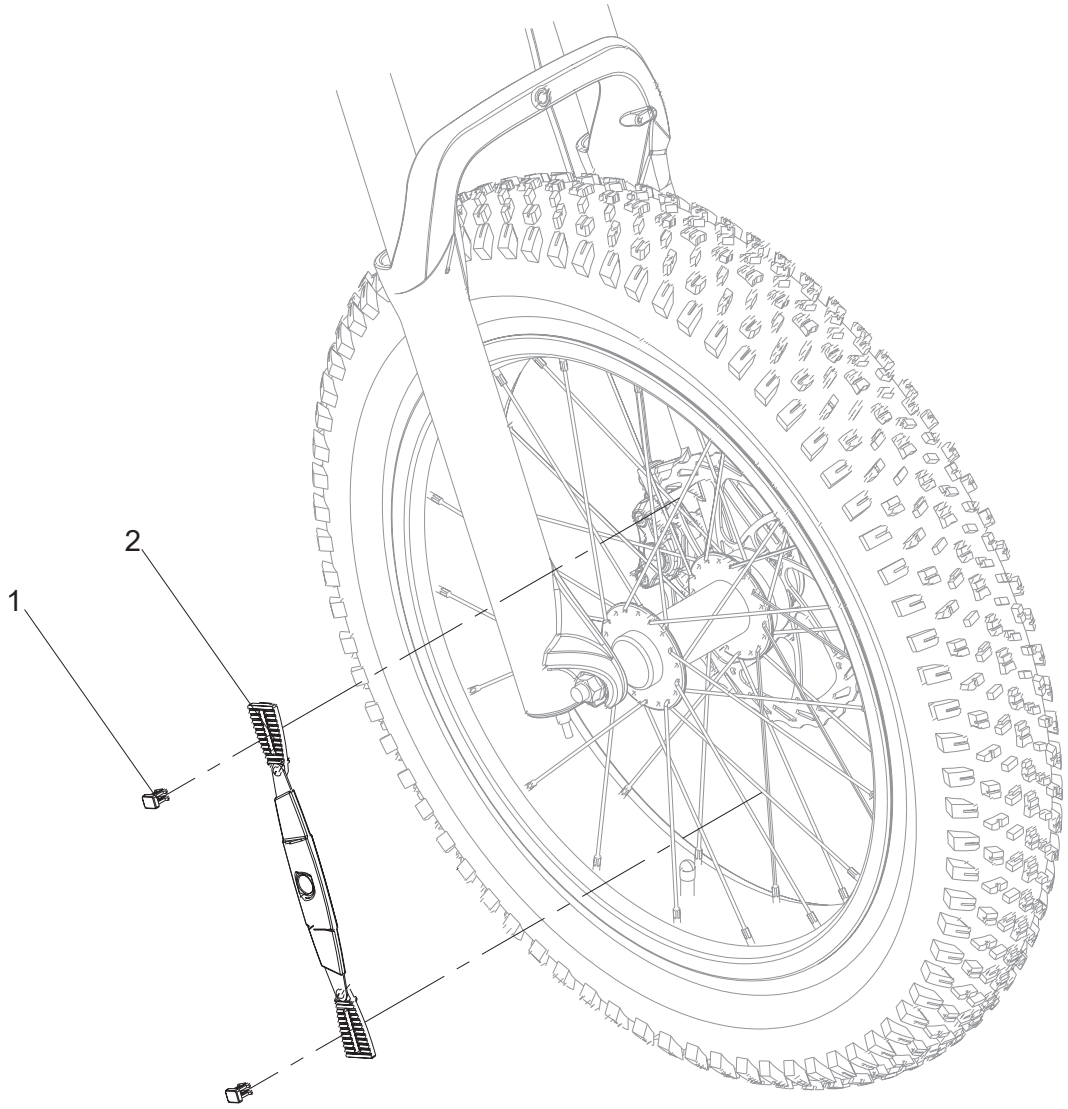


Fig.5

1. Buckle 2. Wheel reflectors

Disassembly:

1. Pull out the two buckles (1) at both ends of the wheel reflector to remove the wheel reflector (2).

Assembly:

1. Install the wheel reflector (2) onto the spokes of the wheel hub and secure it with the buckle (1).

4.2 Battery Cover Assembly

4.2.1 Upper cover assembly

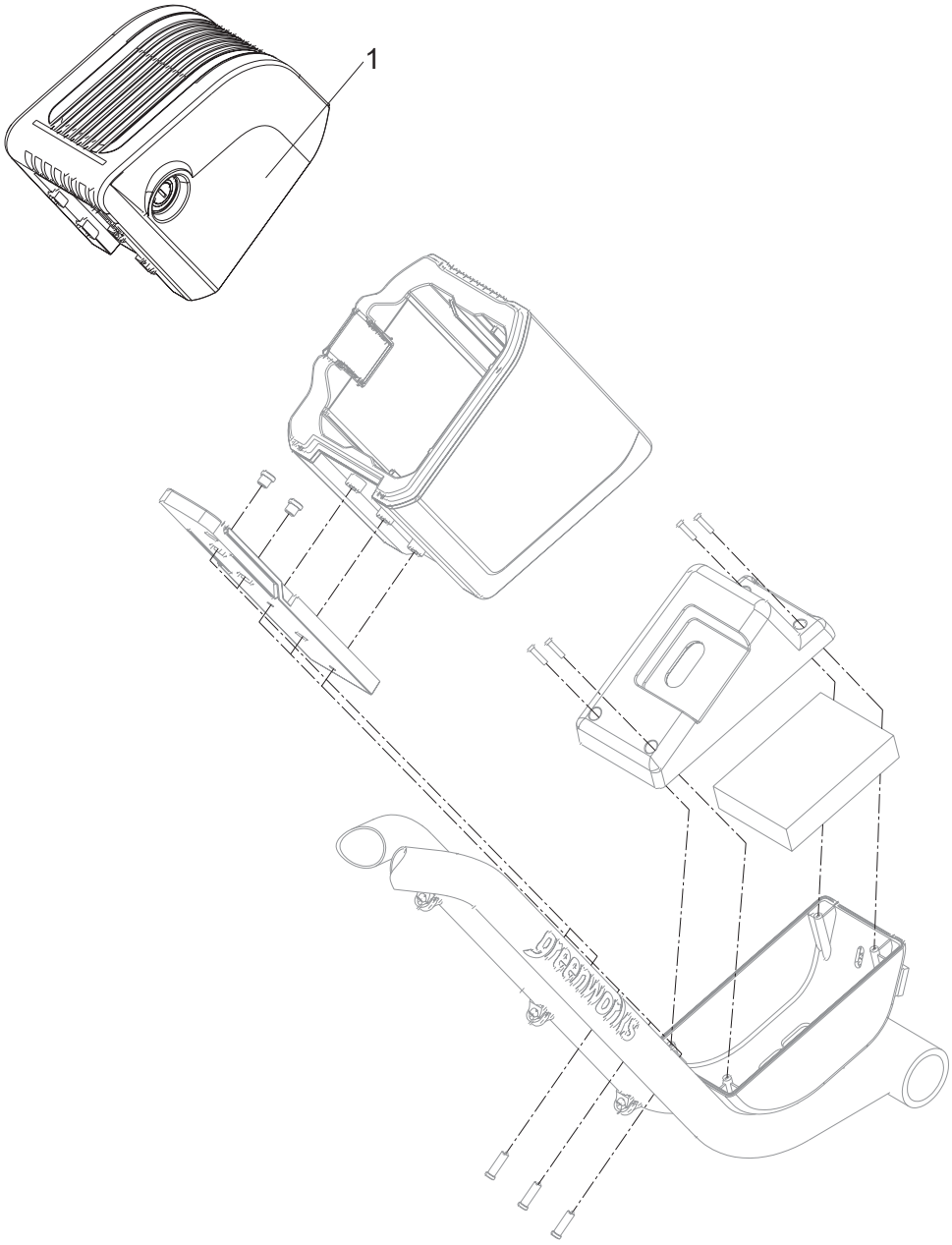


Fig.1

1. Upper cover assembly

Disassembly:

1. Remove the upper cover assembly (1) from the battery slide by turning the key clockwise.

Assembly:

1. Install the new upper cover assembly (1) in place by turning the key clockwise.

5. Electrical System

5.1 Controllers Parts

5.1.1 Controller

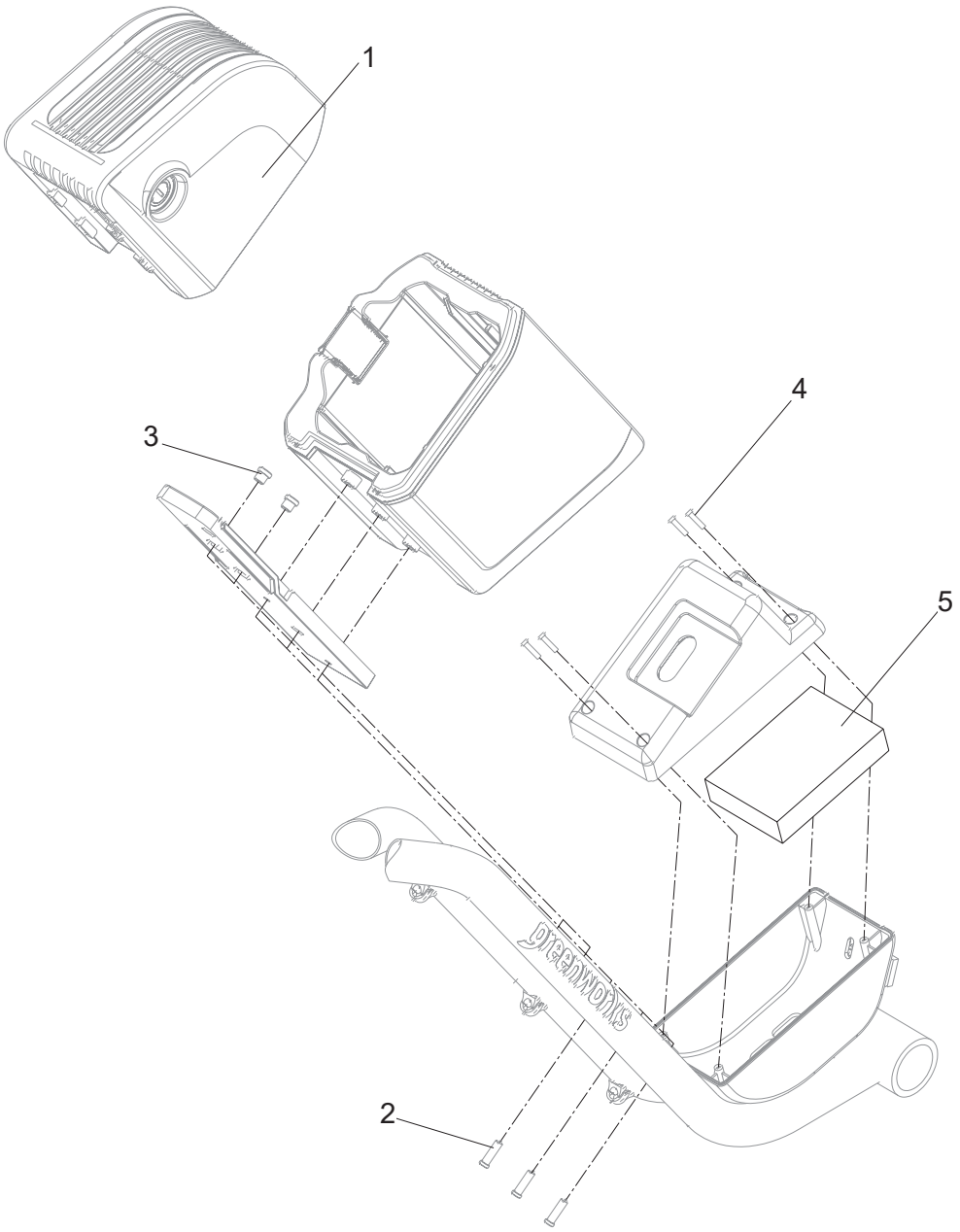


Fig.1

1. Upper cover assembly
2. Hexagon socket head cap screw M5*15
3. Countersunk head cross screw M5*12
4. Semicircular head cross tapping screw ST4*13
5. Controller

Disassembly:

1. Turn the key clockwise to remove the upper cover assembly from the battery slide (1);
2. Take out the battery pack in the battery compartment;

3. Remove the two fixing screws (2) between the battery compartment slide and the frame with a cross screwdriver and the two fixing screws (3) between them.
4. Unplug the connector between the battery compartment and the controller to remove the components of the battery compartment and slide;
5. Remove the four fixing screws (4) from the upper cover of the controller with a cross screwdriver to remove the upper cover of the controller box.
6. Unplug the connector between the controller (5) and each component to remove the controller (5).

Assembly:

1. Connect the new controller (5) to the connectors of each component, replace it in the controller box, cover its upper cover, and fasten it with four screws (4);
2. Connect the battery compartment to the controller connector, put the battery compartment and slide components back in place, and fasten them with two screws (2) and two screws (3).

Note:

1. Torque value: 3-5N m for screw (1), 3-5N m for screw (2), 3-5N m for screw (3).

5.2 Wire Harness Assembly

5.2.1 Waterproof wire

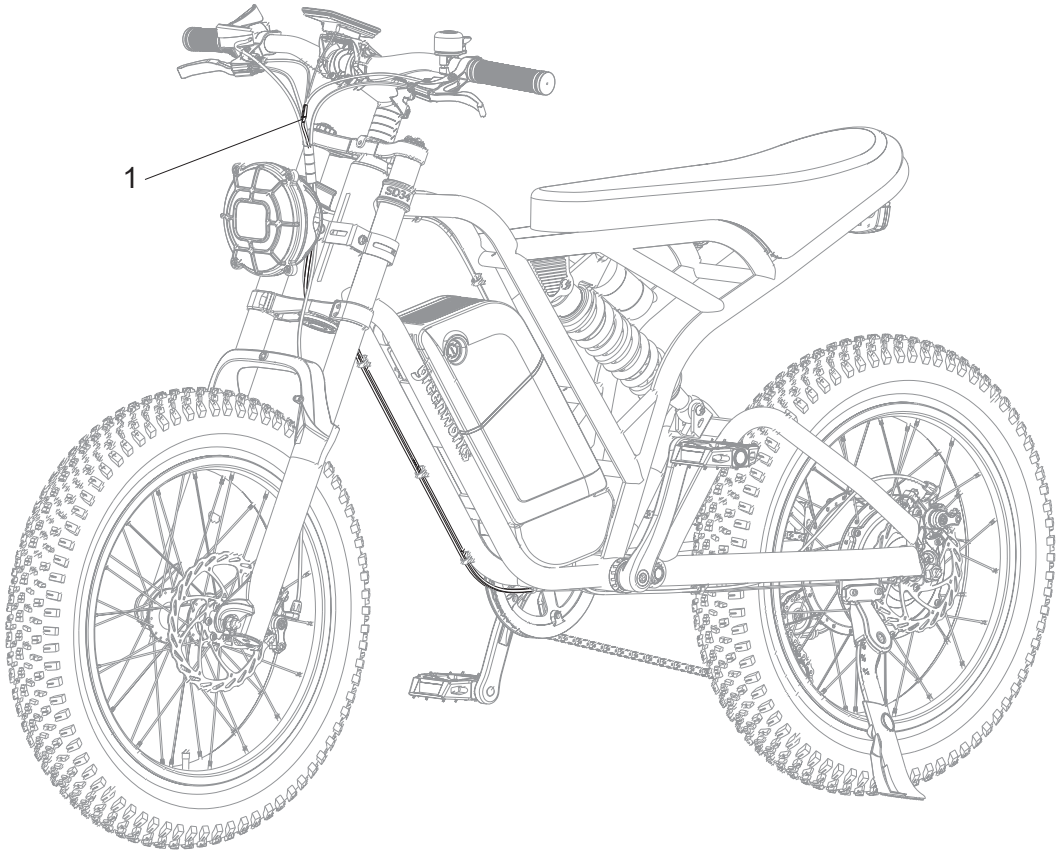


Fig.1

1. Waterproof wire

Disassembly:

1. Remove the winding pipe of the waterproof wire (1), and unplug the connector between the front end component of the frame and the waterproof wire (1);
2. Remove the controller (refer to 5.1.1), unplug the waterproof wire (1) from the connector of the controller to remove the waterproof wire main line (1).

Assembly:

1. Connect the new waterproof wire (1) to the connector of the controller, arrange the waterproof wire (1) as before, and reinstall the controller (refer to 5.1.1);
2. Connect the front end component of the frame with the connector connected to the waterproof wire (1), and install the winding pipe of the waterproof wire (1) as before.

5.3 Meter Parts

5.3.1 Instrument

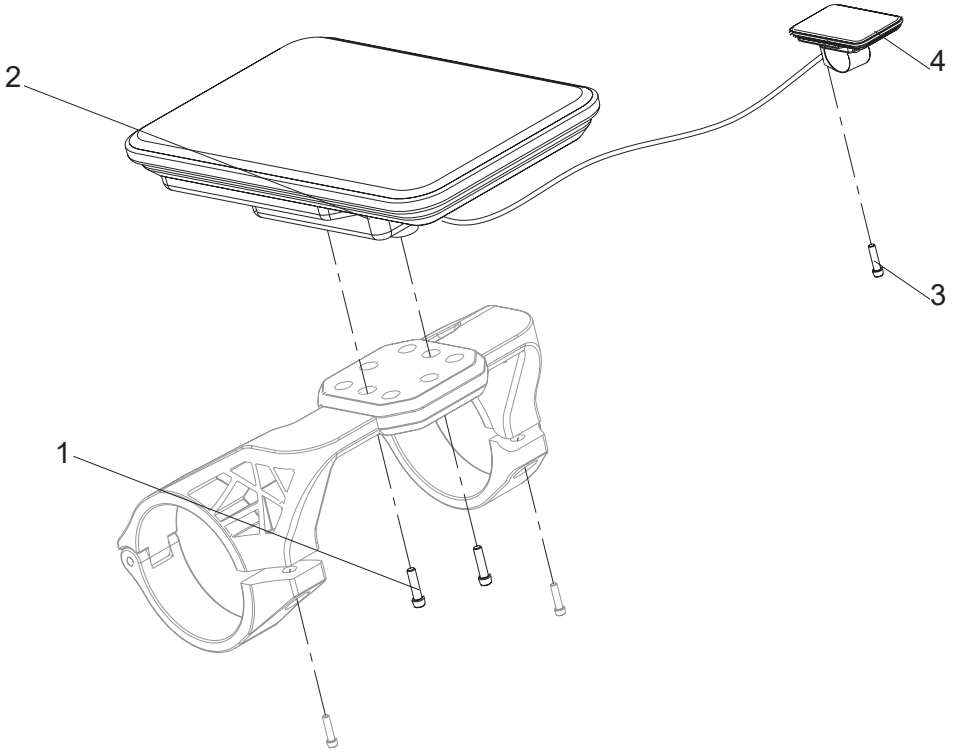


Fig.1

1. Hexagon socket head cap screw M4*8
2. Instrument display
3. Hexagon socket head cap screw M3*10
4. Instrument switch

Disassembly:

1. Take out the battery pack in the battery compartment;
2. Unplug the instrument display (2) and the connector of the waterproof wire main line;
2. Remove the two fixing screws (1) between the instrument display (2) and the instrument bracket with a 3mm Allen wrench to remove the instrument display (2);
3. Remove the fixing screws (3) between the instrument switch (4) and the handle bar with a 2.5mm Allen wrench to remove the instrument switch (4).

Assembly:

1. Install the instrument display (2) on the instrument bracket and tighten it with two screws (1);
2. Install the new instrument switch (4) on the handle bar and tighten it with screws (3);
3. Connect the instrument display (2) and the connector of the waterproof wire main line.

Note:

1. Torque value: 3N·m for screw (1); 3N·m for screw (3).

5.4 Lights Parts

5.4.1 Head light

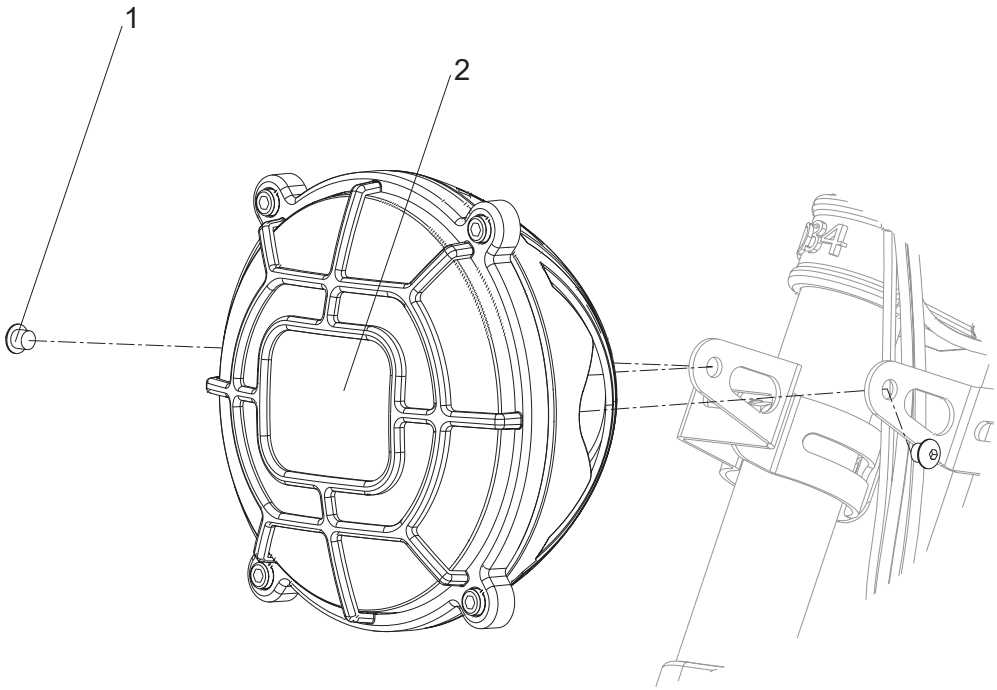


Fig.1

1. Hexagon socket head cap screws M6*5 2. Head light

Disassembly:

1. Take out the battery pack in the battery compartment;
2. Unplug the head light (2) and the connector of the waterproof wire main line;
2. Remove the two fixing screws (1) between the head light (2) and the head light bracket with a 5mm Allen wrench to take down the head light (2).

Assembly:

1. Install the new head light (2) on the head light bracket and tighten it with two screws (1);
2. Connect the head light (2) and the connector of the waterproof wire main line;

5.4.1 Tail light

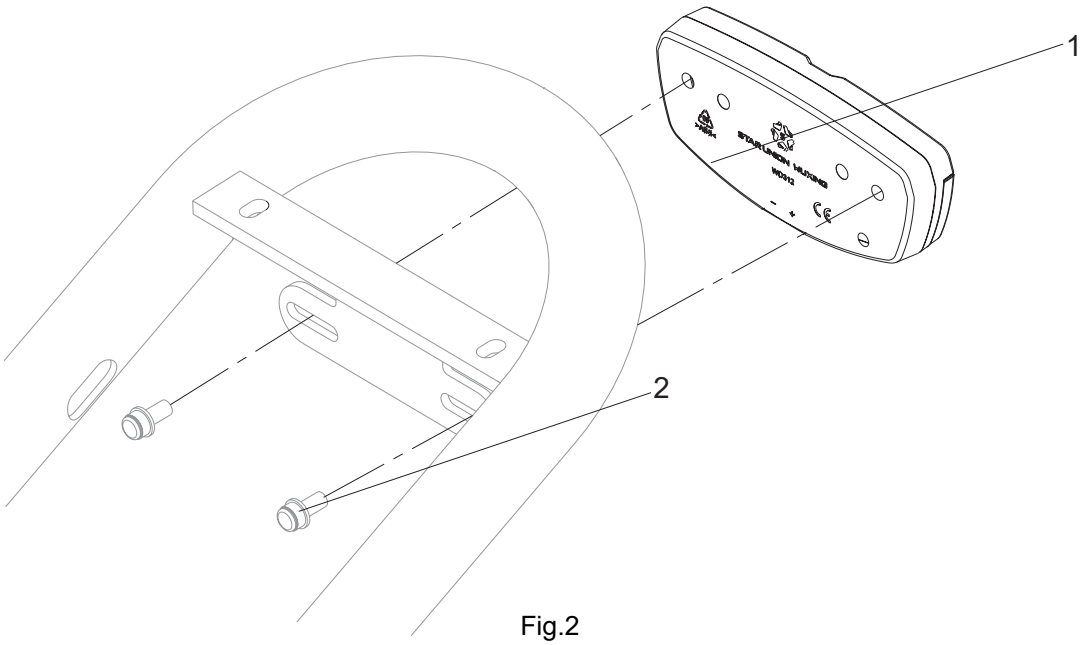


Fig.2

1. Tail light 2. Screw M5*10

Disassembly:

1. Take out the battery pack in the battery compartment;
2. Remove the fixing screws (2) of the tail light (1) with a wrench;
3. Disconnect the battery compartment from the frame and expose the controller (refer to 5.1.1);
4. Unplug the connector between the controller and the tail light (1);
5. Remove the tail light (1) from the frame.

Assembly:

1. Arrange the wiring harness of the new tail light (1) to its original position;
2. Connect the controller to the connector of the tail light (1);
3. Reinstall the controller (refer to 5.1.1);
4. Mount the new tail light (1) to the frame and fix it with screws (2).

5.5 Others

5.5.1 Speed regulation handle

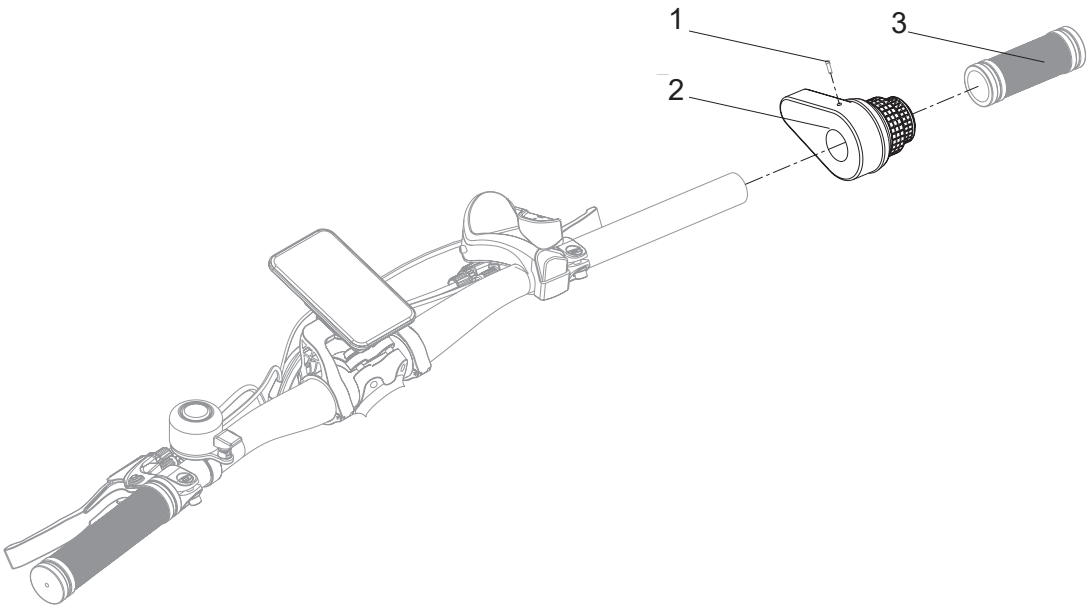


Fig.1

1. Hexagon socket head cap screw M5*8 2. Speed regulation handle 3. Handle sleeve

Disassembly:

1. Take out the battery pack in the battery compartment;
2. Remove the handle sleeve (3);
3. Remove the fixing screw (1) of the speed regulation handle (2) with a 2.5mm Allen wrench;
4. Unplug the connector between the speed regulation handle (2) and the main line to remove the speed regulation handle (2).

Assembly:

1. Install the new speed regulation handle (2) back into the handle bar and connect the speed regulation handle (2) to the connector of the main cable;
2. Secure the speed regulation handle (2) to the appropriate position on the handle bar with the fixing screw (1);
3. Install the handle sleeve (3) back into its original position.

6 Drive System

6.1 Wheel Assembly

6.1.1 External tire

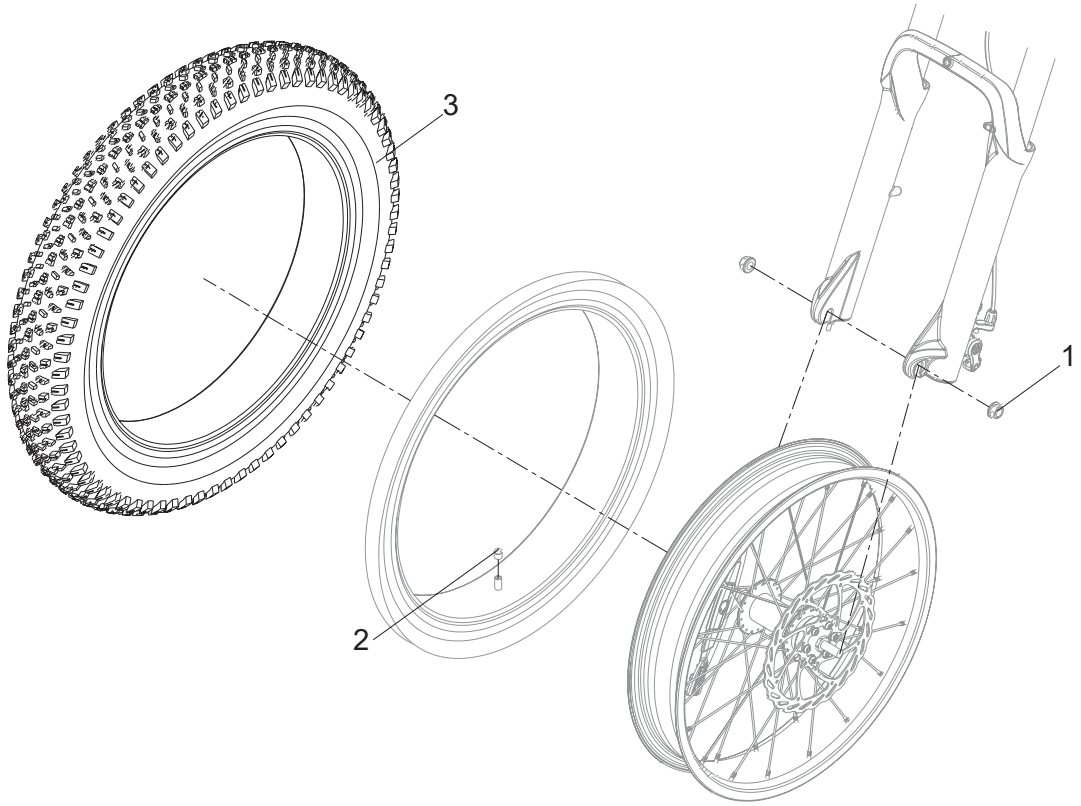


Fig.1

1. Lock nut M10 2. Inner tube cap 3. External tire

Front external tire

Disassembly:

1. Remove the two fixing nuts (1) of the wheel hub assembly with a wrench to remove the wheel hub assembly;
2. Loosen the inner tube cap (2) to deflate the inner tube;
3. Remove the external tire (3) from the wheel hub by a tool.

Assembly:

1. Mount the new external tire (3) to the wheel hub;
2. Inflate the tire with an air pump and tighten the inner tube cap (2);
3. Install the wheel hub assembly back to the front fork and tighten it with two nuts (1).

Note:

1. Front wheel tire pressure: MIN.5-MAX.30 psi (40-210kPa);
2. Torque value: 30-45N·m for nut (1).

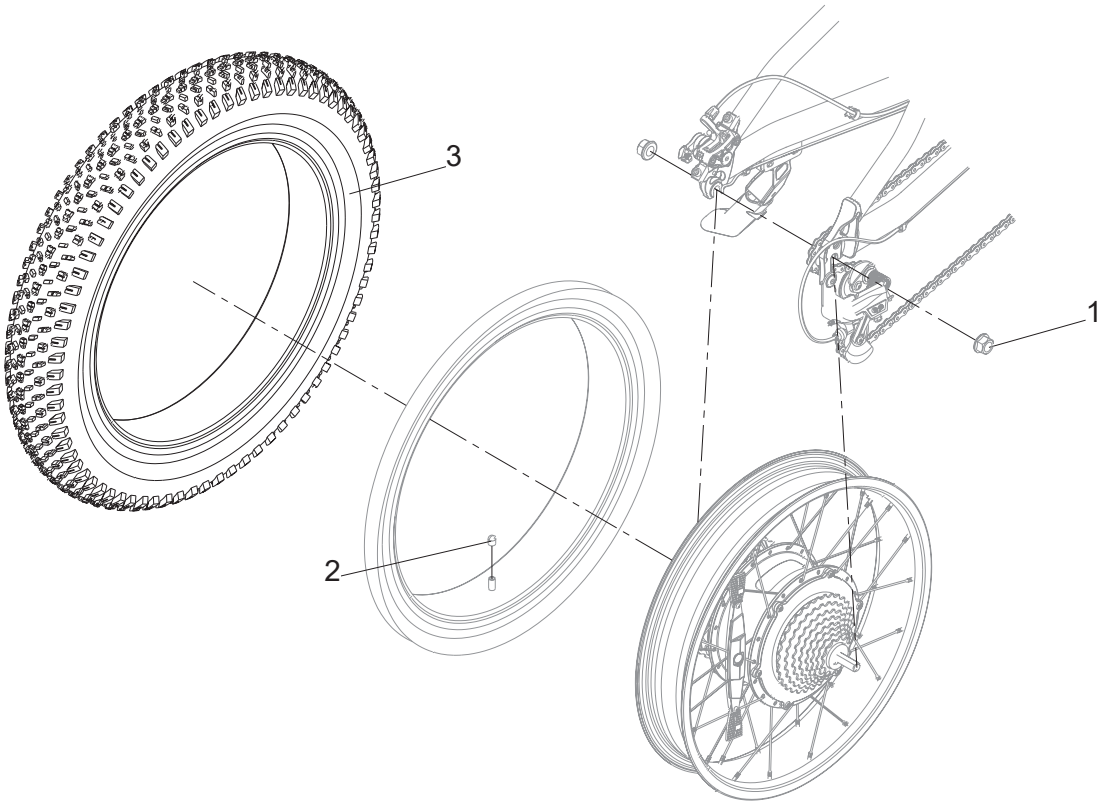


Fig.2

1. Lock nut M13 2. Inner tube cap 3. External tire

Rear external tire

Disassembly:

1. Remove the two fixing nuts (1) of the wheel hub assembly with a wrench;
2. Disconnect the connector between the motor wheel and the controller and remove the motor wheel assembly;
3. Loosen the inner tube cap (2) to deflate the inner tube;
4. Remove the external tire (3) from the motor wheel by a tool.

Assembly:

1. Mount the new external tire (3) to the motor wheel;
2. Inflate the tire with an air pump and tighten the inner tube cap (2);
3. Install the motor wheel assembly back into the frame and fasten it with two nuts (1) to connect the motor wheel to the connector of the controller.

Note:

1. Rear wheel tire pressure: MIN.5-MAX.30 psi (40-210kPa);

6.1.2 Inner tube

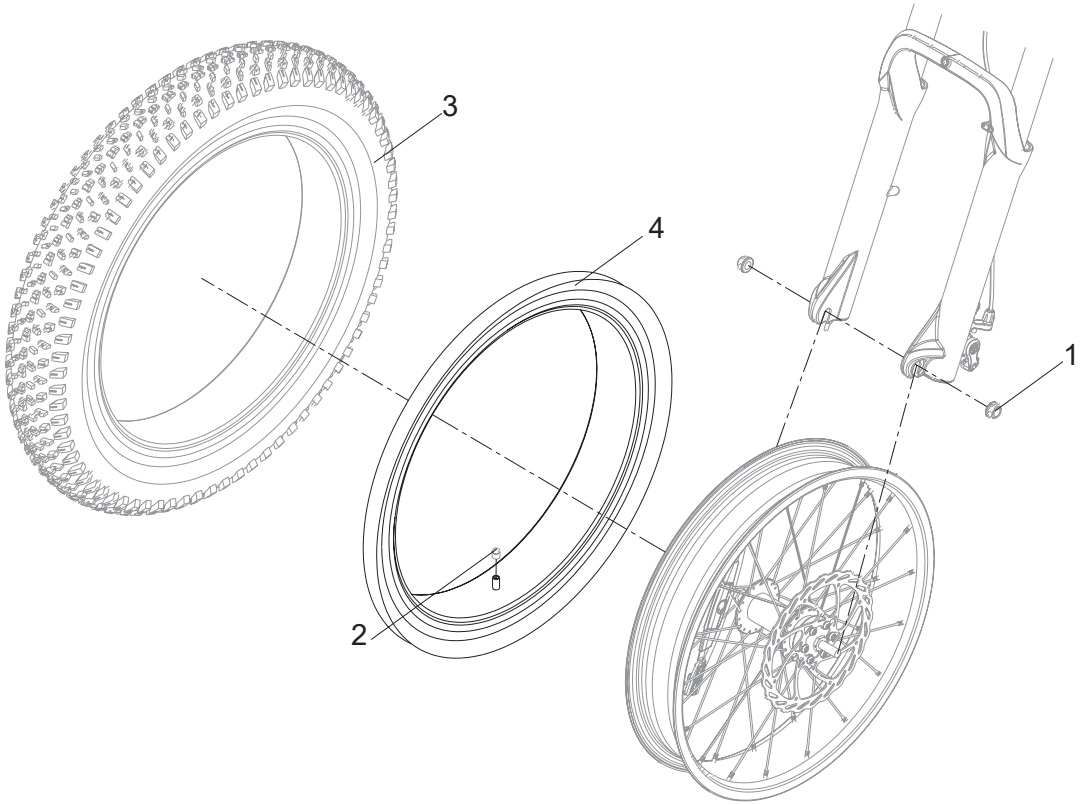


Fig.3

1. Lock nut M10
2. Inner tube cap
3. External tire
4. Inner tube

,

Front inner tube

Disassembly:

1. Remove the two fixing nuts (1) of the wheel hub assembly with a wrench to remove the wheel hub assembly;
2. Loosen the inner tube cap (2) to deflate the inner tube;
3. Remove the external tire (3) from the wheel hub by a tool.
4. Pull out the air nozzle from the wheel hub and remove the inner tube (4)

Assembly:

1. Mount the air nozzle of the new inner tube (4) to the wheel hub;
2. Mount the external tire (3) to the motor wheel;
2. Inflate the tire with an air pump and tighten the inner tube cap (2);
3. Install the wheel hub assembly back to the front fork and tighten it with two nuts (1).

Note:

1. Front wheel tire pressure: MIN.5-MAX.30 psi (40-210kPa);
2. Torque value: 30-45N·m for nut (1).

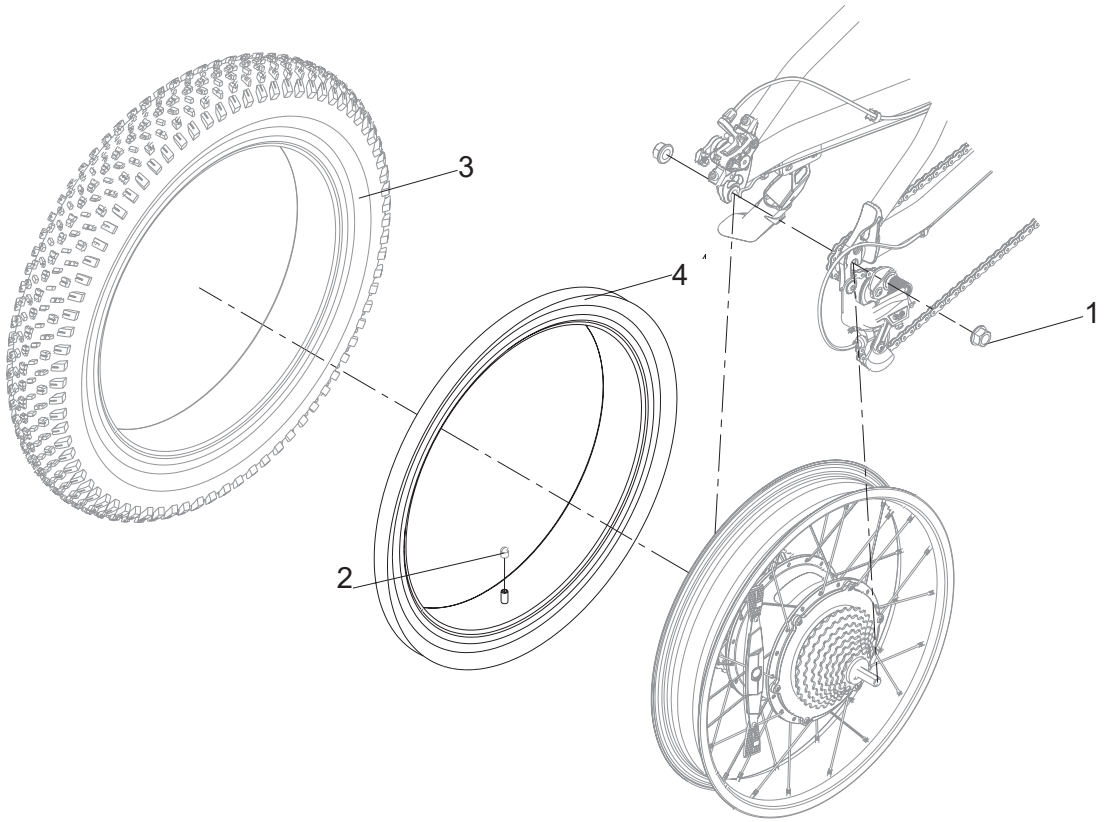


Fig.4

1. Lock nut M13
2. Inner tube cap
3. External tire
4. Inner tube

Rear inner tube

Disassembly:

1. Remove the two fixing nuts (1) of the motor wheel assembly with a wrench;
2. Disconnect the connector between the motor wheel and the controller and remove the motor wheel assembly;
3. Loosen the inner tube cap (2) to deflate the inner tube;
4. Remove the external tire (3) from the motor wheel by a tool.
5. Pull out the air nozzle from the motor wheel and remove the inner tube (4)

Assembly:

1. Mount the air nozzle of the new inner tube (4) to the motor wheel;
2. Mount the external tire (3) to the motor wheel;
3. Inflate the tire with the air pump and tighten the inner tube cap (3);
4. Install the motor wheel assembly back into the frame and fasten it with two nuts (1) to connect the motor wheel to the connector of the controller.

Note:

1. Rear wheel tire pressure: MIN.5-MAX.30 psi (40-210kPa);

6.1.3 Wheel hub

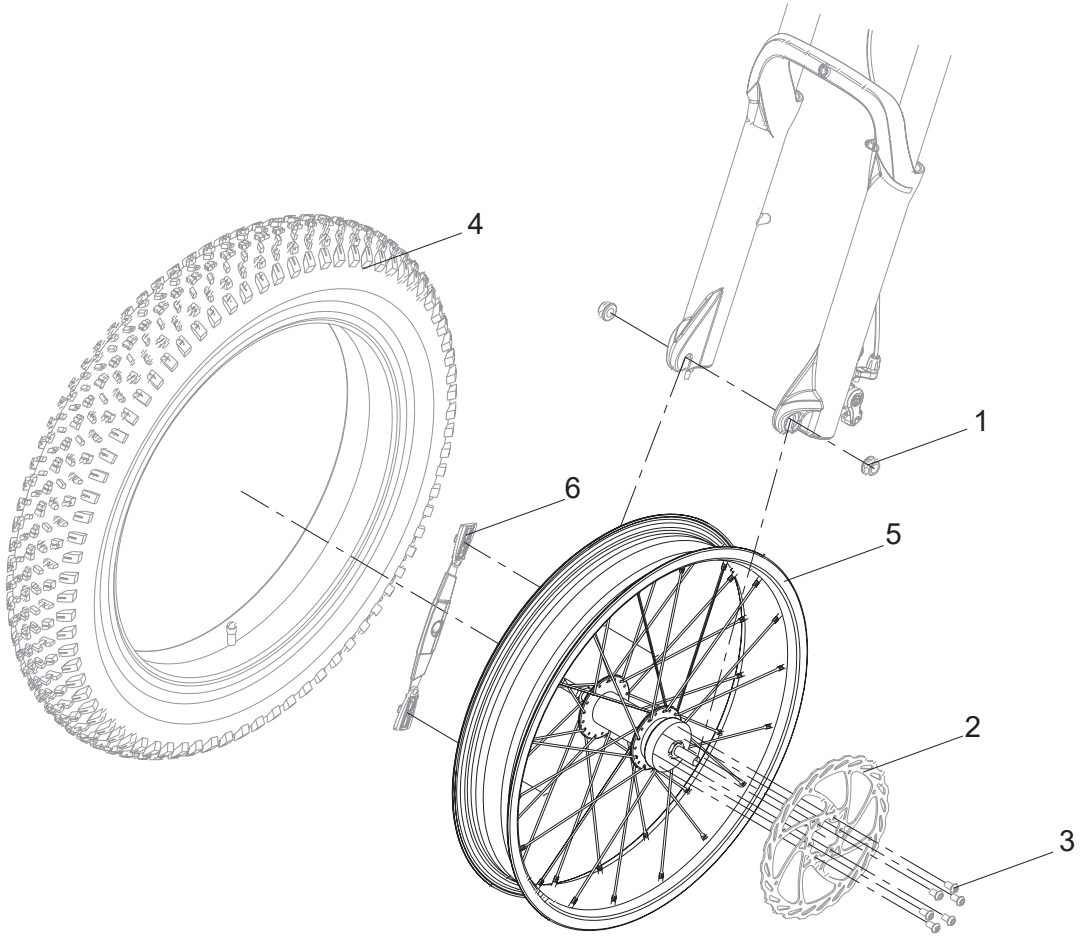


Fig.5

1. Lock nut M10
2. Brake disc
3. Heaxgon socket mushroom head screw M6*10
4. Tire assembly
5. Wheel hub
6. Wheel reflector

Disassembly:

1. Remove the two fixing nuts (1) of the wheel hub assembly with a wrench to remove the wheel hub assembly;
2. Remove the six screws (3) securing the brake disc (2) with a 5mm Allen wrench to remove the brake disc;
3. Remove the tire assembly (4) from the wheel hub (5) (refer to 6.1.2);
4. Remove the wheel reflector (6) from the wheel hub (5) (refer to 4.1.5).

Assembly:

1. Install the wheel reflector (6) on the wheel hub (5) (refer to 4.1.5);
2. Install the tire assembly (4) on the new wheel hub (5) (refer to 6.1.2);
3. Install the brake disc (2) on the new wheel hub (5) and tighten it with the six screws (3);
4. Install the wheel hub assembly back to the front fork and tighten it with two nuts (1).

Note:

1. Torque value: 30-45N·m for nut (1).

6.2 Shock Absorber Rear Assembly

6.2.1 Shock absorber

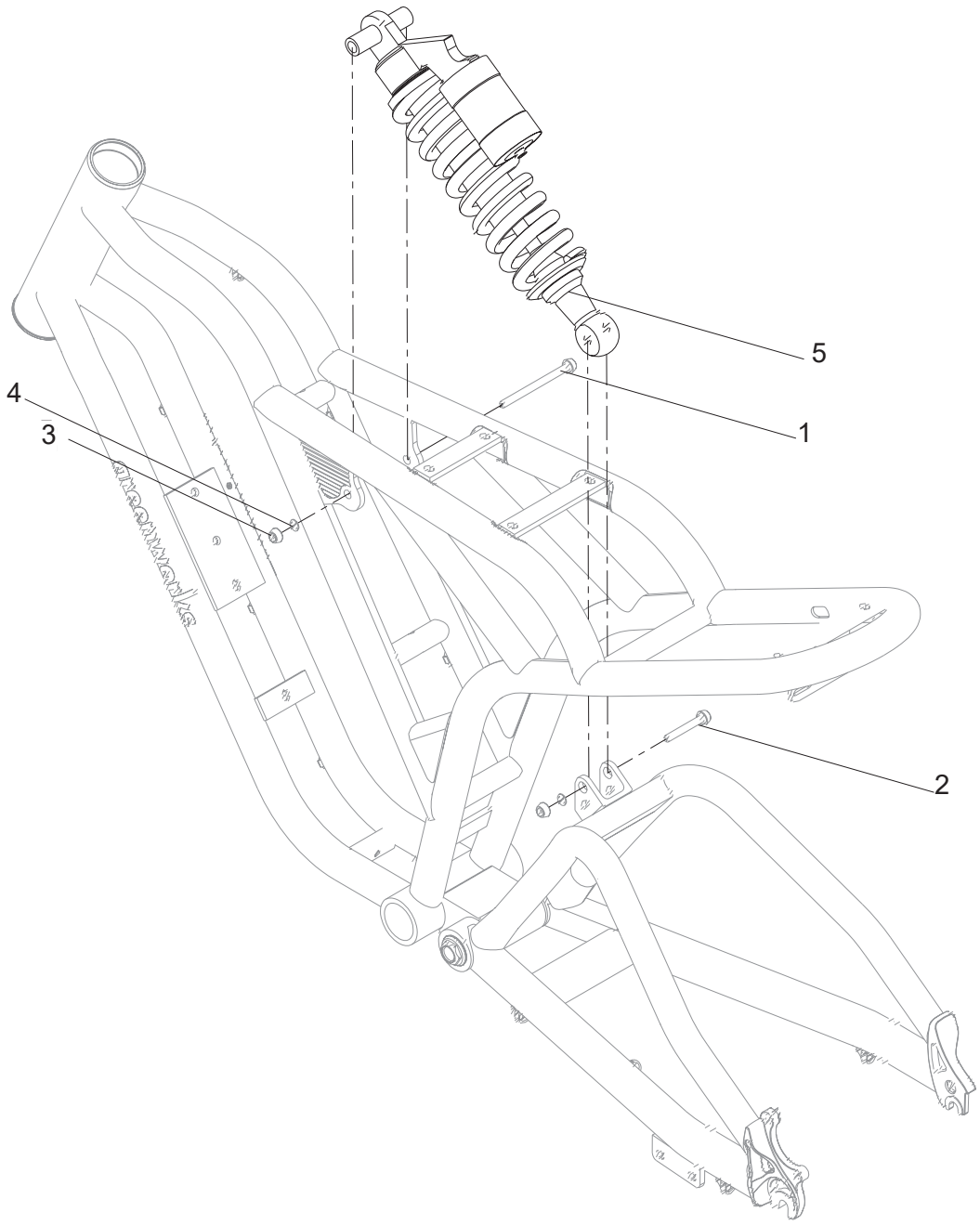


Fig.1

1. Hexagon socket head cap screw M10*85
2. Hexagon socket head cap screw M10*45
3. Lock nut M10
4. Spacer φ10*1.2T
5. Shock absorber

Disassembly:

1. Remove the fixing screw (1), nut (2) and spacer (4) from the front of the shock absorber with a wrench;
2. Remove the fixing screws (2), nuts (2) and spacers (4) from the rear end of the shock absorber with a wrench to remove the shock absorber.

Assembly:

1. Mount the shock absorber to the frame, secure the front end of the shock absorber with screws (1), nuts (2) and spacers (4), and secure its rear end with screws (2), nuts (2) and spacers (4).

Note:

1. Torque value: 30-35N·m for screw (1); 30-35N·m for screw (2).

6.3 Drive Motor and Transmission Parts

6.3.1 Motor wheel

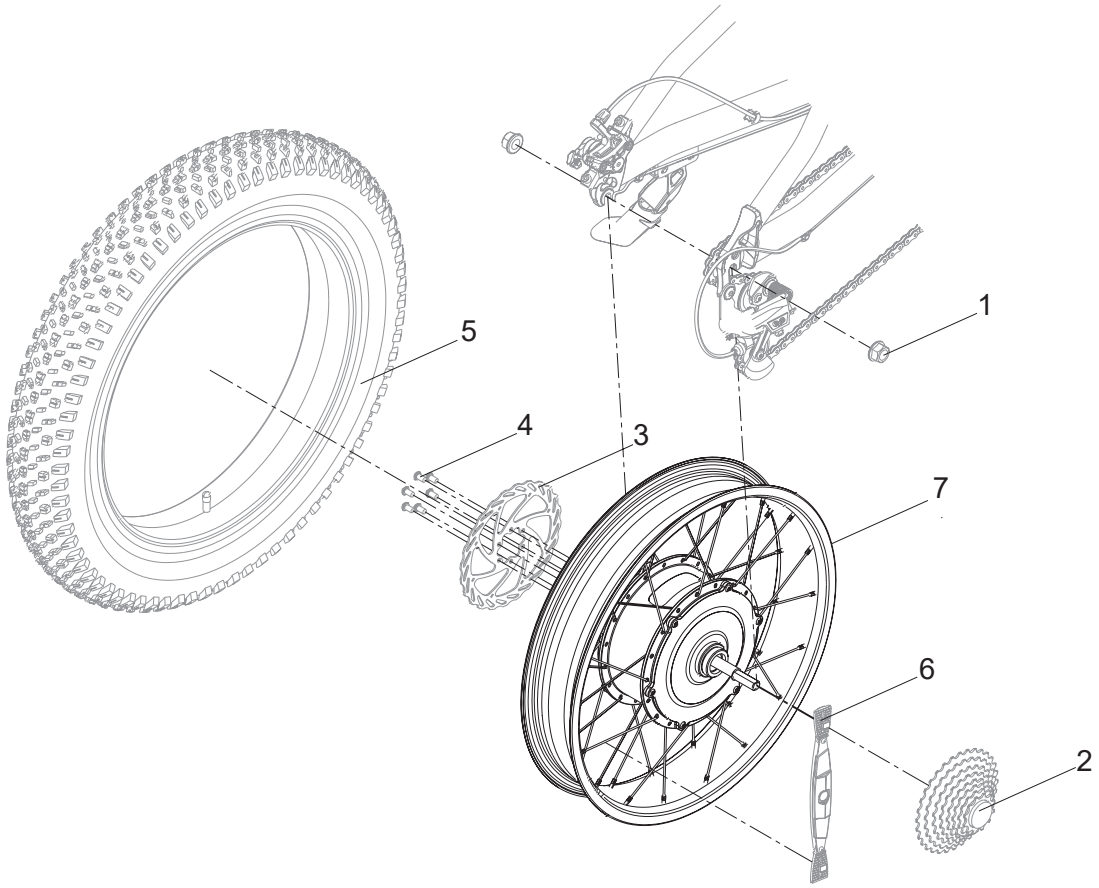


Fig.1

1. Lock nut M13
2. Free wheel
3. Brake disc
4. Heaxgon socket mushroom head screw M6*10
5. Tire assembly
6. Wheel reflector
7. Motor wheel

Disassembly:

1. Remove the two fixing nut (1) securing the motor wheel assembly with a wrench and remove the motor wheel assembly;
2. Remove the free wheel (2) from the motor wheel (7) (refer to 6.3.3);
3. Remove the six screws (4) securing the brake disc (3) with a 5mm Allen wrench to remove the brake disc;
4. Remove the tire assembly (5) from the motor wheel (7) (refer to 6.1.2);
5. Remove the wheel reflector (6) from the motor wheel (7) (refer to 4.1.5).

Assembly:

1. Install the wheel reflector (6) on the new motor wheel (7) (refer to 4.1.5);
2. Install the tire assembly (5) on the new motor wheel (7) (refer to 6.1.2);
3. Install the free wheel (2) on the new motor wheel (7) (refer to 6.3.3);
4. Install the brake disc (3) on the new motor wheel (7) and tighten it with six screws (4);
5. Install the motor wheel assembly back into the frame and fasten it with two nuts (1).

6.3.2 Chainset

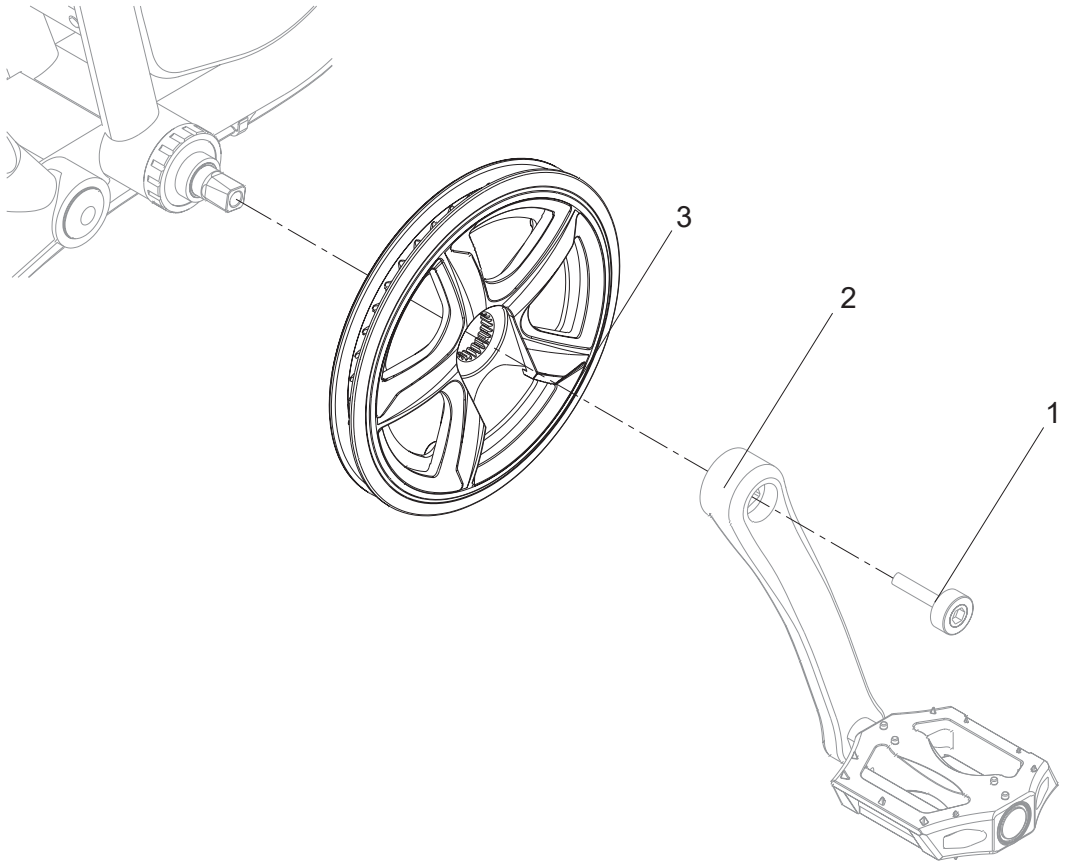


Fig.2

1. Hexagon socket head cap screw M8*13 2. Crank assembly 3. Chainset

Disassembly:

1. Remove the fixing screws (1) of the crank assembly (2) with a 8mm Allen wrench;
2. Remove the crank assembly (2) with a sprocket remover;
3. Remove the chainset (3) using a grommet looser.

Assembly:

1. Mount the new chainset (3) in place with a grommet looser;
2. Mount the crank assembly (2) in place with a sprocket remover and tighten it with screw (1).

6.3.3 Free wheel

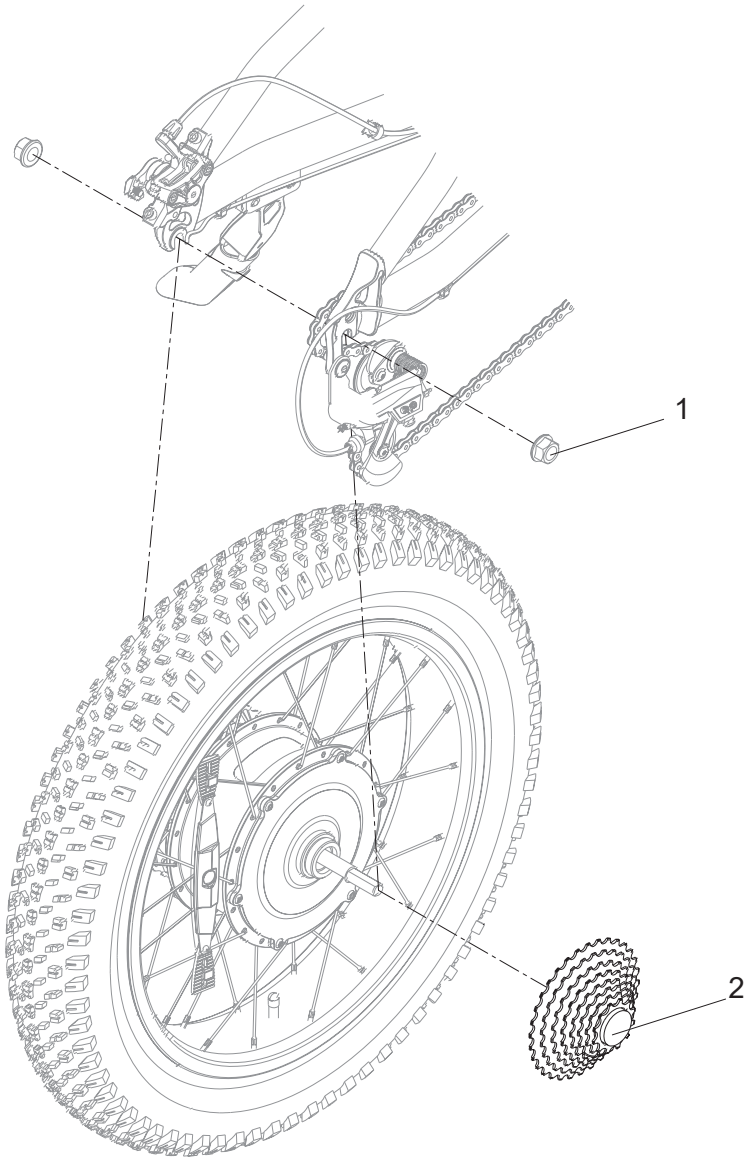


Fig.3

1. Lock nut M13 2. Free wheel

Disassembly:

1. Remove the two fixing nuts (1) of the motor wheel assembly with a wrench;
2. Disconnect the connector between the motor wheel and the controller and remove the motor wheel assembly;
3. Remove the free wheel with the free wheel retainer (2)

Assembly:

1. Mount the free wheel with the free wheel retainer (2)
2. Install the motor wheel assembly back into the frame and fasten it with two nuts (1) to connect the motor wheel to the connector of the controller.

7. Operator System

7.1. Braking System

7.1.1 Brake disc

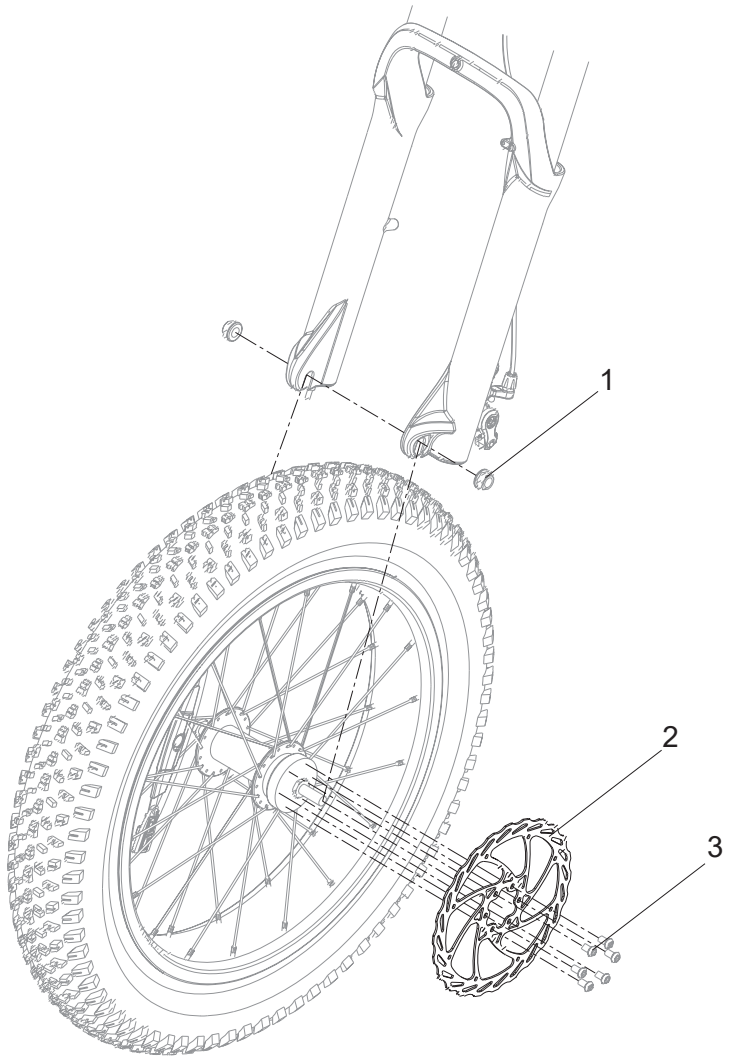


Fig.1

1. Lock nut M10 2. Brake disc 3. Heaxgon socket mushroom head screw M6*10

Front brake disc

Disassembly:

1. Remove the two fixing nuts (1) of the wheel hub assembly with a wrench to remove the wheel hub assembly;
2. Remove the six screws (3) of the brake disc (2) with a 5mm Allen wrench to remove the brake disc (2).

Assembly:

1. Install the brake disc (2) on the wheel hub assembly and tighten it with six screws (4);
2. Install the wheel hub assembly back to the front fork and tighten it with two nuts (1).

Note:

1. Torque value: 30-45N·m for nut (1).

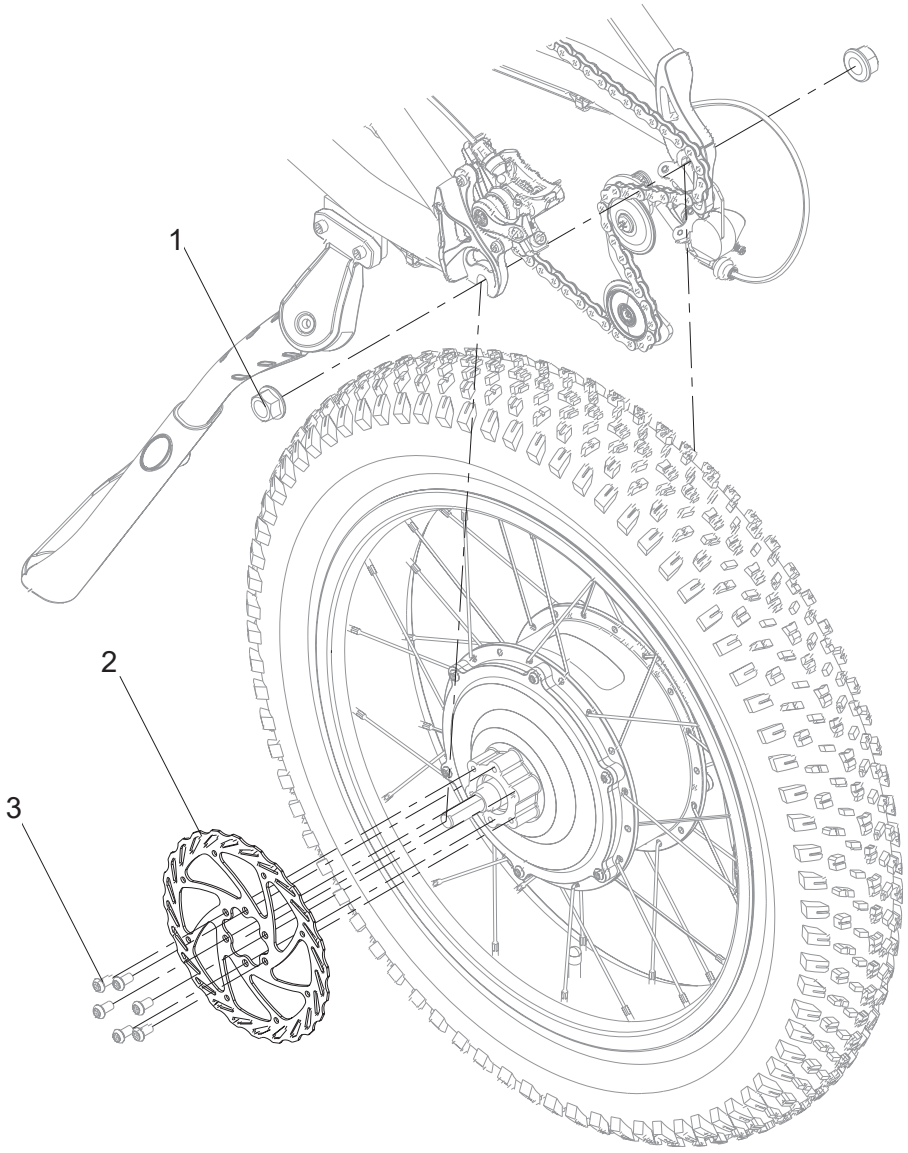


Fig.2

1. Lock nut M13 2. Brake disc 3. Heaxgon socket mushroom head screw M6*10

Rear brake disc

Disassembly:

1. Remove the two fixing nuts (1) of the wheel hub assembly with a wrench;
2. Disconnect the connector between the motor wheel and the controller and remove the motor wheel assembly;
3. Remove the six fixing screws (3) of the brake disc (2) with a 5mm Allen wrench to remove the brake disc (2).

Assembly:

1. Install the brake disc (2) on the motor wheel assembly and tighten it with six screws (3);
2. Install the motor wheel assembly back into the front fork and fasten it with two nuts (1) to connect the motor wheel to the connector of the controller.

7.1.2 Brake lever

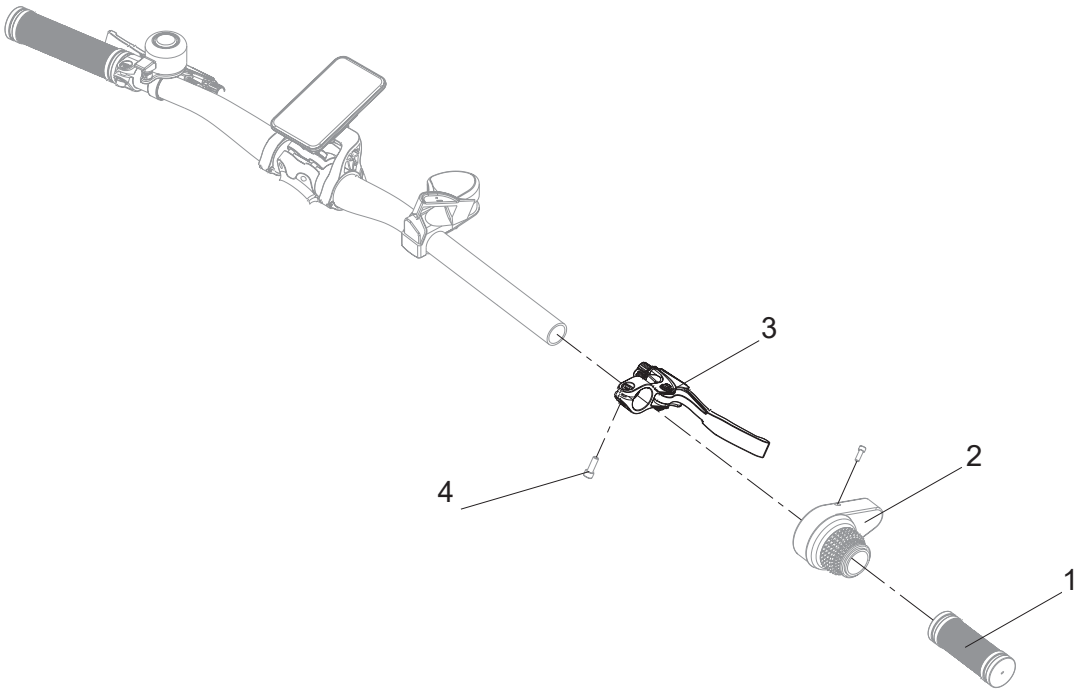


Fig.4

1. Handle sleeve
2. Speed regulation handle
3. Brake lever
4. Hexalobular socket head cap screw M6*16

Right brake lever

Disassembly:

1. Take out the battery pack in the battery compartment;
2. Remove the lever sleeve (1) and the speed regulation handle (2) (refer to 5.5.1);
3. Remove the core wire from the brake lever (3);
4. Remove the fixing screws (4) of the brake lever (3) with a 5mm Allen wrench, disconnect the connector between the brake lever (3) and main cable to remove the brake lever;

Assembly:

1. Install the brake lever (3) on the handlebar and tighten it with screw (4), then connect the connector between the brake lever (3) and the main cable.
2. Install the core wire into the brake lever (3);
3. Install the lever sleeve (1) and the speed regulation handle (2) on the handlebar (refer to 5.5.1).

Note:

1. Torque value: screw is (1) ≤3.5N·m.

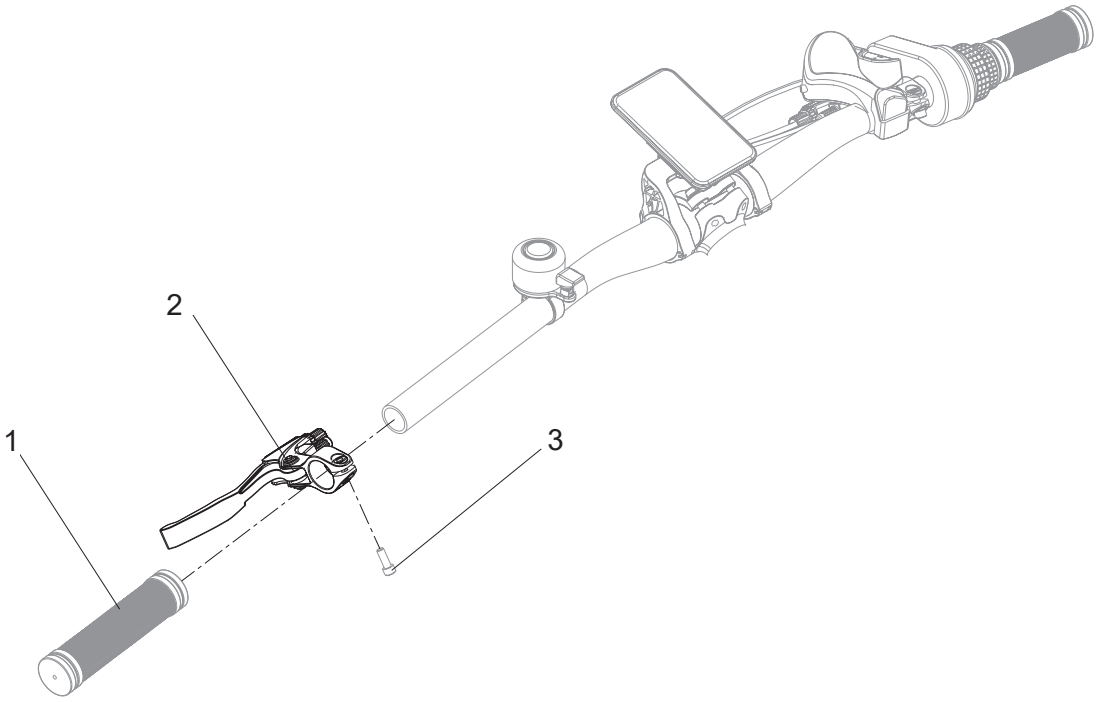


Fig.5

1. Lever sleeve 2. Brake lever 3. Hexalobular socket head cap screw M6*16

Left brake lever

Disassembly:

1. Take out the battery pack in the battery compartment;
2. Remove the lever sleeve (1);
3. Remove the core wire from the brake lever (2);
4. Remove the fixing screws (3) of the brake lever (2) with a 5mm Allen wrench, disconnect the connector between the brake lever (2) and main cable to remove the brake lever.

Assembly:

1. Install the brake lever (2) on the handlebar and tighten it with screw (3), then connect the connector between the brake lever (2) and the main cable.
2. Install the core wire into the brake lever (2);
3. Install the lever sleeve (1) onto the handlebar.

Note:

1. Torque value: screw (1) is ≤3.5N·m.

7.2 Seat Assembly

7.2.1 Saddle

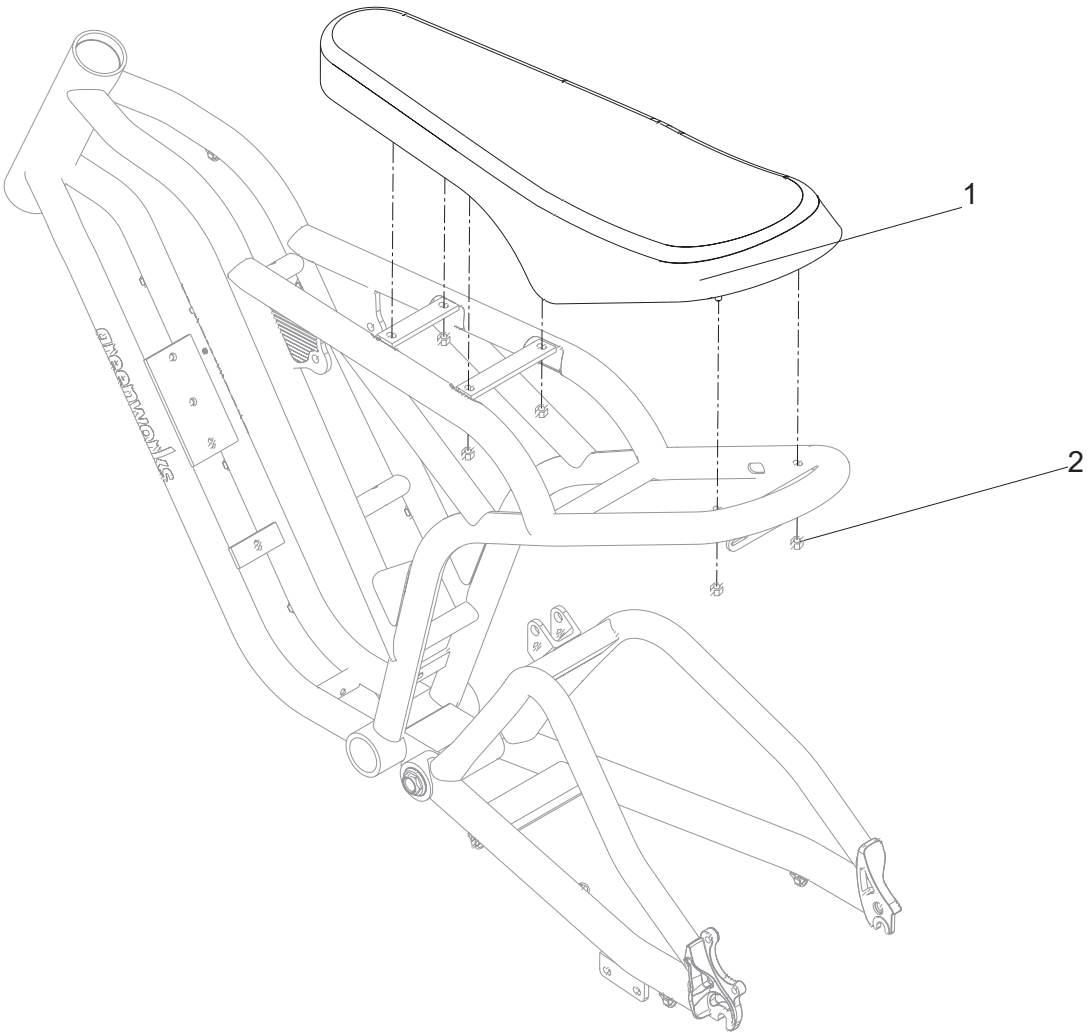


Fig.1

1. Saddle 2. Lock nut M6

Disassembly:

1. Remove the six fixing nuts (2) at the bottom of the saddle (1) with a wrench.

Assembly:

1. Install the new saddle (1) on the frame and tighten it with six screws (2).

8. Torque Specifications

Torque Specification Chart (General Standard Parts)							
Diameter of Thread (mm)	Pitch value of Thread (mm)	Tighten Torque Spec (Mechanical Property of Grade 8.8 for Fasteners components)					
		Standard Value		Max Value		Min Value	
		N•m	Ft-lbs	N•m	N•m	N•m	Ft-lbs
6	1	9.0	6.6	12.0	8.9	6.0	4.4
8	1.25	23.0	17.0	26.0	19.2	16.0	11.8
8	1	25.0	18.5	28.0	20.7	17.0	12.5
10	1.5	59.0	43.5	75.0	55.4	37.0	27.3
10	1.25	63.0	46.5	79.0	58.3	45.0	33.2
10	1	64.0	47.2	80.0	59.0	46.0	33.9
12	1.75	95.0	70.1	111.0	81.9	73.0	53.9
12	1.5	97.0	71.6	113.0	83.4	75.0	55.4
12	1.25	99.0	73.1	115.0	84.9	78.0	57.6
14	2	160.0	118.1	185.0	136.5	122.0	90.0
14	1.5	180.0	132.8	205.0	151.3	146.0	107.7
16	2	215.0	158.7	245.0	180.8	182.0	134.3
16	1.5	240.0	177.1	270.0	199.3	199.0	146.9
18	2.5	268.0	197.8	298.0	219.9	229.0	169.0
18	1.5	316.0	233.2	346.0	255.4	287.0	211.8
20	2.5	430.0	317.3	470.0	346.9	389.0	287.1
20	1.5	440.0	324.7	480.0	354.2	396.0	292.3

Torque Specification Chart (General Standard Parts)							
Diameter of Thread (mm)	Pitch value of Thread (mm)	Tighten Torque Spec (Mechanical Property of Grade 10.9 for Fasteners components)					
		Standard Value		Max Value		Min Value	
		N•m	Ft-lbs	N•m	N•m	N•m	Ft-lbs
10	1.5	74.0	54.6	90.0	66.4	52.0	38.4
10	1.25	78.0	57.6	93.0	68.6	63.0	46.5
10	1	80.0	59.0	95.0	70.1	65.0	48.0
12	1.75	140.0	103.3	156.0	115.1	105.0	77.5
12	1.5	142.0	104.8	158.0	116.6	106.0	78.2
12	1.25	145.0	107.0	161.0	118.8	108.0	79.7
14	2	175.0	129.2	200.0	147.6	141.0	104.1
14	1.5	210.0	155.0	235.0	173.4	178.0	131.4
16	2	280.0	206.6	310.0	228.8	200.0	147.6
16	1.5	305.0	225.1	335.0	247.2	240.0	177.1
18	2.5	437.0	322.5	467.0	344.6	380.0	280.4
18	1.5	467.0	344.6	507.0	374.2	397.0	293.0
20	2.5	528.0	389.7	568.0	419.2	450.0	332.1
20	1.5	558.0	411.8	598.0	441.3	475.0	350.6

Torque Specification Chart (General Standard Parts)							
Diameter of Thread (mm)	Pitch value of Thread (mm)	Tighten Torque Spec (Mechanical Property of Grade 4.6 for Fasteners components)					
		Standard Value		Max Value		Min Value	
		N•m	Ft-lbs	N•m	N•m	N•m	Ft-lbs
6	1	4.0	3.0	5.5	4.1	2.5	1.8
8	1.25	8.0	5.9	11.0	8.1	5.0	3.7
8	1	8.5	6.3	11.5	8.5	5.5	4.1
10	1.5	19.7	14.5	29.7	21.9	14.3	10.6
10	1.25	20.8	15.4	25.8	19.0	16.7	12.3
10	1	21.8	16.1	26.5	19.6	17.0	12.5
12	1.75	37.3	27.5	43.3	32.0	28.0	20.7
12	1.5	38.5	28.4	45.0	33.2	29.0	21.4
12	1.25	39.6	29.2	48.0	35.4	30.0	22.1
14	2	61.2	45.2	75.0	55.4	46.8	34.5
14	1.5	74.6	55.1	92.0	67.9	56.0	41.3
16	2	95.0	70.1	115.0	84.9	73.0	53.9
16	1.5	105.0	77.5	133.0	98.2	76.0	56.1
18	2.5	142.9	105.5	178.0	131.4	107.4	79.3
18	1.5	157.6	116.3	190.0	140.2	124.5	91.9
20	2.5	188.0	138.7	230.0	169.7	135.0	99.6
20	1.5	203.7	150.3	243.0	179.3	149.0	110.0

Torque Specification Chart (General Standard Parts)							
Diameter of Thread (mm)	Pitch value of Thread (mm)	Tighten Torque Spec (Mechanical Property of Grade 5.6 for Fasteners components)					
		Standard Value		Max Value		Min Value	
		N•m	Ft-lbs	N•m	N•m	N•m	Ft-lbs
6	1	4.5	3.3	6.0	4.4	3.0	2.2
8	1.25	10.6	7.8	14.0	10.3	7.0	5.2
8	1	11.0	8.1	15.0	11.1	8.0	5.9
10	1.5	26.0	19.2	33.0	24.4	19.0	14.0
10	1.25	28.0	20.7	34.0	25.1	22.0	16.2
10	1	29.0	21.4	35.0	25.8	23.0	17.0
12	1.75	45.0	33.2	53.0	39.1	37.0	27.3
12	1.5	47.0	34.7	56.0	41.3	38.0	28.0
12	1.25	50.0	36.9	60.0	44.3	40.0	29.5
14	2	81.0	59.8	95.0	70.1	62.0	45.8
14	1.5	90.0	66.4	105.0	77.5	68.0	50.2
16	2	124.0	91.5	150.0	110.7	98.0	72.3
16	1.5	132.0	97.4	160.0	118.1	101.0	74.5
18	2.5	190.0	140.2	220.0	162.4	161.0	118.8
18	1.5	200.0	147.6	230.0	169.7	165.0	121.8
20	2.5	231.6	170.9	272.0	200.7	190.0	140.2
20	1.5	236.6	174.6	285.0	210.3	197.0	145.4