

ROBOOTER

Document No.: BBR-E-01, Version No.: B

ROBOOTER X40

Instruction Manual



Shanghai Bangbang Robotics Co., LTD.

Preface

Dear Customer,

Thank you for choosing our Electric Wheelchair.

The Product Manual is a vital document, offering comprehensive information about the Electric Wheelchair, including its features, operating instructions, and after-sales service details. Before using the product, we kindly request that you thoroughly review the Product Manual to ensure proper operation and maintenance.

Thank you for your dedication to safety and for striving for the optimal performance of your new product.

Sincerely,

Shanghai Bangbang Robotics Co., Ltd.



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01 / Safety

Please read the Safety section carefully before using the product and follow the instructions provided in the Manual.

The safety guidelines are designed to ensure the safe and proper use of the product. To distinguish between different levels of potential harm and damage resulting from misuse, possible damage is categorized as "warning" or "caution." Both categories are crucial safety reminders and must be strictly adhered to.

1.1 Safety Symbols and Indicators



Warning

- The presence of this sign signifies potentially hazardous situations that, if ignored, could result in severe injury.



Caution

- The presence of this sign indicates hazardous situations that, if disregarded, may result in mild or moderate injuries and material damage.

1.2 Environmental Precautions



Caution

- Refrain from spraying, washing, or using an automatic car washer on the electric wheelchair. Direct exposure to rain, smoke, or humid air may result in electrical and mechanical failures, as well as potential rusting of the electric wheelchair. This electric wheelchair has passed tests in accordance with ISO 7176-9 Climatic Tests. These tests are designed to ensure that electric wheelchair users and attendants have adequate time to move to a safe location during rainy weather. Please refrain from operating the electric wheelchair during a thunderstorm. Avoid exposing the electric wheelchair to heavy rain.
- Do not leave the electric wheelchair in a damp environment for an extended period.

1.3 Waste Disposal

Caution

- In accordance with local laws and regulations, your product must be treated separately from domestic waste. Please dispose of it at the designated recycling point in your area. Recycling helps reduce waste, benefiting our environment.

1.4 Operation

Caution

(1) Driving on Slopes

This electric wheelchair has passed test requirements for climbing slopes not exceeding 10° with a load of 264 lbs. DO NOT attempt to climb any slope exceeding 10°.

While reversing on a slope, please ensure to slow down your electric wheelchair. DO NOT reverse on a slope exceeding 10°. Additionally, during reversing, please use extreme caution.

The ability to climb a slope and the driving distance are affected by battery and local factors, such as (but not limited to): the user's body weight, topographical conditions (for example, grass, gravel, uneven surfaces), hill gradients, battery life and service life, extreme temperature conditions, and the usage and weight of the fitting, etc.

(2) Brake

The electric wheelchair will stop within several seconds. When it brakes, please ensure that you are sitting properly and holding the handrail.

Note: The electromagnetic brake will not engage immediately; it will activate after the wheel rotates for a half cycle.

(3) Emergency Braking

In the event of a critical situation or unexpected movement, press the power switch key to make the electric wheelchair stop.

Please be aware that frequent use of the emergency brake may lead to motor faults that can interfere with the normal operation of your electric wheelchair.

Important Note: Although this emergency brake is effective, it should not be used under normal conditions.

(4) Use of Mobile Application

For your safety, it is crucial to adhere to the following guidelines regarding the use of the mobile application with the electric wheelchair:

Do Not Drive Using the Mobile Application: Under no circumstances should the mobile application be used to drive the electric wheelchair. This function is not supported and attempting to do so can lead to serious accidents.

Maintain Awareness of Road Conditions: Even when utilizing the mobile application for its intended uses, always stay aware of your surroundings and road conditions to prevent accidents.

Emergency Use: In case of any unexpected movement or critical situation, be prepared to press the power switch key to halt the electric wheelchair immediately.

Failure to follow these guidelines can result in severe injuries or damage. Always prioritize safety by using the mobile application responsibly and as intended.

(5) About RF Emission

User Information

This equipment has undergone testing and complies with the standards for a Class B digital device, pursuant to Part 15 of the FCC Rules. These standards are designed to provide reasonable protection against harmful interference in residential installations.

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the provided instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a specific installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Safety Notice

Please adhere to traffic rules to ensure your safety and the safety of others while using this equipment.



Warning

DO NOT attempt to pick up objects by bending down while sitting on the Electric wheelchair, as it may cause the wheelchair or the user to roll over, resulting in potential damage and injury.

DO NOT drive on slippery surfaces, such as those covered with water, oil, or ice, among other slippery substances. Doing so could lead to the Electric wheelchair losing control.

DO NOT attempt to tow another Electric wheelchair.

DO NOT connect other medical equipment, including but not limited to life support devices and respirators, to the electronic system of the Electric wheelchair.

DO NOT operate the Electric wheelchair when your judgment may be impaired, for instance, after consuming alcohol or taking medication that affects your ability to operate machinery safely.

DO NOT leave the Electric wheelchair near open flames or sources of high heat, as it may cause damage to the battery or other components.

DO NOT use the Electric wheelchair on steep terrains or near cliff edges, to prevent accidents due to loss of control or tipping over.

DO NOT attempt to use the Electric wheelchair on escalators. Always use elevators or ramps where available.

DO NOT leave the Electric wheelchair unattended in areas prone to theft or vandalism.

DO NOT exceed the recommended maximum weight capacity as it could compromise the stability and safety of the Electric wheelchair.

DO NOT use the Electric wheelchair in water bodies like pools, lakes, or rivers, as it is not designed for such environments and could lead to electric shock or malfunction.

For any injury resulting from non-compliance with local or international laws or regulations, we assume no responsibility and state as follows:

DO NOT tamper with, cut, or modify the wiring harness parts installed on or connected to the Electric wheelchair under any circumstances.

DO NOT use batteries that are incompatible with the Electric wheelchair, such as non-recyclable lead-acid batteries, etc.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.5 EMC Guidelines and Statements

EMI Compliance Table (Table 1)

Phenomenon	Compliance	Electromagnetic Environment
RF Emissions	CISPR 11 Group 1, Class B	Home Healthcare Environment
Harmonic Distortion	IEC 61000-3-2 Class A	Home Healthcare Environment
Voltage Fluctuations/Flicker	IEC 61000-3-3 Compliance	Home Healthcare Environment

EMI Compliance Table (Table 2-5)

Phenomenon	Basic EMC Standard	Immunity Test Level Home Healthcare Environment
Electrostatic Discharge	IEC 61000-4-2	±8kV contact ±2kV, ±4kV, ±8kV, ±15kV air
Radiated RF EM Field	IEC 61000-4-3	20V/m 26MHz-2.5GHz 80% AM at 1kHz 10V/m 80MHz-2.7GHz 80% AM at 1kHz
Proximity Fields from RD Wireless Communications Equipment	IEC 61000-4-3	Refer to Table 3
Rated Power Frequency Magnetic Fields	IEC 61000-4-8	30A/m 50Hz or 60Hz

EMI Compliance Table (Table 2-5)

Phenomenon	Basic EMC Standard	Immunity Test Level Home Healthcare Environment
385	380-390	Pulse modulation 18Hz, 27V/m
450	430-470	FM, ±5kHz deviation 18Hz, sine, 28V/m
710	704-787	Pulse modulation 217 Hz sine, 28V/m
745		
780		

EMI Compliance Table (Table 2-5) Continued.

Phenomenon	Basic EMC Standard	Immunity Test Level Home Healthcare Environment
810	800-960	Pulse modulation 18Hz sine, 28V/m
870		
930		
1720	1700-1990	Pulse modulation 217Hz sine, 28V/m
1845		
1970		
5785		

Table 3: Proximity Fields from RF Wireless Communications Equipment

Test Frequency (MHz)	Band(MHz)	Immunity Test Level Home Healthcare Environment
385	380-390	Pulse modulation 18Hz, 27V/m
450	430-470	FM, ± 5 kHz deviation 18Hz sine, 28V/m
710	704-787	Pulse modulation 217 Hz sine, 28V/m
745		
780		
810	800-960	Pulse modulation 18Hz sine, 28V/m
870		
930		
1720	1700-1990	Pulse modulation 217Hz sine, 28V/m
1845		
1970		
5785		

Table 4: Input AC Power Port

Phenomenon	Standard	Home Healthcare Environment
Electrical fast Transients/burst	IEC 61000-4-4	±2KV 100kHz repetition frequency
Surges Line-to-line	IEC 61000-4-5	±0.5kV, ±1kV
Conducted Disturbances Induced by RF fields	IEC 61000-4-6	3V, 0.15MHz-80MHz 6V in ISM bands and amateur radio bands Between 0.15MHz and 80MHz 80% AM at 1kHz
Voltage Dips	IEC 61000-4-11	0% UT; 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°
		0% UT; 1 cycle and 70% UT; 25/30 cycles Single phase: at 0°
Voltage interruptions	IEC 61000-4-11	0% UT; 25/30 cycles UT=Rated Input Voltage

Table 5 - Signal Input/Output Parts Port

Phenomenon	Basic EMC Standard	Immunity Test Levels	
		Professional Healthcare Facility Environment	Home Healthcare Environment
Electrical fast Transients/bursts a))o)	IEC 61000-4-4	±2KV 100kHz repetition frequency	
Surges a)b))o) Line-to-line	IEC 61000-4-5	±0.5kV, ±1KV	
Surges o)b))k)o)	IEC 61000-4-5	±0.5kV, ±1KV, ±2KV	
Line-to-ground			
Conducted disturbances Induced by field c)d)l)	IEC 61000-4-6	0.15 MHz-80MHz 6V m/n ISM bands Between 0.15MHz and 80MHz n/l 80% AM at 1KHz e/l	3V m/l 0.15 MHz-80MHz 6V m/l n/l ISM and amateur Radio bands between 0.15 MHz and 80MHz n/l 80% AM at 1KHz e/l
Voltage dips f)p)r)	IEC 61000-4-11	0% UT; 0.5 cycle g), at 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° q)	
		0% UT; 1 cycle and 70% UT; 25/30 cycles h) Single phase: at 0°	
Voltage interruptions f)i)o)r)	IEC 61000-4-11	0% UT; 250)300 cycle h)	

Table 6 - Cable information

Cable	Max Cable Length Shielded/Unshielded		Number	Cable Classification
AC Power Line	1.8M	Unshielded	1Set	AC Power
DC Power Line (USB Cable)	0.95M	Unshielded	1Set	DC Power

- a) The test may be performed at any one power input voltage within the ME EQUIPMENT or ME SYSTEM's RATED voltage range. If the ME EQUIPMENT or ME SYSTEM is tested at one power input voltage, it is not necessary to re-test at additional voltages.
- b) All cables of the ME EQUIPMENT and ME SYSTEM are attached during the test.
- c) Calibration for current injection clamps shall be performed in a 150 Ci system.
- d) If the frequency stepping skips over an ISM or amateur band, as applicable, an additional test frequency shall be used in the ISM and amateur radio band within the specified frequency range.
- e) Testing may be performed at other modulation frequencies identified by the RISK MANAGEMENT PROCESS.
- f) ME EQUIPMENT and ME SYSTEMS with a DC power input intended for use with AC-to-DC converters shall be tested using a converter that meets the specifications of the MANUFACTURER of the ME EQUIPMENT or ME SYSTEM. The IMMUNITY TEST LEVELS are applied to the AC power input of the converter.
- g) Applicable only to ME EQUIPMENT and ME SYSTEMS connected to single-phase AC mains.
- h) E.g., 10/12 means 10 periods at 50 Hz or 12 periods at 60 Hz.
- i) ME EQUIPMENT and ME SYSTEMS with a RATED input current greater than 10 A/phase shall be interrupted once for 250/300 cycles at any angle and all phases at the same time (if applicable).
- j) ME equipment and ME SYSTEMS with battery backup shall resume line power operation after the test. For ME equipment and ME SYSTEMS with a RATED input current not exceeding 18 A, all phases shall be interrupted simultaneously.
- k) ME EQUIPMENT and ME SYSTEMS that do not have a surge protection device in the primary power circuit may be tested only at -2 kV line(s) to earth and 1 kV line(s) to line(s).
- l) Not applicable to Class II ME EQUIPMENT and ME SYSTEMS.
- m) Direct coupling shall be used.
- n) RMS before modulation is applied.
- o) The ISM (Industrial Scientific and Medical) bands between 0.15 MHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.282 MHz; and 40.66 MHz to amateur radio bands between 0.15 MHz and 80 MHz are 1.8 MHz to 2.0 MHz, 3.5 MHz to 4.0 MHz, 5.3 MHz to 5.4 MHz, and 7 MHz to 7.3 MHz 10.1 MHz.
- p) Applicable to ME EQUIPMENT and ME SYSTEMS with a RATED input current less than or equal to 16 A/phase and ME EQUIPMENT and ME SYSTEMS with a RATED input current greater than 16 A/phase.
- q) Applicable to ME EQUIPMENT and ME SYSTEMS with a RATED input current less than or equal to A/phase.
- r) At some phase angles, applying this test to ME EQUIPMENT with transformer mains power input might cause an overcurrent protection device to open. This can occur due to magnetic flux saturation of the transformer core after the voltage dip. If this occurs, the ME EQUIPMENT or ME SYSTEM shall provide BASIC SAFETY during and after the test.
- s) For ME EQUIPMENT and ME SYSTEMS that have multiple voltage settings or auto-ranging voltage capability, the test shall be performed at the minimum and maximum RATED input voltage. ME EQUIPMENT and ME SYSTEMS with a RATED input voltage of less than 25% of the highest RATED input voltage shall be tested at one RATED input voltage within the range. See table 1 (Note c) for example calculations.
- t) Basic performance: The sample can maintain normal working condition when interference is applied during normal driving and folding.
- u) WARNING: Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.
- v) WARNING: Use of accessories, transducers, and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.
- w) WARNING: Portable RF communication equipment (including peripheral devices, such as antenna cables and external antennas) can be used handheld if they are more than 5 mm away from the human body.
- x) Essential performance: The electric wheelchair operates normally.

02 / Product Introduction

2.1 Product Features

- The electric wheelchair relies on a DC brush motor as its core component for propulsion.
- Motor control is facilitated through the use of a dedicated controller equipped with brushes. The independent rocker operation allows for forward movement, differential turning, and low-speed reversing.
- The frame structure incorporates patented technologies. A foldable four-bar linkage mechanism facilitates both folding and expanding actions. The electric wheelchair offers the flexibility of electric folding or manual folding options.
- To engage the cruise control mode, press and hold the "speed +" key for an extended period. Subsequently, push the rocker forward to initiate the cruise control feature.
- In the event that there is no activity (no key, rocker, or app operation) for a span of 30 minutes, the electric wheelchair will automatically power off.

2.2 Indication for Use

The intended use of the Electric Wheelchair (Model: BBR-LY-01-01) is to provide outdoor and indoor mobility to persons limited to a seated position that are capable of operating a powered wheelchair.

2.3 Intended User

Adult, maximum mass is less than 120kg.

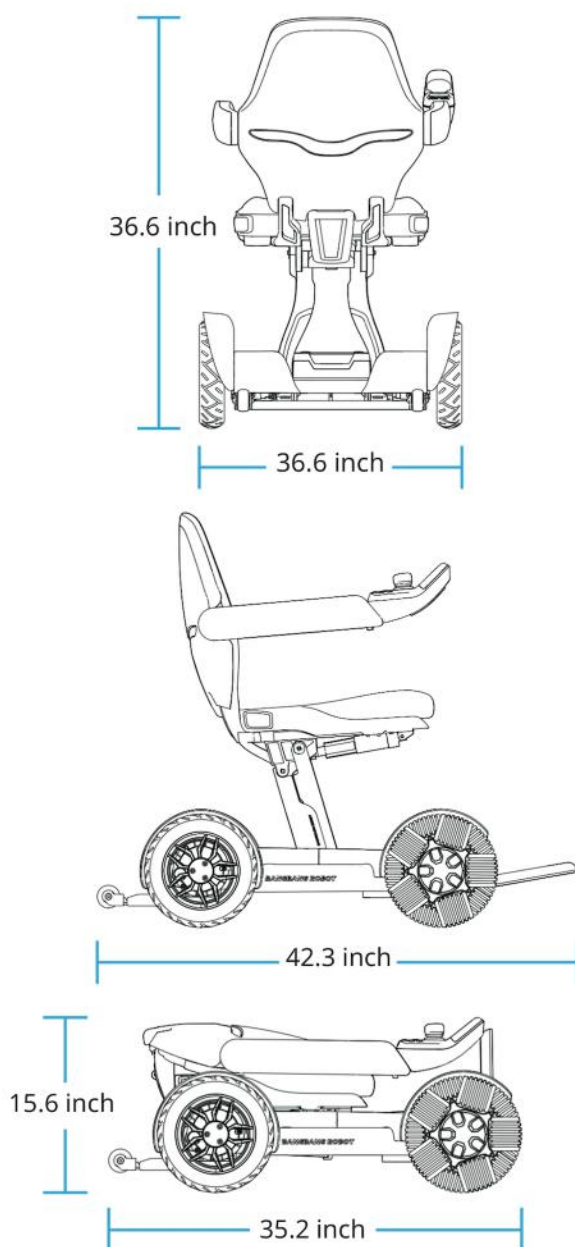
2.4 Prohibited Users

Individuals experiencing mental health conditions, including those who may have temporary or permanent impairments in attention or judgment, are strictly forbidden from using this product.

2.5 Expected Environmental Condition of Use

- Steps lower than 45 mm.
- Slopes with a gradient of 6° or less.
- Environmental temperature: -10°C to 50°C.
- The Electric wheelchair cannot be operated on soft surfaces such as sand, mud, snowy, or frozen paths.
- It is also not suitable for driving on gravel, light snow, and grass.

2.6 Structure of Product



2.7 Component Introduction

The main components of the product include the motor, storage battery, control system, wheels, seat, handrails, and pedals.



Note: Please refer to the product package list for the detailed parts list.

2.8 Package List

Battery Charger	1 pcs
Battery	1 pcs
User Manual	1 pcs
L-shaped hexagonal wrench (2.5MM)	1 pcs
L-shaped hexagonal wrench (3MM)	1 pcs
L-shaped hexagonal wrench (4MM)	1 pcs
L-shaped hexagonal wrench (5MM)	1 pcs
L-shaped hexagonal wrench (8MM)	1 pcs
Phillips screwdriver	1 pcs
Electric Wheelchair	1 pcs

03 / Product Introduction

3.1 Specification Sheet

Standard Reference		Standard Reference		Min
ISO 7176-5	Overall length with largest	ISO 7176-7	Seat plane angle	7.5°
ISO 7176-5	Overall width	ISO 7176-7	Effective seat depth	425mm
-	Folded length	ISO 7176-7	Effective seat width	425mm
-	Folded weight	ISO 7176-7	Seat surface height at front edge	515mm
-	Folded height	ISO 7176-7	Backrest angle	19.7°
ISO 7176-5	Total mass	ISO 7176-7	Backrest height	455mm
ISO 7176-5	Mass of the heaviest part	ISO 7176-7	Footrest to seat distance	428mm
ISO 7176-1	Static stability downhill	ISO 7176-7	Leg to seat surface angle	108°
ISO 7176-1	Static stability uphill	ISO 7176-7	Armrest to seat distance	290mm
ISO 7176-1	Static stability sideways	ISO 7176-7	Front location of armrest structure	445mm
ISO 7176-4	Energy consumption	ISO 7176-7	Hand rim diameter	-
ISO 7176-2	Dynamic stability uphill	ISO 7176-7	Horizontal location of axle	82mm
ISO 7176-10	Obstacle climbing	ISO 7176-7	Minimum turning radius	380mm
ISO 7176-6	Maximum speed forward	Manufacturer	Minimum occupant mass	120kg
ISO 7176-3	Minimum braking distance from max speed			

- a) Requirements and test methods for static, impact and fatigue strengths (ISO 7176-8)
 b) Power and control systems for electric wheelchairs-requirements and test methods (ISO 7176-14)
 c) Climatic test in accordance with ISO 7176-9
 d) Requirements for resistance to ignition in accordance with ISO 7176-16

3.2 Specification Sheet

Product model	BBR-LY-01-01
Software version	1
Type Classes	Class A
Folding mode	Electric
Maximum speed forward	6 km/h
Battery quantity	1
Battery weight	7.7 lbs
Front and rear wheel specifications	The front wheels are 10" omnidirectional wheel and the rear wheels are 10" PU tire (2.4MPa~2.7MPa)
Motor parameters	DC motor rated voltage 24V, Rated power 200W*2
Lithium battery parameter	DC24V 20AH
Charger parameters	The entered voltage is 29.4V and the output current is 4A
Horizontal shift of the shaft	3.2 inch
Vertical shift of the shaft	12.9 inch
Pivot width	46.5 inch
Reversing width	46.5 inch
Ground clearance	2.5 inch
Required width of angled corridor	39.4 inch
Required doorway entry depth	45.3 inch
Required corridor width for side opening	45.3 inch
Product life	5 years

3.2 Specification Sheet

Action	Instruction/Condition
Enter Novice Mode	Press the key for novice mode
Quit Novice Mode	Press the key for novice mode again
Alarm	Keep a long press of the SOS key
Lock	The default boot mode is lock mode; transition from non-lock to lock state

3.2 Specification Sheet

Action	Instruction/Condition
Unlock	Switch from locking status to non-locking status
Wireless Remote Mode	Operate using the control key on the remote
Quit Remote Control Mode	Operate using the control key on the remote again
Fold	Keep a long press of the horn key and SPD- key simultaneously
Expand	Keep a long press of the horn key and SPD+ key simultaneously
Upgrade Mode	When the APP detects a new version, click to upgrade
Upgrade Finished	Triggered after a single module is upgraded
Upgrading	The equipment is currently upgrading
Attention, Reserve	Reserving; warning tone emitted
Power-On Tone	Power on; the power-on tone will ring after 3 seconds
Charging	Charging in progress
Charging Completed	Triggered once charging is completed
Band-Type Brake Open	The band-type brake of the equipment is open
Power-Off Tone	Power off; the power-off tone will ring after 3 seconds
Equipment Bumpiness	Triggered when the equipment experiences bumpiness
Equipment Slant	Triggered when the equipment is slanted, with angles exceeding 5° (both left/right and front/rear)
Sharp Bend	Triggered when the equipment is taking a sharp bend
Upgrade Failed	An error occurred during the upgrade process
Version V1.0	Voice version
Lower Power, Please Charge	Triggered when the battery life is below 20%; repeats every minute
Stop Electric Wheelchair Folding	Stop the electric wheelchair folding process
Stop Electric Wheelchair Expanding	Stop the electric wheelchair expanding process
Pushing Mode	Press the "+" and "-" keys simultaneously
Quit Pushing Mode	Use the rocker to exit pushing mode at any time
Rocker Non-Zero Start Detection	Rocker protection is activated

04 / Using the Electric Wheelchair

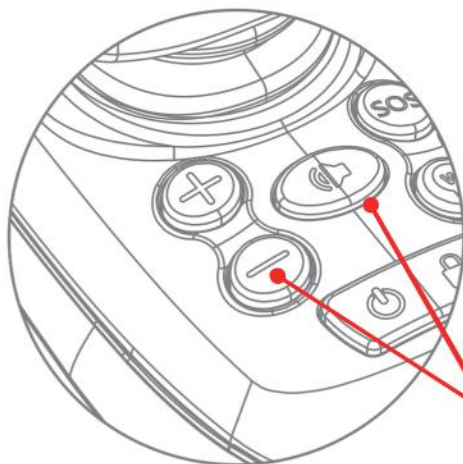
4.1 Notice

- When operating the Electric wheelchair for the first time, choose ground that is flat and hard to ensure there are no obstacles. Additionally, make sure there are no pedestrians in your vicinity.
- The Electric wheelchair's maximum load capacity is 264 lbs. **DO NOT** exceed this limit. It is designed for single-person use only.
- Before using, ensure that the safety belt of the Electric wheelchair is securely fastened.
- To operate the Electric wheelchair, sit correctly and gently push the controller's rocker forward. This action will cause the wheelchair to move forward, backward, or turn left or right, depending on the direction pushed. Upon release, the Electric wheelchair will stop. Practice these movements several times to become accustomed to the Electric wheelchair's operation.
- While maneuvering, ensure the immediate vicinity is clear of obstacles to prevent accidents.
- **DO NOT** steer towards pedestrians or operate the wheelchair recklessly.
- When the Electric wheelchair operates in challenging conditions (for example, when entering through a door or steering in tight spaces), slow down to maintain control. In such environments, it is advisable to reduce the wheelchair's speed to the lowest setting to avoid accidents.
- Periodically check the Electric wheelchair's operation conditions, ensuring smooth performance.
- Note that the Electric wheelchair will automatically shut down after 30 minutes of inactivity to conserve battery life.

4.1 Notice

During the folding or expanding process, moving the rocker will temporarily halt these actions. If interrupted, you can resume the folding or expanding process by following the steps outlined in sections 1 and 2.

4.2.1 Folding the Electric Wheelchair

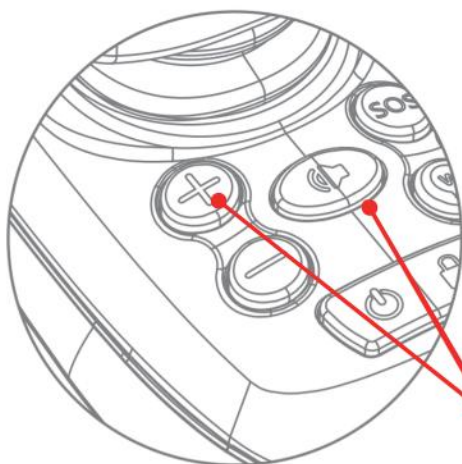


Simultaneously press the 'horn' button and the 'speed -' button on the electric wheelchair for a duration of 3 seconds.



When initiating the folding process of your Electric wheelchair, it will automatically stop once folding is completed, unless interrupted by another command.

4.2.2 Expanding the Electric Wheelchair

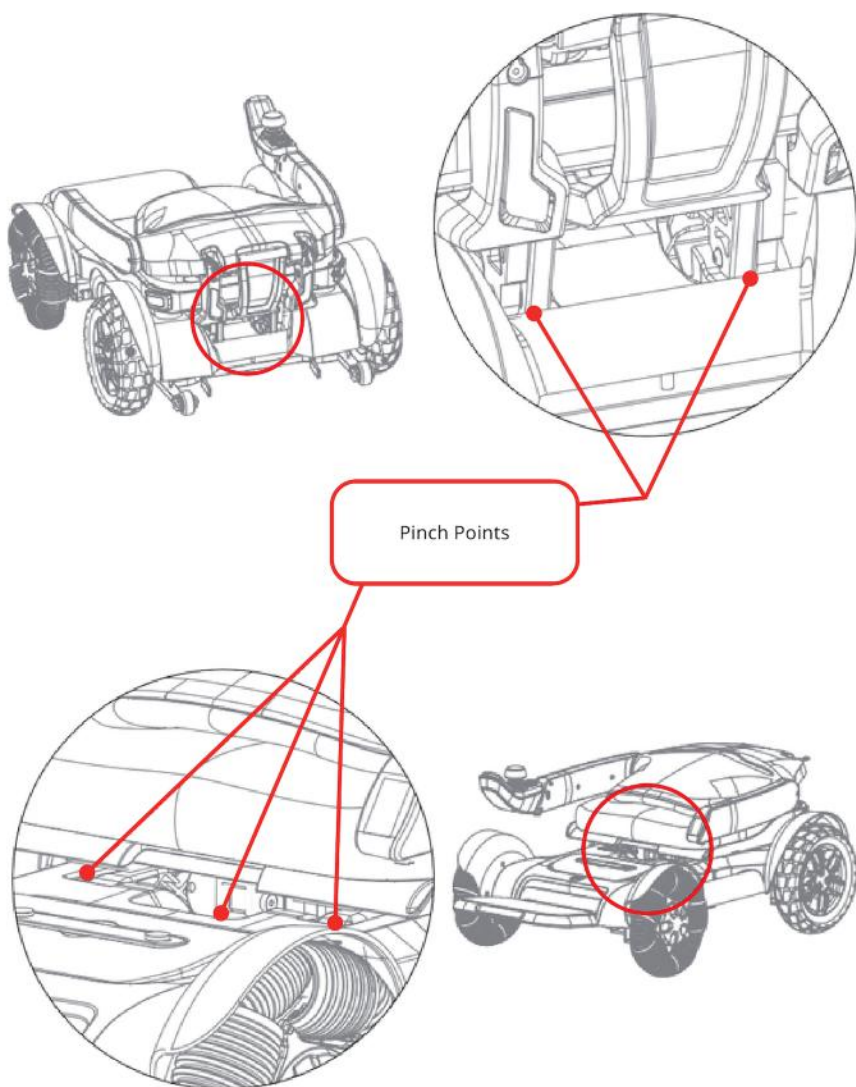


Simultaneously press the 'horn' button and the 'speed +' button on the electric wheelchair for a duration of 3 seconds.



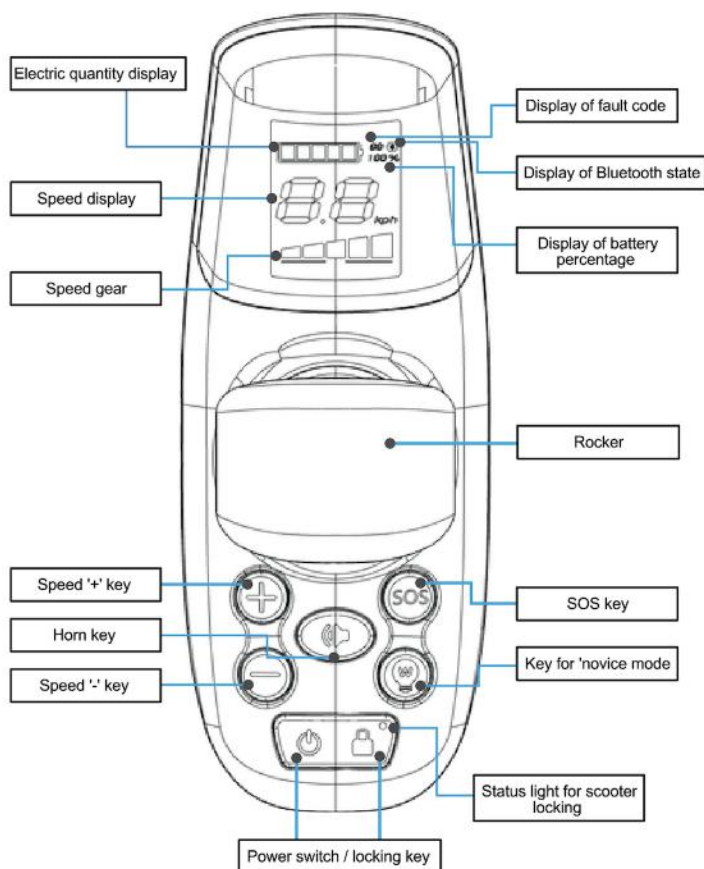
When initiating the expanding process of your Electric wheelchair, it will automatically stop once folding is completed, unless interrupted by another command.

4.2.3 Pinch Points



4.3 Controller

4.3.1 Introduction to the Controller



4.3.2 Controller Instructions

Rocker

Directly controls the Electric wheelchair's direction and speed.

Power Switch / Locking Key

Power On/Off: Long press for 2 seconds.

Unlock: Press the power key, and when the locking indicator is off, the Electric wheelchair is unlocked.

Lock: Press the power key, and when the locking indicator is on, the Electric wheelchair is locked.

Speed Adjustment Key

Increase Speed: Press the '+' key for an immediate speed boost. A long press enters cruise control mode; push the rocker forward to initiate.

Decrease Speed: Press the '-' key to reduce speed.

Horn Key

A short press sounds the horn once, adhering to national noise standards.

Electric Wheelchair Locking Status Light

By default, the wheelchair enters a locked state upon powering on. The rocker is inactive in this state. Unlock to regain control. When connected to the app during lock mode, a reminder notification will appear.

SOS Key

A 3-second press triggers an alarm sound.

Novice Mode Key

Adjusts the Electric wheelchair's parameters for beginner-friendly settings.

4.3.3 Instruction for LCD Screen Menu

Electric Quantity Display

The device features a real-time electric quantity display.

It is represented through five grids, with each grid representing a specific amount of remaining battery.

Speed Display

The LCD screen shows the driving speed of the Electric wheelchair in km/h.

Display accuracy: $\pm 5\%$.

Speed Gear

Increase Speed: Press the '+' key once to shift to the next speed gear. Gear 5 is the maximum speed.

Decrease Speed: Press the '-' key once to shift down a gear. Gear 1 is the slowest.

This function can also be accessed and adjusted through the accompanying APP.

Display of Fault Code

The product's built-in diagnostic tool displays specific fault codes.

For detailed information on each diagnostic code and troubleshooting steps, please refer to section 5.3 titled "Troubleshooting".

Bluetooth Status Display

Not Connected: When Bluetooth is not paired, the Bluetooth icon on the LCD screen remains off.

Connected: When paired with a device via Bluetooth, the icon on the LCD screen illuminates.

Electric Quantity Display

The battery life can also be viewed as a percentage.

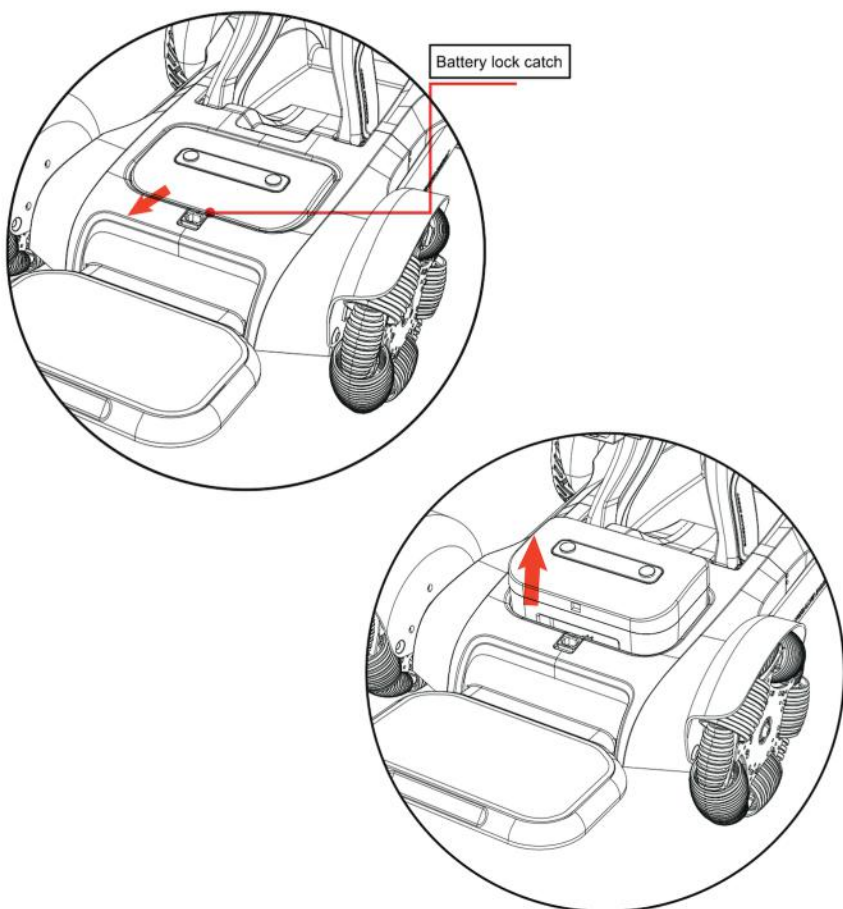
This specific display functionality is available through the APP.

Remember, always ensure you're familiar with these controls before using the Electric wheelchair. Safety and understanding are key.

4.4 Battery

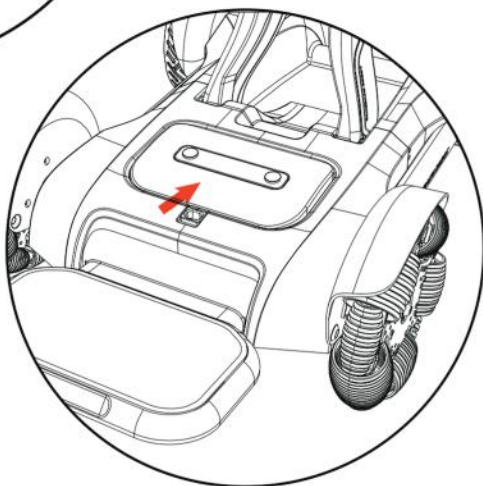
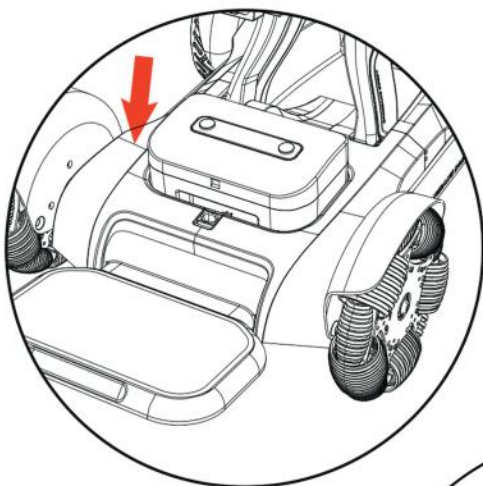
4.4.1 Steps to Remove the Electric Wheelchair's Battery

1. Locate the battery lock catch on the Electric wheelchair chassis.
2. Unlock or release the catch.
3. Grasp the battery firmly.
4. Carefully lift the battery upwards to remove it from the chassis.
5. Ensure the Electric wheelchair is powered off and it's in a stable position before performing these steps.
6. Handle the battery with care.



4.4.2 Steps to Install the Electric Wheelchair's Battery

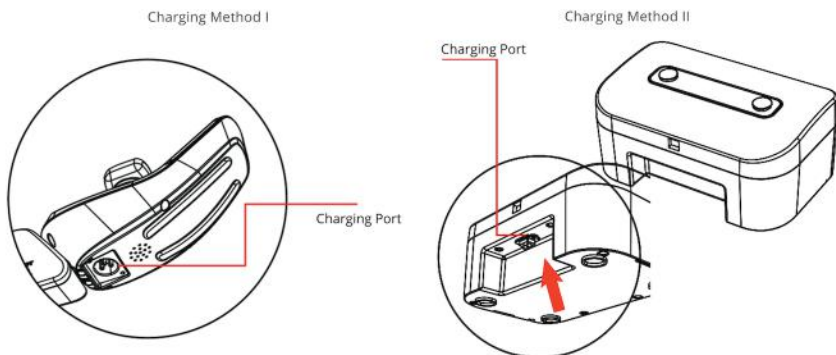
1. Ensure the Electric wheelchair is powered off and in a stable position.
2. Carefully position the battery above the battery slot.
3. Gently place the battery into the slot, making sure it fits securely.
4. Once the battery is in place, close and secure the battery lock catch to ensure the battery stays firmly in its position.
5. Always handle the battery with care and ensure it's aligned correctly in the slot.



4.5 Charging Methods

Charging Method I:

1. Ensure the Electric wheelchair is turned off and in a stable position.
2. Take the charger and ensure its cord is untangled and free from any obstructions.
3. Locate the charging port situated below the controller on the Electric wheelchair.
4. Carefully plug the charger into the port.
5. Plug the other end of the charger into a suitable power outlet.
6. Monitor the charging process and ensure the charger stays connected throughout.
7. Once charging is complete, unplug the charger from the power outlet first, and then detach it from the Electric wheelchair's charging port.
8. Remember to always charge in a well-ventilated area and avoid overcharging the battery.



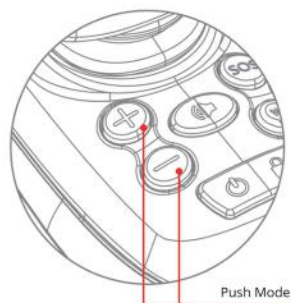
Charging Method II:

1. Ensure the Electric wheelchair is turned off and positioned securely.
2. Locate and open the battery compartment on the Electric wheelchair.
3. Carefully remove the battery box from its slot.
4. Identify the charging port on the battery box.
5. Take the charger, ensuring its cord is untangled and free from any obstructions.
6. Plug the charger into the battery box's charging port.
7. Connect the other end of the charger to an appropriate power outlet.
8. Keep an eye on the charging process to prevent overcharging.
9. Once the battery is fully charged, first unplug the charger from the power outlet.
10. Then, disconnect the charger from the battery box's charging port.
11. Return the battery box to its compartment in the Electric wheelchair and ensure it is secured in place.
12. Always charge in a safe environment, away from any flammable materials, and avoid charging a damaged battery.

4.6 Engaging Push Mode

1. Ensure the Electric wheelchair is in a stable position.
2. Simultaneously press the '+' and '-' keys on the controller.
3. The Electric wheelchair will now enter push mode, allowing manual movement.
4. To exit push mode, simply swing the rocker on the controller.
5. The Electric wheelchair will revert to its standard operation.

Note: While in push mode, be cautious of the surrounding environment and ensure the path is clear of obstacles.



4.7 Storage Guidelines

1. **Temperature Conditions:** Store the packaged Electric wheelchair in a temperature range of -40°C to 60°C.
2. **Humidity:** Ensure the relative humidity does not surpass 95%.
3. **Atmospheric Pressure:** The suitable atmospheric pressure for storage is between 56-146kPa.
4. **Environment:** The storage room should be free from harmful gases that might cause corrosion. Make sure the area has proper ventilation.
5. **Stacking:** When the Electric wheelchair is in its packaged state, avoid pressing or stacking other items on top of it. If stacking is necessary, do not stack more than three packages high.
6. **Protection from External Elements:** Avoid storing the Electric wheelchair near heat sources or in direct sunlight for extended periods.
7. **Long-Term Storage:** If you plan to store the Electric wheelchair for an extended time:
 - Fully charge the battery before turning off the power switch.
 - If the Electric wheelchair remains in storage for over a month, ensure it is fully charged before continuing storage or using it.

05 / Maintenance & Troubleshooting

5.1 Daily Inspection

1. Check for Loose or Missing Components:

- Depending on the frequency of use, carry out weekly or monthly checks on the frame's connecting parts, including screws, nuts, and bolts.
- Look for signs of loosening, missing parts, or corrosion.

2. Inspect Movable Joints:

- Regularly examine movable joint parts.
- Ensure they move freely without jamming and check that none have fallen out or are missing.

3. Tire Maintenance:

- Regularly inspect the tires for signs of aging, damage, or excessive wear.
 - a. Consider replacement if wear is significant or if there are any visible damages.

4. Protection from Moisture:

- If the Electric wheelchair gets wet, especially during rainy or humid conditions, wipe it dry as soon as possible.
- This prevents the potential of rust or corrosion due to prolonged exposure to moisture.

5. Avoid Excessive Heat:

- Do not leave the Electric wheelchair under direct sunlight, especially during high-temperature weather.
- Prolonged exposure to high temperatures can affect its structural integrity and overall lifespan.

5.2 Troubleshooting

If you encounter any issues with your product and need to contact our after-sales service for repairs, please follow the instructions below:

1. **Call After-Sales Service:** Reach out to our after-sales service team at 4000-400-882.
2. **Provide the Fault Code:** Always have the fault code ready when you make the call. This code is crucial for our team to diagnose and understand the issue you are facing.
3. **Diagnostic Code Functionality:** The product is equipped with a built-in information diagnostic tool. The diagnostic code displayed by this tool reflects any abnormalities or issues the product might be experiencing.

By providing the fault code, you enable our team to offer more efficient service and ensure quicker resolution to your concerns. We appreciate your cooperation and understanding in this matter.

5.3 Fault Code & Abnormal States Guide

Fault Code	Abnormal State	Alert
20-24	Rocker protection	Fault alarm
E1	Keystroke anomalies	Fault alarm
E5	Relay abnormalities	Fault alarm
E6	Machine protection	Fault alarm
90-99	Drive protection	Fault alarm
40-42	Holding brake opening	Fault alarm

06 / Mobile App Operation Guide

Download App

Scan the QR code to download the Mobile App

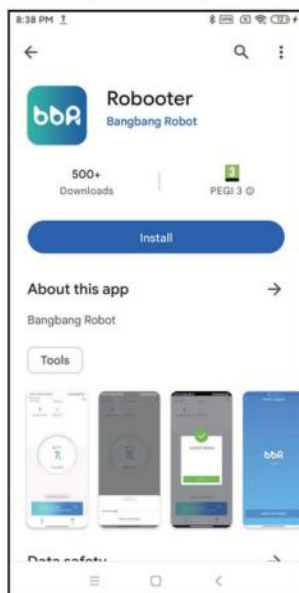


Install App

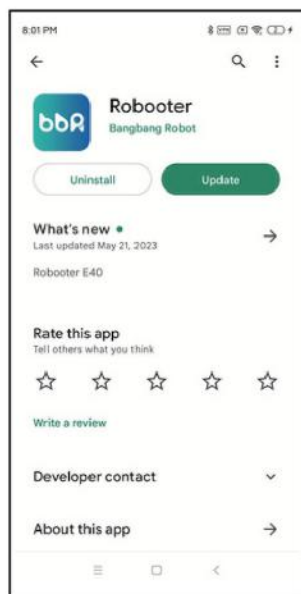
Introduction

Before using the application, ensure you have downloaded the latest version from the App Store or Google Play Store. The app allows you to monitor your Wheelchairs status, update its firmware, and access several features for an enhanced riding experience.

(Android)

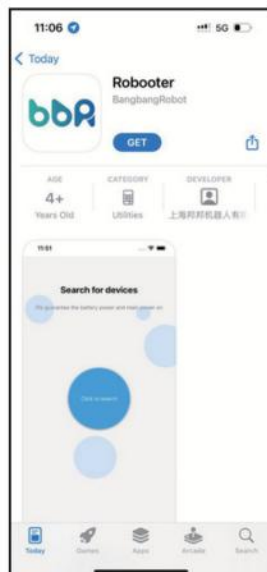


The above screen is displayed after scanning, click "Install" to install the mobile application.

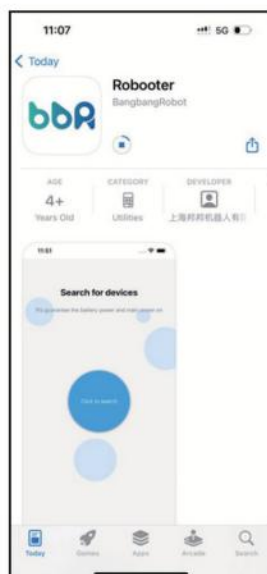


The above screen indicates that the installation of the mobile application is complete. Click **“Open”** on the above screen to open the mobile application.

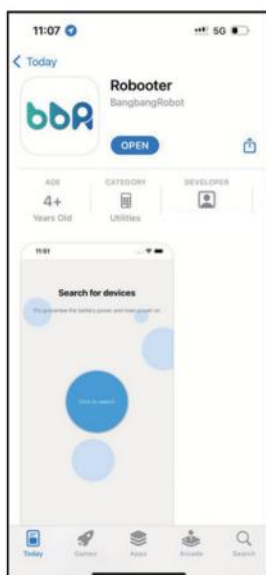
(IOS)



The above screen is displayed after scanning. Click "Get" to install the mobile application.



The above screen indicates that the mobile application is being installed

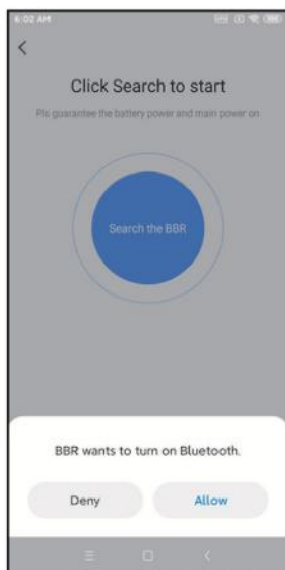


The above screen indicates that the installation of the mobile application is complete.
Click **“Open”** on the above screen to open the mobile application

Connect Device



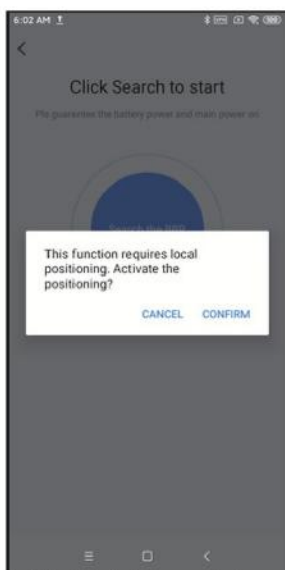
Click **“Click to Search”** on the above screen to search device.



Note: Obtain phone permissions

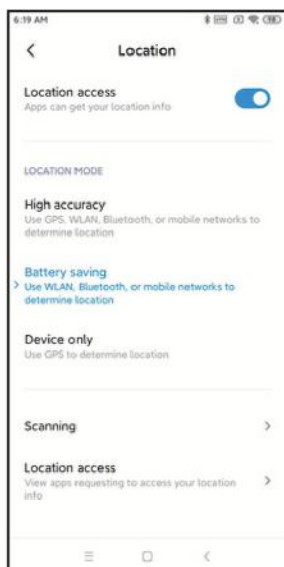
Click **"Allow"** on the above screen to turn on your mobile's Bluetooth

Connect Device



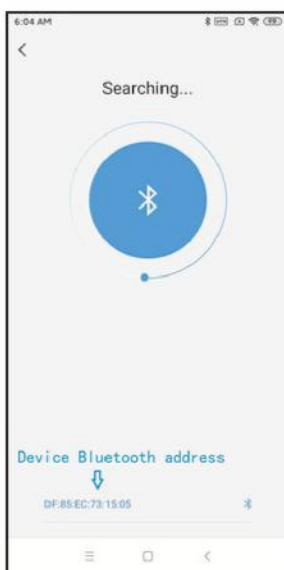
Note: Obtain phone permissions

Click **"Confirm"** on the above screen to turn on your phone's location.

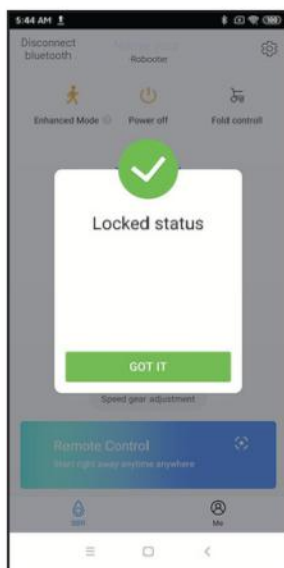


Note: Obtain phone permissions

Click "**Location access**" on the above screen to turn on your phone's location.



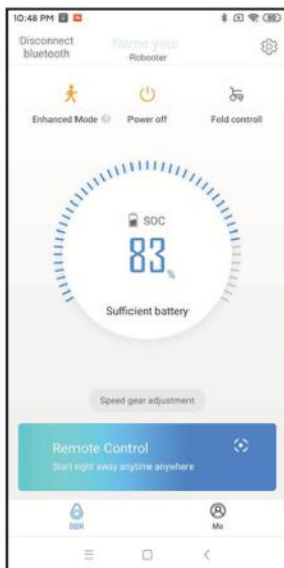
After completing the above steps, the mobile application will begin searching for the device. Click on the Device Bluetooth Address to pair the mobile application with the device.



Note: When the wheelchair is in **lock mode**, display this interface. After turning on the wheelchair, enter the lock mode automatically. Only use the app after unlocking on the wheelchair.

The above screen indicates a successful connection.

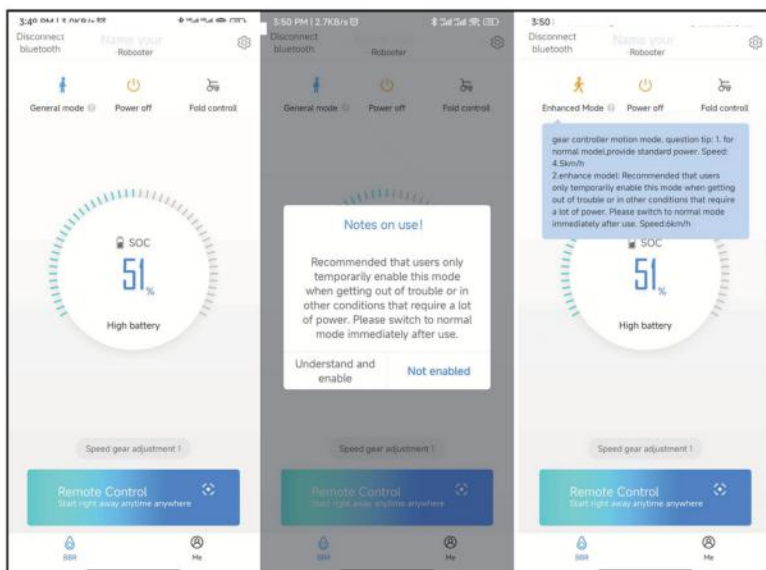
Click **"Got It"** in the above screen to access status screen of the electric wheelchair.



Click **"Power Off"** to turn off the device.

Click **"Disconnect Bluetooth"** to disconnect the bluetooth connection.

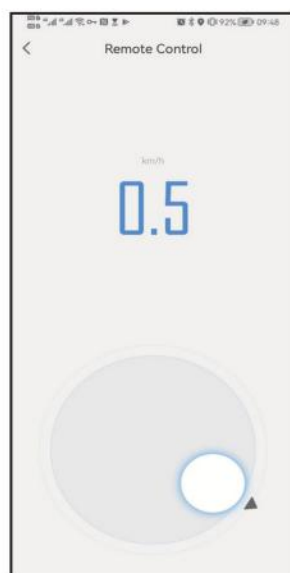
Click **"Speed Gear Adjustment"** to adjust the device speed. (Adjustable speed in 5 gears)



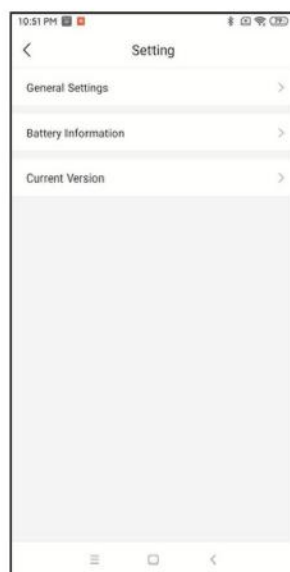
In the status screen, select "**General Mode**" to toggle between enhanced mode and general mode adjustments. **General mode** is 4.5km/h, while the **Enhanced mode** offers a speed of 6km/h.



In the status screen, select "**Fold Control**" to access remote folding controls. Slide the circle left to fold the device and right to expand it.



In the status screen, select "**Remote Control**" to enter remote control mode.
Slide the circle up to move forward, down to reverse, left to turn left, and right to turn right.

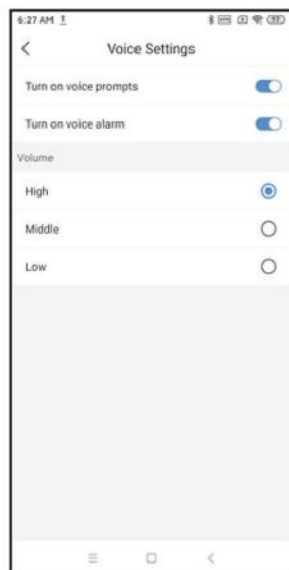


Select "**Settings**" in the top right corner to enter the settings screen.



Select **"General Settings"** in the settings screen to enter the general settings mode.

For cruise control: slide left to deactivate and slide right to activate.

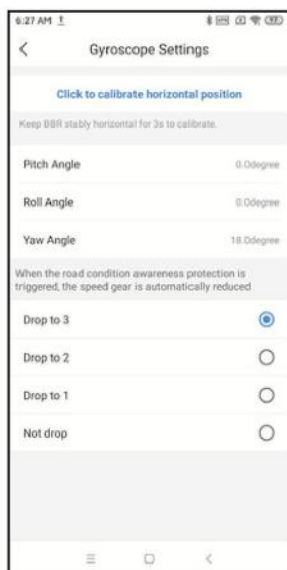


Select **"Voice Settings"** in the General Settings to enter the voice settings mode.

For voice prompts: slide left to mute and slide right to enable

For voice alarms: slide left to mute and slide right to enable.

Volume can be adjusted in three levels: High, Middle, and Low.

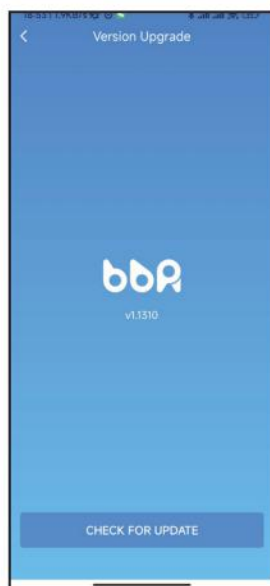


Select **"Gyroscope Settings"** in the General Settings to enter the gyroscope settings mode. Choose **"Click to calibrate horizontal position"** for calibration (factory setting is optimal; user action typically not needed). If the road condition protection is activated, the speed gear will auto-reduce. There are 4 adjustable modes:

- Reduce speed to 3rd gear
- Reduce speed to 2nd gear
- Reduce speed to 1st gear
- No speed reduction



Click on **"Battery Information"** in the settings screen to view the battery information screen. This displays the battery power percentage and battery status.



Click on **"Current Version"** in the settings screen to access the version upgrade mode. This displays the current device version. Select to upgrade the device's version.

07 / Cyber Security

We advise users to set a strong password for their mobile phones to prevent unauthorized access to the equipment. To download the App, simply scan the QR code provided in the manual. Always update the App via Google Play (for Android phones) or the App Store (for iPhones). Avoid installing the App on jailbroken phones.

08 / Wireless Technology & Functions

8.1 Wireless Functions

The wheelchair can be operated using a mobile phone through Bluetooth 4.1 (IEEE 802.15.4) technology.

8.2 Characteristics of the Wireless Technology

- Protocol: Bluetooth 4.1
- Frequency band: 2.4GHz ISM frequency band Frequency: 2.400GHz ~ 2.4835GHz GHz
- Modulation technology: GFSK
- Spread spectrum technology: Frequency-Hopping Output power: +4dBm~-20dBm (in 4dB steps) Sensitivity: -93dBm(BLE mode)
- Distance:<10m

8.3 Wireless Security Measures

At the application layer, AES128 encryption is utilized, with the interactive data being re-encrypted by the hardware. The 128-bit initial password is derived from the feature code of the interacting entities, based on a specific algorithm. This password is updated and synchronized continuously throughout the connection. Given the presence of dynamic random change codes and sequence codes within the data, each communication's actual data sequence varies. Only after decryption is the authentic data revealed. If data is found to be incorrect or if content verification fails multiple times, the connection is severed and the device is added to a blacklist. This remains in place until it's overridden, ensuring the signal is transmitted accurately.

8.4 Addressing Wireless Connectivity Issues

If the mobile phone fails to control the wheelchair accurately, discontinue its use immediately and revert to the wheelchair's manual controls. To troubleshoot, remove other wireless devices from the vicinity and attempt to reconnect the mobile phone to the wheelchair. Only resume using the mobile phone for control once it has been verified to operate the wheelchair effectively.

8.5 Addressing Wireless Issues & Solutions

When operating with the mobile phone, ensure that other wireless devices are positioned at least 2 meters away from the wheelchair to prevent interference.

8.6 Information on RF Wireless Communications

This equipment is in compliance with part 15 of the FCC Rules. Its operation is contingent upon two primary conditions:

1. The device is prohibited from causing detrimental interference.
2. The device must acknowledge and accommodate any interference it receives, even if this results in unintended functioning.

8.7 Precautionary Measures

- Always maintain a safe distance from areas with strong electromagnetic (EM) disturbances.
- Cease operation if the device displays erratic behavior or compromised performance due to EM interferences.
- Utilizing non-standard accessories and cables, or those not provided by the device's manufacturer, could elevate electromagnetic emissions or diminish its electromagnetic resistance, thereby affecting the device's functionality.
- Ensure that the device is kept at a reasonable distance from other electronic equipment to prevent mutual interference. If co-location is necessary, monitor both devices to guarantee they function as intended.
- When the device is operational, maintain a minimum separation of 30 cm (or 12 inches) between it and any portable RF communication tools, including related accessories like antennas. Neglecting this could adversely affect the device's performance.

WARNING: Exposure to frequent sources of RF, such as RFID systems, electronic security mechanisms (like metal detectors or electronic article surveillance systems), NFC systems, wireless energy transfers, and specialized medical instruments (like MRI scanners, electrocautery tools, electrosurgical units, and diathermy devices) can generate electromagnetic interference (EMI). Ensure that interactions with such devices are minimized when using this equipment.

09 / Instruction to Electric Wheelchair Product Service

9.1 Quality Warranty Dictionary & Period for Wearables

Wearables: Components or parts of the electric wheelchair that are subject to wear due to regular use, which might require replacement or repair over time.

List of wearables	"Three guarantees" term	Range of "three guarantees"
Roller of omnidirectional wheel	1,200km or 6 months (the earlier one shall prevail)	The roller has degumming or slip
Driving wheel	1,200km or 6 months (the earlier one shall prevail)	The surface of the tire cracks
Cushion	3 months	The issues of fading or sick seam, etc., due to non-human factor
Backrest	3 months	The issues of fading or sick seam, etc., due to non-human factor
Safety belt	3 months	The issues of fading or sick seam, etc. due to non-human factor
Key	3 months	3 months
Enclosure and pedal cushion	Not in the range of warranty	

9.2 Service Obtaining

Should you require warranty services, you can either:

- Contact authorized service agencies directly.
- Log in to the official website at www.bangbangrobotic.com and leave a message on the support page.
- Call the official after-sales service at 4000-400-882.

Upon reaching out, our after-sales technicians will be on hand to assist you.

For warranty claims, it's vital to provide:

- Valid proof of purchase.
- The "three guarantees" certificate.

Always ask for and retain an invoice with comprehensive information from the distributor at the time of purchase. An invoice that doesn't match the product, has been tampered with, or is not legible will be deemed invalid. If the product has been previously repaired or replaced, always keep the corresponding records.

While the aforementioned documents are vital, if it's clear the product is still within warranty, we might offer warranty services even if these documents are unavailable. This is, however, at our discretion. Adhering to our stipulated procedures, including providing necessary information and undergoing specific identification processes, is crucial when claiming warranty services.

The designated authorized service agencies for each product provide all warranty services unless stated otherwise. If multiple agencies are authorized, you can select the nearest one.

Regarding product replacements or returns, the distributor primarily handles these unless the Company gives different instructions. When looking to replace or return a product, you must surrender it to the distributor who will follow the necessary procedures on your behalf.

For clarity:

- A **distributor** refers to entities supplying products to users through sales or other means.
- Shanghai Bangbang Robot Co., Ltd., authorized service agencies, and distributors who offer warranties as per this document's guidelines are jointly referred to as the "**service provider**."

10 / Disclaimer

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Given that the Company continually enhances and updates its products, users are encouraged to regularly check the official website for the latest user instructions and terms of use or to reach out to distributors for the most recent user manual. The Company reserves the right to modify this Product Manual at its discretion and without prior notice.

All interpretation rights regarding this document are retained by the Company.

11 / Reporting Serious Events to FDA

MedWatch is the Food and Drug Administration's (FDA) program dedicated to reporting severe reactions, product quality issues, therapeutic inequivalence/failure, and product use errors with human medical products. These products include drugs, biologic products, medical devices, dietary supplements, infant formula, and cosmetics.

If you suspect that you or a family member has encountered a significant adverse reaction due to a medical product, we strongly advise you to take the reporting form to your doctor. By doing so, your healthcare provider can contribute crucial clinical data from your medical records, aiding the FDA in a thorough evaluation of your report.

We recognize that, for numerous reasons, you might be hesitant to have the form filled out by your healthcare provider, or they may opt not to complete it. It's worth noting that healthcare providers are not mandated to report to the FDA. If you encounter such situations, you can directly complete the Online Reporting Form on your own.

Upon receipt of your report, the FDA will acknowledge it. FDA staff will review all reports, and they will only reach out if they require more details.

For voluntary adverse event reporting to the FDA, you can utilize the following methods:

1. **Online Reporting:** Visit <https://www.accessdata.fda.gov/scripts/medwatch/index.cfm?action=reporting.home> to report online.
2. **Consumer Reporting Form FDA 3500B:** To use this form, follow the provided instructions to either fax or mail it. For guidance on completing the form, refer to MedWatchLearn. The form is accessible here: <https://www.fda.gov/downloads/aboutFDA/reportsmanualsforms/forms/ucm349464.pdf>.
3. **Telephone Reporting:** Call the FDA directly at 1-800-FDA-1088.
4. **Health Professionals Reporting:** Professionals can use the FDA 3500 form, which can be downloaded here: <https://www.fda.gov/downloads/aboutFDA/reportmanualsforms/forms/ucm163919.pdf>

Remember, timely and accurate reporting plays a critical role in ensuring the safety and effectiveness of medical products available to the public.

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