

User Manual
Model A





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1. Introduction

1.1 *Welcome*

Welcome to your new WHILL Model A! The Model A has amazing features that we hope will positively change the way you live your daily life.

The following items are provided to you:

- WHILL Model A
- WHILL Model A charger
- User Manual (printed or digital copy of this manual)

1.2 *Manual Overview*

The User Manual instructs how to safely operate important features of the WHILL Model A. It also provides basic service, troubleshooting, and maintenance information.

This manual is intended for users, dealers, resellers, salespersons, and others who wish to understand important features of Model A in detail.

At WHILL, we care about your safety and experience. Please carefully read and follow all the instructions in this manual.

1.3 **CAUTION:**

The WHILL Model A is intended for personal transportation and is not a wheelchair. Anyone who is restricted to a sitting position should not use this product. The WHILL Model A is not considered a medical device and has not been submitted to the Food and Drug Administration for review or clearance.

1.4 *Notations*



WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation that, if not avoided, may result in property damage, minor injury, or both.



INFORMATION

Gives useful tips, recommendations and information for efficient, trouble-free use.

1.5 Document Guidelines



INFORMATION

THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

1.5.1 *Illustrations*

The illustrations provided in this manual are for demonstration and conceptual visualization purposes only. Your actual product might vary from the illustrations in the following ways:

- The directional controller (joystick) may be on either the left or the right arm.
- There are different designs for the directional controller.

1.5.2 *Product Specifications*

All specifications and descriptions contained in this manual are verified to be accurate at the time of printing.

1.5.3 *Errors and Omissions*

Let us know at support@whill.us if you notice any inaccuracies or omissions in this manual!

2. Safety

2.1 *Warnings*



WARNING

Model A Operation

- Do not operate the Model A without reading this user manual. Please pay close attention to all safety information and warnings. Contact customer support if you need clarification on sections that are unclear. Failure to read and understand how to safely operate the Model A may result in damage and/or injury.
- The weight capacity of the Model A is 220 lbs. To avoid injury or Model A failure, do not exceed this weight.
- Do not operate the Model A on any streets, roads, or highways. Before crossing the street, make sure that drivers are able to see you.
- Do not use the Model A if it has been exposed to excessive water, is damaged in any way, or requires service. Contact your dealer or WHILL for service.
- To prevent injury and/or damage, do not use the Model A in heavy snow or icy conditions.



- Do not drive the Model A through water deeper than 1”.
- Do not operate the Model A on soft surfaces such as sand or mud.
- Do not use the Model A on slopes greater than 17%. The Model A has been tested for stability on 17% slopes (10 degrees) and should only be used on slopes less than 17%. For reference, standard ramps in front of most buildings (with railing) have an 8.3% slope.
- The Model A is designed and tested for stability on obstacles less than 3”. Do not use the Model A to navigate over objects that are greater than 3” in height.
- Use extreme caution when driving on uneven surfaces or slopes. In these conditions, it is recommended to have a spotter to stabilize the Model A if necessary.
- The Model A is not designed to be used as a dynamic seat during weight training or other exercise.
- For your safety, always fasten your lap belt when you are in the Model A.
- To prevent injury to your legs or knees, inspect underneath tables or other objects before sliding the seat forward.
- Ensure tail lamps are working properly before operating the Model A at night or in low visibility conditions.
- It is not safe to operate the Model A with the footplate in an up (vertical) position. Make sure the footplate is down before moving.
- Make sure your hands, arms, elbows and feet are inside the Model A when moving.

Brake lock release

- Only disengage the brake locks (put the Model A in freewheel mode) for emergency and short-term use.
- To prevent unintended movement, the Model A must be powered off whenever the brake locks are being engaged or disengaged.
- Do not use the Model A on a slope when the brake locks are disengaged (in freewheel mode). Because the Model A has no brakes in this mode, controlling or stopping the Model A will be difficult and could result in serious injury.

Service

- The Model A contains no user-serviceable parts. **Do not attempt to replace or repair any parts (including the batteries) on your own.** Any service must be done by a WHILL-authorized service representative.
- Do not spray water to clean off the Model A. Excessive moisture may damage Model A components and make it inoperable.
- Do not attempt to adjust or modify the Model A. Doing so may make the Model A less stable or impact its performance.

Transportation

- The Model A has not been tested for transportability and is not intended to be used as a seat during transportation. You should transfer to a regular vehicle seat during transportation.

Battery Charging

- Only use the original battery charger provided with the Model A. Use of any other charger may cause damage or injury and will void the product’s warranty. Please contact customer support if you need a replacement battery charger.
- Battery charging should only be performed indoors. The battery charger should not be exposed to any moisture, water, or other elements.

- To reduce the risk of fire or electric shock, extension cords should not be used with the battery charger.
- To reduce the risk of fire or electrical shock, do not leave the Model A plugged in and continuously charging for more than one week.

Electromagnetic Interference

- Electromagnetic Interference (EMI) from external sources can impact braking and control of the Model A. Unintended brake release or Model A movement could result in serious injury. To prevent this:
 - Do not operate hand-held transceivers (transmitters/receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered Model A is turned ON.
 - Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them.
 - If unintended movement or brake release occurs, turn the powered Model A OFF as soon as it is safe.
 - Be aware that adding accessories or components, or modifying the powered Model A, may make it more susceptible to EMI.
 - Report all incidents of unintended movement or brake release to the powered Model A manufacturer, and note whether there is a source of EMI nearby.

Section 6 of this user manual contains more information on EMI and how it can affect the Model A. To properly understand EMI, please read Section 6.



CAUTION

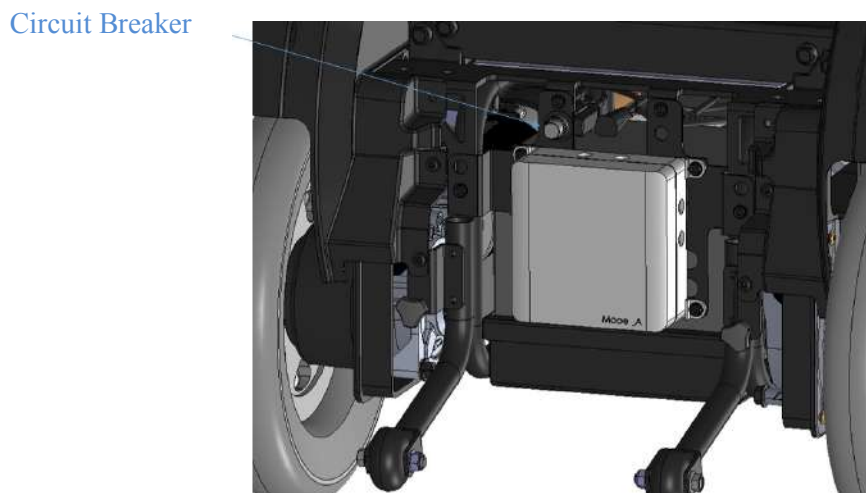
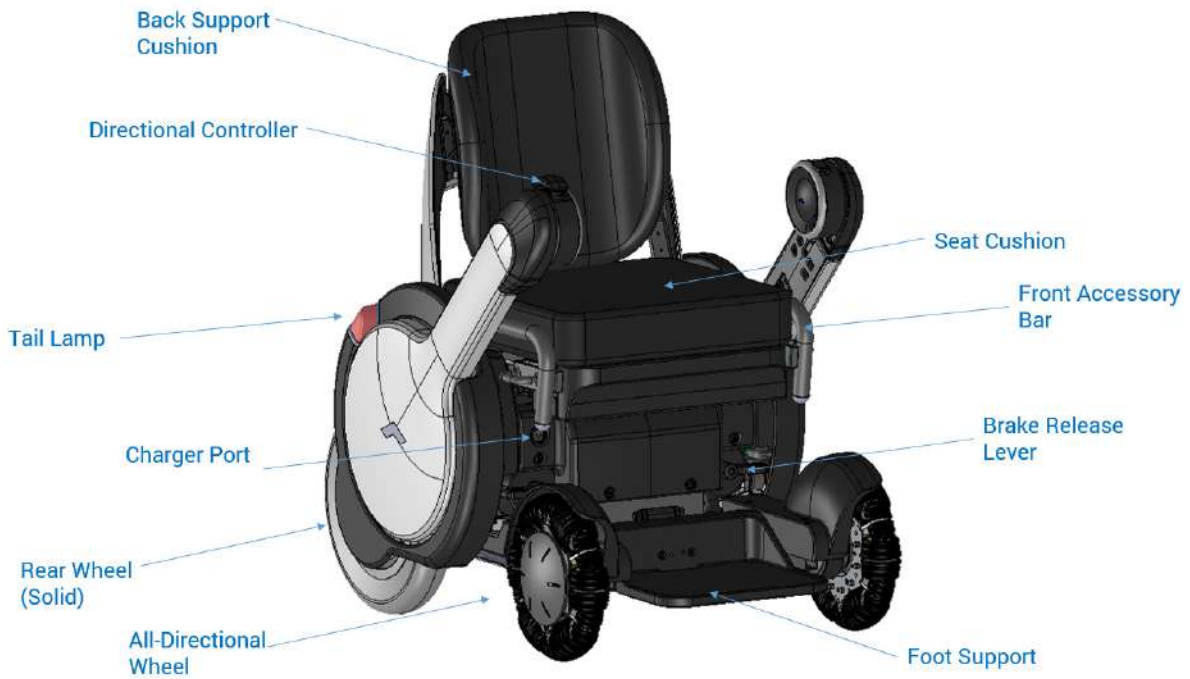
2.2 *Cautions*

- Be sure to charge the batteries before initial use of the Model A. Failing to charge new batteries may reduce battery life.
- To prevent the battery from draining completely, charge the Model A at least once per month. If the battery drains completely, do not use the Model A; have the battery replaced as soon as possible.
- Check around you for loose clothing or other material that may snag on the product before moving the seat backwards. Be sure to gather any objects up and move them out of the way before moving the seat backward.
- Reaching or leaning can affect the stability and balance of the Model A. Always exercise caution when shifting your weight or balance in the Model A. When in doubt, ask for help when reaching for inaccessible objects.

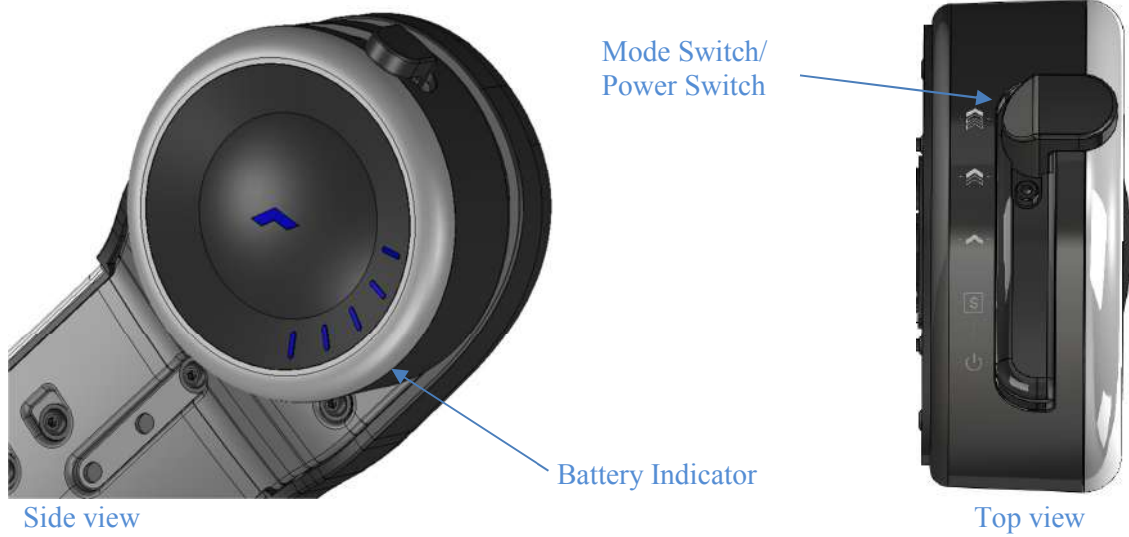
3. Product

3.1 Model A Components

Figure 1. Model A Components



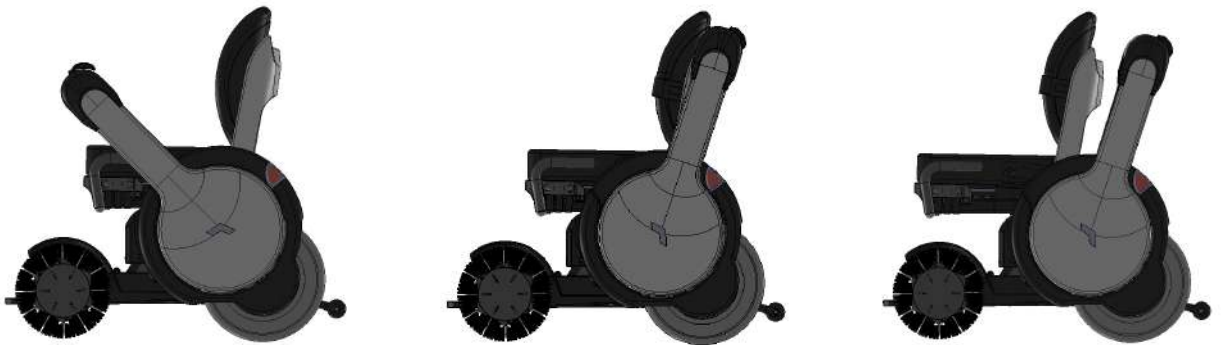
Back cover removed by hand to expose circuit breaker



3.2 Arm and Seat Positions

The Model A arms and seat can each be in two different positions (Figure 2).

Figure 2. Model A Seat and Arm Positions



Arm Down Position

To drive the Model A, the arms must be locked in the down position

Arm Up/Seat Back Position

Creates space to free your arms

Arm Up/Seat Forward Position

Allows you to get closer to the edge of a table

3.3 Cushions

The WHILL Model A is provided with a seat cushion. The seat base is compatible with seat cushions 16” wide and 16” to 20” long.

3.4 Specifications

There is only one model of the wheelchair and specifications are listed below.

Table 1. Model A Specifications

Item	Specification
Drive System	4 Wheel Drive
Controller	Mouse or Joystick Controlling System
Seat Sliding (electric)	5.9" (150mm)
Chair Width	23.6" (600mm)
Chair Length (5 positions)	35", 36", 37", 38", 39" (889mm, 914mm, 940mm, 965mm, 990mm)
Chair Ground Clearance	3.5" (89mm)
Chair Weight	250 lb (114kg)
Maximum Speed	5.5 MPH (8.9 km/h)
Speed Settings	High, Mid, Low Speed
Braking System	Electromagnetic Brake
Turning Radius	28" (711mm)
Maximum Obstacle Height	3" (75mm)
Incline Capability	10 degrees
Driving Range (full battery charge)	10.6 - 12 miles (19.3 – 17.0 km)
Maximum Weight Capacity	220lb (100kg)
Arm Angle (down position)	45, 50, 56, 62 degrees
Seat Angle (4 positions)	1, 4, 7, 10 degrees
Seat Length (5 positions)	16", 17", 18", 19", 20" (406mm, 432mm, 457mm 483mm, 508mm)
Seat to Floor Height (3 positions)	20.2", 21.2", 22.2" (425mm, 445mm, 465mm)
Front Wheel Diameter	9.8" (249mm)
Rear Wheel Diameter	12.5" (317 mm)
Tail lamps (2)	Red lights
Battery	12V 50Ah (per battery; 2 total batteries)
Charger	6A_Charger Charging time: 8 – 9 hours

Item	Specification
Foot Support Angle	0° – 10° (continuous, from horizontal plane)
Foot Support Height from Ground (5 positions)	4", 5", 6", 7", 8" (103mm, 127mm, 152mm, 178mm, 203mm)
Foot Support Extension (5 positions)	0", 1", 2", 3", 4" (0mm, 25mm, 50mm, 75mm, 100mm)
Back Cushion Support Angle (4 positions)	94°, 96°, 98°, 100° (from horizontal plane)
Compatible Back Support	Custom WHILL back support
Compatible Seat Cushion	16" wide, from 16" to 20" deep
Operating Conditions	-13° F to 122° F (-25° C to 50° C)
Storage Conditions	-40° F to 149° F (-40° C to 65° C)
Rear tire options	Solid

4. Operation



WARNING

- Do not operate the Model A without first reading this user manual. Please pay attention to all safety information and warnings and contact customer support if you need clarification. Failure to read and understand how to safely operate the Model A may result in damage and/or injury.
- Do not use the Model A if it has been exposed to excessive water, is damaged in any way, or requires service. Contact your dealer or WHILL for service.

4.1 Safety Check



INFORMATION

- Practice and get to know the feel of your Model A and its capabilities. Perform the safety checks listed below before each use to ensure your Model A operates smoothly and safely.

Perform the following inspections before turning on the chair:

- Ensure the charger is unplugged from the Model A and that the battery charger is safely stored away.
- Do not damage or entangle the charger cable/connector. Failure to comply may cause severe injury.
- Check the rear tires for signs of wear or damage. There should be no visible deformation or flat spots.
- Check the omni-wheels for signs of wear or damage. The rubber thickness on the rollers should not be less than 3mm. The tire should not be susceptible to unusual noise or vibration when it rotates.
- Check Model A for physical damage such as dents, scratches, or corrosion. Awareness of the condition of your Model A will help improve its life and safety.
- Check the control arms to ensure they are locked in the “down” position.
- If you have any concerns about service or maintenance of your product and its accessories, please do not hesitate to contact WHILL customer support.

4.2 *Moving into and out of Model A*



WARNING

- The weight capacity of the chair is 220 lbs. To avoid injury or chair failure, do not exceed this weight.



CAUTION

- Check around you for loose clothing or other material before moving the seat backwards. Be sure to gather any objects up and move them out of the way before moving the seat backward.



INFORMATION

- Moving into or out of your Model A requires agility, awareness and caution. Practice safe loading and unloading techniques and ask for assistance if you cannot safely accomplish them on your own.

The Model A has been designed to make it easy to move into and out of the chair. The figures below demonstrate features that may make moving into and out of the chair easier:

Figure 3. Chair in the driving position.

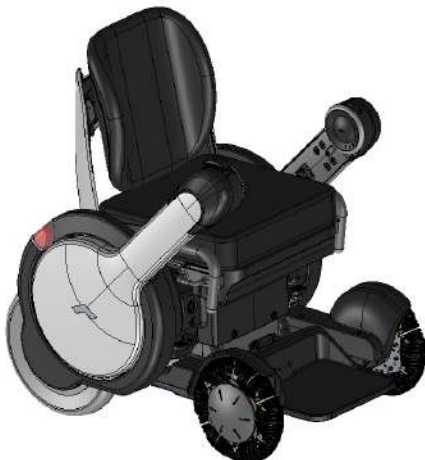


Figure 4. Turn on unit in the seat mode.

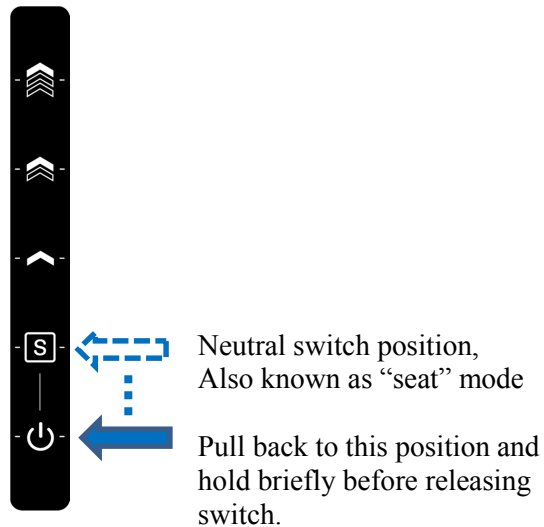


Figure 5. Slide seat forward using directional controller and seat slide mode.

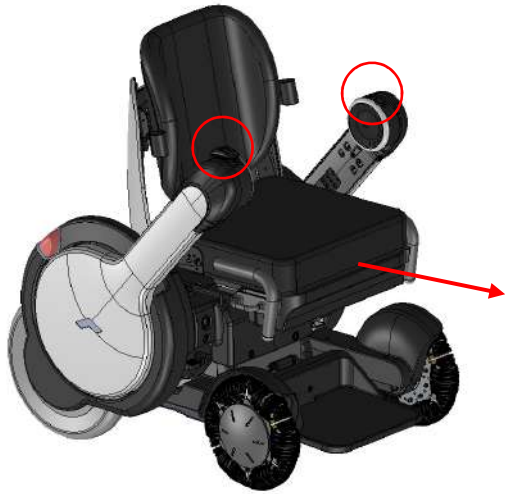


Figure 6. Lift/rotate control arms up and backward.

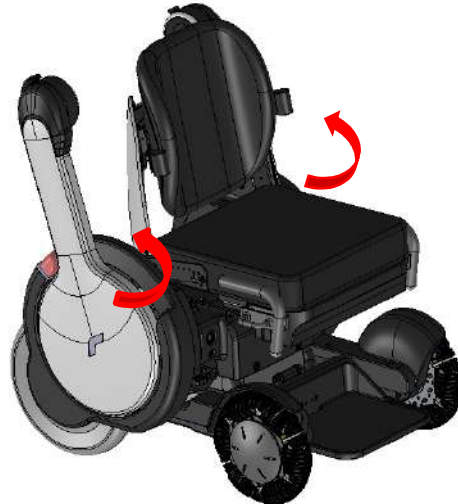


Figure 7. Sit down in the chair. Pivot the footplate up out of the way if desired.

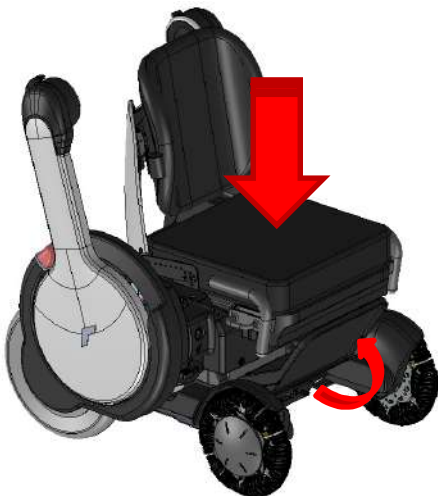


Figure 8. Lower the control arms to the down position.

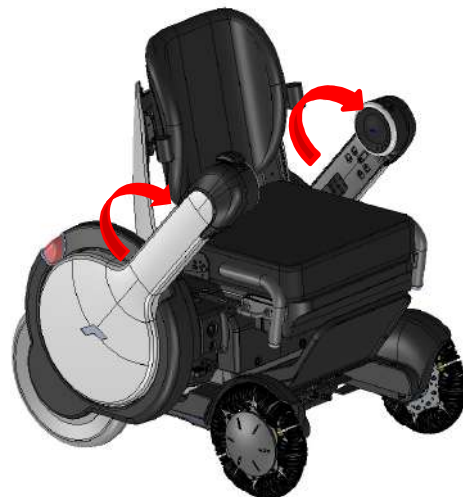


Figure 9. If footplate was pivoted up, return it to the horizontal position.

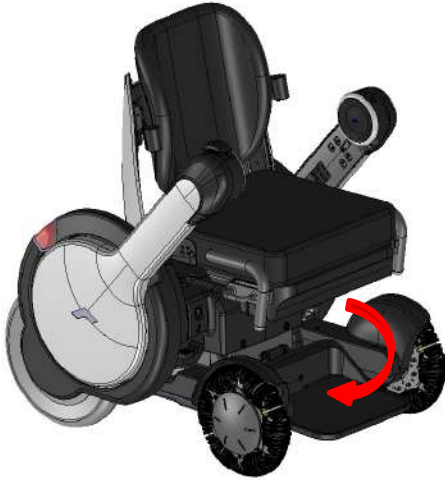
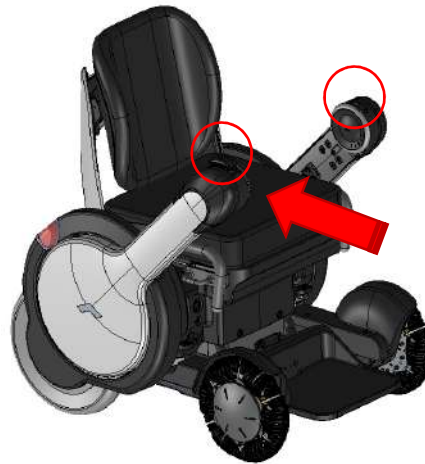


Figure 10. Slide the seat backward using the directional controller & seat slide mode.



4.3 *Lap Belt*

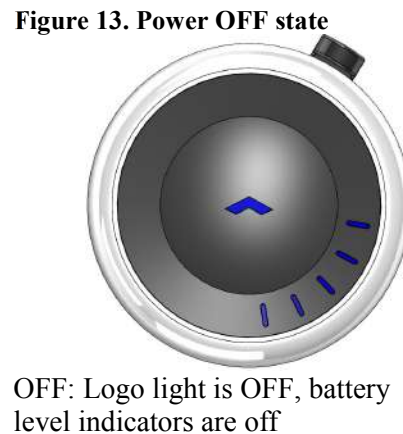
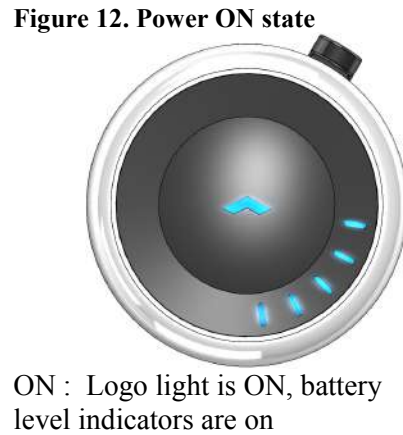
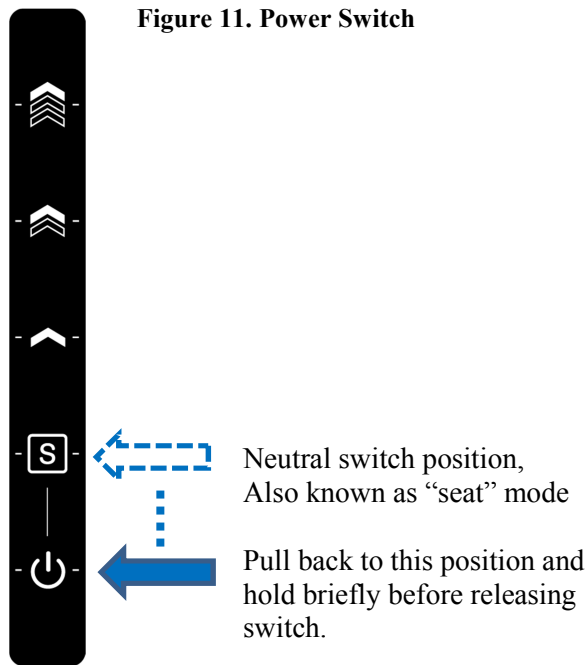


WARNING

For your safety, always fasten the lap belt when you are in the chair.

4.4 Power Switch

This switch is used to turn on and off the chair. It is a round hub on the arm that does not house the directional controller. There is a spring-loaded switch that can be pulled back to the power position, held momentarily, and released. When the power is on, the logo will light up.



4.5 Turning the Model A On

- To turn on the Model A, pull back and release the Power Switch once. The battery indicator blue light(s) should turn on for a second and the logo light should turn on and stay on.
- Around the power switch are multiple lights that indicate the amount of charge left in the battery. To understand the battery charge indicators, see section entitled “Checking the Battery Charge Level” on the following page.

After turning on the Model A, but before moving:

- Check the battery charge level: make sure there is enough charge to conduct your planned activities.
- Check that both rear tail lamps are on.



INFORMATION

You should not touch the directional controller or have the controller arm lifted when you first turn on the Model A. The unit has a short initialization cycle that will be interrupted if you move the directional controller when it is starting up. Doing so will result in an error code. If this occurs, turn off the unit and then turn it back on, making sure not to touch the directional controller.

4.5.1 Turning Model A off

To power off the Model A, pull back and release the Power Switch once and the unit will shut down.

If the Power Switch does not behave as expected, refer to the Battery Charge section of this manual or contact WHILL customer support for help.

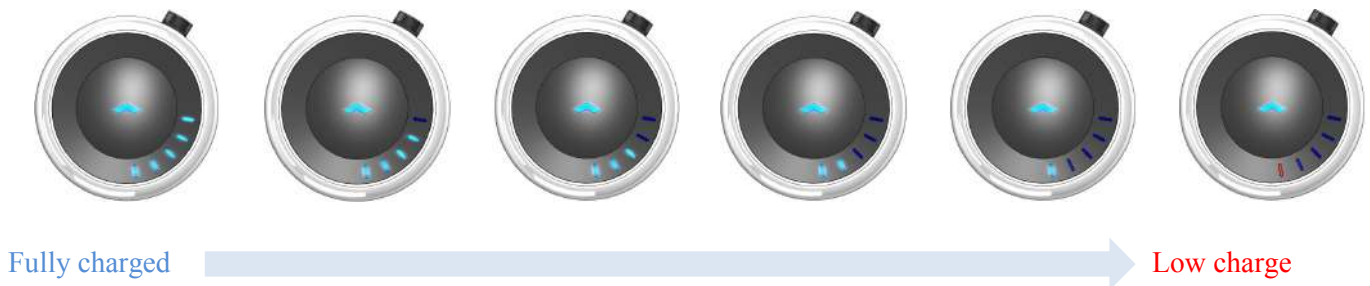
4.6 Checking the Battery Charge Level

The battery charge is designed to last approximately 12 miles depending on conditions, such as tires, road, driving conditions, temperature/humidity, payload and inclines. For more details see section entitled Battery Maintenance.

There are 5 lights indicating the battery charge level. These lights will also indicate error conditions (see Troubleshooting Section).

- If the unit is losing charge too quickly, or if the lights indicate a wrong charge level, please contact WHILL customer support immediately.
- If the battery charge lasts significantly less than 10.6 miles, contact WHILL customer support immediately.

Figure 14. Battery charge levels



4.6.1 Full battery charge

When Model A is on, all 5 blue LEDs will illuminate to demonstrate full charge.

Figure 15. Lights indicating full battery charge



4.6.2 Partial battery charge

When Model A is on, some blue LEDs will illuminate to demonstrate partial charge.

Figure 16. Lights showing intermediate charge



4.6.3 Low battery indication

A low battery level (less than 37%) is indicated by one remaining blue light. If the one blue battery light changes to red, this means the unit is on reserve battery charge (less than 20%) and you should charge the unit immediately.

Figure 17. Lights demonstrating low and reserve battery charge levels



Low battery level

(Flashing) Reserve battery level

If the unit stops due to a dead battery and there is no immediate charging available, refer to section 5, How to release the electromagnetic brakes, for directions on how to move the unit without power.



INFORMATION

A red light and blue light simultaneously or alternatively flashing indicate an error code.

4.7 Error Codes

Figure 18. Model A is charging



Figure 19. Directional controller is moved during “powering-on” procedure

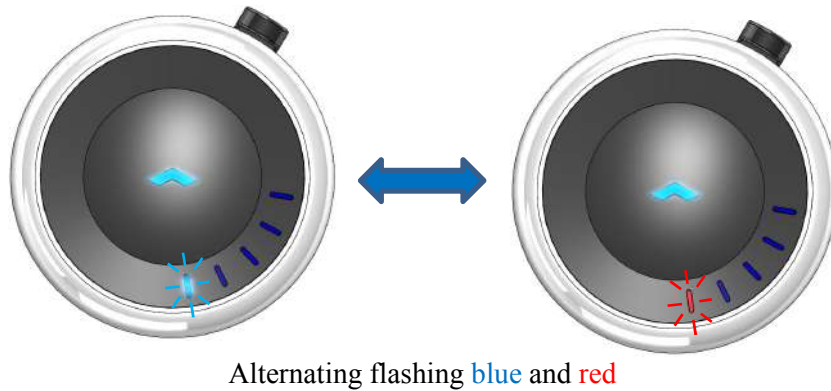


Figure 20. One or both motor brake levers are released (freewheel mode)



Figure 21. Directional controller arm is not fully locked (e.g. in the up position)

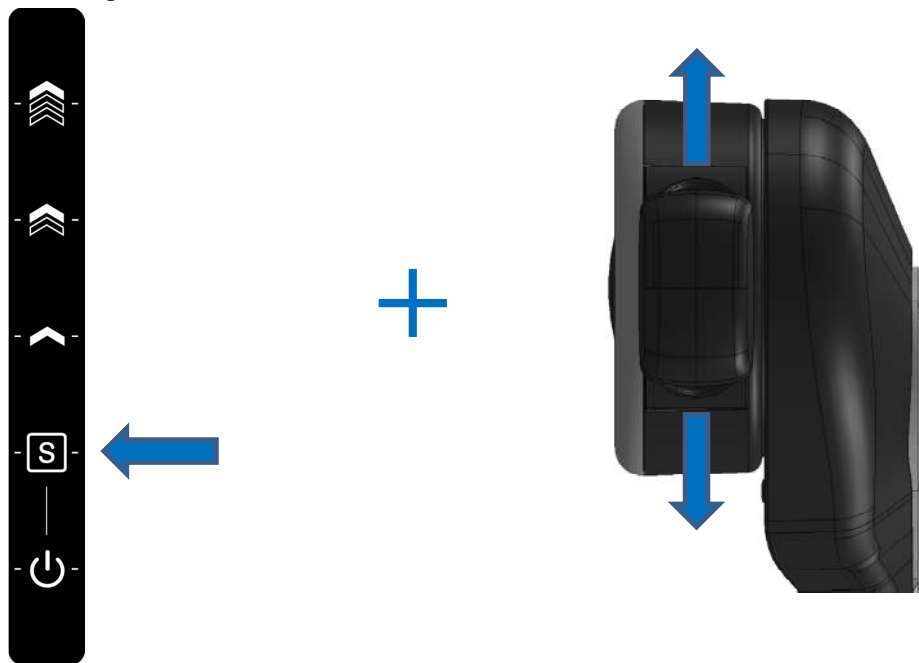


Simultaneous flashing

4.8 *Seat Mode*

The seat slide function of the Model A is utilized through the mode switch and directional controller. Ensure the mode switch is on the “seat mode” setting and move the directional controller to slide your seat forwards and backwards. This functionality can be used to facilitate getting into and out of the unit, or to bring you closer to the edge of a table.

Figure 22. Seat mode demonstration





INFORMATION

Model A driving capability will be disabled if the seat is even slightly forward, for safety concerns regarding balance and increased unit footprint. That is, you must fully retract the seat before the unit will be able to move. If your seat is forward, the WHILL LED logo will be flashing:

Figure 23. WHILL LED logo flashes when seat is forward



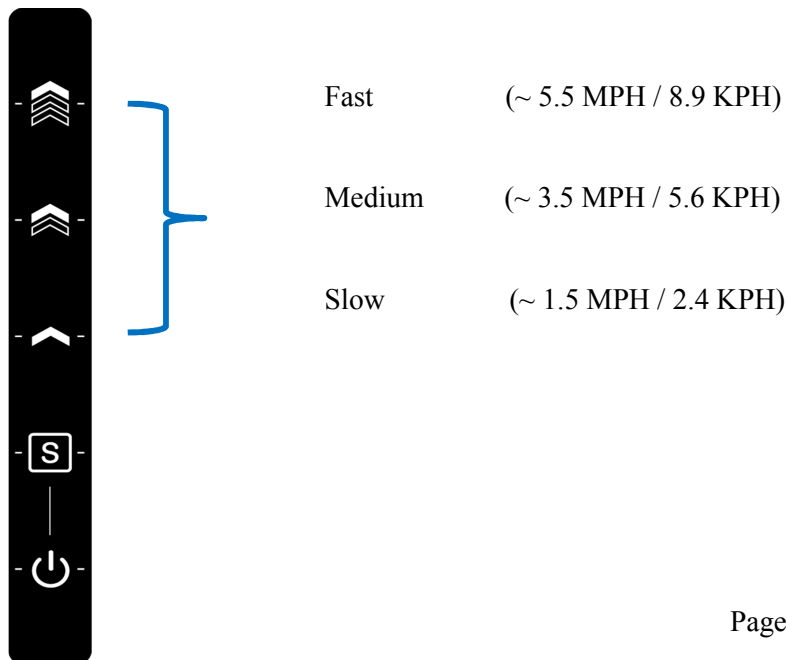
4.9 Speed Control

The maximum operating speeds are controlled by the speed switch. Moving the directional controller will accelerate the Model A from a standstill to a maximum given speed for each switch setting. Please see below for these limits.

4.9.1 Speed Switch

There are 3 settings for the speed switch, which controls overall speed of the unit:

Figure 24. Speed switch controls



4.9.2 *Speed control through the directional controller*

The speed can also be controlled by the amount of pressure you put on the directional controller. Unlike the speed switch, the directional controller provides continuous proportional variable speed control.

The speed setting in the directional controller is just like the accelerator pedal of a car: higher pressure makes the Model A go faster, while less pressure on the directional controller will make the Model A move more slowly.

When beginning to drive the Model A, always set the speed switch to slow (the setting closest to you) and apply just enough pressure on the directional controller for the unit to begin moving.

4.10 *Directional Controller*

The directional controller is the Model A's steering control. WHILL offers two models of directional controllers (Figure 25 and Figure 26).

Figure 25. Mouse Controller

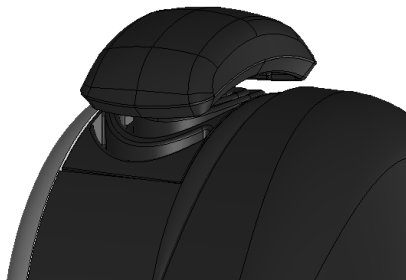
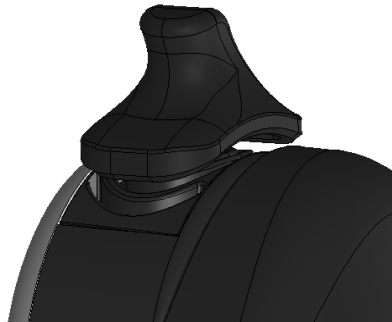
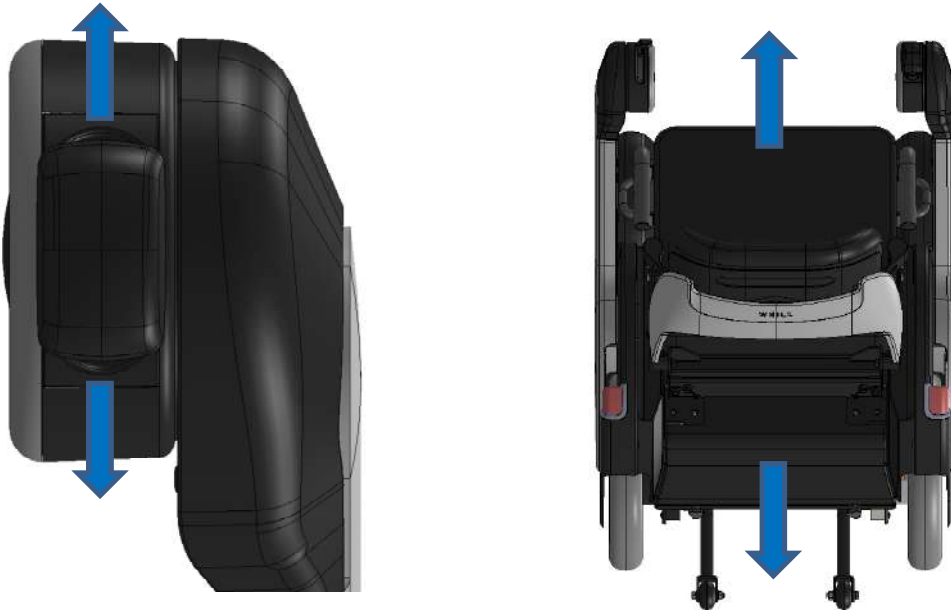


Figure 26. WHILL joystick



The directional controller is free to move in any direction. The figures below give some examples of the basic driving capabilities of your WHILL Model A. All of the possible driving configurations are not shown, but can be inferred from the drawings below.

Figure 27. Movement directions for controller in forward and backward direction



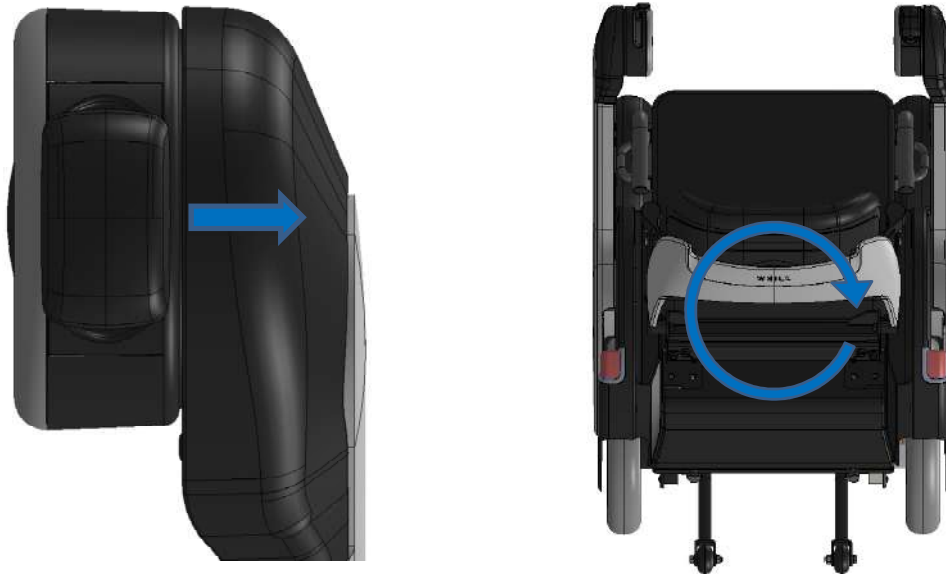
Push the directional controller away from you to drive forward. Pull it towards you to drive in reverse.

Figure 28. Diagonal movement to turn Model A to the right



Move the directional controller diagonally right to begin a right-hand turn.

Figure 29. Directional controller movement to right



Move the directional controller directly to the right to pivot the Model A clockwise. Move the directional controller directly to the left to pivot counter-clockwise.

4.11 *Safety check before driving*



INFORMATION

- Please have someone accompany you the first time you drive your Model A.
- Have a cell phone or communication device with you in event that you encounter any issues while driving.



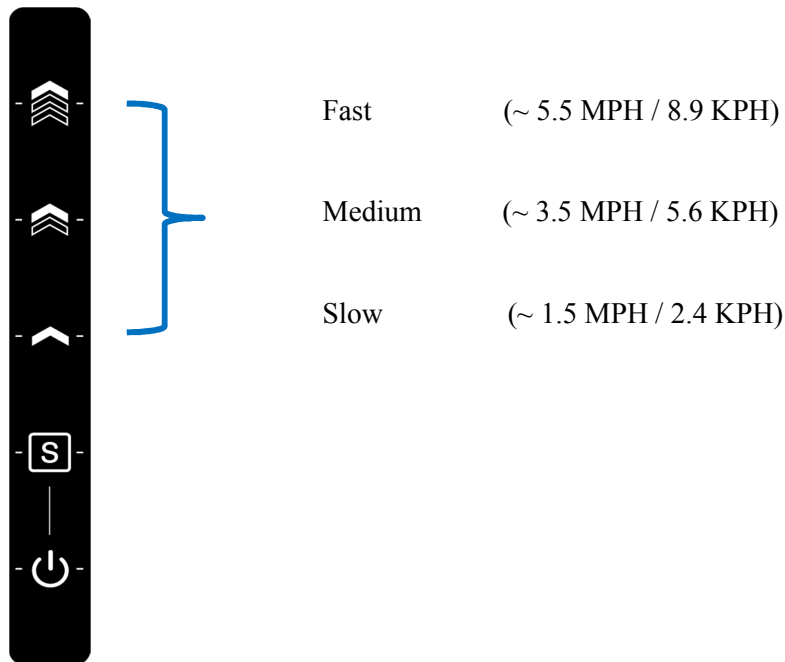
CAUTION

Check around you for loose clothing or other material that may snag on the product before moving the seat backwards. Be sure to gather any objects up and move them out of the way before moving the seat backward.

4.11.1 *Driving checklist for the Model A:*

- Make sure the unit is turned on.
- Make sure the controller arm is in the lowered, locked position.
- Make sure the unit has sufficient battery charge to take you to your destination (see section titled Checking Battery Charge Level).
- Always begin driving at the slowest speed setting (with the speed switch closest to you; refer to Figure 23).

Figure 30. Knob placement for slow speed setting



- Push the directional controller very slowly in the direction you wish to move the unit. You will feel the directional controller engaged when the unit starts to move. Keep the speed switch at the slowest speed.
- Move to a safe open space and at the slowest speed with the controller, check that you can move in any direction you want.
- If you feel there are any new noises or vibrations, make note of these and report them to WHILL customer support.

4.12 ***Driving Conditions***

The Model A is designed with four wheel drive and should provide traction and stability in many conditions. However it is important to be aware of the limitations of the unit.



- Do not operate the Model A on any streets, roads, or highways. Before crossing the street, make sure that any and all drivers see you.
- To prevent injury and/or damage, do not use the Model A in heavy snow or icy conditions. The Model A is not designed for use in these types of conditions.
- Do not drive the Model A through water deeper than 1". Doing so may damage the Model A components.
- Do not operate the Model A on soft surfaces such as sand or mud as you may become stuck and unable to move the Model A.

- Do not use the Model A on slopes greater than 17%. The Model A has been designed for stability on 17% slopes (10 degrees) and should only be used on slopes less than 17%. For reference, a standard ramp going into a public building with a railing has an 8.3% slope.
- The Model A is designed for stability on obstacles less than 3” in height. Do not use the Model A to navigate objects taller than 3”.
- Use extreme caution when driving on uneven surfaces or slopes. In these conditions, it is recommended that you have someone available to stabilize the Model A if necessary.
- The Model A is not intended to be used as a seat during weight training and should not be used as such.
- Check that the tail lamps are working properly before operating the Model A at night or in low visibility conditions.
- It is not safe to operate the Model A with the footplate in an up (vertical) position. Make sure the footplate is down before moving.
- Make sure your hands, arms, elbows and feet are inside the Model A when moving.

**CAUTION**

- Reaching or leaning can affect the stability and balance of the Model A. Always exercise caution when shifting your weight or balance in the Model A. When in doubt, ask for help when reaching for inaccessible objects.

In addition to the warnings and caution above, to ensure a smooth and safe ride:

- Always approach curbs, thresholds and gradients straight-on
- Always approach obstacles, curbs and gradients at low speed

4.13 *Stopping and Parking*

The Model A uses four wheel drive. This means that when the Model A is not powered (either because the power switch is turned off or because the directional controller is not in use), all the wheels are locked and will not move. You can power off the unit and it will park by itself – no separate parking brake is needed.

4.14 *Sitting at a Table or Desk*

Because the Model A has the unique feature of being able to slide the seat, you can position yourself at a table, desk or other object using the following steps:

- Position the Model A as close to the object as possible but not so close that the arm cannot be raised
- Ensure the unit is powered off
- Lift both of the side arms to the upright position
- Use Seat Mode to move your seat forward.

**WARNING**

- To prevent injury to your legs or knees, inspect under tables or other objects before sliding the seat forward under them.

5. WHILL iPhone App

The Whill iPhone app allows remote control of the Model A from your iPhone via Bluetooth. You can drive the Model A, move the seat position and adjust speed settings, all from a simple interface on your iPhone.

To use the remote feature, go to the App Store on your iPhone, search for the WHILL App, select the App and press install. Once installed, touch open to launch the App. Follow the directions below:

5.1 *Set Up:*

Follow the steps below to turn on Bluetooth.



1. Click on Settings icon

2. Click on

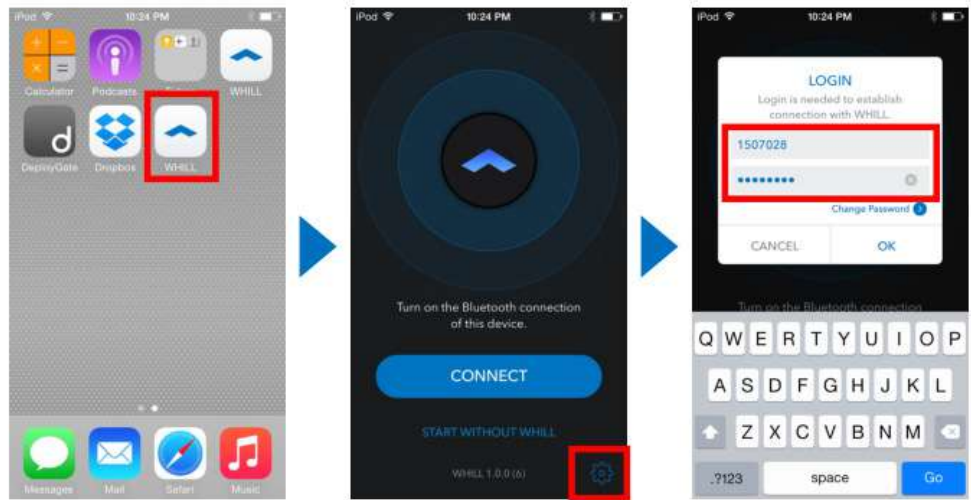
3. Turn on Bluetooth
(Slide circle to the right)

5.2 Configure the Bluetooth Connection between the iPhone and Model A

ID: 7 digit numerical portion of product serial number

Password*: 00000000

*Please change after first log in



1. Open WHILL App

2. Click gear icon at bottom right

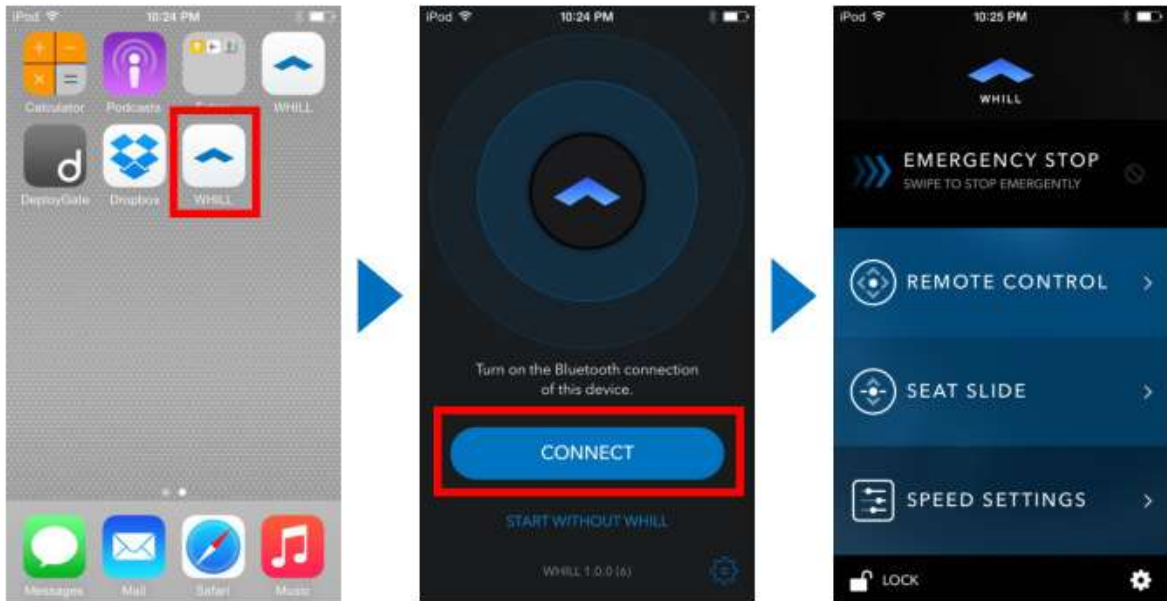
3. Fill in device ID and Password



The Device ID (7 digit numerical portion of serial number) is located on the rear of the product just below the seat, above the back cover

5.3 *Start the App:*

Connecting to Product



1. Open WHILL App

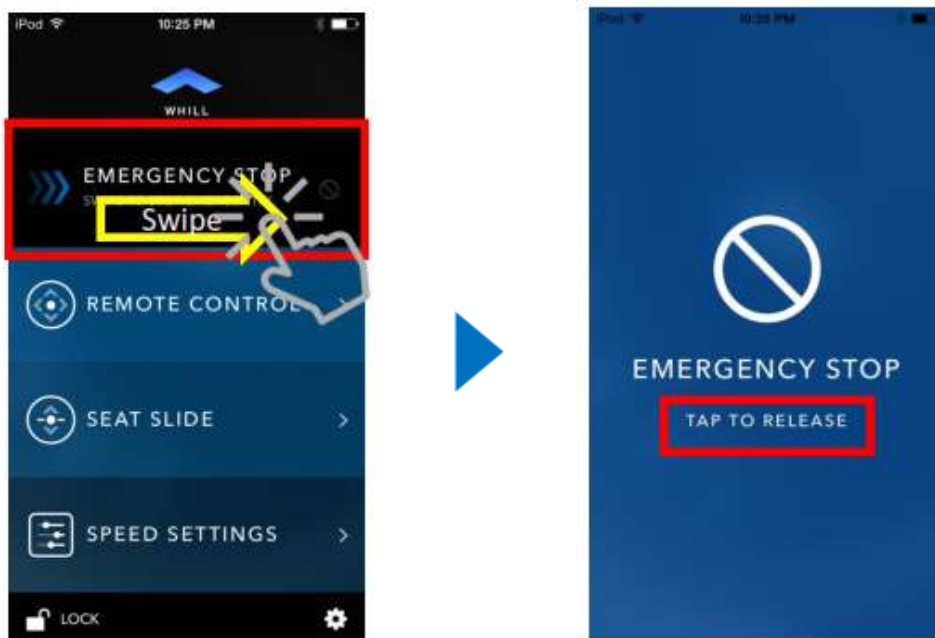
2. Tap Connect button

3. You will see the app portal page

Note: Please make sure you have internet access (only needed for the first connection)

5.4 *Emergency Stop*

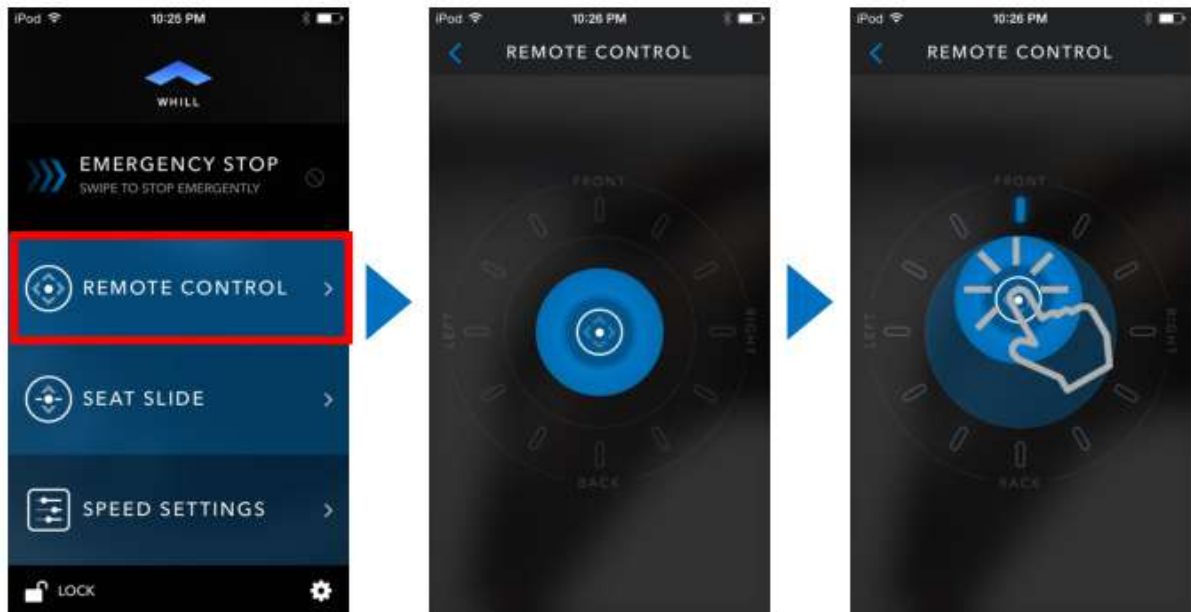
The App may be used to stop the Model A in emergencies.



1. Swipe from left to right to stop the product

2. Tap to release the emergency stop

5.5 Remote Control

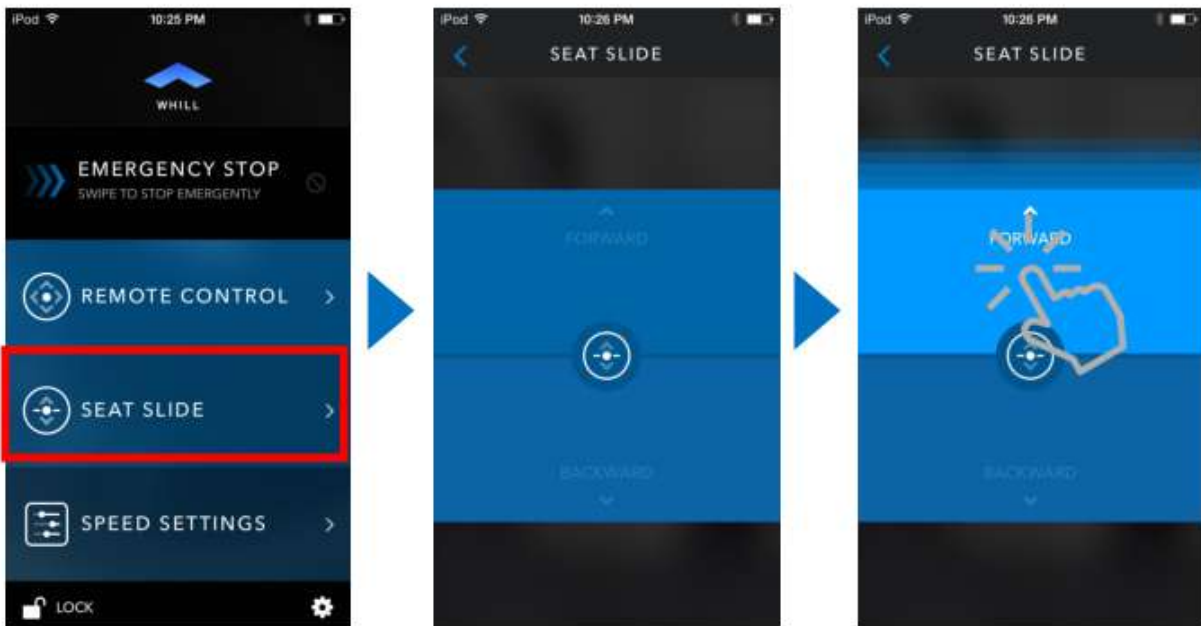


1. Click on remote control

2. Drag the blue circle in the direction you want to go

Example: Drag the circle toward the front bar and the product will move forward

5.6 Seat Slide

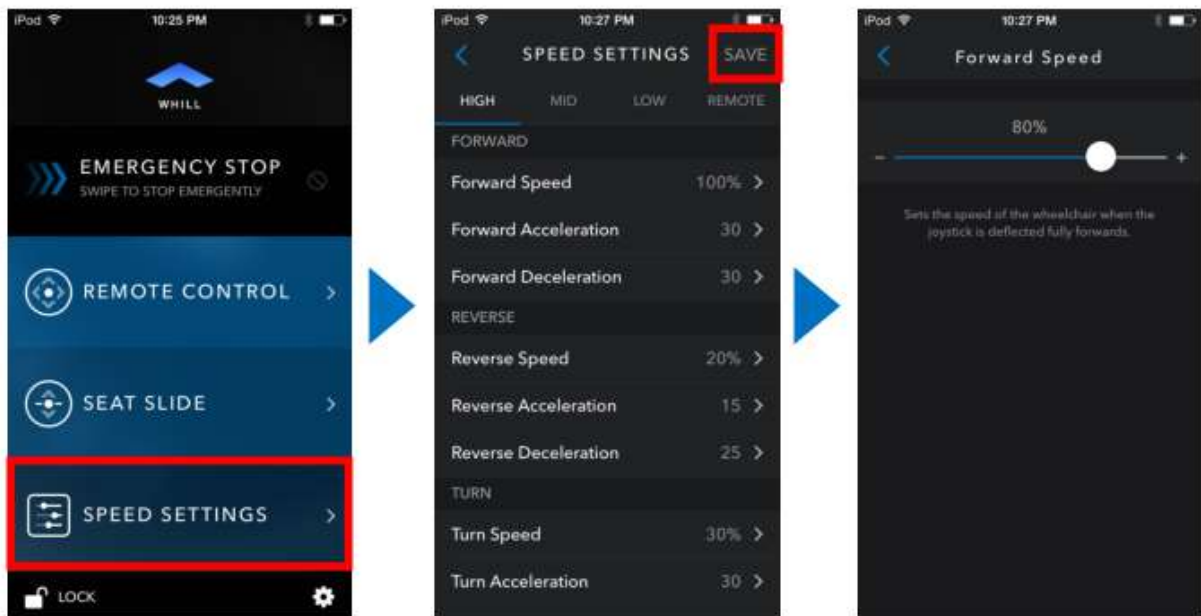


1. Click on seat slide

2. Tap Forward or Backward to slide the seat

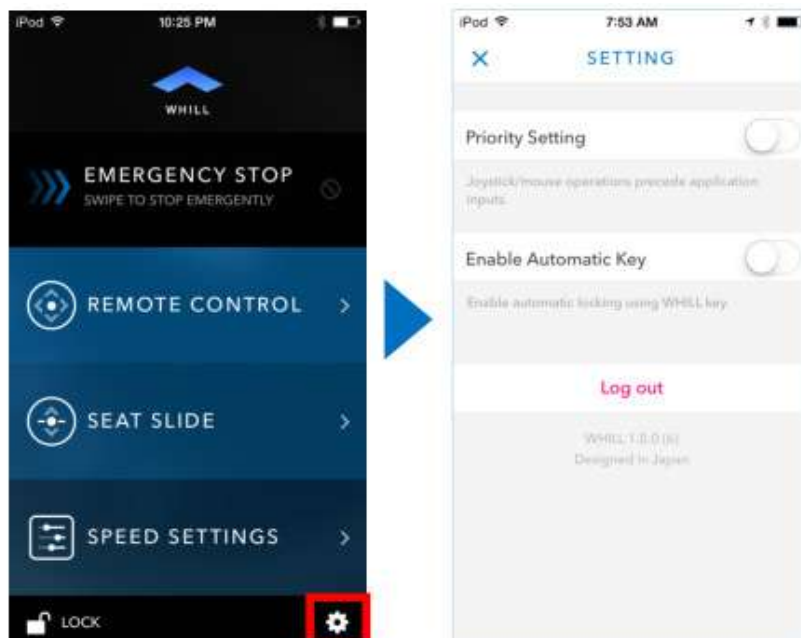
Example: Touch and hold the forward area and the seat will move forward

5.7 Speed Setting

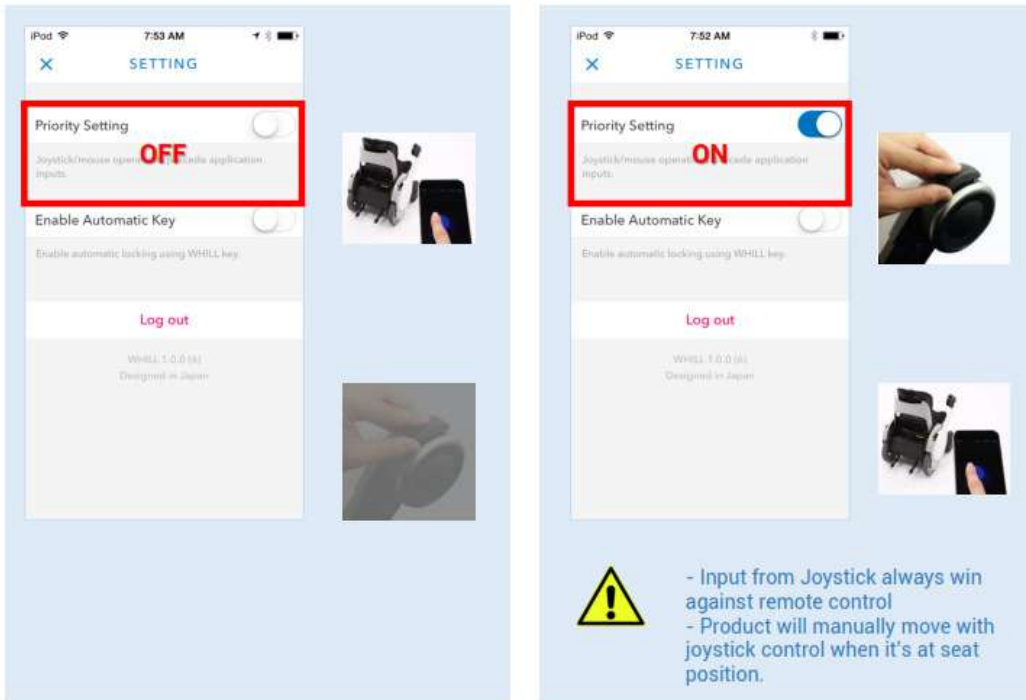


1. Click on speed settings
2. Choose high mid low or remote from the top tab. Then click on any parameter you want to change
3. Change the parameter by sliding the circle forward or backward then tap the back arrow.
4. Save changes by tapping Save in the upper right corner

5.8 Priority Setting



1. Click gear icon at bottom right
2. Turn Priority Setting on or off by moving button left or right



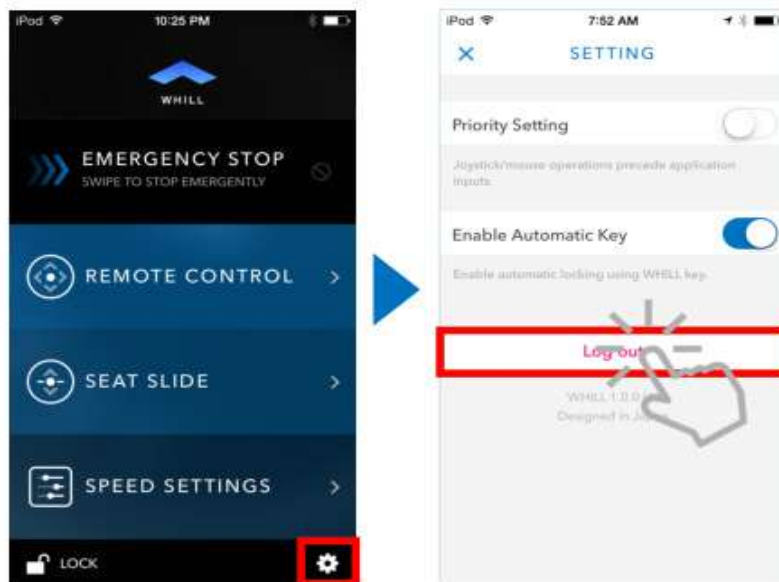
OFF: Product is only operable from the App. Joystick controller will be disabled

ON: Product is operable from both the joystick and the App.

5.9 *Enable Automatic Key:*

This feature is not yet available

5.10 *Log Out*



1. Click gear icon at bottom right

2. Tap Log out

- OR:**
1. Double click home button on the iPhone
 2. Slide the App image off the screen

6. Brake Release Levers

This section describes how to use the Brake Release Levers to release the brakes and manually move the Model A when it is out of charge or otherwise inoperable. The Brake Release Levers disengage the electromagnetic brakes from the motors. This is called “putting the Model A in freewheel mode”. In freewheel mode there is no motor power to the Model A AND there are no brakes. The Model A will move freely. A Model A with one or both electromagnetic brakes released cannot be controlled using the directional controller, even when the Power Switch is turned on.

Note that if you have the Model A in freewheel mode and try to turn it on you will see an error code. This will occur with even one of the brakes released.



WARNING

- Only disengage the brake locks (put the Model A in freewheel mode) for emergency and short-term use.
- To prevent unintended movement, the Model A should be powered off whenever the brake locks are being engaged or disengaged.
- Do not use the Model A on a slope when the brake locks are disengaged (in freewheel mode). Because the Model A has no brakes in this mode, controlling or stopping the Model A will be difficult and could result in serious injury.

Best practice when releasing the brakes:

- Keep in mind that the Model A will be difficult to control in freewheel mode.
- Be strongly aware of the environment around you, especially uneven surfaces, obstacles and people.
- Before releasing the electromagnetic brakes, use stopping devices such as chucks or stops to prevent the Model A from rolling away.
- Never park or transport a Model A that has a brake released.

6.1 *How to release the electromagnetic brakes*

To release the electromagnetic brakes, use the following steps:

- The electromagnetic brake levers are located at the front of the chair, below the seat.
- When facing the front of the Model A, to release the left electromagnetic brake push the lever down.
- When facing the front of the Model A, to release the right electromagnetic brake push the lever down.

The electromagnetic brakes are now released and the Model A is free to roll. Manually push the Model A forward or backwards and verify that it rolls freely.

Figure 31. Location of Model A electromagnetic brake levers

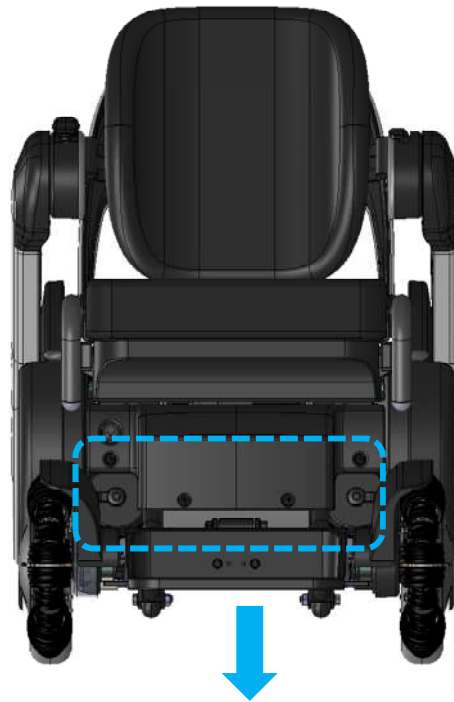
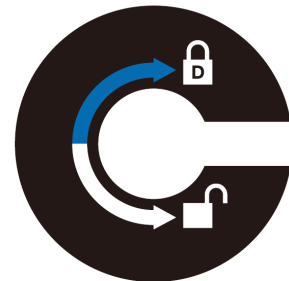


Figure 32. Right-hand side brake release



Right-hand side break release
Release: turn counter clock-wise
Lock: turn clock-wise

Figure 33. Left-hand side brake release



Left-hand side break release
Release: turn clock-wise
Lock: turn counter clock-wise

6.2 *How to engage the electromagnetic brake(s)*

To re-engage the electromagnetic brakes and enable Model A control, use the following steps:

- Look at the front of the Model A, below the seat, for the electromagnetic brake levers.
- When facing the front of the Model A, to lock the left electromagnetic brake by pulling the lever up.
- When facing the front of the Model A, to lock the right electromagnetic brake by pulling the lever up.

The electromagnetic brakes are now engaged and the Model A will require battery power in order to move.

To test if the electromagnetic brakes are engaged, do the following:

- Check to see if someone can manually push the Model A. If it rolls, the electromagnetic brakes are not engaged.
- Use the Power Switch to turn on the Model A and check that no error code is displayed.
- Use the directional controller switch to move the Model A: it should move in all directions.

7. Battery and Charging

Before using your Model A for the first time, make sure you have fully charged the batteries for 10 hours. Please see the Section titled “Checking the battery charge level” for information about the battery level indicators.

With a full battery charge you should be able to drive about 10.6 - 12 miles under ideal conditions. Factors that will affect the driving range include curves, terrain, driving habits, payload, and temperature. To get the maximum range or distance per charge, WHILL recommends the following:

- Always fully charge the batteries before a trip
- Reduce baggage weight as much as possible
- Avoid inclines and obstacles when planning your routes
- Maintain an even speed and avoid quick, frequent stops



WARNING

- Only use the original battery charger provided with the Model A. Use of any other charger may cause damage or injury and will void the product’s warranty. Please contact customer support if you need a replacement battery charger.
- Battery charging should only be performed indoors. The battery charger should not be exposed to any moisture, water, or other elements.
- To reduce the risk of fire or electric shock, extension cords should not be used with the battery charger.
- To reduce the risk of fire or electrical shock, do not leave the Model A plugged in and continuously charging for more than one week.
- If the battery circuit breaker trips (i.e. the button has popped out), unplug the Model A from the charger immediately and discontinue charger use. Do not plug in the battery charger. Please contact customer support.

**CAUTION**

- Be sure to charge the batteries before initial use of the Model A. Failing to charge new batteries may reduce battery life.
- To prevent the battery from draining completely, charge the Model A at least once per month. If the battery drains completely, do not use the Model A and have the battery replaced as soon as possible.

**INFORMATION**

The batteries used are sealed valve-regulated lead-acid batteries. They do not require maintenance.

7.1 *Charger specifications for WHILL Model A*

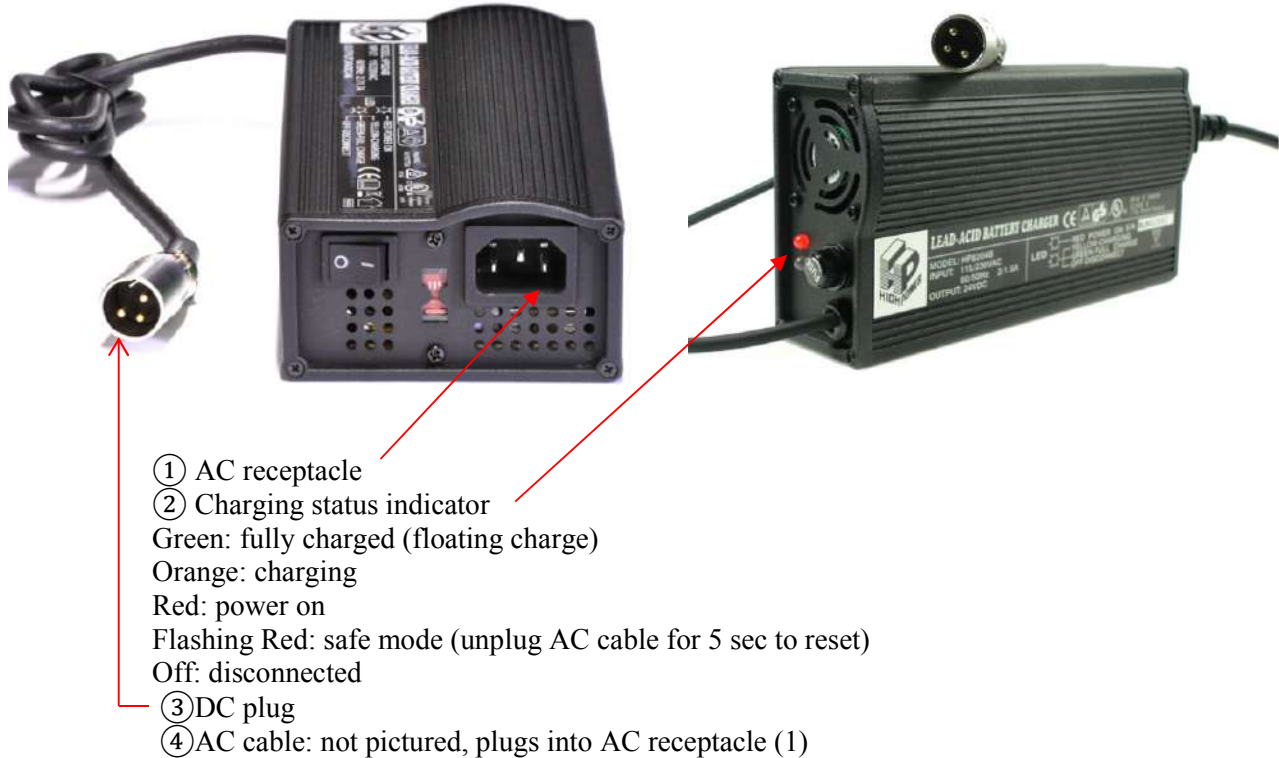
Table 2. Charger specifications for Model A

Manufacturer	High Power
Model	HP0180WB 24V 6A
Output Current (DC)	6.0A ± 0.3A
Pre-Charge Current	0.6A ± 0.3A
Constant Current Fast Charge	21V – 28V+1V/6A
Short Circuit Protection	YES
Protection Against Over Voltage	Stop charge when output voltage is over ($V_{max} * 1.05$)
Protection Against Over Current	Stop charge when output current is over (rating current *1.3)
Over Charge Protection	Automatic to break off charge
Under Voltage Protection	Automatic to break off charge
LED Indicator	Power /On :RED

	Charging :Orange Full Charge :Green Protection: Red LED flash
Operating Temperature	0°C - 40°C
Operating Humidity	20% - 85%
Storage Temperature	-20°C -70°C
Used Below The Altitude	2000m
Dimensions	183mm (L) x 100mm (W) x 58mm (H)
Weight	0.81 kg

7.2 Charging the battery

Figure 34. Battery charger images and design



Please charge the Model A by following the steps below:

- Ensure the Model A is safely parked indoors in a well-ventilated room and has both its brakes engaged.
- Turn off the power.
- Connect the AC cable to the battery charger's AC receptacle.
- Connect the round DC plug to the charger port above the right motor brake knob on the Model A (seen in Figure 1).
- Connect the AC cable directly into a wall outlet with proper grounding earth.
- The charging status indicator should go from red to orange. When it becomes a steady green light, charging is complete. Unplug the DC plug and AC cables.

Depending on the battery's condition, it may take 8 - 9 hours to fully charge.

Note:

- If the status indicator is blinking red, it is in safe mode. To reset, unplug the charger from the wall outlet for 5 seconds and re-plug it.
- If the Model A is turned on during charging, you will see an error code and will not be able to operate the Model A. In this case, turn off the Model A and unplug the charger before turning on the power.

7.3 *Battery service or replacement*

The batteries have a life of at least 400 charging cycles. To prevent problems, WHILL recommends battery replacement once a year. A weak battery or unusually short range per charge may be indicators of battery end of life. The batteries are designed to be serviced or replaced only by technicians qualified by WHILL. Please do not attempt to replace the batteries on your own. If you feel that the battery needs replacement, please contact WHILL customer support.

8. Electromagnetic Interference (EMI)

WHILL Model A may be susceptible to electromagnetic interference - a kind of interfering electromagnetic energy that is emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones. The interference from these radio wave sources can cause the wheelchair brakes to release, or the chair to move by itself or move in unintended directions. It can also permanently damage the chair's electronics and controls.



WARNING

- Electromagnetic Interference (EMI) from external sources can impact braking and control of the Model A. Unintended brake release or Model A movement could result in serious injury. To prevent this:
 - DO NOT operate hand-held transceivers (transmitters/receivers), such as citizens band (CB) radios, or turn on personal communication devices, such as cellular phones, while the Model A is turned ON;
 - Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
 - If unintended movement or brake release occurs, turn the powered chair OFF as soon as it is safe;
 - Be aware that adding accessories or components, or modifying the powered chair may make it more susceptible to EMI
 - Report all incidents of unintended movement or brake release to WHILL, and note whether there is a source of EMI nearby.

8.1 *EMI Sources*

The sources of radiated EMI can be broadly classified into three types:

1. Hand-held compact transceivers (transmitters/receivers) with the antenna mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, "walkie talkies", security, fire and police transceivers, cellular telephones and other personal communication devices.

Note: Some cellular telephones and similar devices transmit signals while they are ON, even when not being used.

2. Medium-Range mobile transceivers, such as those used in police cars, fire trucks, ambulances and taxis. These usually have the antenna mounted on the outside of the vehicle.
3. Long-Range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.

Note: Other types of hand-held devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, cassette players and small appliances such as electric shavers and hair dryers, so far, as we know, are not likely to cause problems.

Because the emitted energy rapidly becomes more intense the closer one moves to the transmitting antenna (source), the electromagnetic fields from handheld radio sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of electromagnetic energy very close to your chair's control system while using these devices, and affect the chair's movement and braking.

9. Troubleshooting

If only one indicator light is on and it is not the light for low battery indicator, then it is an error code.

Here are the key error codes:

- The bottom light will be purple if you turn the Model A on and try to move it while it is still charging. In this case please unplug the charger.
- You should not touch the directional controller when you first turn on the Model A. There will be an error code if you move the directional controller when the Model A is starting up. If this occurs, turn off the Model A and then turn it back on, making sure not to touch the directional controller.
- There will be an error code if one or both of the brakes are released and you turn on the Model A. If this occurs please use the brake release levers to engage (lock) the brakes.
- Other errors codes are for use by service and you should call customer support if they appear.

Whenever you turn on the Model A all the battery indicator lights should illuminate, enabling you to see if they are all operational.

10. Maintenance



WARNING

- The Model A contains no user serviceable parts. Do not attempt to replace or repair any parts (including the batteries). Any service should be done by a WHILL-authorized service representative.
- Do not attempt to adjust or modify the Model A. Doing so may make the Model A less stable or impact its performance.
- Do not spray any liquids to clean off the Model A. Moisture may damage the Model A components and make it inoperable.
- To clean the Model A, wipe with a wet cloth or rag. Only use water, and scrub vigorously to remove scuffs/stains from the plastic covers.

11. Transportation



WARNING

- The Model A has not been tested for transportability and is not intended to be used as a seat during transportation. You should transfer to a regular vehicle seat during transportation.

12. Customer Support

Please don't hesitate to contact us for clarification on any topic in the user manual or general inquiries.

Email: support@whill.us

Telephone: 1-(844)-699-4455



WHILL

Design your own road

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