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Owner's Manual

P312

WELCOME

Congratulations on the purchase of your new power wheelchair. We believe that you have chosen a product that will enhance your quality of life by allowing you the freedom to go places you have always wanted to go.

The unique and user-friendly power chair is designed for maximum maneuverability even in narrow and tight spaces. With your power chair, you will enjoy the freedom to move around your home, visit with your friends and neighbors or just enjoy the outdoors.

Happy motoring and welcome to the family!

Table of Contents

Your power chair is a battery-operated personal mobility vehicle. Therefore, it is required to exercise caution and consideration when operating it to ensure your own personal safety and that of others around you.

The following are the rules for safe operation of your power chair

1. Make sure that the power is off before getting in or out of it. This will eliminate the possibility of accidentally activating the joystick and causing injury to yourself or others.
2. Always use a seat-belt if you have one and keep your arms on or inside the armrests and feet on the footrest at all times.
3. Set the speed control knob according to your driving ability and the environment in which you are going to operate it. We recommend that you keep the speed at the slowest position until you are familiar with the driving characteristics of this vehicle. We also recommend that you do so when using your power-chair indoors.
4. Always climb or descend grades perpendicular to the slope. Never drive across the slope.
5. Do not attempt to climb or descend grades greater than 12 degrees.
6. Do not carry any passengers under any circumstance. Otherwise, your powerchair will become unstable and may result in personal injury.
7. Never drive on the roadway.
8. Always cross street intersections via the most direct route making sure that you are visible to motor traffic.
9. Leave and join curb-cuts perpendicular to the road.
10. Use caution when driving over soft, uneven or unprotected surfaces such as grass, gravel and decks.
11. Never occupy your power chair when transporting it in a motor vehicle. Make sure that it is securely strapped with an approved tie-down system.
12. Do not operate your vehicle if it isn't functioning properly.
13. Do not connect, or allow someone else to connect, any electrical or mechanical device to the vehicle. Failure to do this may result in injury and will void the warranty.

14. Never use electronic radio transmitters such as CB's, walkie-talkies, portable computers or cellular phones while using the vehicle without first turning the vehicle off.
15. Check with your physician if you are taking any medication that may affect your judgement and ability to operate your powerchair.

Electromagnetic Interference (EMI) from Radio Wave Sources

The rapid development of electronics, especially in the area of communications, has saturated our environment with electromagnetic (radio) waves that are emitted by television, radio and communication signals. These EM waves are invisible and their strength increases as one approaches the source. All electrical conductors act as antennas to the EM signals and, to varying degrees, all power wheelchairs and scooters are susceptible to electromagnetic interference (EMI). This interference could result in abnormal, unintentional movement and/or erratic control of the vehicle. The United States Food and Drug Administration (FDA) suggests that the following statement be incorporated to the user's manual for all power wheelchairs.

Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two-way radios and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the EM energy can be measured in volts per meter (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called the "immunity level." The higher the immunity level, the greater the protection. At this time, current technology is capable of providing at least 20V/m of immunity level, which would provide useful protection against common sources of radiated EMI.

Following the warnings listed below should reduce the chance of unintended brake release or powered wheelchair movement that could result in serious injury:

1) Do not turn on hand-held personal communication devices such as citizens band (CB) radios and cellular phones while the powered wheelchair is turned on.

2) Be aware of nearby transmitters such as radio or TV stations and try to avoid coming close to them.
3) If unintended movement or brake release occurs, turn the powered wheelchair off as soon as it is safe.
4) Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to interference from radio wave sources. (Note: there is no easy way to evaluate their effect on the overall immunity of the powered wheelchair).
5) Report all incidents of unintended movement or brake release to the powered wheelchair retailer, and note whether there is a radio wave source nearby.

TURN OFF YOUR POWER CHAIR AS SOON AS POSSIBLE WHEN EXPERIENCING THE FOLLOWING:

1. Unintentional motions.
2. Unintended or uncontrollable direction.
3. Unexpected brake release.

The FDA has written to the manufacturers of power wheelchairs, asking them to test their new products to be sure they provide a reasonable degree of immunity against EMI. The letter says that powered wheelchairs should have an immunity level of at least 20 V/m, which provides a reasonable degree of protection against the more common sources of EMI. The higher the level, the greater the protection.

Your powerchair has an immunity level of 20 V/m which should protect against EMI.

⚠ Warnings

- **WARNING!** YOUR AUTHORIZED DEALER, PROVIDER, THERAPIST(S), AND/OR OTHER HEALTHCARE PROFESSIONALS ARE RESPONSIBLE FOR DETERMINING YOUR REQUIREMENT FOR A SEAT BELT FOR SAFE OPERATION OF YOUR MOBILITY DEVICE.
  WARNING! YOU REQUIRE A SEAT BELT TO SAFELY OPERATE YOUR MOBILITY PRODUCT. MAKE SURE IT IS FASTENED SECURELY IN ORDER TO REDUCE THE POSSIBITY OF A FALL FROM THE MOBILITY PRODUCT.
- **WARNING!** NEVER ATTEMPT TO GET ONTO OR OFF OF YOUR MOBILITY PRODUCT WITHOUT FIRST ENSURING THE UNIT IS POWERED OFF.
- **WARNING!** IF YOUR POWER CHAIR IS EQUIPPED WITH A POWER ELEVATING SEAT FUNCTION, PLEASE ENSURE THAT YOUR SEAT IS IN THE LOWEST POSITION BEFORE TRAVELLING A SLOPED INCLINE. DO NOT USE THIS LIFT FUNCTION WHILE TRAVELING UP/DOWN THE SLOPE.
- **WARNING!** WHEN TRAVELING UP OR DOWN AN INCLINE, DRIVE YOUR POWER CHAIR SLOWLY TO ENSURE A SAFELY CONTROLLED ASCENT OR DESCENT

The environmental conditions may affect the safety and performance of your powerchair. Water and extreme temperatures are the main elements that can cause damage and affect the performance.

A). Rain, Sleet and Snow

If exposed to moisture, your power chair is susceptible to damage to electronic or mechanical components. Water will cause electronic malfunction or promote premature corrosion of electrical components and frame.

B). Temperature

Some of the parts of power chair are susceptible to change in temperature.

At extremely low temperatures, the batteries may freeze, and your power chair may not be able to operate. In extremely high temperatures, it may operate at slower speeds due to the controller's safety feature to prevent damage to the motors and other electrical components.

Your power chairs shipped partially dissambled to maximize its protection during shipping. Please follow the steps described below to assemble it for immediate use:

Components:

1. Frame
2. Shroud
3. Seat assembly
4. Integral controller/bracket
5. Battery terminals

Assembly:

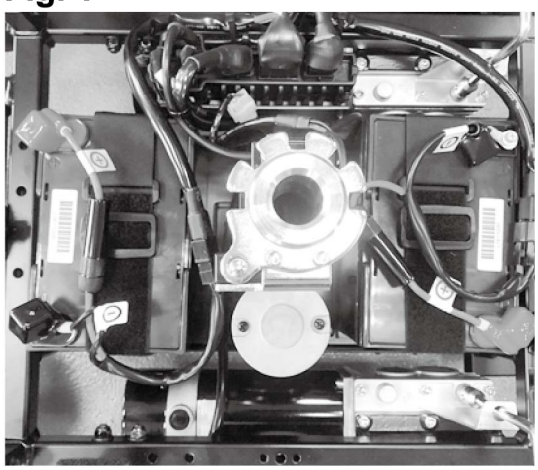
Only four components are needed for assembly in the following order.

A) Install Battery Terminals

1. Place the batteries in your powerchair. Be sure to place the positive(+) contact of each battery adjacent to the Negative (-) of the other battery, as shown in (Fig. 1).

> **Notes:** Please seek help if you cannot lift the battery by yourself.

Fig. 1



2. Connect Positive (+) battery terminals, red, one at a time using screws, washers and nuts provided.

3. Connect Negative (-) battery terminals, black, one at a time.

4. Plug the color-coordinated connectors (batteries and motors).
5. Cover battery posts with caps.

B). Install the shroud

1. Slide the shroud through the seat pedestal and main (controller) cable.
2. Shroud should also slide through motor free-wheeling levers which should be positioned in engaged mode.
3. Secure shroud to frame.

Fig. 2

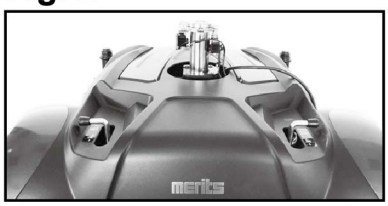
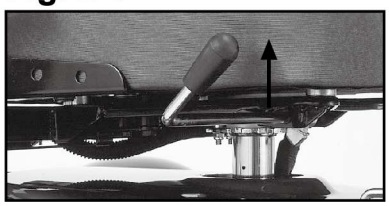


Fig. 2-1



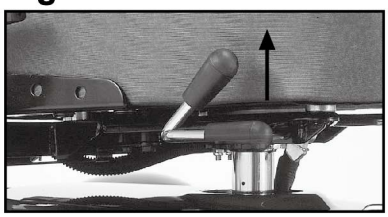
C) Install the Seat:

1. Pull the swivel lever up (Fig 2-1).
2. Lift the seat and slide the seat post stem (bottom of the seat) into the seat pedestal. (Fig. 3)
3. Be sure to swivel the seat and push down on the seat until it locks in place.

Fig. 3

Disassembly:
The disassembly is the reversal of assembly.

Fig. 7



A) Unplug the controller
1. Turn off the power
2. Make sure that the motors are engaged (**not** in free-wheel mode).
3. Disconnect main cable from controller.

B) Seat Removal
1. Pull the swivel lever up to unlock it and rotate the seat a little bit to the position where you can feel the seat rotate freely. (Fig. 7)
2. Pull seat upward.

C) Shroud Removal
After removing the seat, simply lift the shroud straight up, making sure that the motor levers are in the engaged position.

D) Battery Removal

For Transportation:

After removing the seat and shroud,

1. Unplug battery connectors (2, black).
2. Lift batteries one at a time using battery straps.

For Replacement:

After removing the seat and shroud,

1. Unplug battery connectors (2, black) to prevent damage to controller.
2. Remove battery post caps.
3. Unscrew positive terminals (+) one at a time.
4. Unscrew negative terminals (-) one at a time.
5. Place battery connectors (wire harnesses), screws, washers and nuts in a safe place.
6. Remove batteries one at a time using battery straps.

To maximize seating comfort, you can adjust the seat height, backrest angle, and headrest height, armrest tilt angle, and the footrest height and angle. In addition, you can select your desired controller bracket length.

A) Seat Height

To adjust the seat height

Fig. 8

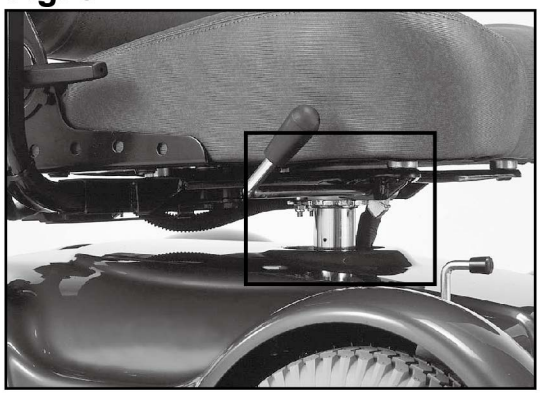
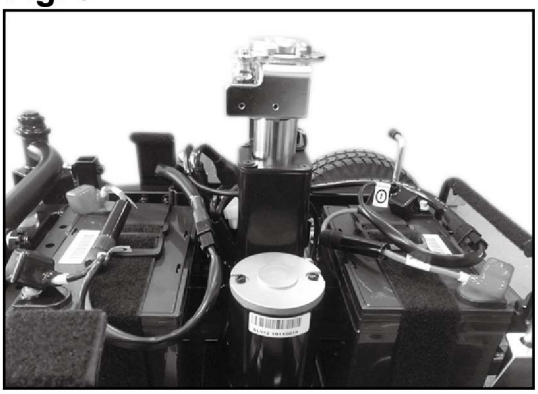


Fig. 9



1. Turn the power off.
2. Disconnect the main cable and remove the seat. (Remove the shroud, if it is necessary).
3. Using two 17 mm wrenches, remove the bolt securing the inner seat pedestal. (Fig. 8 Fig. 9)
4. Slide the inner pedestal to the desired height and reinsert the bolt.
5. Tighten the bolt and replace the seat.

B) Armrest Angle Adjustment

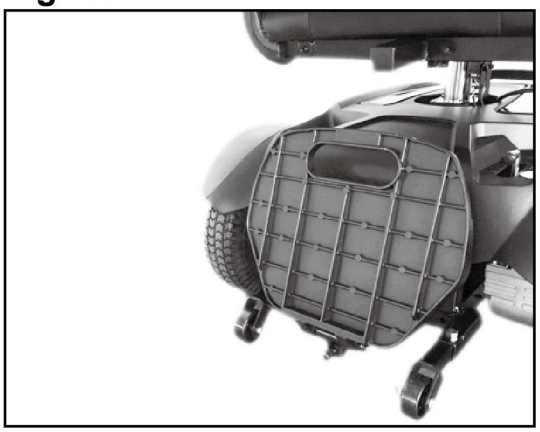
To adjust the tilt Angle

1. Flip up the armrest for easy access.
2. Turn the set nut counter-clockwise to raise the armrest and clockwise to lower the front of armrest (Fig. 10).

Fig. 10

C) Footrest

Fig. 11



To adjust Angle

1. Flip-up the footplate for easy access (Fig. 11).
2. With an Allen wrench, simply turn the bolt clockwise to increase the angle or counter-clockwise to decrease it (Fig. 12).

Fig. 12

D) Controller

To adjust the controller bracket length

1. Flip up the armrest for easy access.
2. Loosen the bracket set nuts with an Allen key. (Fig. 13).
   Slide the controller bracket in or out to the desired positions.

To reverse the controller (right/left)

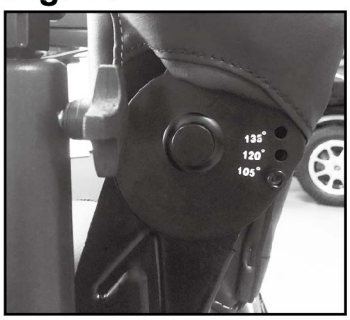
1. Disconnect the main cord.
2. Loosen the bracket set nut and slide the controller out.
3. Install the controller/bracket in the left armrest receptacle and tighten the bracket set nut at the desired length.

Fig. 13

E) Backrest Angle

1. Pull the lever up while leaning on the backrest until you reach the desired comfort position. (Fig. 14)
2. To bring the seat to an upright position or to fold it forward, pull the lever up while removing any pressure on it until the desired position or complete fold is reached.

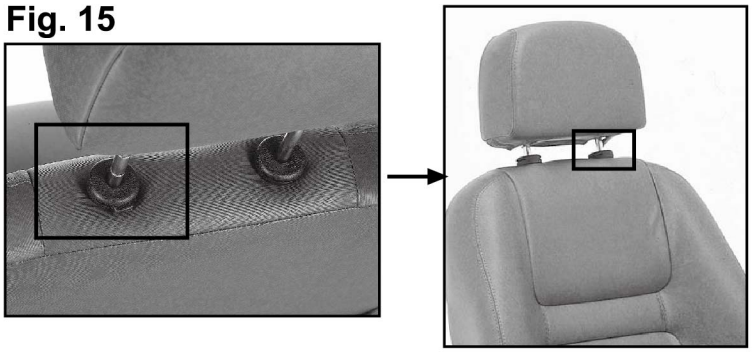
Fig. 14



F) Headrest Height

Depress then release the clamp on the left of backrest while pulling headrest up or pushing down until you reach the desired comfort position (one of three).

Fig. 15



Your power chair is simple to operate. However, we recommend that you carefully read the following instructions to get familiarized with your new vehicle.

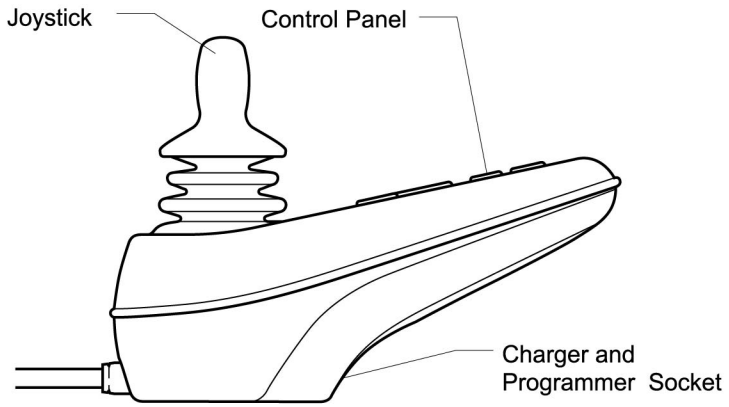
> ***A Word of Caution:*** *Before you turn the power on, always be aware of the environment that surrounds you before you select your desired speed. For indoor environments, we recommend that you select the lowest speed setting. For outdoor operation of this vehicle, we ,recommend that you select a speed that is comfortable for you to control it safely.*

The following are the steps and the components required to safely operate your vehicle:

PG VR2 Controller Operation:

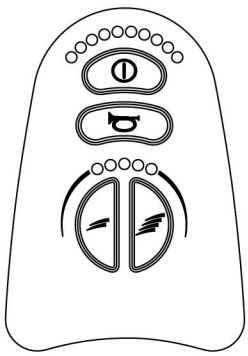
The VR2 control system has two versions of the front control panel - with and without actuaror control. Most of the controls are common to both versions, however, the actuator buttons are only included on VR2 control systems with seat actuator control. Each of the controls is explained within this section.

VR2 USER CONTROLS

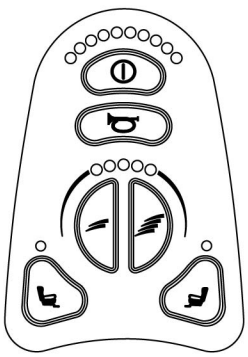


Front Control Panel Details

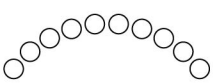
No Actuators



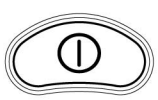
With Actuators



VR2 CONTROL BUTTONS



Battery Gauge



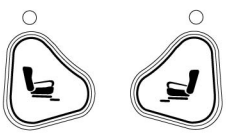
On/Off Button

Horn Button

Maximum Speed / Profile Indicator

Speed / Profile Decrease Button

Speed / Profile Increase Button



Actuator Buttons

On/Off Button and Battery Gauge

The on/off button applies power to the control system electronics, which in turn supply power to the wheelchair's motors. Do not use the on/off button to stop the wheelchair unless there is an emergency. (If you do, you may shorten the life of the wheelchair drive components).

The battery gauge shows you that the wheelchair is switched on. It also indicates the operating status of the wheelchair. Details are given in section 1.

1 Control System Status indication

The battery gauge and maximum speed / profile indicator show the status of the control system.

> A number of supposedly defective control systems returned to us are subsequently found to operate correctly. This indicates that many reported faults are due to wheelchair problems rather than the control system.

1.1 Battery Gauge is Steady

This indicates that all is well.

1.2 Battery Gauge Flashes Slowly

The control system is functioning correctly, but you should charge the battery as soon as possible.

1.3 Battery Gauge steps Up

The wheelchair batteries are being charged. You will not be able to drive the wheelchair until the charger is disconnected and you have switched the control system off and on again.

1.4 Battery Gauge Flashes Rapidly (even with the joystick released)

The control system safety circuits have operated and the control system has been prevented from moving the wheelchair.
This indicates a system trip, i.e. the VR2 has detected a problem somewhere in the wheelchair's electrical system. Please follow this procedure.

- Switch off the control system.
- Make sure that all connectors on the wheelchair and the control system are mated securely.
- Check the condition of the battery.
- If you con't find the problem, try using the self-help guide given in section 1.6.
- Switch on the control sysem again and try to drive the wheelchair. If the safety circuits operate again, switch off and do not try to use the wheelchair.

Contact your service agent.

1.5 Self-Help Guide

If a system trip occurs, you can find out what has happened by counting the number of bars on the battery gauge that are flashing.

Below is a list of self-help actions. Try to use this list before you contact your service agent. Go to the number in the list which matches the number of flashing bars and follow the instructions.
If the problem persists after you made the checks described above contact your service agent.

* If the programmable parameter, Motor Swap has been enabled, then left and right hand references in this table will need transposing.

1 Bar 	The battery needs charging or there is a bad connection to the battery. Check the connections to the battery. If the connections are good, try charging the battery.
2 Bar 	The left hand motor* has a bad connection. Check the connections to the left hand motor.
3 Bar 	The left hand motor* has a short circuit to a battery connection. Contact your service agent.
4 Bar 	The right hand motor* has a bad connection. Check the connections to the right hand module.
5 Bar 	The right hand motor* has a short circuit to a battery connection. Contact your service agent.
6 Bar 	The wheelchair is being prevented from driving by an external signal. The exact cause will depend on the type of wheelchair you have, one possibitity is the battery charger is connected.
7 Bar 	A joystick fault is indicated. Make sure that the joystick is in the center position before switching on the control system.
8 Bar 	A control system fault is indicated. Make sure that all connections are secure.
9 Bar 	The parking bakes have a bad connection. Check the parking brake and motor connections. Make sure the control system connections are secure.
10 Bar 	An excessive voltage has been applied to the control system. This is usually caused by a poor battery connection. Check the battery connections.
7 Bar + S 	A comunication fault is indicated. Make sure that joystick cable is securely connected and not damaged.
8 Bar + A 	An Actuator trip is indicated. If more than one actuator is fitted, check which actuator is not working correctly. Check the actuator wiring.

1.6 Slow or slugginsh movement

If the wheelchair does not travel at full speed or does not respond quickly enough, and the battery condition is good, check the maximum speed setting. If adjusting the speed setting does not remedy the problem then there may be a non-hazardous fault.
Contact your service agent

1.7 Maximum Speed / Profile Indicator is Steady

The display will vary slightly depending on whether the control system is programmed to operate with drive profiles.

1.7.1 Maximum Speed Indication

The number of LEDs illuminated shows the maximum speed setting. For example, if the setting is speed level 4, then the four left hand LEDs will be illuminated.

1.7.2 Profile Indication

The LED illuminated shows the selected drive profile. For example, if drive profile 4 is selected, then the fourth LED's from the left will be illuminated.

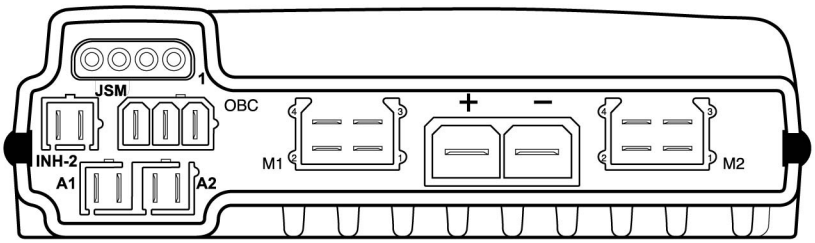
1.8 Maximum Speed / Profile Indicator Ripples Up and Down

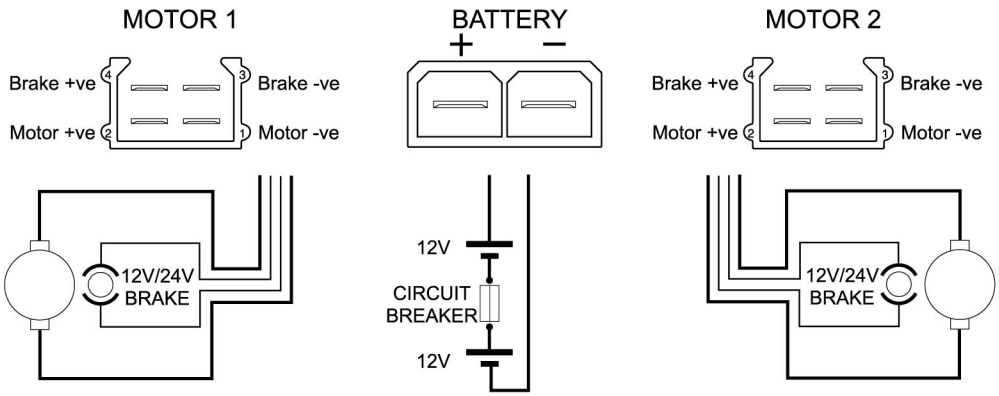
This indicates the control system is locked.

1.9 Maximum Speed / Profile Indicator Flashes

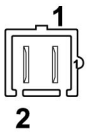
This indicates the speed of the wheelchair is being limited for safety reasons. The exact reason will depend on the type of wheelchair, however, the most common cause is that the seat is in the elevated position.

VR2 POWER MODULE CONNECTIONS



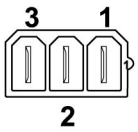


INHIBIT 2



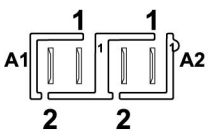
INH-2	Function
1	0V
2	Inhibit 2

ON-BOARD CHARGER



OBC	Function
1	Battery +ve
2	Inhibit 3
3	0V

ACTUATORS



Joystick Movement	Pin 1	Pin 2	Actuator Movement
Forward	+ve	-ve	Channel Up
Backward	-ve	+ve	Channel Down

B. Freewheeling:

Because the motors are designed to engage the electromagnetic brakes when the vehicle is not in use or when the power is OFF, they also have a manual feature that allows them to "free-wheel." Free-wheeling is accomplished by turning the free-wheeling levers to the free-wheeling position as shown. (Fig 17)

Fig 16

Engaged Mode

Fig 17

Free-wheel

C. Seat Rotation

Your seat can be swivelled at 45 increments up to 90º each side (Fig. 19-1,2,3). The swivel lever will lock the seat rotation in one of five positions. To swivel your seat, simply pull up on swivel lever forward to unlock it and then release it while rotating the seat until it locks in place (Fig. 19).

Fig. 19

Fig. 19-1

Fig. 19-2

Fig. 19-3

Recommendation

To ensure a dependable battery charge, we recommend charging the batteries overnight. It will not only spare you unpleasant situations on route, but will prolong the batteries' service life as well.

Note: *Only use the charger that is supplied with the power chair. Use of any other charging unit voids the warranty and could result in severe damage to the batteries and the power chair, or may cause hazard. Depending on the use, terrain and driving conditions, the batteries will provide a range of 15 - 25 miles. However, we recommend that the batteries are charged periodically.*

Charging Instructions:

The power chair charging system is designed for your safety and convenience. To recharge the batteries, follow the Steps below:

1. Place your power chair close to a standard electrical wall outlet.
2. Turn the controller power off.
3. Plug the charger plug into the controller's charger socket. (Fig. 22) located in the back of the controller.
4. Plug the charger power cord into a standard wall outlet.
5. Disconnect the Charger power cord from the wall outlet when the batteries are fully charged.

Fig. 22

Charger Socket

The batteries will be fully charged in 4 - 6 hours. This will be indicated when the green light in the battery charger side panel turns on.

Your power chair is designed for minimal maintenance. However, we recommend that you periodically check the following:

Tire pressure: Be sure to maintain the pressure of the tires between 30-37 psi. (If tire is pneumatic tire)

Tire tread: Visually inspect the tire tread. If less than 1/32", please have your tires replaced by your local dealer.

Motor brushes: Have your local dealer inspect the motor brushes every six months.

Joystick/controller: Make sure to keep the controller from the elements. Moisture will damage the controller and void the warranty.

Battery terminal connections: Inspect the state of the battery terminals. Make sure that they are not corroded.

Clean your power chair cover only with a damp cloth:

The ABS shroud (cover) has a clear coat that is very easy to clean. Please do not use water to clean your power chair.

Note: *If you experience any technical problems, check with your local dealer before attempting to trouble shoot on your own.*

P312 / MP-3U

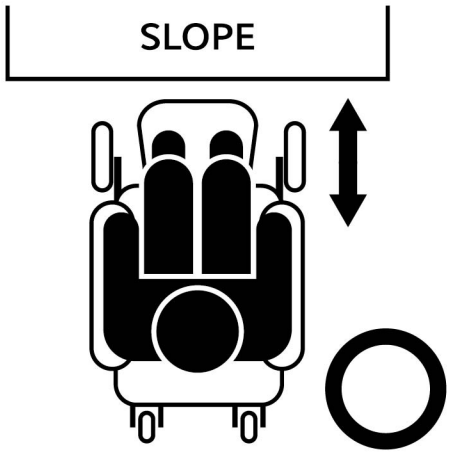
Specification	P312	P312SE
Weight		
Base	93.5 lbs / 42.5 kg	101.5 lbs / 46 kg
Overall Dimensions		
Length	37.5 in / 96 cm	
Width	24 in / 61 cm	
Seat height from ground	20 in / 51 cm	22 in / 56 cm
Top speed	5 mph / 8km/h	
Load capacity	300 lbs / 136kg	
Turning radius	21 in / 53 cm	
Wheel Sizes		
Drive Wheels	10 in / 260 x 85	
Casters	8 in / 200 x 50	
Footrest		
Seat height from foodrest	18" - 20" / 46 cm - 51 cm	20" - 25" / 51 cm - 63.5 cm
Controller	50 A	60 A
Charger	5 A	
Battery Type (recommended)	12 V / U1 * 2 pcs	

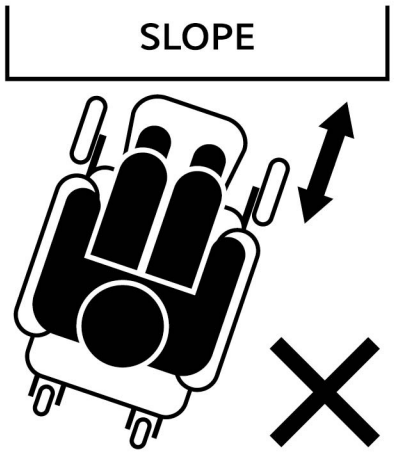
IEC SYMBOLS	
	**Caution, attention or consult accompanying documents.**
	**Alternating Current**
	**Type BF Equipment**
	**Double Insulation**
	**No Smoking or Naked Flames**

Degree of protection against ingress of water is rated as IPx0.

Serialization format for products	
	
1	The first digit is the last one digit of the year for manufacture.
2	The second and third digits are the month for manufacture.
3	The fourth to seventh digits are counting of how many units were manufactured during the month.

WARNING! Always drive straight up or straight down an incline, ramp, or slope to reduce the possibility of a tip or a fall.





We wish you a safe and comfortable riding experience!

TROUBLESHOOTING TIPS

Figure 1

Figure 2

If your power chair or scooter is not operating properly, please take the following steps prior to calling Technical Support.

Load-test Batteries—See Figure 1

1. Attach Battery Load-tester to battery.
   Observe polarity: Red is Positive—Black is Negative

2. Hold load switch on for 10 seconds. A good reading is 11.2 Volts DC, or in the Green.

Note: A Voltmeter cannot load-test batteries.

Test Voltage—See Figure 2

Utilizing a Voltmeter, place meter leads in charging port. The voltage reading should be 25 Volts DC, plus or minus 2 volts.

Note: Batteries are connected in series.

If the above tests are successful, proceed with the following test.

1. For power chairs, place gearbox levers in Freewheel.

2. Turn on controller and run in all four quadrants.

3. If troubleshooting a scooter, elevate rear wheels and run in Forward and Reverse.

If any of the above tests fail, contact your local dealer.

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