USER MAUNAL

Unlimited Electric Wheelchair
OB-EW-001

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SPECIFICATION

INTRODUCTION

Safety

Welcome to Observer. The electric wheelchair you have purchased combines the high technology of optics electrics and machine. Our patented aclinic equipment will adjust your body centre of gravity to keep the level as same as the terrain. Our electric wheelchair also can climb the angle up to 36 degree. It offers you 100% safety when you drive on any terrain. It's safe, comfort, and styling in mind. We are confident that our electric wheelchair will offer you the most convenience in House, public location, open space ect.

Read and follow all instructions, and notes in this manual before attempting to operate your power wheelchair for the initial driving. Failure to follow the instructions in this manual and those located on your power wheelchair can lead to personal injury or damage to the power chair including voiding the warranty.

Purchaser's Agreement

By accepting delivery of this product, you promise that you will not change, alter, or modify this product or remove of render inoperable or unsafe any guards, or other safety features of this product; fail, refuse, or neglect to install any retrofit kits from time to time provided by Observer to enhance or preserve the safe use of this product.

Feedback

We want to hear your questions, comments, and suggestions about our product. We would also like to hear about the safety and reliability of your new buying of our power wheelchair,
The service you received from your authorized agent. You can send us E-mail or refer to our website FAQ section. Welcome your feedbacks. Hope to communicate with you often.

OPERATION

The basic demand to user:

1. The user must be having physique, intellect and ability of strain that can operate the electric wheelchair safely. The person who ill with vision or mental retardation, please consult the doctor or cure doctor at first.
2. The user should keep the torso balance, and can bear jolt the cave and convex roadway, the torso muscle intensity scarcity hour, should consider carrying the safety belt, or using the suitable body to accept to give the system, for example, the back packing sheet, body packing sheet etc.
3. The person who have the pain of neck or neck stiff, The user can't see the back situation when the wheel chair go back, can add rear view mirror.
4. The user must hold enough knowledge of the technology of the electric wheelchair, and have confidence to driving, and crossing, and overcome the rugged roadway by oneself, and then can use the electric wheelchair to activity in outdoor by oneself.

Operation Remark:

1. To read and follow all instructions and notes in this manual before attempting to opearte your power wheelchair for the first time.
2. This power wheelchair is the monopoly product, please do not rebuild for other usages.
3. Before formal using, please practice at open space to be familiar with all of functions.
4. In case of danger, while driving the power wheelchair, do not use mobile phone, laptop or other radio tramsmitter etc.
5. If meet following conditions while driving, please keep away from or accompany with a nurse. Such as: the heavy traffic, muddy road, serious uneven road or rubble land, narrow lane, snowy roads, freezing surface, ditch withour protective guard, and at a bad weather (raining, sonowing, thick fog, strong wind etc.)
6. While go on or go down stairs or slope, please operatate at slow speed for driving carefully.
7. While turning left & right, 360°revolving or turning at any angle, must be operatated at slow speed in order to protect the motors for lift extension, reduce the noisy, and prevent damage of components.
8. The controller of electric wheelchair is the key part of the whole body.

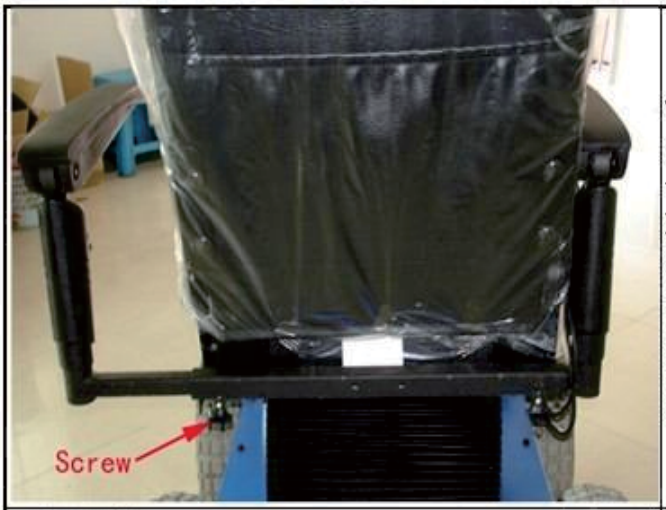
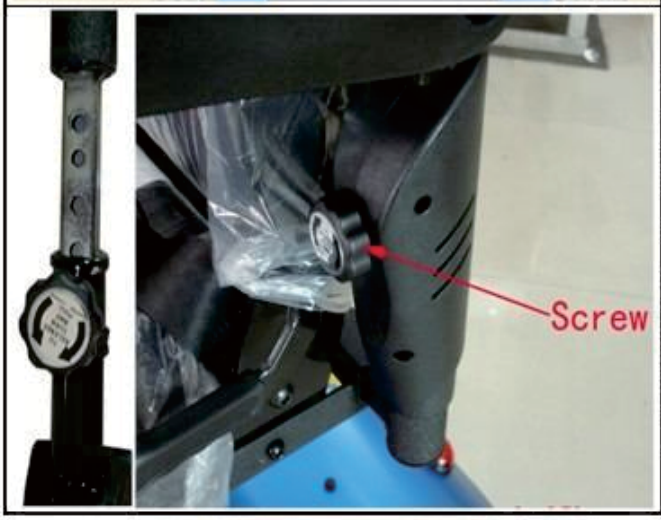
Please do not try to open it for repairing or do other things for changing it, which can damage the controller and make the maintain ineffective. The controller surface should be cleaned by dry soft cloth. To use the controller under the condition of over-heating, over-loading and extremely wet should be forbidden absolutely.

9. Do not try to open, repair or change the motor, which can damage it and make the maintain ineffective. Water inflow should be forbidden absolutely, while the power wheelchair crossing 100 mm, the motor can be soaked; it will cause the permanent damage of motor.

How to operate the gradienter switch? Just following the instruction as belows (based on the controller equip at the right side):

<table>
<tr><td rowspan="6">
</td><td>Normal state
The gradienter does not work，don not turn on the ON button on the when driving chair on the level ground.</td></tr>
<tr><td>Working
Click on the button to ON and the green light is lighted. The gradienter in normal operate when climbing stairs or slopes.</td></tr>
<tr><td>Reset automatically
If the gradienter detect the maximum crawl angle it will stop working and the green light went out. Just click to OFF and wait for 2 seconds, then click the button to RST, the red light is lighted, The gradienter will reset automatically, the chair will reset to horizontal position.</td></tr>
<tr><td>Working again
Click to OFF and wait for 2 seconds, then click on the button to ON, the green light is lighted, the gradienter in normal operation station again.</td></tr>
<tr><td>Tilt in space function
When the chair is static, Click on the button to ON and the green light is lighted,also click on the round red button and the red light is lighted,rotate the white switch to make the seat tilt</td></tr>
<tr><td>Don’t use the tilt function when the chair is dynamic.and make black line in the white switch in the middle position.</td></tr>
</table>

How to adjust the width and height of the armrest that you need? Just following the easy instruction as belows:

	The armrest width can be adjusted according to the user's needs. Easy steps as belows: 1. Loosen the screw. 2. Adjust the armrest width as you need. 3. Lock the screw tight again.
	The armrest height can be adjusted according to the user's needs. Easy steps as belows: 1. Loosen the screw and pull out a little. 2. Adjust the armrest height as you need. 3. Make the screw wedge in the screw hole and lock the screw tight.

3.1 Controls and indicators overview

3.1.1 REM050

Figure 23, below, shows the main features of the REM050 remote module. These features are described in more detail in the following sections.

Figure 23: REM050 user interface

3.1.2 REM060, REM110

Figure 24, below, shows the main features of the REM060/110 remote modules. These features are described in more detail in the following sections.

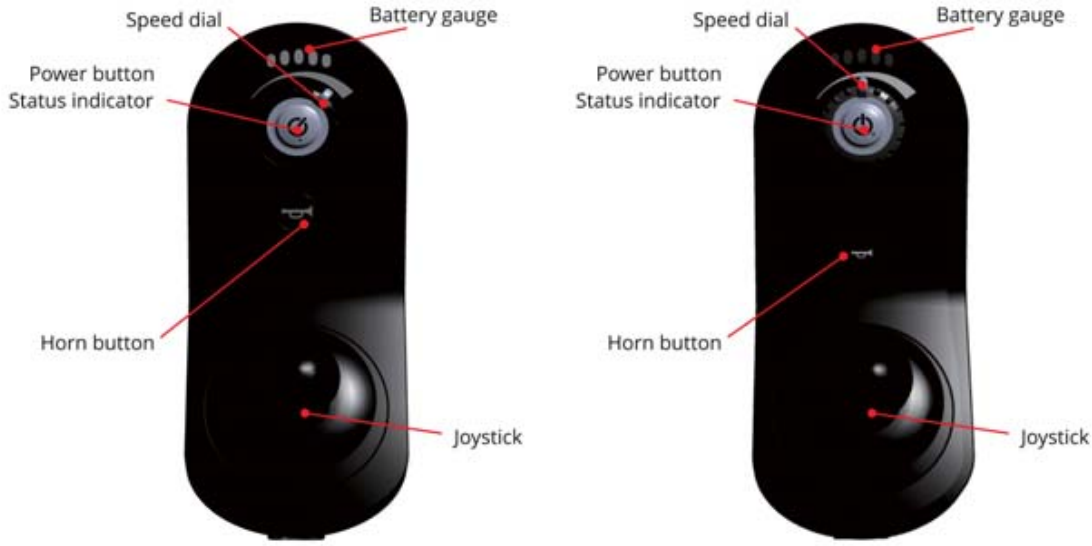


Figure 24: REM060 (left)/REM110 (right) user interface

3.1.3 REM210, REM211

Figure 25, below, shows the main features of the REM210 and REM211 remote modules. These features are described in more detail in the following sections.

Figure 25: REM210, REM211 user interface

3.1.4 REM215, REM216

Figure 26, below, shows the main features of the REM215 and REM216 remote modules. These features are described in more detail in the following sections.

Figure 26: REM215, REM216 user interface

Note

The REM211 and REM216 have a white ring around the base of their joysticks to differentiate them from the REM210 and REM215 respectively.

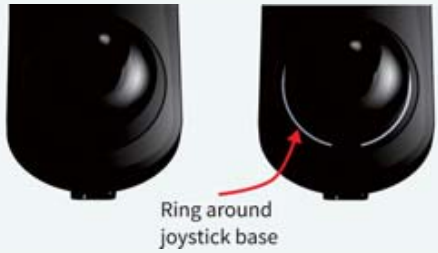


Figure 27: Identifying the REM211 and REM216

3.2 Using the controls

3.2.1 Powering up and down

Note

In the unlikely event that the wheelchair is in a runaway situation, the user can press the remote module's power button to perform an EMERGENCY STOP. See section 4.2.2 Performing an emergency stop

Figure 28: Power OFF

To switch **ON** the LiNX remote module, press the power button. The power button is the only user input that can activate the system.

If there is no fault with the system, the status indicator (through the power button) will light up green, and the battery gauge will display the current battery status.

If there is a fault with the system when powering up, the status indicator will indicate the fault with a series of red flashes (see LiNX System Manual for more information on fault indication).

Figure 29: Power ON

To switch **OFF** the system, press the power button; the system will power down and the status indicator will switch off.

The power button is also used to perform an EMERGENCY STOP—see next section—and lock the system—see section *4.2.6 Using the lock function*.

Warning

A power button can power down a system only if its status indicator is illuminated (green or flashing red). If a power button's status indicator is off, the power button cannot be used to power down the system.

See also

3.3.1 The status indicator

3.2.2 Performing an emergency stop

If the user needs to stop the wheelchair quickly, or stop a seating motion quickly, the power button can be pressed to perform an EMERGENCY STOP. If driving, the wheelchair will come to a halt quickly; the rate at which it comes to a halt is set by the Emergency Deceleration parameter.

See also

See the LiNX System Manual for more information on the Emergency Deceleration parameter.

3.2.3 Using the joystick

Figure 30: The joystick

The joystick controls the direction and speed of drive and seating functions. It can be configured to work in proportional or discrete modes.

Direction control — driving
By default, when the joystick is deflected from the neutral position, the wheelchair will move in the same direction as the joystick. This default behaviour, however, can be modified by rotating the joystick, flipping the remote module, or reassigning joystick quadrants. See the LiNX Systems Installation Manual for more details.

Direction control — seating
For seating functions, the direction of the seating motion (extend / retract) depends on how the input control has been configured. See the LiNX Systems Installation Manual for more details.

Speed control — proportional mode
In proportional mode, the speed of the drive or seating function is proportional to the joystick deflection, so that the further the joystick is moved from the neutral position, the faster the drive or seating function will travel.

Speed control — discrete mode
In discrete mode, the speed of the drive or seating function is fixed and is activated when the joystick is deflected past a configurable threshold — see Joystick Switch Threshold in the LiNX System Installation Manual.

Stopping
In general, to stop driving or to stop a seating motion, either pull the joystick back to the neutral position, or release the joystick and it will automatically return to the neutral position. However, this operation does not work for latched driving modes. For latched driving, see the LiNX Systems Installation Manual.

The joystick can also be used to wake up the system when in sleep mode — see *4.2.7 Interrupting or waking up from sleep*.

See also
See LiNX System Manual for more information on:
- *Drive Delay At Startup*
- *Neutral Window*
- *Joystick Throw*

Warning
As the joystick is deflected, the size of the gap between the joystick skirt and the top of the remote module's body reduces; this can be a pinching hazard. The user should be instructed to release the joystick if any body part becomes pinched from deflecting the joystick.

3.2.4 Controlling maximum speed

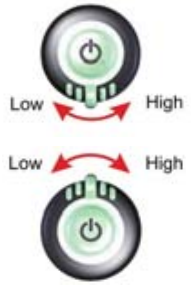


Figure 31: The speed dial (low profile module top, traditional style module bottom)

The speed dial allows the user to limit the maximum speed of the wheelchair (that is, the speed when the joystick is fully deflected) to suit their preference and environment.

The dial offers 10 discrete steps between the lowest speed (dial set to the left) and the highest speed (dial set to the right).

Figure 32: The speed symbol (low profile module top, traditional style module bottom)

As a visual reminder, a speed symbol (shown left) is positioned by the speed dial to indicate the low and high positions of the speed dial.

The speed symbol on the low profile module is below the speed dial; on the traditional remote modules, it is above the speed dial.

See also

See the LiNX System Installation Manual for more information on Drive settings.

Warning

It is the responsibility of the wheelchair manufacturer to inform the wheelchair user about the wheelchair's stopping distances.

3.2.5 Using the horn

Figure 33: The horn button

The REM050's horn button is located above the power button. The horn button for the traditional style remote modules is located below the power button. Press the horn button to sound the horn. The horn will sound for as long as the horn button is pressed.

The horn button is also used for unlocking a locked system — see below for more details.

3.2.6 Using the lock function

The lock function is used, primarily, to restrict who can use the system, but also can help prevent unintentional use of the controls for when the system is not required for any length of time.

When a system is locked (see below), the system is powered down, and the user controls are not responsive. If the power button is pressed when the system is locked, the locked status is displayed to the user by the battery gauge.

To unlock the system, an unlock sequence must be performed (see below) by the user within a specific time frame. If the sequence is not performed correctly, within the time frame, the system will remain locked and the system will power down again.

Figure 34: Power OFF

To power down and **lock** the system, press and hold the power button for 4 seconds.

When entering the locked state, the battery gauge will indicate the transition by flashing LEDs 1, 3, and 5 (far left, middle, and far right) 3 times.

Figure 35: System locking

Figure 36: Power ON

To power up and **unlock** the system, press the power button once, and then, press the horn button twice — the horn button must be pressed twice within 10 seconds of pressing the power button.

If the user implements the unlock sequence incorrectly, or the power button is pressed again before the unlock sequence is complete, the system will return to the locked state.

During an unlock attempt, the battery gauge will indicate the system is in a locked state by flashing LEDs 1, 3, and 5 (far left, middle, and far right) until either the system is powered off, unlocked, or the Sequence Timeout is reached.

Figure 37: System unlocking

Note

- *the lock function is only available when the **Enable Lock** parameter is set to **Yes**;*
- *the LiNX remote module can be programmed when in a locked state;*
- *the LiNX remote module battery can be charged when in a locked state;*
- *if more than one remote module is used within the system, the unlock sequence will only operate with the remote module that powered up the system. Furthermore, the locked status indication will only be displayed on the remote module that powered up the system;*
- *the horn will not sound when pressing the horn button during the unlocking sequence.*

See also

*See the LiNX System Manual for more information on the **Enable Lock** parameter.*

3.2.7 Interrupting or waking up from sleep

Before a system goes to sleep, the system enters a transition period, indicating to the user (see indication section) that it is about to enter sleep mode. If sleep mode is unwanted, the user can interrupt the process during this transition period by pressing the power button or deflecting the joystick. Note, however, if the joystick on the remote module is not the active function's user input, then it will be ignored and will not interrupt the process.

Note

To interrupt the transition period, any button can be pressed. However, the system will react accordingly to the button press. So, for example, pressing the horn button will make the horn sound and interrupt the transition period, preventing the system going to sleep.

The system is woken from sleep by:

- momentarily deflecting the joystick (see note below), or
- pressing the power button.

Note

*Set the **Enable Joystick Wakeup** parameter to enable this functionality.*

3.2.8 Changing drive function (REM210, REM211, REM215, REM216)

Figure 38: Drive function select button and display

The wheelchair's drive function can be selected with the drive function select button, which is located below the power button on the left-hand side of the remote module.

Press the top of the button to select the next drive function. Press the bottom of the button to select the previous drive function.

The drive function selected is indicated on the drive function indicator, which is located to the right-hand side of the drive select button. The indicator has three LEDs:

1. when drive function 1 is selected, the bottom indicator will be lit;
2. when drive function 2 is selected, the bottom and middle indicators will be lit;
3. when drive function 3 is selected, all indicators will be lit;
4. when drive function 4 or greater is selected, the top and bottom indicators will be lit;

3.2.9 Changing seating function (REM210, REM211, REM215, REM216)

Figure 39: Seating function select button

The wheelchair's seating function can be selected with the seating function select button, which is the rocker button located on the right-hand side of the remote module.

Press the top of the button to select the next seating function. Press the bottom of the button to select the previous seating function. Note that only

seating functions that have been programmed (see Systems Installation Manual) will be available for selection.

The selected seating function is displayed on the drive/actuator status indicator as shown below.

Table 8: Seating function display

Seating function	Display	Seating function	Display	Seating function	Display
Tilt		Recline		Recline and Legs	
Elevate		Left Leg		Unspecified	
Right Leg		Both Legs		None	

3.2.10 Controlling lights (REM215, REM216)

Figure 40: Lighting control buttons

Lighting control is available on the REM215 and REM216. There are two lighting control buttons, which are situated below the horn button.

The left-hand button controls the left indicator and the hazard lights. The right-hand button controls the right indicator and the position lights. The operation of these is described below.

3.2.10.1 Hazard lights

To switch on the hazard lights, press and quickly release the left-hand lighting button once. LEDs behind the left-hand button and right-hand button will flash on and off for the duration the hazard lights are operating.

To switch off the hazard lights, press the left-hand or right-hand lighting button.

3.2.10.2 Indicator lights

To switch on the left indicator, press and hold the left-hand lighting button once. The LED behind the left-hand button will flash on and off for the duration the left indicator lights are operating.

To switch on the right indicator, press and hold the right-hand lighting button once. The LED below the right-hand button will flash on and off for the duration the right indicator lights are operating.

To switch off either indicator, press the left-hand or right-hand lighting button.

3.2.10.3 Position lights

To switch on the position lights, press and quickly release the right-hand lighting button once. The LED behind the right-hand button will remain on for the duration the position lights are operating.

To switch off the position lights, press the right-hand or left-hand lighting button.

3.2.11 Disabling Bluetooth

The embedded Bluetooth functionality can be disabled when powering up the system by pressing and holding the power button for more than three seconds. The disabled Bluetooth functionality is indicated to the user by the connectivity LED (REM210, REM211, REM215, REM216) and the status LED pulsing for a duration of six seconds.

3.3 Reading the indicators

3.3.1 The status indicator

The status indicator is located underneath the power button. When the system is not powered up, the status indicator is not lit.

When the system is powered up, and there are no faults with the system, the status indicator will be lit green.

If, when powered up, there is a fault with the system, then the status indicator will flash red. The number of flashes will indicate the type of error. For more information on flash codes, see Error indication in the LiNX System Installation Manual.

Figure 41: The status indicator

See also

See LiNX System Manual for more information on diagnostics, and error indication.

3.3.2 The battery gauge

The battery gauge comprises five different LEDs (1 x red, 2 x amber, 2 x green), situated above the remote module's horn button. The number of LEDs lit depends on the status of the battery, as shown below.

The battery gauge LEDs are also used to display charging information. See the LiNX System Installation Manual for more information on battery charging.

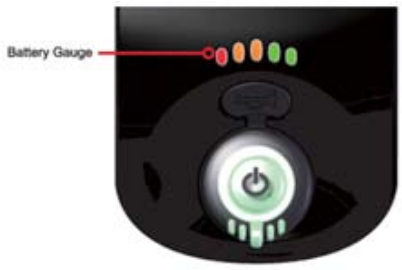


Figure 42: The battery gauge

3.3.2.1 Normal operation

Table 9: Battery gauge — normal operation

Battery Gauge	Battery Level	Notes
	Fully charged	This level is set by the Batt Gauge Maximum parameter. See the LiNX System Manual for more information.
	Consider charging battery	

Battery Gauge	Battery Level	Notes
Figure 43: Battery gauge operation	Battery needs charging	This level is set by the Batt Gauge Minimum parameter. See the LiNX System Manual for more information.

Note

*It is a requirement of ISO7176-14 that **the wheelchair manufacturer must determine and state the battery gauge accuracy**. The accuracy can only be determined by the wheelchair manufacturer since it is dependent on a wheelchair's build and configuration.*

See also

See the LiNX System Manual for more information on:

- *Batt Gauge Maximum*
- *Batt Gauge Minimum*

3.3.2.2 High voltage warning

Figure 44: High voltage warning

A high voltage warning is indicated by all LEDs on, and the green LEDs flashing. This occurs when the battery voltage level has risen above the high voltage warning set-point.

See also

See LiNX System Manual for more information on Batt Gauge High Voltage Warning.

3.3.2.3 Low voltage warning

Figure 45: Low voltage warning

A low voltage warning is indicated with the left-most LED flashing. This occurs when the battery voltage level has decreased below its low voltage warning set-point. See Batt Gauge Low Voltage Warning in the LiNX System Manual for more information.

Charge the battery immediately.

See also

See LiNX System Manual for more information on Batt Gauge Low Voltage Warning.

3.3.2.4 Cut-off voltage

Figure 46: Cut-off voltage

When the battery voltage decreases below the battery cut-off voltage:

- the status indicator will flash (Flash code 2)
- the first (red) LED will flash on the battery gauge
- the horn will sound once every 10 seconds

See also

See LiNX System Manual for more information on Cut-Off Voltage, and Error indication.

3.3.3 Drive inhibit indication

Drive inhibit mode is indicated by the battery gauge with a right-to-left chase sequence.

The chase sequence starts with the green LED on the right-hand side, and one-by-one, each LED will switch on and then off. When the sequence completes at the left-most red LED, it begins again at the right-hand side.

The chase sequence continues until the error condition has been cleared.

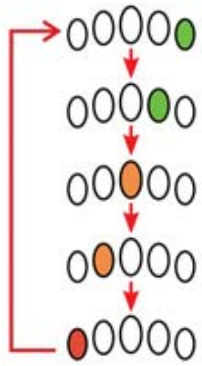


Figure 47: Drive inhibit chase sequence

Figure 48: Drive wheel indicator flashing

For remote modules with a drive wheel indicator, if the joystick is deflected during a drive inhibit, the drive wheel indicator will flash simultaneously with the drive inhibit chase sequence described above. It will continue to flash for the duration that the joystick remains out of the neutral position.

3.3.4 OON indications

OON ("**Out Of Neutral**") is a safety feature that prevents accidental driving or seating movement:

- when the system is powering up, or
- on a function change, or
- when the system comes out of an inhibit or drive lock-out.

There are two types of OON:

- Drive OON
- Seating OON (if applicable to system)

3.3.4.1 Drive OON warning

The joystick must be in the centre position:

- when a system is powering up,
- on a function change, or
- when transitioning from a drive lock-out or inhibit state,

otherwise a **drive OON warning** is displayed. During a drive OON warning, the battery gauge LEDs and drive wheel indicator (REM210, REM211, REM215, REM216 only) will flash continually to alert the user, and the wheelchair will not drive. If the joystick is returned to the centre position, the warning will clear and the wheelchair will drive normally.

3.3.4.2 Seating OON warning (REM110, REM210, REM211, REM215, REM216)

Direct access switches must not be active when a system is powering up, or on a function change, otherwise a **seating OON warning** is displayed. During a seating OON warning, the battery gauge LEDs and seating indicator (REM210, REM211, REM215, REM216 only) will flash continually to alert the user, and the seating motions will not operate. If the switches are deactivated, the warning will clear and the seating motions will operate normally.

See also

See the LiNX System Manual for more information on fault indication.

Note

For systems prior to MR4, the above indications were called OONAPU. OONAPU has been replaced with OON. For a description of OONAPU, please refer to the previous version of this manual (issue 3).

3.3.5 Drive and seating function indications (REM210, REM211, REM215, REM216)

In addition to the motion indications (described above), the drive / actuator status indicator will also display the following system state information:

- drive slow-down
- drive lock-out
- actuator lock-out

3.3.5.1 Drive slow-down

To notify the user that a drive slow-down is active, the drive wheel LED and the corresponding seating function LEDs are slowly pulsed on and off. The LEDs pulse for the duration of driving or seating function demand.

3.3.5.2 Drive lock-out

To notify the user that an actuator has caused a drive lock-out, the drive wheel LED and the corresponding seating function LEDs flash on and off. The LEDs flash for the duration of driving or seating function demand.

3.3.5.3 Actuator lock-out

To notify the user that the motion they want to use is locked-out, an actuator lock-out state is indicated by flashing the corresponding seating function LEDs. The LEDs flash for a minimum of three flashes and then for the duration of the seating function demand.

3.3.6 Firmware upgrade indication

When a system is in firmware upgrade mode, the status indicator remains switched on and all other indicators on the remote module are switched off.

3.4 Using dual remote modules

The LiNX 100 and 200 series power modules provide two communication bus connectors, allowing two remote modules to be connected at the same time. This is useful, for example, when a remote module is required for both an occupant and an attendant.

Figure 49: Dual remote modules

When two remote modules are connected in the same system, both are capable of operating the wheelchair, although only one of them will have control of the system at any one time. While one remote is in charge, the other will not respond to any commands except for its power button, which can always turn off the system.

Note

The remote modules do not have to be the same type. The power module can connect to identical or different remote module types. For example, two REM050s will work together, as will one REM050 and one REM060.

The following sections detail the general operation of the dual remote module feature.

3.4.1 Operation

Powering up

Either of the remote modules can power up the system with their own power button. The remote module that powers up the system will have control of the system (remote-in-charge). The other remote module (remote-not-in-charge) will have no control of the wheelchair except for its power button, which can still be used to switch off the system.

Note

If a programming and diagnostic tool is responsible for a system powering up when it connects to a LiNX Access Key, the remote module that hosts the LiNX Access Key will be in charge of the system.

Powering down

No matter which remote module is in charge in the dual remote system, the wheelchair can be powered down by pressing the power button on either remote module.

Swapping the remote-in-charge

To swap which remote module is in charge, power down the system with either remote module, and then power the system on again with the remote module that requires the control.

Remote-in-charge indication

Dual remote systems indicate who's in charge with the battery gauge — all other indicators display normally.

Remote-in-charge		Remote-not-in-charge
All indicators, including the battery gauge will display as normal.		All indicators will be switched off except the status indicator.
Figure 50: Remote-in-charge indication		**Figure 51: Remote-not-in-charge indication**

3.4.2 Fault handling and indication

If a fault exists on one of the remote modules in a dual remote system, then the fault is indicated on both modules.

If one of the remote modules in a dual system is faulty, the system can be driven with the other remote module. If, however, the power button on the remote-not-in-charge has a fault, then the system will not operate.

If one of the remote modules is disconnected from the system when it is powered down, the remaining remote module will display an error (FC:2) when the system is powered up again to indicate that it was expecting two remote modules in the system. To remove the error, cycle the power with the power button.

3.5Battery charging

The battery charging socket of the LiNX system is a 5-pin XLR type, located on the LiNX remote module.

Warning

The manufacturer must ensure that the XLR charger connector and cable, provided to the user to charge the wheelchair, is rated for the full current capacity of the charger.

Make sure that the battery charger that is used with the vehicle has a drive inhibit function that is correctly connected for use with the controller. The maximum voltage on the inhibit pin must not exceed 3 V if a battery voltage is to be detected when the battery charger is connected. If you are not sure, ask your distributor or vehicle manufacturer.

The XLR charger connector on the remote module is to be used exclusively for the intended purpose. Warranty will be voided if any unauthorised device is connected to this port.

To charge the wheelchair's battery, plug the battery charger into the remote module's XLR socket.

The battery gauge will indicate the system is connected to the charger by cycling between a left-to-right chase sequence, and then displaying the approximate battery charge state at the end of the chase sequence.

The LiNX system does not have to be powered up when charging the battery, however, if it is not powered up, then the battery gauge will not display the charging state/ chase sequence.

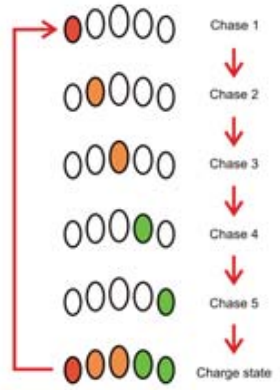
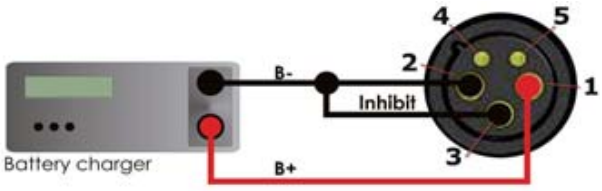


Figure 52: Battery charging chase sequence

The battery charger's connector plug must be wired with a drive inhibit connection, as shown below.



Pin	Signal
1	Battery positive (B+)
2	Battery negative (B-)
3	Drive inhibit
4	Communications bus high
5	Communications bus low

The drive inhibit signal ensures that the wheelchair does not drive when connected to the charger. This signal must be provided within the battery charger plug as a connection between pin 2 and pin 3. Ensure that the battery charger is compatible with this configuration before connecting it to the charging socket.

Warning

1. *The wheelchair manufacturer should comply with the requirements of ISO7176, Part 25 regarding batteries and chargers.*
2. *The maximum charging current for the LiNX wheelchair control system is:*
    - *6 A - with PM40 hardware version 1.x only*
    - *8 A - with PM40 hardware version 2.x and later*
    - *8 A - with PM50*
    - *12 A - with PM60, PM75 and PM120*
3. *The wheelchair manufacturer must specify an appropriate battery charger for the batteries used in the wheelchair.*
4. *The wheelchair manufacturer must also specify the maximum current of any battery chargers to be used with the controller and warn against using battery chargers of higher current ratings.*
5. *The battery charger must have over-current protection in the form of a non-resettable fuse, which does not self-reset until the fault is cleared. It is the responsibility of the wheelchair manufacturer to manage the risks of battery over-charging and any related gas emissions.*
6. *To protect the wheelchair wiring from over-currents while charging the batteries, chargers must have the ability to reduce their current output when electrically shorted.*

Components Illustration

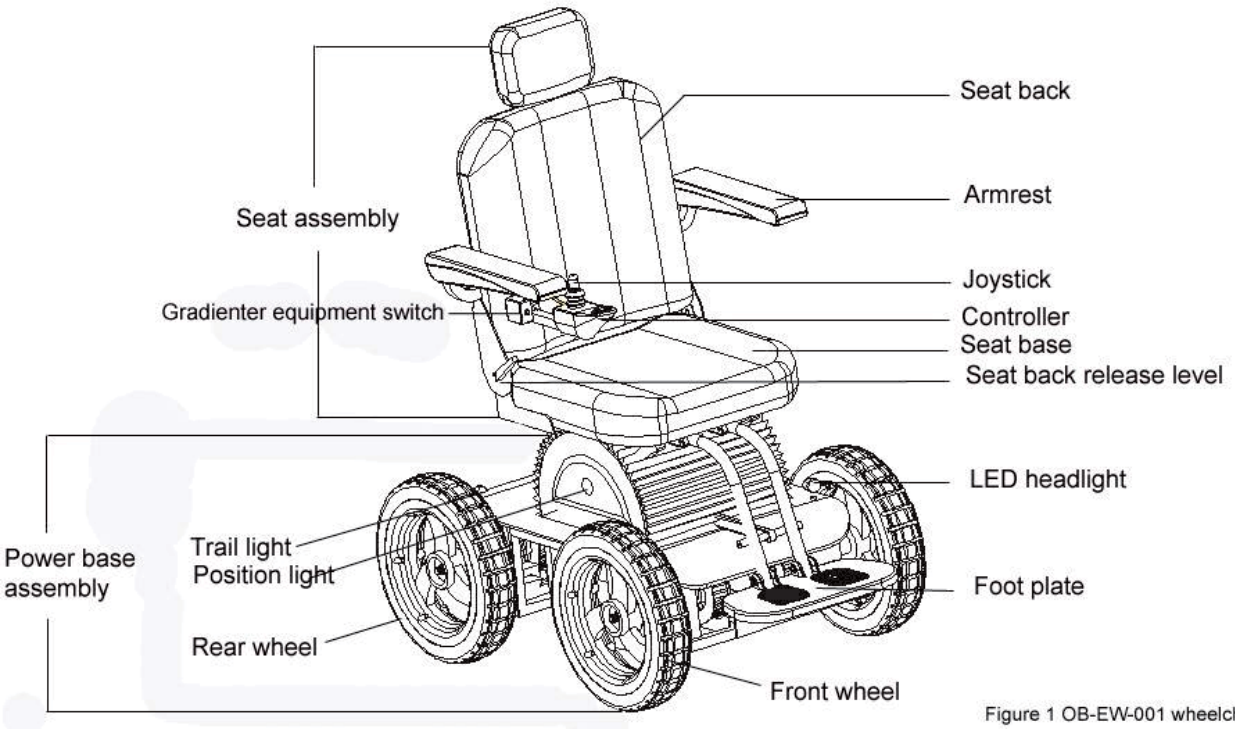


Figure 1 OB-EW-001 wheelchair

Initial Assembly

Your power chair may require some assembly either before initial use or after transportation. It may also require disassembly to make some comfort adjustments. Figure 2 details those Parts of the power chair that are designed to be disassembled and assembled by an end user. Or by a qualified caregiver before using the product or making comfort adjustment.

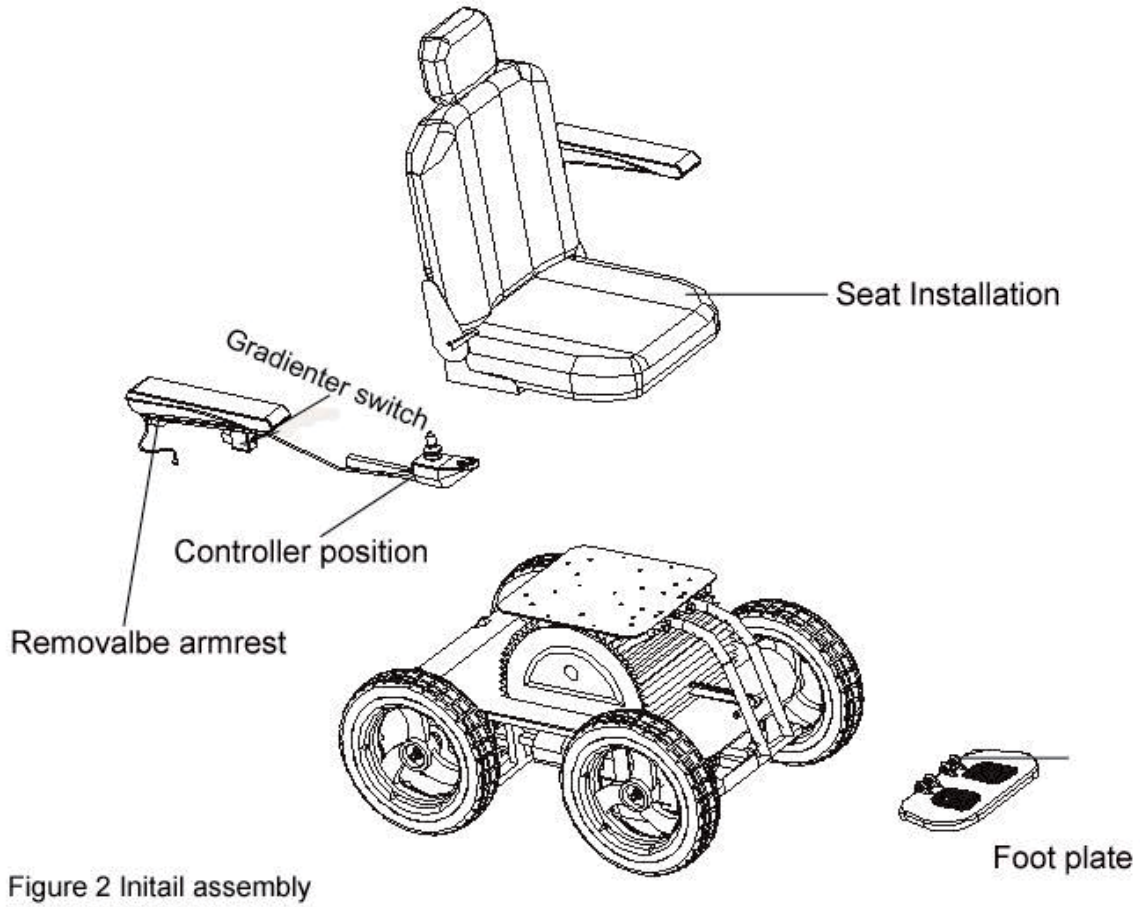


Figure 2 Initail assembly

Tire Assembly

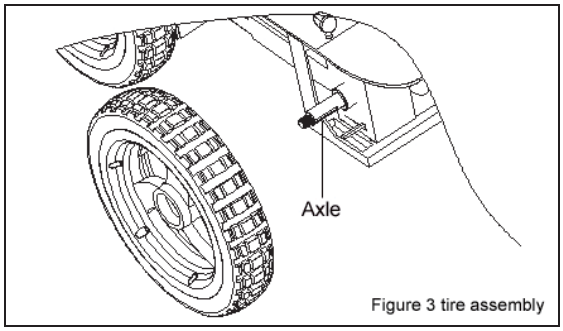


Figure 3

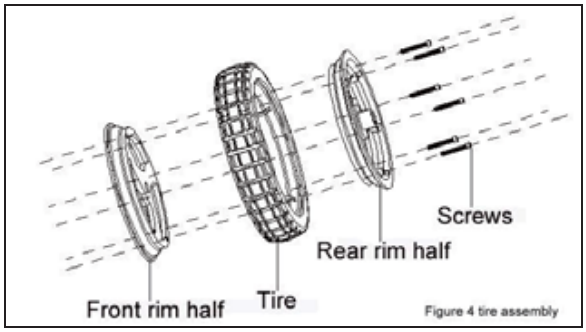


Figure4

Follow these easy steps for a quick and safe repair for the solid tires:

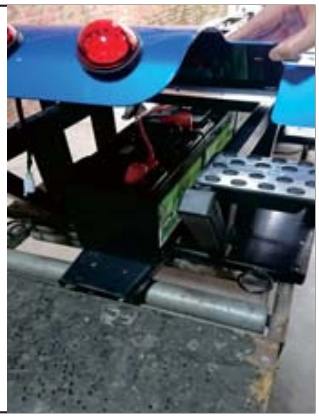
1. Turn off the power to the controller.
2. Set the power chair up on the blocks.
3. Remove the drive wheel nut and washer from the axle. See figure3.
4. Pull the wheel off the axle.
5. Remove the screws from the rim assembly and separate the front and rear rim, See firgure4.
6. Reassembly the rims and reinstall the screws.
7. Slide the wheel back onto the axle. Make sure that the key is in the axle slot.
8. Reinstall the drive wheel nut and washer onto the axle and tighten.
9. Remove the power chair from the blocks.

Battery Replacement

Replacing batteries steps

First,screw off the four thumb sctews back of the wheel cover, and lift up back cover gently,then loose the batteries belt,and disconnect the batteries fastener,last take out the first battery.(see picture)

Push the batteries back from the front,until the second batteries to the position of the first one.disconnect the positive wrie with a small screwdriver,then take the second battery.Do the same and disconnect the third negative wire,then take out all the batteries.(as shown)



All batteries being taken out(as shown),disconnect the connecting line and install them on the new batteries,Repeat the above steps in opposite way and install batteries,you have complete it.

WARNING! Make sure you tighten the fasteners so that the connections are secure.

1. Place the batteries back into the power base one by one from the rear base.
2. Fasten the battery strap around the rear battery.
3. Connect each battery harness to his mating plug on the power base.
4. Reinstall the rear cover and the front cover.
5. Charge the batteries.

BATTERIES AND CHARGING

5.1 Silicone Battery characteristics:

- **Optimized for high current discharges**
  Greensaver batteries are superior at discharging large currents. Our products are able to discharge 30c in 8 Seconds without damage to the battery.
- **Reduced charging time**
  Greensaver batteries can be recharged via large currents of up to 0.5~1.0 c. this allows charging time to be greatly reduced. It only takes 30 minutes to achieve an 80% recharge, and no more than 3 hours for a 100% complete charge.
- **Enhanced capacity**
  Greensaver batteries hold more change and have much higher capacity than other batteries its class.
- **Long battery life**
  Under normal operation and usage, Greensaver batteries have a 10 years float life, and are able to last up to＞400 deep cycles.
- **Minimal self-discharge**
  Self-discharge in Greensaver batteries are greatly reduced. Not only is charging no longer required within one year prior to use, it has an extended shelf life 400% of typical average lead acid batteries.
- **Maintains high capacity under low temperatures**
  Greensaver batteries are able to hold 70~75% of their total charge under temperatures of -10°c
- **Extended operating temperature range**
  Able to withstand and operate under the harshest of environments, Greensaver products are able to operate normally from -50°c ~ +60°c with margins to spare.
- **No memory effects, and maintenance free sealed design**
  Greensaver batteries do not suffer from memory effects during recharges and discharges. Our products are also maintenance free designed to aid your convenience.
- **No acidic vapors created, electrolyte is environmentally friendly**
  Our unique and patented silicate compound electrolyte does not create acidic vapors during charging. The electrolyte itself is also non hazardous and environmentally friendly.
- **Low internal resistance**
  Using the silicate compound electrolyte, internal resistance is greatly reduced. Thus, high temperatures do not result from charging, and risks of explosion are eliminated.

5.2 Advantages

Silicate compound electrolyte

Developed by Greensaver Corporation, the new electrolyte allows for an unprecedented breakthrough in the global energy market. The electrolyte is non-corrosive, and environmentally friendly. Our technology is patent-verified in more than 10 countries worldwide. As attested, such state-of-the-art technology has never been witnessed until today, and has thus received the highest grading, as, in all qualifications.

At the same time, the electrolyte allows for enhanced capacity, extended lifespan, high current discharge superiority, rapid recharge time, and superior low temperature performances. Our deep-sea models have been tested to work optimally at great depths. Along with our experienced team of engineers and professional management group, it is our company's foremost goal to bring safe, natural, and environmentally friendly energy to the world.

Sealed silicone power battery & sealed lead-acid battery comparison chart

Test description	Typical maintenance free lead acid battery	Maintenance free silicone power battery
Specific energy(c20)	35-40 wh/kg	45-50wh/kg
Electrolyte	Sulfuric acid	Silicate compound
Standard charge time (constant current and charge)	4-8h	1-2h
Fast charge time (constant current and charge)	2-3h	0.5-1h
Self--discharge loss / standard shelf life without charging	5% per month/3-6month	First month 4%, declines after the second month, maintains at 90% after a year / 1-2 years
High current capability	3-7c	15-30c
Ability to recover from over-design	Fair	Excellent
Low temperature performance	Performance plummets Below 0°C	Functions normally at-50°C
Optimal operating temperature range	Needs ambient temperature adjustments	No control needed from-50°C
Environmental friendliness	Allows for minor acid vapor	No acid vapor at all

5.3 Charging the batteries

The battery charger is essential in providing long life for your electric wheelchair's batteries. The battery charger is designed to optimize your electric wheelchair's performance by charging the batteries safely, quickly, and easily.

To charge the batteries using the off-board charger:

1. Position the front of your electric wheelchair next to a standard electrical outlet.
2. Be certain the controller power is turned off and the power chair is in drive mode.
3. Plug the off-board charger into the off-board charger/programming socket on the controller.
4. Plug the off-board charger into the electric outlet.
5. During charging, the red lights on the controller are flashing in turn. For fully charged, all the lights are green, no flashing.
6. When the batteries are fully charged , unplug the off-board charger from the electrical outlet and then from the controller.

WARNING!

1. Do not use batteries that exceed the recommended type and amp-hour capacity.
2. Do not use batteries with different with different amp-hour capacities.
3. Never use an extension cord to plug in your battery charger. Plug the charger directly into a properly wired standard electrical outlet. You must recharge your power chair's batteries with the supplied charger. Do not use an automotive-type battery charger.
4. Do not expose the battery charger to rain or other source of moisture unless it has been tested for outdoor use. Explosive gases may be generated while charging the batteries. Keep the power chair and battery charger away from sources of ignition such as flames or sparks and provide adequate ventilation when charging the batteries. Inspect the battery charger, wiring, and connectors for damage before each use.
5. Do not attempt to open the battery charger case. If the battery charger does not appear to be working correctly, contact your authorized provider.
6. Do not allow unsupervised children to play near the power chair while the batteries are charging. Observer recommends that you do not charge the batteries while the power chair is occupied. If your battery charger has not been tested and approved for outdoor use, then do not expose it to adverse or extreme weather conditions. If the battery charger is exposed to adverse or extreme weather conditions, then it must be allowed to adjust to the difference in environmental conditions before use indoors. Refer to the manual supplied with the battery charger for more information.

CARE AND MAINTENANCE

The electric wheelchair is a sophisticated mobility vehicle. Like any motorized vehicle, it requires routine maintenance checks.

You can perform some of these checks, but others require assistance from an authorized Provider. Preventive maintenance is very important. If you follow the maintenance checks in this section as scheduled, you can help ensure that your wheelchair gives you years of trouble-free operation. If you have any doubt as to your wheelchair's care or operation, contact an authorized Provider.

WARNING! Direct or prolonged exposure to water or dampness could cause the electric wheelchair to malfunction electronically and mechanically. Water can cause electrical components to corrode and the chair's frame to rust. Electric wheelchair should be examined periodically for signs of corrosion caused by water exposure, bodily fluids exposure, or incontinence. Damaged components should be replaced or treated immediately.

What should you do when your electric wheelchait touched water?

1. Dry your electric wheelchair as thoroughly as possible with a towel.
2. Allow your electric wheelchair to sit in a warm, dry place for 12 hours to allow unseen water to evaporate.
3. Check the joystick operation and the brakes before using your electric wheelchair again.
4. If any inconsistencies are found, take your electric wheelchair to your authorized Provider. Electric wheelchair that is frequently exposed to sources of water, such as incontinence, should be inspected often for corrosion and electronic components may need to be replaced frequently.

Temperature

Some of the parts of your electric wheelchair are susceptible to extreme changes in temperature. Always keep your electric wheelchair between the temperatures of -20°C and50°C.

In extremely cold temperatures the batteries may freeze. The specific temperature at which they freeze depends on a number of factors, such as battery charge, usage, and composition of the batteries.

Temperatures above 50°C may cause your electric wheelchair to operate at a reduced speed. This reduced speed is a safety feature built into the controller that helps prevent damage to the motor and other electrical components.

6.1 General Guidelines

Avoid knocking or bumping the controller, especially the joystick.

Avoid prolonged exposure of your Chair to extreme conditions, such as heat, cold, or moisture.

Keep the controller clean.

Check all connectors to ensure that they are all tight and secured properly.

WARNING! Even though the electric wheelchair has passed the necessary testing requirements for ingress of liquids, you should keep electrical connections away from sources of dampness, including direct exposure to water or bodily fluids and incontinence. Check electrical components frequently for signs of corrosion and replace as necessary.

Daily Checks

With the controller turned off, check the joystick. Make sure it is not bent or damaged and that it returns to the neutral position when you release it. Check the rubber boot around the base of the joystick for damage. Visually inspect the boot. Do not handle or try to repair it. See an authorized Provider if there is a problem.

Visually inspect the controller cable. Make sure that it is not frayed, cut, or has any wires exposed. See an authorized Provider if there is a problem.

Check for flat spots on solid tires. Flat spots could adversely affect stability.

Weekly Checks

Disconnect and inspect the controller from the power base. If there is any

corrosion, contact an authorized Provider if necessary.

Ensure that all parts of the controller system are securely fastened to your electric wheelchair.

Calibrate the joystick if a noticeable difference in performance is detected or if the joystick does not operate properly.

To calibrate the joystick, power off the unit, place the joystick in the neutral position, and power the unit back on. If a problem still exists with your joystick's performance, contact an authorized Provider.

Check the brakes. This test should be carried out on a level surface with at least 3 feet (1 meter) of clearance around your Z-Chair.

Check the brakes

1. Turn on the controller and turn down the speed level of your electric wheelchair.
2. After one second, check the battery condition meter. Make sure that it remains on.
3. Slowly push the joystick forward until you hear the electric brakes click. Immediately release the joystick. You must be able to hear each electrical brake operating within a few seconds of joystick movement. Repeat this test three times, pushing the joystick backwards, then left, and then right.

Monthly Checks

Check for drive tire wear. See an authorized Provider for repair.

Keep your electric wheelchair clean and free of foreign material, such as mud, dirt, hair, food, drink, etc.

Yearly Checks

Take your electric wheelchair to an authorized Provider for yearly maintenance, especially if you use your chair on a regular basis. This helps ensure that your electric wheelchair is functioning properly and helps prevent future complications.

Storage

Your electric wheelchair should be stored in a dry place, free from temperature extremes. When storing, disconnect the batteries from the Z-Chair. See VI. “Batteries and Charging.”

WARNING! If you fail to store the electric wheelchair properly, the frame can rust and the electronics can be damaged.

Batteries that are regularly and deeply discharged, infrequently charged, stored in extreme temperatures or stored without a full charge may be permanently damaged, causing unreliable performance and limited service life. It is recommended that you charge the batteries periodically throughout periods of prolonged storage to ensure proper performance.

You may wish to place several boards under the frame of your electric wheelchair to raise it off of the ground during periods of prolonged storage. This takes the weight off of the tires and reduces the possibility of flat spots developing on the areas of the tires contacting the ground.

Cleaning and Disinfection

Use a damp cloth and mild, non-abrasive cleanser to clean the plastic and metal parts of your electric wheelchair. Avoid using products that may scratch the surface of your electric wheelchair. If necessary, clean your product with an approved disinfectant. Make sure the disinfectant is safe for use on your product before application.

WARNING! Never use any chemicals to clean a seat, as they may cause the seat to become crack. Use soapy water and dry the seat thoroughly.

Wheel Replacement

If your chair is equipped with a solid tire insert, then you must replace the whole wheel assembly; If your chair is equipped with a beach tire,which maximum charge pressure or pressure range is 2Kpa.when you replace the beach tire to solid tire, you must exchange the whole wheel assemdly.

Replacement wheel assemblies are readily available through an authorized Provider.

WARNING! Be sure that the controller's power is turned off and the electric wheelchair is not in freewheel mode before performing this procedure.

WARNING! When changing a tire, remove only the center lug nut and washer then remove the wheel.

Do as the following steps:

1. Turn off the power to the controller.
2. Set the electric wheelchair up on blocks.
3. Remove the drive wheel nut and washer from the axle.
4. Pull the wheel off the axle.
5. Slide the new wheel back onto the shaft. Make sure that the key is in the axle slot.
6. Reinstall the drive wheel nut and washer onto the axle and tighten.
7. Remove the electric wheelchair from the blocks.

Battery Replacement

A battery wiring diagram is printed on a decal located on the front battery tray. See the Specifications Table for correct battery specifications.

WARNING! Battery posts, terminals, and related accessories contain lead and lead compounds. Wear goggles and gloves when handling batteries and wash hands after handling.

WARNING! Do not mix or match new and old batteries. If you encounter a situation where one battery needs to be replaced, then replace both batteries. Refer to the specification table in this manual and the manual supplied with the battery charger for recommended type and capacities.

6.2 Breakdown overhaul guide

Before the electric wheelchair is asked to maintain, please refer or check following table, in order to find possible reason caused matters. Some simple check and mix adjustment you operate can solve the problem and restore normal operation. If you have questions about some key check factors, or the repairing method showed in table cannot solve the problems, please contact an authorized Provider.

Test Item	Content for checking
Handle	Are they loosened? Can they convolute from left to right?
Motor	Is the moving sound abnormal? Do the electromagnetic brakes work?
Dump Power of lead battery	Do the indicator lamps shine? Is the surplus of lead battery enough?
Horn	Do the horns sound?
Seat	Does the operating lever of seat work normally? Can it convolute from left to right smoothly?
Screws	Are they loosened?
Tire	Are they cracked or damaged? Is the light of dime of tire suitable? Is there anything such as metal sheet or rubble insert?
Others	Is there any strange voice? Are there leak-off?

WARRANTY

For the lifetime of your electric wheelchair from the date of purchase, Observer will repair or replace at our option to original purchaser, free of charge, any of the following parts found upon examination by an authorized representative of Observer to be defective in material and/or workmanship:

7.1 Warranty parts and period

Item	Guarantee
Motor	12 months
Battery	6 months
Controller	12 months
Frame	24 months

The following situation beyond our warranty scope

a. Do not operate according to the users' manual.
b. Do not maintain at the assigned repairing place.
c. Exceeding the deadline of guarantee.
d. Do not use the individual parts produced by our company.
e. To rebuild the product without the authorized permission of our company.
f. The loading capacity exceeds the maximum.
g. Caused by the force major factor such as typhoon, flood, fire, earthquake and war etc.

Guarantee for coming into force

The buyers must fill in the service card at purchasing area after signature and seal. The domestic users mail it to our company, and the overseas users mail it to the distributors. The distributors will deal with it according to the regulations

and it will be effective after confirmed by our company.

Cash-in mode

While finding the products with quality problems, the domestic users can contact our Company directly, and the overseas users can contact our distributors. The distributors will deal with it according to the regulations and it will be effective after confirmed by our company.

Special declaration

If you do not operate the wheelchair according to the instructions, thus cause the damages is not in the range of maintenance and replacement. We hope to gain your understanding!

7.2 The service card of product

<table>
<tr><td>Mode</td><td></td><td>Color of wheelchair</td><td></td></tr>
<tr><td>Proforma Invoice No.:</td><td></td><td>Date of Dispatch</td><td></td></tr>
<tr><td rowspan="2">User’s info.:</td><td>Name:</td><td>Contact Info.:</td><td>TEL:
Mobile;
FAX:</td></tr>
<tr><td colspan="3">Address</td></tr>
<tr><td rowspan="4">The service center</td><td colspan="3">Name:</td></tr>
<tr><td colspan="3">TEL: FAX::</td></tr>
<tr><td colspan="3">Address:</td></tr>
<tr><td colspan="3">Authorized Signature:
Date:</td></tr>
<tr><td>Service Confirmation</td><td colspan="3">The responsible person of service center signature:
Date:

User:
Date:</td></tr>
</table>

[Note]

Please fill in the service card by standard script. It will be effective after seal the common seal of sale shop. Please show the service card and the purchasing invoice to the local service center for maintaining. If there are no repairing departments at local place, please contact the distributors or contact the after-sales center of our company directly。

SPECIFICATION

Overall length	1150mm	**Weight with batteries**	197kg
Overall width	730mm	**Max load capacity**	150kg
Overall height	1370mm	**Max speed**	7.0km/h
Wheel size(front/rear)	ϕ400mm	**Max output rotate speed (for driving motor)**	60rpm
Seat-to-floor height	680mm	**Max mileage**	≈10km
Chassis-to-floor height	105mm	**Operation time**	1-3h
Seat	High-back/Low-back seat 18"/20"	**Charging time**	5-10h
Height of obstacl to Span	<the chassis height	**Brake**	Electromagnetic braking
Stair/curb climbable angle(Max.)	25° Step height< 120 mm,	**Driving Motor**	2 x 750W
Slope climbable angle(Max.)	30°	**Level rack Motor**	1 x 300W
Turning radius	490MM/360°	**Silicone Battery**	12V,33AH ， 4pcs Silicone power battery
Electronics	Level equipment(patent) DYNAMIC Controller	**Drive manner**	Four-wheel drive

OB-EW-001

OB-EW-002

OB-EW-003

OB-EW-020

OB-EW-020-1

OB-EW-030

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