

# TUBE+



Geachte reiziger,

Met uw keuze voor een Tube minischoot heeft u voor ongeëvenaarde zekerheid, kwaliteit, gemak en rijplezier gekozen! Wij wensen u vele comfortabele en veilige kilometers toe en hopen dat u zult genieten van de vrijheid die de Brio u biedt. In deze gebruikershandleiding vindt u alles over de Tube minischoot, van veiligheidsinstructies en bedieningsfuncties tot onderhoudstips.

Graag houden wij u op de hoogte van nieuwtjes, gebruikerservaringen en andere wetenswaardigheden. Op de website [www.skylinemobility.com](http://www.skylinemobility.com) kunt u regelmatig de laatste ontwikkelingen lezen.

Hartelijke groet,  
Skyline Mobility  
*Uw gids in Travel Mobility*

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*Ziet u dit teken in de hand-leiding, dan volgt een aan-vullende instructie. Volg deze instructies altijd op. Nalatigheid kan de werking van de scootmobiel nadelig beïnvloeden en mogelijk lei-den tot lichamelijk letsel of schade aan de scootmobiel, de directe omgeving of het milieu.*

The users need to consult the instructions of the device for information on how to use it properly.

All adjustments can be adjusted by both occupant and assistant. This vehicle is suitable for land and/or air transport.

- Moving of adult disabled persons by self-driving.
- Maximum user weight: 115 kg; Classified in Class B (EN12184).
- Rated slope: 6° (Suitable for indoor and outdoor).
- The product is not intended for visually impaired people.
- The drivers need to be mentally and physically suitable to drive the scooters.
- The fingers need to work functionally.
- The device can't be used by children until age of 12.
- The driving distance will be reduced if the power scooter is used frequently on slopes, rough ground or to climb kerbs.
- The scooter is not for use as a seat in motor vehicle.
- Don't operate your power scooter without completely reading and understanding this user manual!
- Don't operate the scooter with depleted batteries, since the occupant could be stranded. The end user is NOT allowed to change the parameter.
- The occupant can switch off the key to stop the scooter for any emergency stop.
- Please disconnect battery package from the scooter unit before long term storage.

\*\* Notice to the user that any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user is established. \*\*

- Tube should be turned off prior to entering or exiting the seat. Before driving, please make sure that the quick release handle of the scooter is fully locked.
- For detailed product safety notice and product recalls, please contact your local authorized distributor direct. The recall notice should include the following information: Product description, including the name, make, model and any distinguishing features, batch, or serial numbers.

- The power scooter has provision for an anterior pelvis support to be fitted such as belt.
- Environmental conditions may affect the safety and performance of your power scooter. Water and extreme temperatures are the main elements that can cause damage and affect performance.
- Rain, sleet and snow:
  - If exposed to water, your power scooter is susceptible to damage to electronic or mechanical components.
  - Water can cause electronic malfunction or promote premature corrosion of electrical components and frame.
- Temperature:

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

  - The controller can only operate in temperature that range between  $-20^{\circ}\text{C}$  and  $+45^{\circ}\text{C}$ .
  - At extreme low temperatures, the batteries may freeze, and your power scooter may not be able to operate.
  - In extreme high temperatures, it may operate at slower speeds due to a safety feature of the controller that prevents damage to the motors and other electrical components.

The following symbols are used in the scooter to identify warnings, mandatory actions and prohibited actions. It is very important that you read and understand them completely.



Read and follow the information in the instruction manual.



Caution. Observing notes and accompanying documents.

## Scooter Class B

It is classified in category B according to EN 12184.

It is compact, manoeuvrable and not necessarily able to overcome obstacles outdoors.



For ambient conditions.



Protection class II.



Charger IPX0 "Protect from moisture" / Scooter IPX4 "Splashproof".



Does not meet the ISO 7176-19 standard and cannot be used as a seat in a motor vehicle.

Labeling on the product.



Devices for decommissioning the drive system.

Warning: Switch on the drive system again before leaving a user unattended.



Charge the batteries fully before use.

Disconnect battery and the key from an unattended scooter.



Year of manufacture see label on the product.



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The scooter Tube is designed for indoor and outdoor use by adults with limited mobility.  
According to EN 12184, it belongs to category B.  
It is compact, maneuverable, and able to overcome outdoor obstacles. The maximum load is 115 kg.

## Indications

Inability to walk or severe walking disability due to:

- paralysis
- loss of limbs
- extremity defect / deformity
- joint damage (not on both arms) other diseases

A supply with a scooter (or also electric wheelchairs) is indicated when the use of hand-driven wheelchairs is no longer possible due to the disability, but the correct operation of an electric motor drive is still possible.

## Contraindications

The supply of scooters is unsuitable for people:

- with severe balance problems
- with reduced and insufficient eyesight
- with severe cognitive impairments

## Conformity

This mobility meets the requirements of EN 12184: 2014 and the requirements for class I medical devices in accordance with Class I of Regulation MDR (EU)2017/745 annex VIII.



Always use a seat belt and keep your feet on the scooter all the time.



Never operate the scooter while you are under the influence of alcohol.



Never use electronic radio transmitters such as walkie-talkies, or cellular phones.



Do not ride your scooter in traffic.



Do not attempt to climb curbs greater than limitation shown on technical specification.



Do not leave your hands and legs off the scooter when driving.



Make sure that there are no obstacles behind you while reversing your scooter.



Do not make a sharp turn or a sudden stop while riding your scooter.



Do not ride your scooter during snow in order to avoid accidents on slippery roads.



Do not allow unsupervised children to play near this equipment while the batteries are charging.

- Don't operate your scooter for the first time without completely reading and understanding this user manual. Skyline Mobility aanvaardt geen aansprakelijkheid voor schade of letsel veroorzaakt door onachtzaamheid of het niet naleven van de veiligheidsvoorschriften.
- U heeft in Nederland geen rijbewijs nodig om op een scootmobiel te mogen rijden. In bepaalde (medische) situaties is het echter wel aan te bevelen om een rijvaardigheidscursus te volgen, bijvoorbeeld via Veilig Verkeer Nederland.
- Het is in Nederland verplicht om uw scootmobiel minimaal WA\* te verzekeren. *\*WA is een aansprakelijkheidsverzekering die wettelijk verplicht wordt gesteld door de overheid. De schade, die u met uw scootmobiel aan anderen veroorzaakt en waarvoor u wettelijk aansprakelijk bent, wordt vergoed. Dit geldt niet voor de schade die door uw schuld aan uw scootmobiel is veroorzaakt. Een verzekerd voertuig is te herkennen aan een verzekeringsplaatje aan de achterzijde.*
- Rijd niet met uw scootmobiel op de openbare auto(snel) - wegen. U mag in Nederland gebruik maken van de stoep, het voetpad, het fietspad en de rijbaan. U dient zich aan de verkeersregels\* van de betreffende weg te houden. *\*In Nederland gelden op het trottoir de voetgangersregels (max. 6 km/h). Op het zebrapad heeft de scootmobiel net als de voetganger voorrang. Op het fietspad gelden de regels voor fietsen. Gebruik hier uw verlichting in het donker en bij slecht zicht. Dit geldt ook voor de rijbaan.*
- Don't operate scooter on public streets and roadways. Be aware that it may be difficult for traffic to see you when you are seated on the scooter. Obey all local pedestrian traffic rules. Wait until your path is clear of traffic, and then proceed with extreme cautions.
- To prevent injury to yourself or others, always ensure that the power is switched off when getting on or off of the scooter.
- Always check that the drive wheels are engaged (drive mode) before driving. Do not switch off the power when the scooter is still moving forward. This will bring the chair to an extremely abrupt stop.
- Do not use this product or any available optional equipment without first completely reading and understanding these instructions. If you are unable to understand the warnings, cautions or instructions, contact a healthcare professional, the dealers or technical supports before

attempting to use this equipment, otherwise, injury or damage may occur.

- There are certain situations, including some medical conditions, where the scooter user will need to practice operating the scooter in the presence of a trained attendant. A trained attendant can be defined as a family member or care professional especially trained in assisting a scooter user in various daily living activities. Consult with your physician if you are taking any medication that may affect your ability to operate your scooter safely.
- Do not attempt to lift or move a power scooter by any of its removable parts including the armrests, seats or shrouds. Personal injury and damage to the power chair may result.
- Never try to use your scooter beyond its limitations as described in this manual.
- Please do not sit on your scooter while it is in a moving vehicle.
- Keep your hands away from the wheels (tires) while driving scooters. Be aware that loose fitting clothing can become caught in the drive tires.
- Consult your physician if you are taking prescribed medication or if you have any certain physical limitations. Some medications and limitations may impair your ability to operate scooters in a safe manner.
- Be aware when the drive mode is unlocked or locked.
- Don't disconnect battery.
- There is a anti tipper equipped with the scooter.
- Contact with tools can cause electrical shock and do not connect an extension cord to the AC/DC converter or the battery charger.
- Do not attempt to lift or move your scooter by any of its removal parts, such as the armrests, seats, or shroud.
- When climbing an incline, don't drive at an angle up the face of the incline. Drive your scooter straight up the incline. This greatly reduces the possibility of a tip or a fall.
- Don't climb a slope steeper than the scooter's limitation.
- Don't attempt to have your scooter proceed backward down any step, curb or other obstacle. This may cause the scooter to fall or tip.
- Always reduce your speed and maintain a stable center of gravity when cornering sharply. Don't corner sharply when driving scooters at higher speeds.

- Operating in rain, snow, salt, mist conditions and on icy or slippery surfaces may have an adverse affect on the electrical system.
- Never sit on your scooter when it is being used in connection with any type of lift or elevation product. Your scooter is not designed with such use in mind and any damage or injury incurred from such use is not the responsibility of Heartway.
- Surfaces of the power scooter that can come into direct contact with the occupant's skin and/or assistant's skin during normal use and that are within occupant reach shall not exceed 41°C. The motor surface can reach temperatures greater than 41°C after driving. Do not touch these parts when disassembling the scooter or wait until the motor is cooled down.
- The programming of the controller shall only be carried out by personnel, which is authorized by his manufacturer. A wrong programming can result in safety hazards for the occupant!
- Drive-wheel needs to be switched to engaged-mode while transporting the power scooter with a car or airplane.
- Surface temperatures can increase when exposed to external sources of heat.
- Can only go up obstacles in the direction of progress. Forward & backward obstacle with run up.

Manufacturer has designed and engineered to provide a maximum utility. However, under no circumstances should you modify, add, disconnect battery, or disable any part or function of your power scooter. Personal injury and damage to the power scooter may result.

- Do not modify your power scooter in any way not authorized by distributor/manufacturer. Do not use accessories if they have not been tested or approved for this product. Changing of controller parameter shall be only performed by authorized technicians due to the safety concern.
- Get to know the feel of your power scooter and its capabilities. We recommend that you perform a safety check before each use to make sure your power scooter operates safely.

## Inspections prior to using your power scooter

- If equipped with pneumatic tires, please check for proper tire inflations.
- Please check all electrical connections and make sure they are tight and not corroded.
- Please check all harness connections and make sure they are secured properly.
- Please check the brakes.

## Weight limitation

- Please refer to the specifications table for weight capacity information. Power scooter is rated for a maximum weight capacity.
- Stay within the specified weight capacity for your scooter. Exceeding the weight capacity voids your warranty.
- Manufacturer will not be held responsible for injuries or property damage resulting from failure to observe weight limitations.
- Don't carry passengers on scooters.
- Carrying passengers on scooter may affect the center of gravity, resulting in a tip or a fall.

## Tire inflation

- If your scooter is equipped with pneumatic tires, it is necessary to check the air pressure at least one time a week.
- Proper inflation pressures will prolong the life your tires and ensure the smooth operation while riding.
- Inflating your tires from an unregulated air source could over inflate them, resulting in a burst tire.

## Temperature

- Some of the parts of the power scooter are susceptible to change in temperature. The controller can only operate in temperature that ranges between -20°C ~ 45°C.
- At extreme low temperatures, the batteries may freeze,

and your power scooter may not be able to operate. In extreme high temperatures, it may operate at slower speeds due to a safety feature of the controller that prevents damage to the motors and other electrical components.

- The scooter can generally be operated at outside temperatures from  $-10^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$ .
- Some parts of the scooter tend to be temperature dependent. The controller works best at temperatures between  $25^{\circ}\text{C}$  and  $45^{\circ}\text{C}$ .
- Below  $-15^{\circ}\text{C}$  the batteries can freeze and the scooter may not work.
- At extremely high temperatures  $> 45^{\circ}\text{C}$ , the safety function of the control, which prevents damage to the motors and other electrical components, can lead to slower maximum speeds.

### Electromagnetic interference (EMI)

The rapid development of electronics, especially in the area of communications, has saturated our environment with electromagnetic (EMI) radio waves that are emitted by television, radio and communication signals. These EMI wave are invisible and their strength increases as one approach the source. All electrical conductors act as antennas to the EMI signals and, to varying degrees, all power scooters and scooters are susceptible to electromagnetic interference (EMI). The 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 scooter like the Tube. Power scooters may as susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy emitted from sources such as radio stations, TV stations, amateur radio (HAN) transmitter, two-way radios, cellular phones and alarm systems of shops. The interference (from radio wave sources) can cause the power scooter to release its brakes, move by itself or move in unintended directions. It can also permanently damage the powered scooter's control system. The intensity of the EM energy can be measured in volts per meter (V/m). Each powered scooter can resist EMI up to a certain intensity. This

is called “immunity level”. The higher the immunity level the greater the protection. At this time, current technology is capable of providing at least 20 V/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 scooter movement that could result in serious injury:

- Do not turn on hand-held personal communication devices such as citizens band (CB) radios and cellular phones while the powered scooter 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 scooter off as soon as it is safe.
- Be aware that adding accessories or components, or modifying the powered scooter, may make it more susceptible to interference from radio wave sources. (Note: It is difficult to evaluate the effect on the overall immunity of the powered scooter)
- Report all incidents of unintended movement or brake release to the powered scooter manufacturer, and note whether there is a radio wave source nearby.



## Product safety notice and product recalls

For detailed product safety notice and product recalls, please contact your local authorized distributor direct. The recall notice should include the following information: product description, including the name, make, model and any distinguishing features, batch, or serial numbers.

## Turn off your powered scooter as soon as possible when experiencing the following:

- Unintentional scooter movements.
- Unintended or uncontrollable direction.
- Unexpected brake release.

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

 *The scooter itself can disturb the performance of the electromagnetic fields such as emitted by alarm systems of shops.*

- The driving performance of the scooter can be influenced by electro magnetic fields.

Tube seat is tested according to EN 1021 regarding resistance to ignition, but it is recommended to avoid the use of flame near the power scooter and of smoking during sitting on the power scooter.

 *The stability tests were performed in the least stable positions of the seat (height and front/rear position).*

The distance will be reduced if the wheelchair is used frequently on slopes, rough ground or to climb the kerbs.

 *The stopping distance on the slope can be significantly greater than on the level ground.*

### **Indication/ Intended Purpose:**

- Considerable to pronounced limitation of mobility/walking abilities/structural and/or functional damages the lower extremities (including amputation, consequences of injuries, musculoskeletal).
- Severe impairment of strength and grasping capabilities
- Sufficient orientation and coordination capabilities
- Ensuring mobility indoors as well as outdoors (access to neighborhood and handling of routine errands)

<b>Tube+ Technische Specificaties</b>	
Banden	Antilek (PU)
Wielmaat voor	20 x 5 cm (8")
Wielmaat achter	23 x 7 cm (9")
Formaat	84 (l) x 52 (b) x 89-98 cm (h)
Formaat compact*	84 (l) x 52 (b) x 66 cm (excl. zitting: 51,5 cm) (h)
Gewicht	25 kg / 20,5 kg (excl. zitting)
Accu specificaties	24 V / 11,5 Ah / lithium batterijen
Max. gewicht bestuurder	115 kg
Maximale actieradius	14 km**
Maximale snelheid	6 km/h
Lader specificaties	110-240 V / 2,5 A / Li-ion
Laadtijd	5 uur (volledige lading)
Controller specificaties	S-Drive 45 A
Motor specificaties	270 W / electromagnetische rem
Rughoogte	33 cm
Zittingbreedte	39 cm
Zittingdiepte	34 cm
Zithoogte (vanaf grond)	54 / 59 cm
Hoogte voetsteunen	26 cm
Bodemvrijheid	6 cm
Max. obstakelhoogte	5 cm
Draaistraal	95 cm
Wielbasis	53,5 cm
Stuurhoogte	Verstelbaar (bereik: 9 cm)
Vering	Niet aanwezig
Maximale hellingshoek	6°
Gebruik	Binnen en buiten op vlakke ondergronden
Temperatuur	-10°C tot +45°C (Indoor laden: 10°C tot 40°C)
Spatwaterdicht	IPX4 (excl. lader)
Voldoet aan	EN 1218421 klasse B (MDR proof) / ISO 7176-14, 21
Transport	Niet geschikt als zitplaats in een motorvoertuig!
Markering	CE / FDA / EMC gekeurd
MSDS rapport***	Zie bijlage in gebruikershandleiding

\* Afmeting met geroteerd stuur en neergeklapte rugleuning.

\*\* O.a. afhankelijk van snelheid, rijstijl, bandenspanning, type ondergrond, hellingshoek, temperatuur, gewicht van bestuurder en conditie van batterijen.

\*\*\* Material Safety Data Sheet: ter inzage voor cruise- of luchtvaartmaatschappijen.

## Folding steering



1. Pull up release handle



2. Press down release handle



3. Push left release handle



4. To forward to fold the steering



## Unfolding steering



1. Lift up the steering



2. Push left release handle



3. Pull up release handle



4. Press down the release handle to make lock .



-  *If you need to release the handle, please turn off the power of the electric scooter first.*
-  *For any mechanical adjustment on the tiller or on the seat, be aware of trapping and squeezing of your fingers.*
-  *Do not lift the scooter on your own if it is too heavy for you. Ask for assistance.*
-  *Never open the battery box.*
-  *If you have any question, please contact your local authorized dealer or technical supports for further support and assistance.*
-  *The power scooter needs to be folded properly before any transporting.*

### Storage

Your power scooter should be stored in a dry place, free from temperature extremes. When storing, disconnect the batteries from the power scooter. If you fail to store the unit properly, the frame can rust and the electronics can be damaged.

Please disconnect battery package from the scooter unit before longterm storage.

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.

If you plan on not using your power scooter for an extended period of time, it is best to fully charge its batteries prior to storage.

## Disconnect the batteries from the scooter

- Store your power scooter in a warm, dry environment.
- Avoid storing your power scooter where it will be exposed to temperature extremes.
- Operating conditions and storage conditions (-10°C ~ +45°C)
- Make sure the batteries are fully charged before use after longterm storage

## Operation



The power scooter is simple to operate. However, we recommend that you read carefully the following instructions to become familiarized with your new vehicle. Please do not operate this power scooter if it is behaving abnormally or erratically.

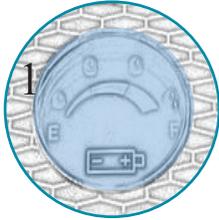
The following operation can be carried out either by assistant or occupant.

Before you turn the power on, always be aware of the environment that surrounds you to select your desired speed. For indoor environments we recommend that you select the slowest 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 steps are required to operate your vehicle safely with the controller.

## Button functions

Insert the key and rotate it clockwise to power on the scooter. To turn off the scooter rotate the key anti clockwise.



### 1. Battery indicator

When the scooter is turned on, the LED lights on the meter will light up in sequence from left to right. When the battery is slowly exhausted, the LED lights will turn off in sequence from right to left, and the charging will be indicated at the precise time Status, when all four LED lights are on, the battery is fully charged. When the LED lights turn off in sequence, your battery will lose power, but you still have power to spare. When the battery symbol on the meter flashes blue, your battery is low and needs to be recharged (see "Battery and Battery charging" section).



### 2. High/low speed adjustment

This allows you to pre-select your desired speed. The adjuster is proportional to speed and can be set anywhere between minimum and maximum. Turn the adjuster knob counter-clockwise to minimum for a very gentle operation, and clock wise towards maximum to increase your speed.



### 3. Power ON/OFF light

The light will turn on if you insert the key. The light will turn off if you takeout the key.



### 4. Horn button

Press this button to sound the horn.  
(Easy operation for left hand or right hand.)



### 5. Headlight/taillight switch

Press the button to " I " , will turn on the headlights and taillights at the same time ; Press the button to " O " will turn off the headlights and taillights at the same time.

## Driving

### Controller ON/OFF switch

Insert the key to power on the scooter (disconnect battery the key to power off). Swing the finger lever control forward or backward to control the driving direction of the scooter (the finger lever control is located at both sides of the controller and the returning of the finger lever control to its neutral position (center), will reduce the speed and stop the vehicle by automatically applying the electro-magnetic brakes.

### Speed control

Turn the adjuster knob clockwise towards maximum to increase your speed, and counter-clockwise toward minimum to slow down your speed.

### Finger lever control

The finger lever control can also control the speed of your vehicle. The deeper you press on the finger lever (forward / backward), the faster the vehicle will go.

-  *After inserting the key into controller ON/OFF port, the light of power ON/OFF will turn on for a few seconds during self-checking process.*
-  *When the vehicle is in operation, the surface of the charger will become slightly warm.*
-  *In case of emergency, let go of the finger lever control and the vehicle will come to a stop.*
-  *DO NOT touch the rear shroud while driving. It may be hot.*

De accu-indicator op het bedieningspaneel toont de resterende accucapaciteit:

Accu-status	
Signaallampje	Indicatie
Groen	De batterijen zijn vol.
Oranje	Bij voorkeur nu opladen.
Rood	De scootmobiel z.s.m. opladen.

## Control panel

The control panel display is a multifunction visual display. It can provide a lot of information of the vehicle.

When the battery indicator falls into the red sector, your batteries are low on power and need to be recharged. It is wise to recharge your batteries when the battery indicator enters the red zone. The remaining battery indicator only goes lower when using the battery, regardless the battery voltage.

System will power off when the battery voltage is lower than 21.0V.

System will be automatically power-off when the vehicle is not in use over 30 minutes. You need to disconnect battery the key and insert the key to restart the scooter.

## Brake & battery-connection

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” so the scooter can be moved without turning it on. Free-wheeling is accomplished by adjusting the free-wheeling switch to the free-wheeling position.

Engaging in freewheel mode will have the function as parking brake.

-  *Free-wheel your power scooter on a slope.*
-  *Never free-wheel the motors while operating your vehicle.*
-  *Always remember to engage the motors before turning the power ON.*
-  *Please turn off the power before folding/unfolding steering of miniscooter.*



In case the switch is turned to FREE-WHEEL mode (accidentally) while driving, the error code will be activated to remind the user to stop driving. However, the scooter will not stop operation automatically while the user switch the DRIVE mode to FREE-WHEEL mode accidentally.

## Electromagnetic brakes

Your power scooter comes with Electromagnetic Brakes, i.e. an automatic magnetic disc safety brake which is also known as Fail-Safe brake. The electro-magnetic Brakes are automatic and work when the power scooter is ON but in a steady state (i.e. Wigwag is released to the neutral position), even when the scooter is on a slope. The Electromagnetic Brakes will also be set whenever the power scooter is OFF, but the motor levers are in the engaged (vertical) position.

## Parking brake

There is an automatic parking brake function included in the electromagnetic brake. The scooter will stop when the motor is engaged and the power switch is off or when the power switch is on and the wigwag is in the neutral position. If the scooter is in the free wheel mode (motor is disengaged), you can use the manual parking brake function by moving the engaging/disengaging lever back into the engaged position by an attendant.

## Thermal protection

Your power scooter controller is equipped with a safety system called thermal rollback. A built-in circuit monitors the temperature of the controller and motor.

In case of excessive heat of the controller and motor, the controller will cut-off the power to allow the electrical components to cool down. Although your power scooter will resume its normal speed when the temperature returns to a safe level, we recommend to wait for 5 minutes before restarting to allow the components to cool down.

## Remmen

Uw scootmobiel is voorzien van een electromagnetisch remsysteem (ook wel anti-rollback genoemd). Dit remsysteem werkt automatisch als de duimgashendels in de neutrale stand staan (dus niet ingedrukt zijn) en wanneer de scootmobiel is uitgeschakeld. Wel zo handig als uw scootmobiel op een helling staat!

**!** *Als u in een noodgeval moet stoppen, dient u de gashendels los te laten.*



Vrijloophendel omhoog:  
- met de hand verrijdbaar  
- rem is **NIET** ingeschakeld!



Vrijloophendel omlaag:  
- elektrische rij-stand  
- rem is **WEL** ingeschakeld!

## Vrijloop

Uw scootmobiel is uitgerust met een rode handmatige vrijloophendel die, wanneer ingeschakeld, het mogelijk maakt om de scootmobiel voort te duwen.

- Duw de vrijloophendel naar boven om de scootmobiel met de hand te verrijden.
- Duw de vrijloophendel naar beneden voor de elektrische rij-stand. **Wen uzelf deze handeling aan na elk gebruik van de vrijloophendel.**

**!** *Als u uw scootmobiel in de vrijloop (duw-stand) zet, zijn de remmen **niet** ingeschakeld. Neem dan geen plaats op de scootmobiel!*

**!** *Gebruik de vrijloop-stand nooit op een helling of tijdens het rijden. De rem is dan buiten werking.*

**!** *Duw de vrijloophendel na elk gebruik van de vrijloophendel naar beneden om de rem weer in te schakelen.*

**!** *Tijdens transport in auto of vliegtuig dient de rijstand (vrijloophendel naar beneden) te zijn ingeschakeld.*



- ! *DO NOT operate this scooter with depleted batteries since the occupant could be stranded.*
- ! *Please Disconnect battery the battery package from the scooter unit before long term storage.*
- ! *Forbidden! Although the travel scooter has passed the required IPX4 water spray test requirements, keep electrical connections away from sources of moisture, including direct exposure to water or body fluids, and incontinence. Check the electrical components frequently for signs of corrosion and replace if necessary.*

! *The charger should only be used in a dry interior.*

! *Protect from moisture and wetness.*

Depending on the use, terrain and driving conditions, the batteries will provide a range of 15 km of travel. However, even if the power scooter is not in use, we recommend that the batteries are charged periodically.

! *Do not use any automotive batteries. They are not designed to handle a long, deep discharge and also are unsafe for use in power scooter.*

The useful life of a battery is quite often a reflection of the care it receives.

### Battery charger

The battery charger takes the standard wall outlet voltage (alternating current) and converts it into DC voltage (direct current).The batteries use direct current to run your power-scooter. When the batteries are fully charged, the amperage from the charger is almost at zero. This is how the charger maintains a charge but does not overcharge the battery.

- ! *The batteries cannot be charged if they were discharged to nearly zero voltage.*
- ! *The power scooter meet the requirement of ISO7176-14:2008 and ISO7176-21:2009.*
- ! *Only use the battery charger type which was provided by the supplier.The use of any different type of charger can be hazardous and need the approval of the manufacturer.*

## Operation procedures

- Attention! Connect charger first to AC power before connecting the battery to the charger. Plug into AC mains the “power on” indicator will be on and the “Status” indicator will be GREEN, then connecting the battery pack to charger.
- During charging, the “Status” indicator turns on RED. When full, it turns on GREEN.
- To avoid the case of failed battery pack, when the charger stays in pre-charge stage longer than 5 hours, it will stop charging and the “Status” indicator will be pulsed with a one second to indicate pre-charge error.
- During charging, user can Disconnect battery from charger any time as he/she wants.

Users also could start to charge the battery at any time.

LED 1	LED 2	Indicators
OFF	ON	Condition Power On (Power on by plugging in AC source and without battery) Flashing in three times then ON
ON	OFF	Constant Current Mode
ON	OFF	Constant Voltage Mode
ON	ON	Battery Fully Charged (Terminate Current $\leq 300 \pm 100\text{mA}$ )
Slow Flash	OFF	Pre-Charged Mode
Red and Green LEDs Flash synchronous		Pre-Charged Mode Fail
Red and Green LEDs Quickly Flash alternately		Over Voltage, Over Current, CC CV Mode Current Fail

The charger is able to determine the best cut-in point where the charging process is starting to.

- In case of problems, please check battery pack and repeat above steps. If problem persist, please contact manufacturer for assistance.

## Check before Proceeding:

- Make sure battery pack is compatible with The charger before connecting.
- The 3-pin connector of the output cable is pre-set at the factory. Do not swap their connections which may cause serious hazards.
- The charger is designed for use only with lithium battery packs and is not recommended for use with other battery packs.
- The charger is a precise tool and should be kept away from high power EMI radiating devices.

**Attention: Never use this charger to charge a non-rechargeable battery.**

-  *Always charge your batteries in well ventilated areas.*
-  *The charger is intended for indoor use only. Please protect it from the moisture.*
-  *For maximum performance if the battery is low, it is recommended that you charge the battery.*
-  *If the power scooter will not be used for a long period of time, arrange to have the batteries recharge at least once every month to avoid deterioration of the batteries.*

Can we use a different charger? Please understand that chargers are selected specifically for particular applications and matched to the type and size of specific batteries. In order to charge your power scooter safely and efficiently, we recommend use of the charger supplied as original equipment with your Heartway product only. Any charging method resulting in batteries being charged individually is prohibited.

According to the battery type and condition of the batteries, batteries usually can be fully charged in 4-10 hours.

This will be indicated when the status light in the battery charger side panel turns green. Charging the battery longer than necessary will not harm the battery.

We recommended that you charge the batteries for 8 to 10 hours after daily use. Do not charge the batteries for more than 24 hours.

Note: There is a battery circuit diagram labeled on the frame. Please refer this diagram before you assemble the battery.

-  *Read through the charger operating instruction before using it.*
-  *Make sure you charge the battery every time after you use the power scooter or scooter.*
-  *If the charger indicates red light, please kindly check if the charger is defected or if the cable wiring connection is poor.*



*Please keep the battery terminals clean other wise the charging condition will be poor.*

## **Caution on usage of Lithium Ion pack (or soft pack)**

### **Handling at assembly**

- In case of adding strong shock to battery or dropping battery, do not use the battery.
- In case of distorting battery, do not use the battery.
- To prevent from ESD under appropriate work environment and by workers.

### **Storage**

- It shall be kept in shipping condition (within 40% ~ 60% SOC or 25V ~ 26V voltage range) for long period.
- It is recommended to inspect the battery pack every 6 months to ensure battery pack is at the best status for long term storage. If battery pack is out of the storage condition, specified in 1), it shall be charged or discharged to the recommended storage condition.
- It shall be kept in dry condition of low humidity, especially be free from high temperature.
- Do not storage the battery near heat sources, nor in a place subject to direct sunlight to storage in warehouse.

### **Prohibition clause**

- Do not throw the battery into fire, nor heat the battery.
- Do not disassemble nor modify the battery Pack.
- Do not leave the battery in a place of high temperature. (45°C or more)
- Do not immerse battery in water, or leaving in high moisture.
- Do not add strong shock, nor drop the battery.
- Do not solder lead directly to the battery body.
- Do not heat nor solder the terminals of the battery.

## Controle

Uw scootmobiel heeft minimaal onderhoud nodig. Maar zoals elk gemotoriseerd voertuig adviseren wij ook enkele onderhoudschecks uit te voeren. Breng 1 keer per jaar de vouwscoot naar een gekwalificeerde scootmobielmonteur voor een servicebeurt. Preventief onderhoud voorziet in de controle op het goed en juist functioneren van alle bewegende delen, alsmede de elektronica en de conditie van de batterijen.

In de onderstaande matrix zijn de onderdelen aangegeven die regelmatig gecontroleerd moeten worden.

Controle- en onderhoudsmatrix				
Onderdeel	Actie	Dagelijks	Maandelijks	Halfjaarlijks
Lader	Controleren op werking	X		
Batterijen	Check capaciteit	X		
	Volledige oplaadcyclus		X	
	Check corrosie op polen			X
Banden	Check bandenspanning	X		
	Controleren op slijtage		X	
Behuizing en frame	Reinigen met vochtige doek en niet-schurende reiniger		X	
Verbindingen	Controleren op slijtage, breuk of blootliggende draden		X	
Scootmobiel	Servicebeurt			X

Als er een gebrek is ontstaan, kunt u een gekwalificeerde scootmobielmonteur inschakelen om dit te verhelpen. Deze monteurs beschikken over de benodigde kwalificatie en gereedschappen om het een en ander veilig en correct uit te voeren. Waarbij alleen de originele Skyline Mobility onderdelen mogen worden gebruikt. Zo heeft u nog lang plezier van uw Tube minischoot.

-  *Als het profiel van de banden minder is dan 1 mm moeten de wielen vervangen worden.*
-  *Als het vermogen van de accu terugloopt, komt het einde van de levensduur in zicht. U dient de batterij dan zo snel mogelijk te vervangen.*

## Reinigen

- Verwijder lichte verontreiniging van de bekleding met een oplossing van mild reinigingsmiddel en warm water.
  - Schrob de bekleding voorzichtig met een zachte borstel wanneer de verontreiniging in de bekleding is getrokken.
  - Reinig de behuizing met een niet-schurende reiniger.
  - Zet de behuizing in een niet-schurende autowas.
  - Als de polen van de batterij gecorrodeerd zijn, veeg deze dan schoon met een droge doek.
  - Houd de wielen vrij van zand, haar en ander vuil.
-  *Gebruik geen bleek- of oplosmiddelen.*
  -  *Gebruik geen hogedrukreiniger om de scootmobiel te reinigen.*

## Batterijen

-  *Om de levensduur te maximaliseren dient u voor gebruik de lithium batterijen volledig op te laden.*
-  *Laad uw scootmobiel met enige regelmaat op.*
-  *Accu's kunnen gevaarlijk zijn. Laat uw accu's uitsluitend installeren en onderhouden door een gekwalificeerde scootmobielmonteur.*
-  *Als u de scootmobiel een tijdje niet gebruikt, disconnect deze dan in volledig geladen toestand. Laad uw accu elke maand een keer op om verslechtering te voorkomen.*

-  *Vermijd opslag van batterijen bij extreem hoge of extreem lage temperaturen.*
-  *Berg uw scooter bij voorkeur op in een ruimte met een lage temperatuur (< 30°C) en een laag luchtvochtigheidsgehalte. Dit is beter voor uw batterijen en dit voorkomt eveneens schimmelvorming en verslechtering van de gepolsterde delen.*

### Controller

Uw scooter is uitgerust met een S-Drive controller. Deze computer bewaakt het systeem van de scooter. Als de controller een probleem detecteert, wordt dit weergegeven door het aan/uit indicatielampje. Iedere foutmelding heeft een eigen codering. Door het tellen van het aantal flikkeringen kunt u de scootmobielmonteur van de juiste informatie voorzien.

## Garantie

Op uw nieuwe scootmobiel geldt een garantieperiode van 2 jaar (accu: 1 jaar).

Buiten de garantie vallen gebreken ontstaan door: niet in acht nemen van gebruiks- en onderhoudsvoorschriften, anders dan normaal gebruik, slijtage (koolborstels, banden, zitting, batterijen e.d.), onachtzaamheid, overbelasting, ongeval door derden, toegepaste, niet originele onderdelen en gebreken waarvan de oorzaak is gelegen buiten het product (zoals brand- en waterschade).

Met deze garantie vervalt elke andere garantie; in de wet bepaald, of mondeling meegedeeld, behoudens dat wat door Skyline Mobility schriftelijk wordt gegarandeerd.

Garanties gelden uitsluitend binnen de EU.

## Afdanken van product en verpakking

Alle onderdelen van uw scootmobiel zijn recyclebaar. In de meeste gevallen kunt u gewoon terecht bij uw lokale afvalinzamelingspunt. Uw winkelier is eveneens bekend met de inzamelpunten voor het afdanken van de scootmobiel.

Vanuit milieuoogpunt adviseren wij om de verpakking en de scootmobiel zoveel mogelijk gescheiden af te voeren, zodat de gebruikte materialen efficiënt gerecycled kunnen worden.

Deze handleiding is met de grootst mogelijke zorg samengesteld en is gebaseerd op de informatie zoals bij Skyline Mobility bekend op het moment van verschijnen. Skyline Mobility neemt geen verantwoordelijkheid voor eventuele fouten in de tekst of gevolgen daarvan.

De informatie in deze handleiding is van toepassing op de standaard uitvoering van het product. Skyline Mobility neemt geen verantwoordelijkheid voor eventuele schade ontstaan door wijzigingen in of aanpassingen op het product na het moment van eerste verkoop. Tevens kan Skyline Mobility niet aansprakelijk gesteld worden voor schade door werkzaamheden door derden.

De informatie in deze handleiding mag op geen enkele manier vermenigvuldigd en/of openbaar gemaakt worden, zonder de voorafgaande schriftelijke toestemming van Skyline Mobility.

De door Skyline Mobility gebruikte handelsnaam en handelsmerken mogen krachtens de handelsnaamwet niet als vrij worden beschouwd.

Aan deze tekst kunnen geen rechten worden ontleend. Wijzigingen voorbehouden.

Skyline Mobility BV – Alle rechten voorbehouden

## Material Safety Data Sheet (MSDS) for passengerships and airlines.



SDS ID: EBP28A103AC1

## SAFETY DATA SHEETS

**Section 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Product Identification: Rechargeable Lithium Battery Module  
Rechargeable Battery Pack : 7S4P  
Customer Model Name: Rechargeable Lithium Battery Module  
Customer P/N: 77172628, 77172639, 77172642, 77172646, 77172656, 77172655  
Product Manufacturing Place: Taiwan

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of product: Application of LEV

**1.3 Details of the supplier of the safety data sheet**

Manufacturer: STL Technology Co., Ltd.  
Address: No. 1, West 15th Street, Cianjhen Dist. Kaohsiung, 806011 Taiwan, R.O.C.  
Telephone number: +886-7-8411501  
FAX: +886-7-8111314

**1.4 Emergency phone number:**

Call CHEMTREC  
Domestic North America 1- 800-424-9300  
International, Call 1-703-741-5970

**Section 2. Hazard(s) Identification**

**2.1 GHS Classification Categories:** Not applicable with normal use.

**2.2 Classification of the substance or mixture.****2.1.1 Preparation Hazards and Classification:**

The product is a Lithium ion battery and is therefore classified as an article and is not hazardous when used according to the recommendations of the manufacturer. The hazard is associated with the contents of the battery. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the cell in the battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. If the cell in the battery is compromised and starts to leak, based upon the battery ingredients, the contents are classified as Hazardous.

**2.1.2 Hazard Summary:**

**Physical hazards:** Not classified for physical hazards.

**Health hazards:** Not classified for health hazards.

**Environmental hazards:** Not classified for hazards to the environment.

**Specific hazards:** Exposure to contents of an open or damaged cell or battery: contact with this material will cause burns to the skin, eyes and mucous membranes.

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May cause sensitization by skin contact.

**2.2 Label elements****2.3 Other Hazards**

**2.3.1 Appearance, Color and Odor:** Solid object with no odor.

**2.3.2 Primary Routes(s) of Exposure:** thermally, electrically or physically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

**2.3.3 Potential Health Effect(s):**

**2.3.3.1 Acute (short term):** see Section 8 for exposure controls.

In the event that this cell or pack has been ruptured, the electrolyte solution contained within the cell would be corrosive and can cause burns to skin and eyes.

**Inhalation:** Inhalation of materials from a sealed cell is not an expected route of exposure. Vapors or mists from a ruptured cell may cause respiratory irritation.

**Ingestion:** Swallowing of materials from a sealed cell is not an expected route of exposure.

Swallowing the contents of an open cell can cause serious chemical burns to mouth, esophagus, and gastrointestinal tract.

**Skin:** Contact between the cell and skin will not cause any harm. Skin contact with the contents of an open cell can cause severe irritation or burns to the skin.

**Eye:** Contact between the cell and the eye will not cause any harm. Eye contact with the contents of an open cell can cause severe irritation or burns to the eye.

**2.3.3.2 CHRONIC (long term):** see Section 11 for additional toxicological data.

**2.3.4 Medical Conditions Aggravated by Exposure:** Not Available.

**2.3.5 Interactions with other chemicals:** Immersion in high conductivity liquids may cause corrosion and breaching of the cell or battery enclosure. The electrolyte solution inside of the cells may react with alkaline (basic) materials and present a flammability hazard.

**2.3.6 Potential Environmental Effects:** Not Available.

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## Section 3. Composition/information on ingredients

**3.1 Substance:** Lithium Ion Battery

**3.2 CAS number:** Not specified

**3.3 Cases:** ABS · not dangerous

**3.4 Printed Circuit Board Assembly :** Not dangerous

**3.5 Lithium Ion Cell:** US18650NC1/Murata/2750mAh

The battery should not be opened or burned since the following ingredients contained within the battery that could be harmful under some circumstance if exposed or misused.

The cell contains neither metallic lithium nor lithium alloy.

Cathode	: Lithium Nickel Cobalt Oxides	(active material)
	Polyvinylidene Fluoride	(binder)
	Carbon Black	(conductive material)
Anode	: Graphite	(active material)
	Styrene-butadiene rubber / Carboxymethyl cellulose sodium salt	(binder)
Electrolyte	: Organic Solvent	(non-aqueous liquid)
	Lithium Salt	
Others	: Heavy metals such as Mercury, Cadmium, Lead, and Chromium are not used in the battery.	

## Section 4. First-aid measures

## 4.1 Description of first aid measures

The hazardous components of this cell or battery are contained within a sealed unit. The following measures are only applicable if exposure has occurred to components when a cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. The hazardous contents are caustic alkaline electrolytes contained in cells with lithium metal oxide cathodes, graphite and carbon anodes and Polyvinylidenfluoride binders.

**Inhalation:** Not anticipated. If battery is leaking, contents may be irritating to respiratory passages.

Remove to fresh air. Contact physician if irritation persists.

**Skin:** Not anticipated. If battery is leaking, irrigate exposed skin with copious amounts of clear, tepid water for at least 15 minutes. If irritation, injury or pain persists, consult a physician.

**Eye Contact:** Not anticipated. If battery is leaking and material contacts eyes, flush with copious amounts of clear, tepid water for at least 30 minutes. Contact physician at once.

**Ingestion:** Not anticipated. Consult a physician immediately for treatment.

## PROTECTION FOR FIRST

**AIDERS:** Do not enter corrosive vapor contaminated areas without a respirator or Self Contained Breathing Apparatus. Wear adequate personal protective equipment as indicated in Section 8.

**FIRST AID FACILITIES:** Eye wash bottle, fountain, safety showers or at least a source of running water are required in the area where the product is used.

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### 4.2 MOST IMPORTANT SYMPTOMS & EFFECTS, ACUTE & DELAYED, CAUSED BY EXPOSURE:

**ACUTE:** The contents of the battery are rated as corrosive. Ingestion of the electrolyte could lead to severe gastrointestinal tract irritation with nausea, vomiting and potentially burns. Inhalation of vapors may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing. Eye contact may lead to severe eye irritation or in worst case scenario irreversible damage and possible eye burns. Skin contact may lead to irritation and possible skin burns.

**CHRONIC:** Skin contact may aggravate/exacerbate existing skin conditions, such as dermatitis. Chronic inhalation may lead to the same symptoms as listed for acute inhalation above.

### 4.3 Indication of any immediate medical attention and special treatment needed

**ADVICE TO DOCTOR:** Treat symptomatically if the person comes into contact with the corrosive electrolyte liquid contents of a damaged battery.

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

**5.1.1 Suitable extinguishing media:** Dry chemical, carbon dioxide and foam. Water acts as a cooling agent.

**5.1.2 Unsuitable extinguishing media:** Strong oxidizing agents, strong reducing agents, strong acids and strong alkalis. Despite water incompatibility, water is the most effective firefighting tool to control the spread of fire to other cells and batteries and combustibles.

**5.1.3 Explosion Data:** Closed containers may explode, burst, rupture or vent when exposed to temperatures above 120°C (248°F).

### 5.2 Special hazards arising from the substance or mixture:

The interaction of water vapor and exposed lithium hexafluorophosphate (LiPF<sub>6</sub>) may result in the generation of hydrogen and hydrogen fluoride (HF) gas. Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes. Thermal degradation may produce hazardous fumes of lithium, cobalt and manganese, hydrofluoric acid, hydrogen and oxides of carbon, aluminum, lithium, copper and cobalt as well as smoke and irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation.

### 5.3 Advice for firefighters:

In case of fire where lithium-ion cells and batteries are present, flood the area with water. If any cells or batteries are burning, water may not extinguish them, but will cool the adjacent cells or batteries and control the spread of fire. Carbon Dioxide, dry chemical and foam extinguishers may be preferred for small fires, but also may not extinguish burning lithium-ion cells or batteries. Burning cells or batteries will burn themselves out. Virtually all fires involving lithium-ion cells and batteries can be controlled with water. When water is used, however, hydrogen gas may be evolved which can form an explosive

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mixture with air. LITH-X (powdered graphite) or copper powder fire extinguishers, sand, dry ground dolomite or soda ash may also be used. These materials act as smothering agents.

### 5.4 Protective Equipment and Precautions for firefighters:

In case of a fire and the release of hydrogen fluoride, it is critical to protect the skin from any contact. Fire fighters should wear a self-contained breathing apparatus. Burning lithium-ion cells and batteries can produce toxic fumes including hydrogen fluoride (HF), oxides of carbon, aluminum, lithium, copper and cobalt. Volatile phosphorous penta fluoride may form at temperatures above 110°C (230°F). Wear adequate personal protective equipment as indicated in Section 8.

## Section 6. Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures:

6.1.1. As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering. Wear adequate personal protective equipment as indicated in Section 8.

### 6.2. Environmental precautions:

6.2.1. Absorb spilled material with non-reactive absorbent such as vermiculite, clay or earth. Prevent from migration into soil, sewers and natural waterways – inform local authorities if this occurs.

### 6.3. Methods and material for containment and cleaning up:

6.3.1 Evacuate spill area immediately and remove sources of ignition. Do NOT touch spilled material. Cleanup personnel must be trained in the safe handling of this product. Spills may be absorbed on non-reactive absorbents such as vermiculite. Place cells or batteries into individual plastic bags and then place into appropriate containers and close tightly for disposal. Ensure that cleanup procedures do not expose spilled material to any moisture. Immediately transport closed containers outside. Lined steel drums are suitable for storage of damaged cells or batteries until proper disposal can be arranged.

## Section 7. Handling and storage

### 7.1. Precautions for safe handling

- Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods.
- Do not directly heat or solder.
- Do not expose to extreme heat or fire
- Do not mix batteries of different types and brands.
- Do not mix new and used batteries.
- Do not immerse cell or battery in liquids as there is a danger of short circuiting the cells or batteries.
- Do not incinerate the cells or batteries as there is a danger of explosion.

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- Do not use or charge damaged, defective or deformed cells or batteries.
- Keep batteries in non conductive (i.e. plastic) trays.
- This package must be handled with care and a flammability hazard exists, if the package is damaged.
- Do not damage or mishandle this package. If the package is damaged. The package must be inspected and if necessary, batteries must be repacked so as to prevent short circuit.
- Observe good industrial hygiene practices. Wash hands thoroughly after handling.

### 7.2. Conditions for safe storage, including any incompatibilities

**7.2.1. Conditions for safe storage:** Store in a cool, dry, well-ventilated area, out of direct sunlight and away from heat and ignition sources. To minimize any adverse effects on cell and/or battery performance, it is recommended that the cells and/or batteries be kept at room temperature (25°C +/- 5°C). Elevated temperatures can result in shortened cell and/or battery life. Keep out of reach of children. Store away from incompatible materials, see Section 10 of the SDS.

**7.2.2. Incompatibilities:** Water, strong oxidizing agents, strong reducing agents, strong acids and strong alkalis.

**7.3 Specific end use(s):** The Lithium-ion battery pack for this products such as NB · Power tool · E-bike · E-scooter · E-Car · UPS · ESS...

## Section 8. Exposure controls / personal protection

### 8.1. Exposure Control Measures

- 8.1.1. Exposure Limit Values:** Airborne exposures to hazardous substances are not expected when the cells or batteries are used for their intended purposes. Exposure standards are not applicable to the sealed articles.
- 8.1.2. Biological Monitoring:** Not applicable.
- 8.1.3. Control Banding:** Not applicable.
- 8.1.4. Recommended monitoring procedures:** Follow standard monitoring procedures.
- 8.1.5. Derived no-effect level (DNEL):** Not applicable.
- 8.1.6. Derived minimal effect level (DMEL):** Not applicable.
- 8.1.7. Predicted no-effect concentrations (PNECs):** Not applicable

### 8.2. Engineering Controls:

**8.2.1. Engineering Controls:** Special ventilation is not required when using these products in normal use scenarios. Ventilation is required if there is leakage from the cell or battery.

### 8.2.2. Individual Protection Measures

- 8.2.2.1. Eye and Face protection:** Eye protection is not required when handling cells or batteries during normal use. Wear safety glasses/goggles if handling a leaking or ruptured cell or battery.
- 8.2.2.2. Skin (Hand) protection:** Hand protection is not required when handling the cell or battery

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during normal use. PVC gloves are recommended when dealing with a leaking or ruptured cell or battery.

**8.2.2.3. Skin (clothing) protection:** Skin protection is not required when handling the cell or battery during normal use. Wear long sleeved clothing to avoid skin contact if handling a leaking or ruptured cell or battery. Soiled clothing should be washed with detergent prior to re-use.

**8.2.2.4. Respiratory protection:** During routine operation, a respirator is not required. However, if dealing with an electrolyte leakage and irritating vapors are generated, an approved half face inorganic vapor and gas/acid/particulate respirator is required.

**8.2.2.5. Thermal Protection:** Not applicable.

**8.2.2.6. Other Protective Equipment:** Have a safety shower or eye wash station readily available.

**8.2.3. Hygiene Measures:** Do not eat, drink or smoke in work areas. Avoid storing food, drink or tobacco near the product. Practice and maintain good housekeeping.

**8.2.4. Environmental exposure controls:** Avoid release to the environment.

Respiratory Protection	Hand Protection	Eye Protection	Other
			
In all fire situations, use self-contained breathing apparatus.	In the event of leaking or ruptured cells or batteries, wear gloves.	Safety glasses are recommended in case of leaking or ruptured cells or batteries.	In the event of leaking or ruptured cells or batteries, wear protective clothing.

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## Section 9. Physical and chemical properties

State	Solid, Sealed Unit	Upper/lower flammability or explosive limits	Not Applicable
Physical state	Solid object with no odor	Vapor pressure	Not Applicable
Color	Black		
Odor Type	Odorless	Vapor density	Not Applicable
Odor threshold	Not Applicable	Relative density	Not Applicable
pH	Not Applicable	Solubility in Water	Insoluble
Vapor pressure	Not Applicable	Partition coefficient: n-octanol/water	Not Applicable
Melting point/freezing point	Not Applicable	Auto-ignition temperature	Not Applicable
Flash point	Not Applicable	Decomposition temperature	90°C
Evaporation rate	Not Applicable	Kinematic viscosity	Not Applicable
Flammability (solid, gas)	Not Applicable	Particle characteristics	Not Applicable

## Section 10. Stability and reactivity

**10.1 Chemical Stability:** The cells or batteries are stable under normal conditions of use, storage and transport.

**10.2 Possibility of hazardous reactions:** Keep away from water, strong oxidizing agents, strong reducing agents, strong acids and strong alkalis. Reaction of the leaking electrolyte materials with water may produce flammable and explosive hydrogen gas as well as corrosive hydrogen fluoride gas. Hazardous polymerization does not occur.

**10.3 Incompatible materials:** Do not immerse in water or other high conductivity liquids.

**10.4 Hazardous decomposition products:** May decompose to produce hydrogen fluoride, phosphorus oxides, sulfur oxides, sulfuric acid, lithium hydroxide, carbon monoxide and carbon dioxide.

**10.5 Reactivity:** The cells or batteries do not pose any further reactivity hazards other than those listed in the following sub-sections.

**10.6 Conditions to avoid:** Avoid exposing the cells or batteries to fire or temperatures above 80°C. Do not disassemble, crush, short circuit, puncture, immerse in liquid, burn, expose to flame or install with incorrect polarity. Avoid mechanical, physical or electrical abuse.

## Section 11. Toxicological Information

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**11.1. Information on toxicological effects:**

The hazardous components of the cell or battery are contained within a sealed unit. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the cell or battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the battery leaks, is exposed to high temperature or is mechanically, electrically or physically abused/damaged. **The following toxicology data is in respect to if a person comes into contact with the electrolyte.**

**11.2. Acute Toxicity:**

**11.2.1. Swallowed:** The electrolyte contained within the cell or battery is a corrosive liquid. Ingestion of this electrolyte would be harmful. Swallowing may result in nausea, vomiting, diarrhea, abdominal pain and chemical burns to the gastrointestinal tract. During normal usage ingestion should not be a means of exposure.

**11.2.2. Eye:** The electrolyte contained within the cell or battery is a corrosive liquid and it is expected that it would cause irreversible damage to the eyes. Contact may cause corneal burns. Effects may be slow to heal after eye contact. Correct handling procedures incorporating appropriate eye protection should minimize the risk of eye irritation.

**11.2.3. Skin:** The electrolyte contained within the cell or battery is a corrosive liquid and it is expected that it would cause skin burns or severe irritation to the skin if not washed off immediately. Correct handling procedures should minimize the risk of skin irritation. People with pre-existing skin conditions, such as dermatitis, should take extreme care so as not to exacerbate the condition.

**11.2.4. Inhaled:** Inhalation of vapors from a leaking cell or battery is expected to cause severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing.

**11.3. Skin Corrosion/Irritation:** The electrolyte contained within the cell or battery is classified as a corrosive liquid and is expected to exhibit Dermal Corrosivity /Irritation.

**11.4. Serious Eye Damage/Irritation:** The electrolyte contained within the cell or battery is classified as a corrosive liquid and is expected to exhibit serious Damage/Corrosivity.

**11.5. Respiratory or Skin Sensitization:** The electrolyte contained within the cell or battery is not expected to be a skin sensitizer according to OECD test 406, based on the available data and the known hazards of the components. The electrolyte contained within the battery is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.

**11.6. Germ Cell Mutagenicity:** The electrolyte contained within the cell or battery is not expected to be mutagenic according to test such as OECD tests 471, 475, 476, 478 and 479, based on the available data and the known hazards of the components.

**11.7. Carcinogenicity:** The electrolyte contained within the cell or battery is not expected to be a carcinogen. The cathode contains Cobalt and Nickel components. These components are classified as

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IARC 2B – possibly carcinogenic to humans, however they do not pose a threat when contained in the cell or battery sealed unit.

- 11.8. Reproductive Toxicity:** The electrolyte contained within the cell or battery is not expected to be a reproductive hazard according to test such as OECD tests 414 and 421, based on the available data and the known hazards of the components.
- 11.9. Specific Target Organ Toxicity (STOT) – Single Exposure:** The electrolyte contained within the cell or battery is corrosive and is expect to cause respiratory irritation by inhalation. Inhalation of vapors may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing.
- 11.10. Specific Target Organ Toxicity (STOT) – Repeated Exposure:** The cells or batteries are not expected to cause organ damage from prolonged or repeated exposure according to tests such as OECD tests 410 and 412, based on the available data and the known hazards of the components.
- 11.11. Aspiration Hazard:** The cells or batteries are not classified as an aspiration hazard, based on the available data and the known hazards of the components. However, due to the corrosive nature of the product if swallowed, do NOT induce vomiting. If vomiting has occurred after ingestion the person should be observed to ensure that aspiration into the lungs has not occurred and assessed for chemical burns to the gastrointestinal and respiratory tracts.
- 11.12 Information on other hazards:**
- 11.12.1 Endocrine disrupting properties:** Not available.
- 11.12.2 Other information:** No additional data is available

### Section 12. Ecological Information

- 12.1. Ecotoxicity:** The sealed cell or battery does not pose an Ecotoxicity hazard. Cells or batteries under normal use conditions pose no ecotoxicity hazard. In the case of a broken or damaged cell or battery and leakage of the electrolyte, it will react with water and potentially cause damage to flora and fauna if not disposed of properly. See Section 13 of this SDS for proper disposal considerations.
- 12.2. Persistence and degradability:** There is currently no data available.
- 12.3. Bio accumulative potential:** There is currently no data available.
- 12.3.1. Partition coefficient n-octanol/water (log Kow):** Not applicable.
- 12.3.2. Bio concentration factor (BCF):** Not available.
- 12.4. Mobility in soil:** There is currently no data available.
- 12.5. Results of PBT and vPvB assessment:** Not a PBT or vPvB substance or mixture.
- 12.6 Endocrine disrupting properties:** Not available.
- 12.7. Other adverse effects:** Solid cells and batteries released into the natural environment will slowly degrade and may release harmful or toxic substances. Cells and batteries are not intended to be released into water or on land but should be disposed or recycled according to local regulations. See section 13 of this SDS for Disposal Considerations.

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## Section 13. Disposal Consideration:

- 13.1. Waste treatment methods:** Cell and battery recycling is encouraged. Cells and batteries should not be released into the environment, do **NOT** dump into any sewers, on the ground or into any body of water. Do not dispose of in fire. Used cells and batteries should be stored in their original packaging, a plastic bag or with their terminals/contacts taped, to minimize the potential for short-circuiting to occur. Cells and batteries should be fully discharged before being sent for recycling. Do not store used cells or batteries near heat sources, chemicals or food. Do not store or transport used lithium-ion cells or batteries with lead acid batteries as they have different regulatory requirements. Do not break open or damage lithium-ion cells or batteries prior to disposal. Care should be taken at all times to ensure that used cells or batteries are not damaged during storage or transport. Store material for disposal as indicated in Section 7 Handling and Storage
- 13.2. Classification of the waste to comply with Transport Regulations:** Spent lithium-ion cells and batteries are not considered hazardous waste. Lithium-ion cells and batteries involved in a fire may be considered to be hazardous waste and should be classified as such. Damaged lithium-ion cells and batteries are explicitly prohibited from transport by air.
- 13.3. Classification of Packaging materials:** Unsoiled excess packaging should be disposed of according to any applicable recycling regulations and is not considered hazardous waste. Soiled packaging or packaging exposed to the interior of a lithium-ion cell or battery pack should be considered hazardous waste and disposed of according to local hazardous waste rules and regulations.

## Section 14. Transport Information

Nominal Voltage(DCV)	Nominal Capacity(mAh)	Power(Wh)
25.2	11500	289.8

- 14.1 UN number:** UN3480
- 14.2 UN proper shipping name:** Lithium ion batteries
- 14.3 Transport hazard class:** 9
- 14.4 Packing group:** II
- 14.5 Environmental hazards:**  
Marine Pollutant: No.
- 14.6 Special precautions for user**
- 14.6.1** Lithium ion batteries only transport by air in accordance with PI965 at a state of charge (SOC) not to exceed 30 percent of rated design capacity.
- 14.6.2** IATA/IMDG ERG Code: 12FZ

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14.6.3 DOT ERG Code: 147

14.7 Maritime transport in bulk according to IMO instruments: Not Applicable.

**Other information:**

- **IATA(Air):**  
 Packing Instruction: 965  
 Section: IA  
 (Special Provision A88 · A99 · A154 · A164 · A183 · A201 · A206 · A213 · A331 · A334 and A802 may apply depends on content goods of the transport).
- **IMDG(Sea)**  
 Packing Instruction: P903  
 ( Packing Instruction P908 · P909 · P910 · P911 · LP903 · LP904 · LP905 & LP906 and Special Provision 188 · 230 · 310 · 348 · 376 · 377 · 384 & 387 may apply depends on content goods of the transport).
- US Department of Transportation (DOT) 49 code of Federal Regulations [USA] International Civil Aviation Administration (ICAO)
- There is no hazards in accordance with the UN recommendations tests (Manual of Tests and Criteria, Part III, sub-section 38.3)

No	ITEMS	RESULT	REMARKS
1	Altitude Simulation	Pass	
2	Thermal Shock	Pass	
3	Vibration	Pass	
4	Shock	Pass	
5	External Short	Pass	
6	Impact/Crush	Pass	For cell only
7	Overcharge	Pass	
8	Forced Discharge	Pass	For cell only

### Section 15. Regulatory Information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:

##### 15.1.1. International Information

- 15.1.1.1. Montreal Protocol: Not applicable
- 15.1.1.2. Stockholm Convention: Not applicable
- 15.1.1.3. Rotterdam Convention: Not applicable
- 15.1.1.4. Basel Convention: Not applicable
- 15.1.1.5. Marpol Convention: Not applicable

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15.1.1.6. UN Transportation of Dangerous Goods: All cells and batteries have passed the applicable testing.

**15.1.2. United States Federal and State Regulations:**

TSCA Status: All ingredients in these products are listed on the TSCA inventory.

OSHA: These products do not meet criteria as per Part 1910.1200, manufactured article.

SARA EPA Title III: None.

Sec. 302/304: None.

Sec. 311/312: None.

Sec. 313: None.

CERCLA RQ: None.

**15.1.3. EC Classification for the Substance/Preparation:**

These products are not classified as hazardous according to Regulation (EC) No. 1272/2008.

Keep out of the reach of children.

**15.1.3.1. EU Regulations:**

- Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I: Not listed.
- Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II: Not listed.
- Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I as amended: Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1 as amended: Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2 as amended: Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3 as amended: Not listed.
- Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V as amended: Not listed.
- Regulation (EC) No. 166/2006, REACH Article 59(10) Candidate List as currently published by ECHA: Not listed.

**15.1.3.2. EU Authorizations:**

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended: Not listed

**15.1.3.3. EU Restrictions on use:**

- Regulation (EC) No. 1907/2006, REACH Annex XVII
- Directive 2004/37/EC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding: Not listed

**15.1.3.4. Other EU Regulations:**

- Directive 96/82/EC (Seveso II) on the control of major accident hazards involving dangerous substances: Not listed.

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- Directive 94/33/EC on the protection of young people at work: Not listed.

This Safety Data Sheet complies with the requirements of Regulation (EC) No. 1907/2006.

### 15.1.4. Chinese Regulations:

- General Rule for Classification and Hazard Communication of Chemicals (GB 13690-2009):

Specifies the classification, labeling and hazard communication of chemicals in compliance with the GHS standard for chemical production sites and labeling of consumer goods.

- General Rule for Preparation of Precautionary Labels for Chemicals (GB 15258-2009): Specifies the relevant application methods of precautionary labels for chemicals.

Safety Data Sheet for Chemical Products Content and Order of Sections (GB/T 16483-2008)

**15.2. Chemical Safety Assessment:** Not applicable.

### Section 16. Other Information:

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation. This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

End of Safety Data Sheet





# Skyline



*your guide in travel mobility*