

**Empulse™ R20™**

**Supplier:** This manual must be given to the user of this device.

**User:** Before using this device read this entire manual and save for future reference.

**Owner's Manual****Empulse™ R20™**

**Distribuidor:** Este manual debe entregarse al usuario de este dispositivo.

**Usuario:** Antes de usar este dispositivo, lea este manual completo y guárdelo para referencia futura.

**Manual de Instrucciones**

Cada una de las sillas se envía con un manual de instrucciones en inglés. El manual en español y francés está disponible en formato PDF en nuestra página en Internet: [www.SunriseMedical.com](http://www.SunriseMedical.com). Ingrese a la página del producto específico para descargar el manual, o comuníquese con el proveedor autorizado de Sunrise Medical.

**Empulse™ R20™**

**Au Fournisseur:** Ce manuel doit être remis à l'utilisateur de ce dispositif.

**Utilisateur:** Avant d'utiliser cet appareil, lisez l'intégralité de ce manuel et enregistrez pour référence future.

**Manuel d'instructions**

Chaque fauteuil est livré avec un manuel d'instructions en anglais. Les versions en espagnol et en français sont à votre disposition en format PDF sur le site : [www.SunriseMedical.com](http://www.SunriseMedical.com). Veuillez vous rendre à la page de votre produit pour télécharger le manuel dans la langue souhaitée, ou contactez un fournisseur agréé Sunrise Medical.

P/N 254717 Rev. C

Instructions for Use

**EMPULSE™ R20™**  
General Manual

**SUNRISE MEDICAL LISTENS**

Thank you for choosing an Empulse R20. We want to hear your questions or comments about this manual, the safety and reliability of your device, and the service you receive from your Sunrise dealer. Please feel free to write or call us at the address and telephone number below:

**SUNRISE MEDICAL (US) LLC**

Customer Service Department  
12002 Volunteer Blvd.  
Mount Juliet, TN 37122, USA  
(800) 333-4000



[www.SunriseMedical.com/register](http://www.SunriseMedical.com/register)

Be sure to register your device and let us know if you change your address. This will allow us to keep you up to date with information about safety, new products, and options to increase your use and enjoyment of the Empulse R20.

You can register your product at:  
[www.SunriseMedical.com/register](http://www.SunriseMedical.com/register)

**FOR ANSWERS TO YOUR QUESTIONS**

Your authorized dealer knows your device best, and can answer most of your questions about device safety, use, and maintenance.

For future reference, please fill in the following:

Dealer: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Serial #: \_\_\_\_\_ Date/Purchased: \_\_\_\_\_

**ADDITIONAL INFORMATION YOU SHOULD KNOW**

No component of this device was made with Natural Rubber Latex.



**DISPOSAL AND RECYCLING INFORMATION**

When this product reaches the end of its life, please take it to an approved collection or recycling point designated by your local or state government. This product is manufactured using a variety of materials.

Your product should not be disposed of as ordinary household waste. You should dispose of your product properly, according to local laws and regulations. Most materials that are used in the construction of this product are fully recyclable. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is disposed in a manner that protects the environment.

Ensure you are the legal owner of the product prior to arranging for the product disposal in accordance with the above recommendations.

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## 1.0 USER INFORMATION

### 1.0 User information

Congratulations on choosing a Empulse R20. Our high quality mobility products are designed to enhance independence and make everyday life easier.

As a part of our ongoing product improvement initiative, Sunrise Medical reserves the right to change specifications and design without notice. Further, not all features and options offered are compatible with all configurations of the R20.

All dimensions are approximate and may be subject to change. The intended lifetime of the R20 is three (3) years. Please DO NOT use or fit any third party components to the R20 unless they are officially approved by Sunrise Medical.

### 1.1 This user manual

This user manual will help to use and maintain the device safely. The entire user manual for this device consists of one booklet:

- The general device user manual (this booklet)

When necessary, this general user manual refers to other manuals as shown below:

R20 Mounting Clamps instruction sheet: refers to the instruction sheet for R20 mounting clamps.

The user manual will refer to the wheelchair user and the attendant. The device is designed to be operated by the wheelchair attendant, not the wheelchair user. The user manual will refer to:

- wheelchair user
- attendant: wheelchair attendant/device operator

Some sections, not pertaining to device operation, may apply to both the wheelchair user and the attendant.

### Do not use the device until this entire manual (all booklets) has been read and understood!

If one of the user manuals was not included with the device, please contact a Sunrise Medical authorized dealer immediately.

### 1.2 For further information

Please contact a Sunrise Medical authorized dealer for any questions regarding the use, maintenance, or safety of the device. In case there is no authorized dealer in the area or for any other questions, contact Sunrise Medical either in writing or by telephone. For information about product safety notices and product recalls, go to [www.SunriseMedical.com](http://www.SunriseMedical.com)

### 1.3 Symbols used in this manual

#### DANGER!

Potential risk of serious injury or death

#### WARNING!

Potential risk of injury

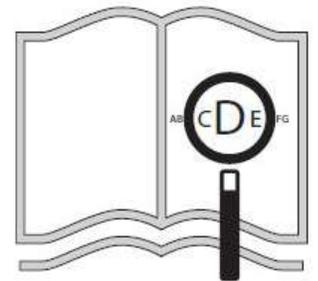
#### CAUTION!

Potential damage to equipment

#### NOTE:

General use advice

Not following these instructions may result in physical injury, damage to the product, or damage to the environment!



If you are visually impaired,  
this document can be viewed  
in PDF format at  
[www.SunriseMedical.com](http://www.SunriseMedical.com)



Follow the instructions carefully next to these warning symbols! Not paying careful attention to these instructions could result in physical injury or damage to the device or the environment. Wherever possible, safety information is provided in the relevant chapter.

### 2.1 Symbols and labels used on the product

The signs, symbols, and instructions affixed to the device comprise part of the safety facilities. They must never be covered or removed. They must remain present and clearly legible throughout the entire lifespan of the device.

Replace or repair all illegible or damaged signs, symbols, and instructions immediately. Please contact a Sunrise Medical authorized dealer for assistance.

Fig. 2.1: Warning – Maximum wheelchair user weight for the device.

Fig. 2.2: Location of Device Serial Number Label.

### 2.2 Safety: Temperature

#### **WARNING!**

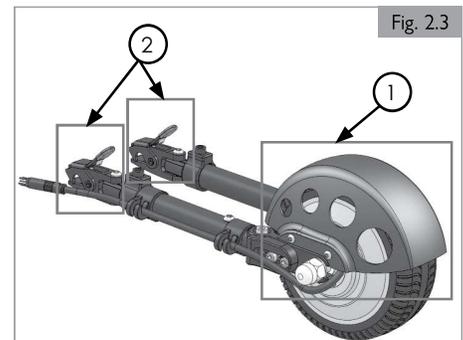
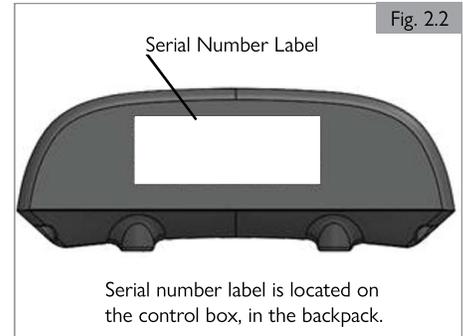
1. Avoid physical contact with the device's motors at all times. Motors are continuously in motion during use and can reach high temperatures. After use, the motors will cool down slowly. Physical contact could cause burns. Allow the motors to cool down for at least thirty (30) minutes after use before any physical contact and/or service.
2. When the device is not in use, ensure that it is not exposed to direct sunlight for lengthy periods of time. Certain parts of the device, such as the battery, motor, and wheel can become hot if they have been exposed to full sunlight for too long. This may cause burns.

### 2.3 Safety: Moving parts

#### **DANGER!**

The device has moving and rotating parts. Contact with moving parts may result in serious physical injury or damage to the device. Contact with the moving parts of the device should be avoided (Fig. 2.3).

1. Wheel and motor
2. R20 mounting clamps



## 2.0 SAFETY

### 2.4 Safety: Electromagnetic radiation

#### ⚠ WARNING!

Heed all warnings to reduce the risk of unintended movement:

1. Beware of the danger from hand-held transceivers. Never turn on or use a hand-held transceiver while power to the device is on. Use extra care if such a device may be in use near the R20.
2. Be aware of nearby radio or TV stations, and avoid coming close to them.
3. If unintended movement occurs, turn the device off as soon as it is safe to do so.

#### 2.4.1. What is EMI?

#### ⚠ WARNING!

1. EMI means: electromagnetic (EM) interference (I). EMI comes from radio wave sources such as radio transmitters and transceivers. (A “transceiver” is a device that both sends and receives radio wave signals).
2. There are a number of sources of intense EMI in one’s daily environment. Some of these are obvious and easy to avoid. Others are not, and may be unavoidable.
3. The device may be susceptible to Electromagnetic interference (EMI) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two way radios, and cellular phones.
4. EMI can also be produced by conducted sources or electrostatic discharge (ESD).

#### 2.4.2. What effect can EMI have?

#### ⚠ WARNING!

1. EMI can cause the device, without warning, to:
  - a. Move by itself.  
If this occurs, it could result in severe injury to the attendant, the wheelchair user, or others.
2. EMI can damage the device. This could create a safety hazard, and lead to costly repairs.

#### 2.4.3. Sources of EMI

#### ⚠ WARNING!

The sources of EMI fall into three broad types:

##### 1. Hand-Held Transceivers

The antenna is usually mounted directly on the unit. These include:

- a. Citizens band (CB) radios
- b. “Walkie-talkies”
- c. Security, fire, and police radios
- d. Mobile phones
- e. Lap-top computers with phone or fax
- f. Other personal communication devices
- g. Electronic article surveillance systems

NOTE: These devices can transmit signals while they are on, even if not in use.

##### 2. Medium-Range Mobile Transceivers

These include two-way radios used in police cars, fire trucks, ambulances, and taxi cabs. The antenna is usually mounted on the outside of the vehicle.

##### 3. Long-Range Transceivers

These include commercial radio and TV broadcast antenna towers and amateur (HAM) radios.

NOTE - The following are not likely to cause EMI problems: Lap-top computers (without phone or fax), Cordless phones, TV sets or AM/FM radios, CD or tape players.

#### 2.4.4. Distance from the source

#### ⚠ WARNING!

Electro-magnetic energy rapidly becomes more intense as one gets closer to the source. For this reason, EMI from hand-held devices is of special concern. A person using one of these devices can bring high levels of EM energy very close to the device without notice.

#### 2.4.5 Immunity level

#### ⚠ WARNING!

1. The level of EM is measured in volts per meter (V/m). Every power assist device can resist EMI up to a certain level. This is called its “immunity level”.
2. The higher the immunity level, the less the risk of EMI. It is believed that a 20 V/m immunity level will protect the device attendant and the wheelchair user from the more common sources of radio waves.
3. The common configuration tested and found to be immune to at least 20 V/m is: Empulse R20 mounted to a Manual Wheelchair using lithium ion batteries.

#### ⚠ WARNING!

If there is any doubt that the device is not immune to 20V/m, extra care should be taken around known sources of EMI.

#### ⚠ WARNING!

There is no way to know the effect on EMI if accessories are added or if modifications are made to the chair the device is mounted to. Any change to the chair may increase the risk of EMI. Parts not specifically tested or parts from other suppliers have unknown EMI properties.

#### 2.4.6 Report all suspected EMI incidents

#### ⚠ WARNING!

Promptly report any unintended movement. Ensure it is indicated whether there was a radio wave source near the device at the time. Contact: Sunrise Medical, Customer Service Department at (800) 333-4000.

#### 2.4.7 EMI from device

#### ⚠ WARNING!

The device itself can disturb the performance of electromagnetic fields such as emitted by commercial and/or residential alarm systems.

### 2.5 Safety: Choking hazard

#### ⚠ DANGER!

This mobility aid uses small parts which under certain circumstances may present a choking hazard to young children.

### 2.6 Safety: Battery

Remove the battery only when the wheelchair or the device are on flat, level ground. This will help prevent either the wheelchair or the device from tipping.

#### ⚠ DANGER!

Do not remove the batteries while the chair is on a lift table or on any other elevated surface.

### 2.7 Safety: Lifting the device

#### ⚠ WARNING!

Lift the device using the handle. Lifting the device from other parts may damage the device or cause injury to the attendant and/or wheelchair user. (Fig 2.4)



Fig. 2.4

### General description

The Empulse R20 provides power assistance to manual wheelchair attendants. It is designed to augment the manual propulsion provided by the attendant, reducing the effort required by the attendant to propel the wheelchair and significantly extending the activity radius of the wheelchair user.

#### **⚠ WARNING!**

DO NOT use this device for purposes other than what is intended by the manufacturer. Unauthorized modifications and use of parts or accessories not supplied or approved by Sunrise Medical may change the device's function. This will void the warranty and may cause a safety hazard. If the warning is ignored, damage to the device and the potential for severe injury of the person using the device for unintended purposes can occur.

### 3.1 Area of application: Introduction

**INTENDED USE OF DEVICE:** The Empulse R20 is a power assist device, which is attached to a wheelchair, to support the mobility and integration of the wheelchair user in daily life. The power assist device is designed for personal use indoors or outdoors by an attendant. Under no circumstances should the wheelchair user operate the power assist device themselves like a wheelchair power drive. The Empulse R20 is suitable for manual wheelchair users who are limited in their field of activities because of their physical conditions. The device can expand their field of activities by providing assistive propulsion power, operated by an attendant.

Choosing the best device for your unique mobility needs, will depend on such things as:

1. Your disability, grasping strength, balance, and coordination.
2. The types of hazards you must overcome in daily use (where you live and work, and other places you are likely to use your device).

#### **The overall maximum wheelchair user weight shall not exceed:**

Standard configuration - 170 kg (375 lbs)

The maximum wheelchair user weight specified by the manual wheelchair shall also be observed. In no case should the R20 be used where the maximum overall weight (combined weight of wheelchair, wheelchair user, and any items carried using on-board storage) is greater than 190 kg (419 lbs).

#### **⚠ WARNING!**

Exceeding the weight capacities could lead to injury and/or permanent damage to the equipment.

**NOTE** — Exceeding the weight limit will void the warranty.

The wheelchair user and the attendant must be informed of the contents of this user manual before using the device.

#### Indications

The varieties of fitting variants, as well as the modular design, mean that it can be used by those who cannot walk or have limited mobility because of:

- Paralysis
- Loss of extremity (leg amputation)
- Extremity defect deformity
- Joint contractures/joint injuries
- Illnesses such as heart and circulation deficiencies, disturbance of equilibrium or cachexia as well as for elderly people who still have strength in the upper body.
- Neuromuscular disorders (CP, ALS, MS, etc.)

#### Contraindications

The device shall not be used in case of:

- Perception disorder
- Imbalance
- Seating disability

#### **⚠ WARNING!**

Improper use of the device or the wheelchair it is attached to, depending on surface, weather, and traffic conditions can present a potential injury and cause damage to the device or wheelchair. The device must only be operated under the following prerequisites:

1. The wheelchair user and/or attendant is both physically and mentally capable of operating the wheelchair and device in all possible conditions and situations.
2. Proper instruction on its handling and operation has been received by reading and understanding this owner's manual in its entirety.
3. No technical modifications have been made to the device.
4. The attendant must take time to become accustomed to the device's response and performance by first practicing its operation in a safe area that

is free from hazards. The attendant must become comfortable with deactivation response, acceleration/top speed, etc. of the device before venturing out with the device where potentially more hazardous situations may exist.

5. It is strongly recommended that the attendant not attempt to use the device outdoors until it can be safely operated indoors without difficulty.
6. Do not operate the device beyond its stated design scope (i.e. travelling uphill, exceeding maximum load on device).

If any issues or malfunctions exist, cease use of the device and contact Sunrise Medical Customer Service. Any contrary use to the directions of this owner's manual, to the recommendations of one's mobility equipment dealer, or to the technical limitations defined by either Sunrise Medical and one's wheelchair manufacturer is considered to be misuse of the power assist device.

Sunrise Medical is not responsible for any injuries or damage caused by this type of misuse.

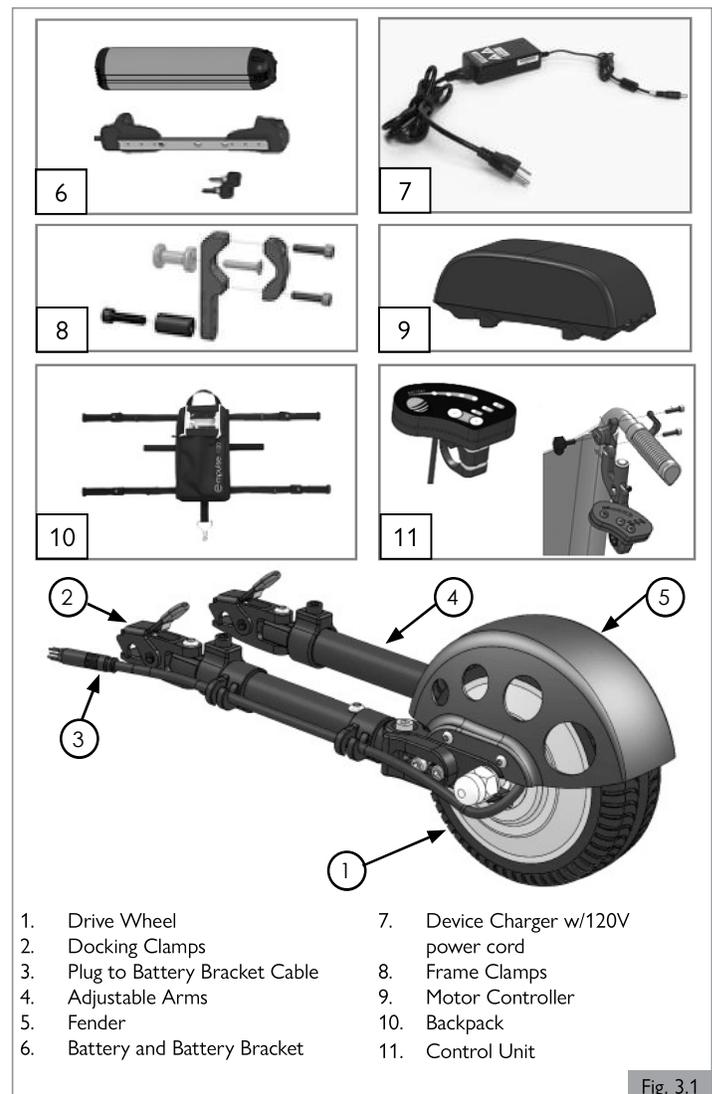


Fig. 3.1

**NOTE:** All features may not be available with some chair setups or in conjunction with another chair feature. Please consult a Sunrise Medical authorized dealer for information.

**NOTE:** The Empulse R20 is designed to fit on a variety of manual wheelchairs. For information concerning a specific chair, please contact Sunrise Medical Customer Service, or consult the owner's manual for that chair.

## 3.0 INTENDED USE OF THE DEVICE

### **WARNING!**

1. Being under the influence of medicines that can have an effect on one's ability to operate the device is not permitted while operating the device.
2. Adequate vision is required in order to safely operate the device.
3. Not more than one person at a time can use the device.
4. Do not allow children to use the device unsupervised.

### **CAUTION!**

The operator of the device is at all times completely responsible for complying with the applicable local safety regulations and guidelines.

### 3.2 Area of application: Attendants

Before assisting a wheelchair user, read all warnings contained in this manual, and follow all instructions that apply. Be aware that after consulting a health care provider, it is necessary to learn safe and proven body mechanics to use and create assistive methods best suited to one's abilities.

### **WARNING!**

The addition of the device to a wheelchair may cause it to feel different. Take the time to learn the feel of the device before operating the device. Practice and become familiar with the response and performance of the device prior to regular use. Do not attempt to use outdoors until it can be safely operated indoors without colliding into walls or any other objects.

With use of too much force, damage to the device, a fall, tip-over, or loss of control may occur and cause severe injury to the attendant, the wheelchair user, or others.

### **WARNING!**

1. BEFORE beginning use of the device, one should be trained in the safe use of the device by a health care provider.
2. First, with the device attached to the chair, practice propelling the wheelchair at slow speeds and in open areas.
3. It is necessary to develop methods for safe use best suited to one's level of function and ability.
4. NEVER try a new maneuver alone. Ask the advice of a health care provider to lower the risk of a fall or tip-over.

Get to know the areas where the device will be used.

### **WARNING!**

Before each use of the device:

1. Verify there is no unusual vibration in the device. Inspect for any problems. A Sunrise Medical authorized dealer can help find and correct the problem(s).
2. Ensure the device battery is properly charged.
3. Ensure that mounting clamps on both sides of the chair are mounted correctly and latched securely.

### **WARNING!**

Unauthorized modifications, or use of parts or accessories not supplied or approved by Sunrise Medical may damage the device. This will void the warranty and may cause a safety hazard.

### **WARNING!**

NOTE - This device contains parts and hardware of many shapes and sizes. When using or working around the device, take caution to avoid any corners or edges that may cause a scrape or a cut.

### **WARNING!**

Adding the device to an existing wheelchair may affect the center of balance. The point where the chair may tip forward, back, or to the side depends on its center of balance and stability. How the chair is set up, the options selected, and the changes made may affect the risk of a fall or tip-over.

1. The center of balance is also affected by:
  - a. A change in the wheelchair user's body position, posture, or weight distribution.
  - b. Operating the chair on a ramp or slope.
  - c. A backpack or other options and the amount of added weight.
2. To reduce the risk of an accident:
  - a. Consult a Sunrise Medical authorized dealer BEFORE modifying or adjusting this device. Be aware that other changes may be needed to correct the center of balance.
  - b. Take the time to learn the balance points of the chair and how to avoid a tip-over.
  - c. Use anti-tip tubes.

Failure to heed these warnings will result in a high risk of a fall, tip-over, or loss of control that could cause severe injury to the attendant, the wheelchair user, or others.

### **WARNING!**

NOTE - The device has many moving parts that can create pinch points and possible finger traps. Pinch points exist between device and receiver, and drive wheel and fender. Be aware when making any adjustments, when moving, and any other situation that could cause a pinch point situation.

### **WARNING!**

If the wheelchair user reaches or leans it will affect the center of balance of the wheelchair. This may cause the wheelchair user to fall or tip over. Always follow the acceptable use guidelines recommended by the wheelchair manufacturer.

Failing to heed these warnings will result in a high risk of a fall, tip-over, or loss of control that could cause severe injury to the attendant, the wheelchair user, or others.

### **WARNING!**

The power assist device does not have a brake.

### 3.3 Area of application: Wheelchair user

Before using the device read all warnings contained in this manual and follow the instructions that apply. After consulting a health care provider, it is necessary to learn safe and proven body mechanics to use and create assistive methods best suited to one's abilities.

## 3.0 INTENDED USE OF THE DEVICE

**3.4 Area of application: The device use environment (Fig. 3.2)**

This device has been designed to accommodate both indoor and outdoor use. When operating the device outdoors, drive only on paved roads, pavements, footpaths, and bicycle paths. Do not operate on loose, rocky, grass, rough, or wet surfaces. This could cause a loss of traction or stability resulting in damage to the device, loss of control, and put the wheelchair user at risk of a fall or tip-over. The speed must be adapted to suit the environment.

**⚠ WARNING!**

1. Do not operate device on slippery roads resulting from rain, ice, or snow!
2. Be extra careful when driving at higher speeds.
3. Select a lower maximum speed indoors, on the pavement, and in pedestrian areas.
4. Do not drive off high obstacles.

**⚠ CAUTION!**

1. Prevent the device from coming into contact with sea water: sea water is caustic and may damage the device.
2. Prevent the device from coming into contact with sand: sand can permeate into the moving parts of the device, causing extensive wear on these parts.
3. Do not use the device if temperatures are below: -4°F (-20°C) or above 140°F (60°C).
4. Do not push and/or tow any objects with the device.
5. Do not drive through puddles of water.
6. Ensure the battery cover is secure.
7. Never take the device into a shower, tub, pool, or sauna.
8. Dry the device as soon as possible if it gets wet, or if water is used to clean the device.
9. Do not wash the device >212°F (100°C).

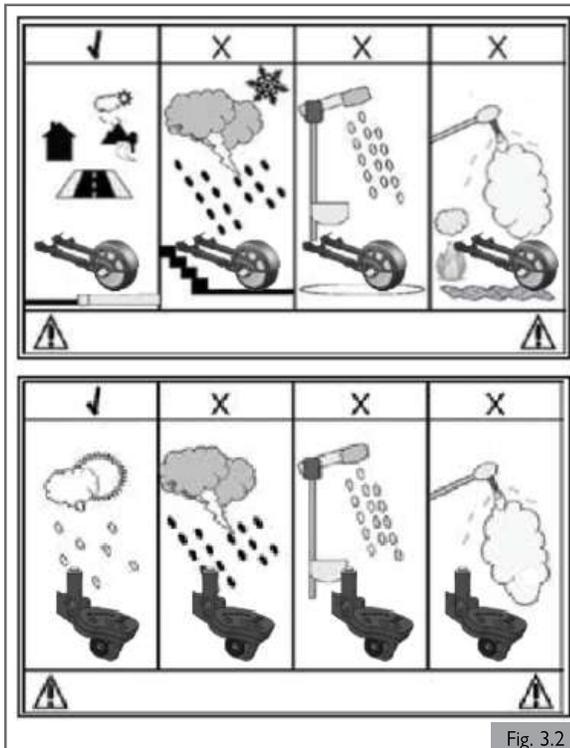


Fig. 3.2

**⚠ WARNING!**

Do not use the device if it has been involved in a motor vehicle accident. A sudden stop and/or collision may structurally damage the device. There may have been a change to the structure of the device and/or damaged or broken some of the components.

Inspect for: visual cracks, dents, metal distortion, or bends. If the device has been involved in an accident, discontinue use immediately and contact a Sunrise Medical authorized dealer for a thorough inspection. Work with the dealer to determine if the device is still safe to use if it has been involved in a collision. If damage is questionable or if there is concern regarding the condition of the device Sunrise Medical recommends replacement of the device.

**NOTE — The warranty is void on any device that is involved in a collision.**

**⚠ CAUTION!**

Continuous or prolonged UV exposure can damage the device. Avoid exposing the device to continuous or prolonged UV light as it can cause component materials to weaken and become brittle, and cause labels to become illegible and/or discolored.

**⚠ WARNING!**

Avoid overheating of device motor and battery by only operating and/or storing device within acceptable temperature ranges:

1. Operating temperature range: -4°F to 140°F (-20°C to 60°C)
2. Storage temperature range: -4°F to 95°F (-20°C to 35°C)

Failure to heed these warnings will result in a high risk of damaging the device and injuring the attendant, the wheelchair user, or others.

## 4.0 SETTING UP THE DEVICE

### 4.1 Setting up the device

#### **⚠ WARNING!**

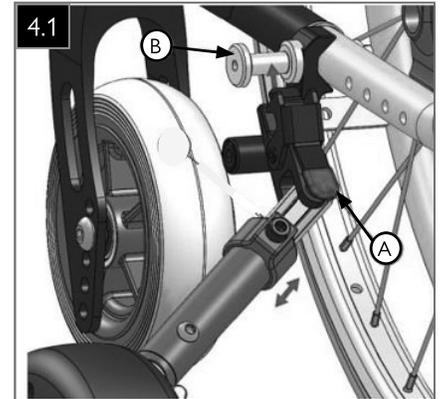
Attachment and set-up of the device should be done by a Sunrise Medical authorized dealer. Improper attachment and set-up of the device onto a wheelchair may result in damage to or failure of the device, the wheelchair, or injury to the attendant, the wheelchair user, or others.

### 4.2 Mounting the frame clamp and adjusting the arms

Refer to the R20 Mounting Clamps instruction sheet to complete this section. Then, proceed to section 4.3, below.

### 4.3 Attaching the device onto the wheelchair (Fig. 4.1)

1. Open the lock by pressing the release button (A) on the lever on both sides and plug the connector into the docking pin (B) on the wheelchair frame.
2. Ensure that the lock is fully clicked into place.



#### **⚠ CAUTION!**

The power assist device may only be used with the delivered docking system and the suitable docking pins for the wheelchair it is attached to.

The device must be handed over ready to use from a Sunrise Medical authorized dealer. Changing the bracket for the device must only be carried out by a Sunrise Medical authorized dealer.

#### **⚠ WARNING!**

The device has many moving parts that can create pinch points and possible finger traps. Pinch points exist between the device and receiver, and the drive wheel and fender. Be aware when making any adjustments, when moving, and any other situation that could cause a pinch point situation.

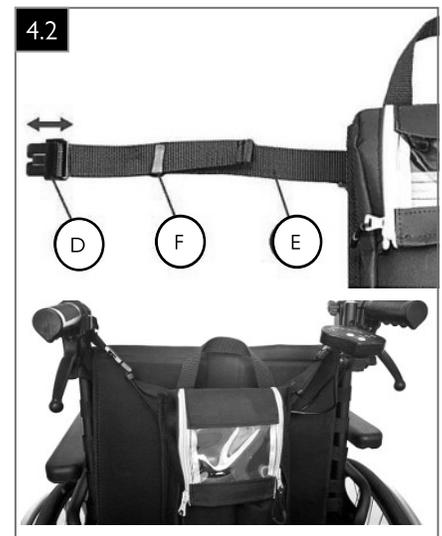
#### **⚠ WARNING!**

Checking clothing on potential entrapment:

When operating the device, ensure that clothing does not hamper the device (i.e. too long). Before use, always ensure clothing or accessories do not come into contact with the wheels or other moving and/or rotating parts in which they could become entangled.

### 4.4 Attaching the backpack onto the wheelchair (Fig. 4.2)

1. Connect the four corners of the backpack with the buckle (D) of the retaining straps.
2. Adjust the straps (E) to the required width for the wheelchair. Any surplus strap can be fixed using the retaining clips (F).



#### **⚠ WARNING!**

Adding a backpack may change the center of gravity which may affect the stability of the wheelchair.

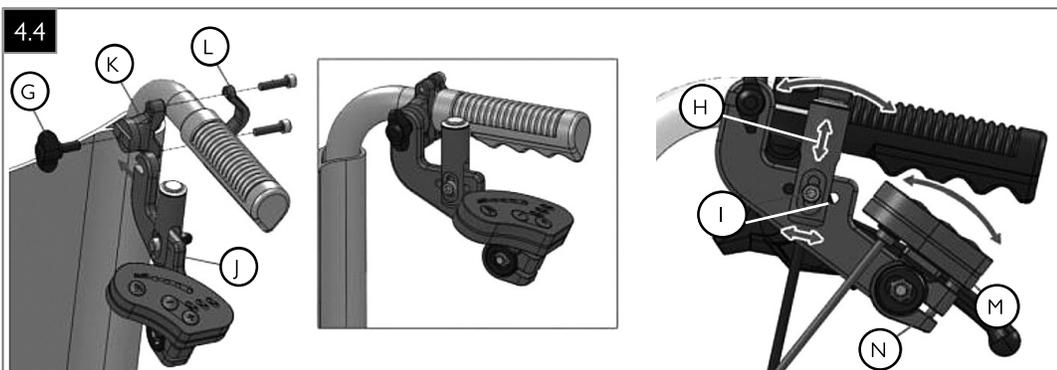
### Connecting wheel to battery plug (Fig. 4.3)

1. Connect motor plug to battery plug. Ensure that arrows on plug ends are aligned.



### 4.5 Adjusting the control unit (Fig. 4.4 - Fig. 4.5)

1. The optimal position can be set for the pushbutton (H) by undoing or removing the screw fitting (I) and the display can be adjusted by undoing the screw (N). Then re-tighten all screws.
2. By undoing the wing bolt (G), the control unit (J) can be fully removed and stored in the backpack. To do this, pull the control unit (J) through the rear zip fastening of the backpack and store it in the right backpack pocket.



#### 4.6 Additional warnings

### DANGER!

1. Have the wheelchair user's health care provider re-assess the basic fit and performance measurements, and adjust seating components when the device is added to an existing chair.
2. Unauthorized modifications or use of parts not supplied or approved by Sunrise Medical may change the function of the device. This will void the warranty and may cause a safety hazard.
3. The device may require adjustment by a Sunrise Medical authorized dealer when components of the wheelchair are changed. If the rear wheels of the wheelchair are altered, the device's traction may be affected and the device may need adjustment.
4. Many of the screws, bolts, and nuts on this device are special high-strength fasteners. Use of improper fasteners may cause your device to fail.
  - a. ONLY use fasteners provided by a Sunrise Medical authorized dealer (or ones of the same type and strength, as indicated by the markings on the heads).
  - b. Over- or under-tightened fasteners may fail or cause damage to device parts.
  - c. If bolts or screws become loose, tighten them as soon as possible.

NOTE — For safety and optimum performance, do not reuse fasteners when replacing components.

### DANGER!

Anti-tip tubes can help keep the wheelchair from tipping over backward in normal conditions. If the chair includes anti-tip tubes, ensure anti-tip tubes are re-adjusted after adding the device to the chair.

1. Sunrise Medical recommends the use of anti-tip tubes.
2. Ensure anti-tip tubes are set and adjusted per the wheelchair manufacturer's recommendations.

Failure to heed these warnings may result in a high risk of damage to the device, a fall, tip-over, or loss of control may occur and cause severe injury to the attendant, the wheelchair user, or others.

## 5.0 USING THE DEVICE

### 5.1 Using the R20

#### **⚠ DANGER!**

1. Be aware that adjustment to the operational settings of the system may be required.
2. Check and adjust the settings regularly.
3. Consult a Sunrise Medical authorized dealer to adjust the operational settings immediately if there is any change in the device operator's ability to:
  - a. Control the device.
  - b. Stopping and starting.
  - c. Insufficient traction.

### 5.2 Checking device before use

Perform the following daily check routine before driving:

#### **⚠ CAUTION!**

##### Checking tire

If tire is overly worn and/or there is a loss of traction, then replacement of the device tire is recommended. Replacement must be completed by a Sunrise Medical authorized dealer.

##### Checking batteries (Fig 5.1)

1. Before using the device for the very first time, charge the batteries for a period of 24 hours.
2. Are the batteries sufficiently charged? Check the battery charge level by pressing the button on the top of the battery (A). Four red lights indicates a full charge.

#### **⚠ WARNING!**

Battery chargers are only intended to charge:

1. The battery supplied for the device. Do not try and charge other batteries with the device charger.
2. Do not use any other battery than the battery supplied with the device.
3. Sunrise Medical can provide additional or replacement device batteries if required. Contact a Sunrise Medical authorized dealer if another battery is required.
4. Refer to the battery and charger section for the proper care, use, and maintenance of the battery and charger.

##### Checking the mounting clamps (Fig 5.2)

1. Ensure that the mounting clamps are attached correctly and securely on both sides of the chair.
2. Verify that the arm bolt (B) is mounted and secure.

##### Checking clothing on potential entrapment

When operating the device, ensure that clothing does not hamper the device (i.e. too long). Before use, always ensure clothing or accessories do not come into contact with the wheels or other moving and/or rotating parts in which they could become entangled.

##### Checking weather condition

In winter, batteries have a reduced capacity. During a period of light frost, the capacity is roughly 75% of the normal capacity. At temperatures below 23°F (-5°C) this will be roughly 50%. This will reduce the range of action.

### 5.3 Powering on/off the device (Fig 5.3)

1. To switch the drive system on and off, use the button (C) on the battery. After switching on, the battery charge level can be checked by pressing the battery charge level button (A) (Fig 5.1) on the top of the battery. The battery charge level will display when the button is pressed. Four red lights indicates a full charge.
2. It is not necessary to open the backpack to reach this button (C). The battery can be switched on and off through the transparent viewing window.

Attention: The on/off switch is also the emergency stop switch. Therefore, it must always be easily accessible.

#### **⚠ WARNING!**

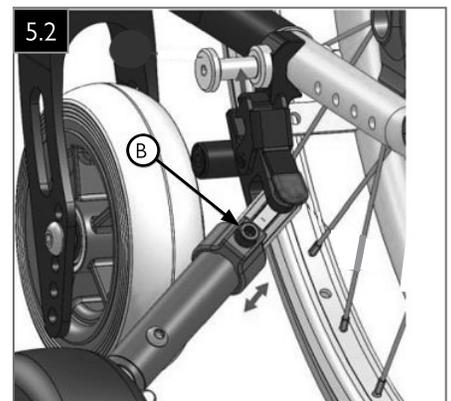
When the wheelchair is parked, the battery must always be switched off.

#### **⚠ CAUTION!**

Before using for the first time, the battery should be fully charged.

#### **⚠ WARNING!**

The surface temperature of the charger can rise to 104°F (40°C) during charging.

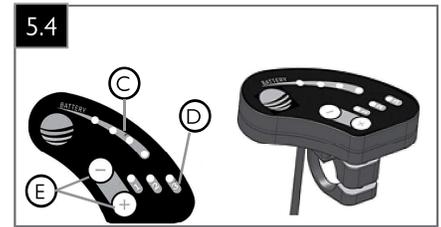


### 5.4 Operating the LED display (Fig 5.4)

The display contains LED displays for the battery charge status (C), LED displays for the 3 drive levels (D), and 2 operating keys for the drive level selection (E).

After switching on, drive level 1 is always set. Use the “-” and “+” keys to select. Depending on the drive level set, the maximum speed is limited to:

Drive level 0 = no LEDs on = 0mph (0kph) (OFF)	(0 LEDs on)
Drive level 1 = first LED on = 1.2mph (2kph)	(1 LED on)
Drive level 2 = first and second LEDs on = 2.3mph (3.7kph)	(2 LEDs on)
Drive level 3 = first, second and third LEDs on = 3.1mph (5kph)	(3 LEDs on)



C = Battery charge level display  
D = Drive level display  
E = Setting button for drive levels

### 5.5 Operating the pressure switch (Fig 5.5)

Pressing the pushbutton (F) will activate the power assist device and it will drive at the set maximum speed for as long as the pushbutton is being pressed. When the pushbutton is released, the power assist device is deactivated.

Attention: the power assist device is not a braking aid. The wheelchair must be braked by the attendant.

#### **⚠ WARNING!**

1. The pushbutton must never be locked in position!
2. If the power assist device is powered on, each time the pushbutton is pressed, the pulse is converted into a drive command. Ensure that the pushbutton is not pressed unintentionally. Power off the device when stopping or waiting at potential hazardous areas (e.g. while waiting for a pedestrian traffic light, on uphill and downhill gradients, or on ramps of any type) and release the pushbutton.



### 5.6 Driving the R20

#### **⚠ WARNING!**

Please show the utmost consideration for the other traffic on the road.

#### **⚠ DANGER!**

1. Remember that the last thing a car or truck driver expects to see is a device backing off the curb into the road.
2. If in any doubt, do not risk crossing the road until ensured that it is safe.
3. Always cross the road as quickly as possible; there may be other traffic.
4. Ensure that there are no objects in the wheelchair's path that could possibly become lodged in the device. This could cause the device to come to a sudden stop.
5. Riding over drains or grids could cause the device wheel to become lodged, causing the chair to come to a sudden stop.

The device operates by pressing the pushbutton. To move forward, simply select a speed level and then press the pushbutton to proceed forward.

#### 1. Accelerating

The device has three (3) electronic speed levels and a standby (neutral) mode. Power on the device, select the desired speed level, and press the pushbutton to propel forward.

#### 2. Maintaining Direction

While moving forward, it is important to maintain control of the wheelchair. The device may veer left or right due to the grade of the terrain or the set up of the wheelchair. Maintaining the desired direction is done in the same manner as is used in operating the wheelchair without the device attached, by rider applying a push or stopping force to either the left or right handrim or attendant steering.

#### 3. Turning

To turn while the device is operating requires either the rider pushing on the left or right handrim or the attendant steering, just as would be done without the device assisting. To reduce speed when executing a turn, the attendant can release the push button or change to a lower speed. Speed control is detailed in step 1.

#### **⚠ DANGER!**

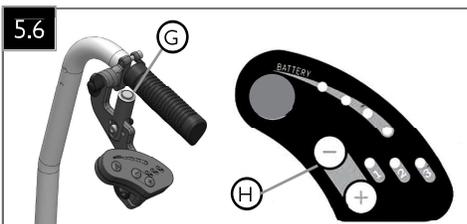
Full speed turns should not be attempted. To turn sharply requires the attendant to reduce speed prior to executing the turn. ALWAYS release the acceleration push button before turning. This is particularly important when traveling across or down a slope. Disregarding this advice could lead to the device tipping over which may result in damage to the device or injury to the attendant or the wheelchair user.

## 5.0 USING THE DEVICE

### 4. Decelerating (Fig. 5.6)

There are three ways to decelerate the device:

- Stop pressing the push button (G).
- Pressing the minus (-) (decrease speed) button (H) on the control unit as shown. (Fig. 5.6)
- Changing speed control to neutral mode by pressing the minus (-) (decrease speed) button until no speed control lights are lit.



### 5. Stopping

The device does not have a brake. Stop pressing the push button or switch to neutral; this will provide some slowing force, but it will not provide a braking force. Full stopping force must be provided by the wheelchair user and/or attendant in order to come to a full stop.

### 6. Operating on an incline

The device will provide assistive propulsion up an incline. It is best to be in motion prior to encountering the incline. Starting on an incline requires the ability to accelerate the chair through the handrims and/or attendant pushing.

Note: Refer to the manual wheelchair owner's manual for warnings regarding maximum allowable incline.

### 7. Operating on a decline

The device does not have a brake. All speed control/braking must be provided by the wheelchair user through the handrims and/or by the attendant.

### 8. Operating rearward

The device does not provide any powered assistance in the rearward direction. However, it will provide a small amount of resistance moving rearward. To avoid this resistance, the device can be put into neutral mode.

### 9. Neutral mode

Neutral mode is intended to be used when powered assistance is not required on a temporary basis, such as when operating in tight or confined spaces.

To position the device in neutral mode, do one of the following:

- Release (stop pressing) the push button.
- Reduce the speed level until no speed level lights are lit. In this mode (no speed level lights are lit), pressing the push button will not activate the device.

### **! WARNING!**

**Do not operate the device at high speeds in tight or confined spaces. Either reduce the speed, turn off the device, or position it into neutral mode.**

### Adverse conditions

Please be aware that when operating the power assist device in adverse conditions, e.g. on wet grass, mud, ice, snow, or other slippery surfaces, there may be a reduction in the grip and traction of the device.

- It is recommended to take extra precautions in these conditions, particularly on hills and slopes. The device could become unstable or skid causing possible injury.
- When using the device take extra care with loose or long items of clothing. Moving parts, such as wheels, can be potentially dangerous or even fatal if clothing becomes entangled.
- If there is any doubt about the capabilities of the device on a slope, then do not attempt to drive up or down the slope/curb. Try to find an alternate route.

### Gradients: ascents

### **! WARNING!**

- When going uphill, keep the chair moving.
- Steer by rider carefully pushing on either the left or right handrim making slight left and right adjustments while proceeding uphill, and/or by attendant steering.
- If the wheelchair is stopped on a hill, start slowly.
- If necessary, the wheelchair user should lean forward.

### Gradients: descents:

- On descents, it is important not to let the device accelerate beyond its normal level of ground speed.
- For steep declines, it is recommended to power off the device.

### **! DANGER!**

- Proceed slowly down steep descents and stop if feeling anxious.
- If the chair picks up speed, switch to a lower speed or to neutral mode, or power off the device.
- Restart slowly and do not allow the speed to increase above what the attendant is comfortable with.

### **! DANGER!**

- In certain circumstances the device could become unstable.
- Before attempting to climb or descend a slope or a curb, caution should be taken to properly shift the rider's weight to ensure the device is properly balanced during the maneuver.
- To improve stability the rider should lean forward when driving uphill, with the seat and back in an upright position.
- Alternatively the rider should sit in an upright position when travelling in a forward, downhill direction and/or recline the seat backwards.

### 5.7 Securing the device (wheel off the ground) (Fig.5.7)

The device can be secured off the ground when not in use for short periods of time. Power off the device or move to neutral mode (no speed lights are lit on the control). Lift the wheel off the ground and hook the fender on the clip (I) that hangs off the bottom of the backpack.

NOTE — Unhook clip prior to tilting or reclining the seating system. Reevaluate ground clearance of the wheel if changing the tilt angle or back recline.



## 6.1 Introduction

### 1. Battery notes–

- Batteries supply the power for the device. They contain a finite amount of energy and have limits on how long they can store and supply energy.
- Batteries can only be charged a certain number of times before they will fail and no longer hold a charge.
- ALWAYS remove the battery for storage when storing or transporting the chair and device.
- For answers to questions about batteries, consult a Sunrise Medical authorized dealer.

### 2. Use proper batteries:

The device operates on one battery.

- Use the battery supplied with the device.
- When buying a replacement, purchase R20 batteries or recommended replacement batteries.

### 3. Before removing the battery:

- Ensure the wheelchair is stopped and on level ground.
- Turn off the device.
- Battery must be removed from charger/padlock. See 6.3 Charging the Battery for instructions.

## 6.2 Battery types

The Empulse R20 utilizes Lithium ion batteries:

- Li-ion 00 (Lithium ion) uses the specialized plug when charging the batteries while connected to the device. Batteries can also be charged off of the device.
- Do not use chargers other than those provided with your device batteries. Damage to the battery, and/or the charger unit can occur if using a charging unit other than what was provided by the manufacturer.

## 6.3 Charging the battery (Fig 6.1 - Fig 6.3)

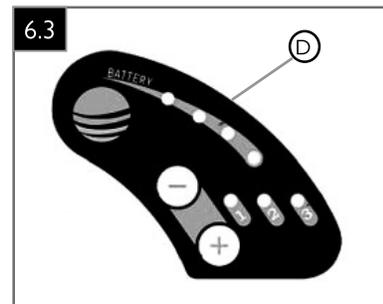
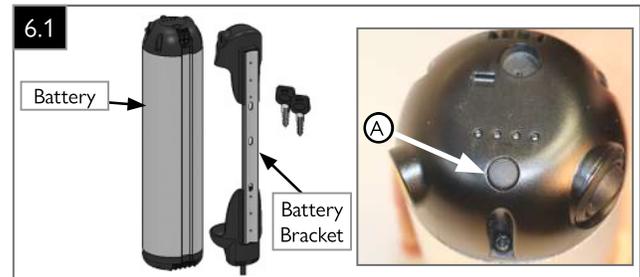
### 1. Li-ion charging notes

**This type of battery does not have a refresh charge:**

**Device Charger: standard charge process** - On-board or table top.

**Important** - If charging from the backpack, ensure that the charge cord is not tangled.

- The battery is locked in the backpack (Fig 6.1). To unlock the battery, turn the battery key counter-clockwise.
- Flip the battery forward and pull it out of the bracket.
- Open the end cap (B) to charge the device and connect the charging plug (C) of the charger (Fig 6.2). Connect the charger to the socket using the main plug.
- A single green light on the charger indicates that the charger is powered on.
- During the charging process, the battery charge level can be checked by pressing the battery charge level button (A) on the top of the battery. There are four lights to indicate the battery charge level. Four red lights indicates the battery is fully charged. Charging can take 4.5 to 5 hours.
- The battery charge level is also shown on the battery level indicator (D) on the controller display. (Fig 6.3)
- After charging has completed, remove the main plug of the charger from the socket and pull the charging plug out of the charging socket of the battery. Close the charging socket end cap, in order to prevent water ingress and corrosion.



- To refit the battery, push the battery into the backpack bag so that the bottom of the battery slides into the bottom battery bracket. Next, push the battery into the upper bracket. Then, secure the battery again by turning the key in a clockwise direction. Last, remove the battery key.

Note: always carry a battery key and keep the second key in a second location. Note: it is recommended to charge the battery after each journey. Before long periods of non-use, the battery should be fully charged. When not being used, the battery should be re-charged every 12 weeks, in order to avoid damage to the battery.

### 2. Device charger: troubleshooting

- Once connected to the power assist device, the charger will automatically start charging as long as:
  - The voltage of the battery is between 31V -36V, and
  - The internal battery cells are at normal temperature range. (No measurement of this temperature is possible)

### 3. Charger maintenance

- Visually inspect both sides of charger for wear or damage every three months.

## 6.4 Battery storage

### ⚠ WARNING

Store the battery fully charged and disconnected. Exposed contacts on the bottom of the battery can cause short circuits and lead to a fire or battery rupture. Never store the battery in direct sunlight or outdoors.

## 6.0 BATTERY AND CHARGER

### 6.5 Low battery levels (Fig 6.3)

#### **⚠ WARNING**

ALWAYS be aware of the battery life. Check it frequently. It is best to carry a spare battery when taking prolonged rides. Battery level (D) is shown on the controller display. When battery level reaches the last battery indicator light (one light remaining), change to a replacement battery.

1. First get the wheelchair to a safe place. Turn the power button off and switch to the replacement battery. If no replacement battery is available, leave the power button turned off while driving.
2. The battery should only be changed by someone trained in proper battery installation.

### 6.6 Battery safety

#### **⚠ WARNING**

The battery on the device is not very large but stores a large amount of charge. Improper use can cause damage or in certain circumstances lead to burns or fire.

1. Only use the battery for the intended purpose of power assist for a wheelchair.
2. Keep the battery out of reach of children and anyone who is not familiar with it.
3. When transporting the wheelchair, remove the battery from the device.
4. When the battery is not in use, store it in the travel bag.
5. If the battery housing is damaged, a corrosive liquid (KOH) can be emitted. Avoid any contact with the skin and discontinue use, if any damage to the device is noticed.
6. Do not allow battery connection clamps to come into contact with wires or metal.
7. Do not expose the battery to impact; do not add parts to or remove parts from the battery.
8. Do not expose the battery to heat or place near fire or water.
9. Do not use a broken or damaged battery.
10. Do not disassemble or modify the battery.
11. Do not charge or store the battery near pets or children.

### 6.7 Lithium Ion battery

#### **⚠ WARNING**

#### Temperature

- a. While travelling, if the internal temperature of the lithium ion battery becomes too high or too low, the battery will not provide power to the unit. The power assist function will not operate.
- b. If the unit is in the drive position it will not operate. It may be necessary to manually remove the drive unit from the wheelchair.
- c. When descending down a slope on the wheelchair, the drive motor, contrary to normal operation, generates electricity and charges the battery. Charging a lithium ion battery in this way when its temperature is below 32°F (0°C) or above 113°F (45°C) will cause its deterioration. To protect the battery in these conditions, the device may stop itself.

#### 2. Charging:

- a. The Lithium Ion battery uses the specialized plug when charging the battery in the unit.
- b. The battery can be removed to charge.
- c. Do not use a charger other than the one provided with the specific battery.

Failure to heed this warning may result in damage to the battery and/or the charger unit.

### 6.8 Checking the battery (Fig 6.4)

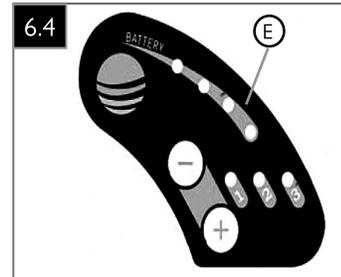
The battery capacity and charging progress (E) is shown on the controller. The total capacity is shown by LED indicator lights. Each light represents about 30% of the total capacity of the battery.

#### 1. What each battery level means

There are four LED lights (E) on the battery display. (Fig. 6.4).

#### 2. Lithium Ion battery life:

- a. When the battery can no longer be charged, the battery indicator lamp no longer lights.
- b. Recycle battery. Do not dispose of in bodies of water or sewer systems. Dispose of in accordance with local, state, and federal regulations.



### 6.9 Charger safety

#### **⚠ WARNING**

The charger for the device is a very sensitive piece of equipment. Improper use can cause damage or in certain circumstances lead to burns or fire.

1. When charging always use the charger supplied.
2. Always charge on a level surface. After use do not keep it plugged into the power outlet.
3. Keep the charging unit out of reach of children and anyone who is not familiar with it.
4. Do not use chargers that have a damaged cord, or chargers that have been dropped.
5. The charger design is focused on dust-proof and water-proof (IP21). Please do not use it in direct sunlight or high temperature environment (32°F to 113°F [0°C to 45°C]).
6. Do not use batteries not designed for the charger.

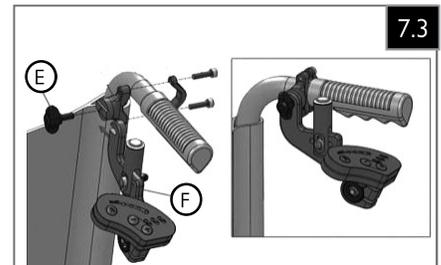
**7.1 Transport of the R20 in a car****⚠ DANGER!**

The device should not be attached to the wheelchair when being transported in a car or any other moving vehicle, whether the wheelchair is transit certified or not. The device has not been tested or certified to be used while attached to a wheelchair when in a moving vehicle. Failure to heed this warning could result in damage to the device or the wheelchair, and result in risk of injury or death to the attendant, the wheelchair user, or other occupants in the vehicle.

**7.2 Disassembly for transportation (Fig 7.1 - Fig 7.4)**

For transportation, the pushing device can be removed without the need for tools.

1. Open the lock by pressing the red lever (A) on both sides and remove the pushing device from the wheelchair. (Fig 7.1)
2. Undo the four (4) straps of the backpack with the buckle (D) on the retaining straps of the wheelchair. (Fig 7.2)
3. Undo the wing bolt (E) in order to remove the controller unit (F) completely and store it in the backpack. To do this, pull the control unit (F) through the rear zip fastening of the backpack and store the control unit in the right backpack pocket. (Fig 7.3)
4. Fix the power assist device on the rear of the backpack using the Velcro® straps. (Fig 7.4)



## 8.0 MAINTENANCE AND CLEANING

The device's lifespan is dependent on it being well maintained.

For information concerning specific settings, maintenance or repair work, please contact a Sunrise Medical authorized dealer. Always mention the model and year of manufacture and identification number provided on the identification plate of the device when contacting the Sunrise Medical authorized dealer.

### CAUTION!

The device should be serviced by a Sunrise Medical authorized dealer once a year or, in the case of intensive use, every six months. For a list of approved local authorized dealers please contact Sunrise Medical Customer Service.

The contact details of local Sunrise Medical Service Centers can be found on the inside front cover of this booklet.

Website address is on the back cover.

### 8.1 Maintenance

#### WARNING!

- Loose fasteners should be re-tightened. Refer to the R20 Mounting Clamps instruction sheet for specific instructions.
- If a broken or loose component is found, discontinue use immediately and contact a Sunrise Medical authorized dealer for replacement.

#### WARNING!

- If there is any doubt about the performance requirements of the device contact a Sunrise Medical authorized dealer.
- After performing any maintenance or repairs on the device, ensure that it is functioning correctly before it is used.
- All fasteners must be replaced like for like using the correct length, tensile strength, and materials.
- When replacing self-locking nuts, or nuts/studs secured with a thread locking solution, ensure that a suitable thread locking solution is reapplied to the fastener.
- Failure and cracking can happen due to aging. Inspect the device regularly in order to detect any damage due to aging.

### Daily checks

Perform the daily check routine before driving as described in chapter 5.2.

Maintenance and Inspection Schedule	Wheelchair User / Attendant			Sunrise Medical Authorized Dealer
	Daily*	Weekly	Quarterly*	Annually
Daily Check routine as described in Section 5.1	<input checked="" type="checkbox"/>			
Weekly Check routine as described in Section 8.1		<input checked="" type="checkbox"/>		
Quarterly Check routine as described in Section 8.1			<input checked="" type="checkbox"/>	
<b>Complete inspection, safety check, and service should be made by a Sunrise Medical authorized dealer</b>				<input checked="" type="checkbox"/>

\* Daily = Before each use of the device. Quarterly = Every three (3) months.

If fasteners are found to be loose a Sunrise Medical authorized dealer should tighten the fastener to the torque setting per size detailed below, unless stated otherwise in all appropriate owner's manuals or instruction sheets (if applicable).

- M8 Fasteners = 14 Nm [125 in-lbs]
- M5 Fasteners = 3 Nm [25 in-lbs]
- M6 Fasteners = 7 Nm [62 in-lbs]
- M4 Fasteners = 0.7 Nm [6 in-lbs]

### Weekly checks

Perform the weekly check routine before driving as described below.

#### Checking connectors and cables

- Ensure that all connectors are securely mated.
- Check the condition of all cables and connectors for damage.

#### General weekly checks

- Check tire to ensure not overly worn.
- Check device for foreign objects and/or obstructions.

#### Quarterly checks

Perform the quarterly check routine before driving as described below.

- Check chair for any missing or loose nuts, bolts, and/or fasteners. Contact a Sunrise Medical authorized dealer if found.
- Check device for any broken components, unusual wear, or other indicators of excessive wear. Discontinue use if damage is found and contact a Sunrise Medical authorized dealer.

#### WARNING!

- If there is any doubt about the performance requirements of the device, contact a Sunrise Medical authorized dealer.
- After performing any maintenance or repairs on the device, ensure that it is functioning correctly before it is used.
- A complete inspection, safety check, and service should be made by a Sunrise Medical authorized dealer at least once per year.
- All fasteners must be replaced like for like using the correct length, tensile strength, and materials.
- When replacing self-locking nuts, or nuts/studs secured with a thread locking solution, ensure that a suitable thread locking solution is reapplied to the fastener.
- Ensure that any contamination, such as fluff, hair, etc. is removed from the device. Such contamination may affect the axle on the device wheel.
- Do not reuse fasteners.

## 8.2 Tire maintenance and replacement

### Replacing the tire

The device is fitted with a 6-in drive wheel with a solid tire. Ensure that the tire has sufficient tread, as this will significantly affect the driving characteristics. When the tire is worn, it must be replaced by a Sunrise Medical authorized dealer.

## 8.3 Cleaning and disinfection (Fig 8.1)

The device should be wiped down once per week with a slightly damp, not wet, cloth. Any fluff or dust that has accumulated around the motor should be blown or dusted away.

The docking pins (A) at the wheelchair and the docking system can be cleaned with water, a soft sponge, or a soft brush (recommended after each ride). (Fig 8.1)



### ⚠ CAUTION!

Ensure that all parts of the device are dried if it becomes wet or damp after cleaning or if it is used in a wet or damp environment.

### ⚠ WARNING!

Regular cleaning is important to avoid unwanted odor and to prevent contaminants from spreading.

### ⚠ CAUTION!

Do not apply too much cleaning fluid or chemical as an excessive amount of cleaning fluid can result in corrosion, degradation, or impair the structural integrity of the device.

### ⚠ DANGER!

It is important if the device is used by more than one person that it is cleaned thoroughly to ensure there is no cross infection.

## Hygiene measures when being re-used

Prior to the device being re-used, it must be carefully prepared. All surfaces which come into contact with the attendant or the wheelchair user must be treated with a disinfection spray.

To do this, it is necessary to use a suitable disinfectant for rapid alcohol-based disinfection of medical products and medical devices.

Please take into account the manufacturer's instructions for the disinfectant being used.

### ⚠ CAUTION!

1. Do not use solvents, bleaches, abrasives, synthetic detergents, wax polishes, or aerosols.
2. Disinfectants may be used in dilution as specified by the manufacturer.
3. Ensure surfaces are rinsed with clean water and dried thoroughly.

### ⚠ WARNING!

1. Always read the label on any commercial or domestic cleaning substances.
2. Always follow the instructions carefully.

## 8.4 Medium to long term storage

When storing the device for long periods of time (in excess of one week), follow these simple instructions:

1. Fully charge the device for at least 24 hours.
2. Disconnect the charger.
3. Disconnect the batteries.

### ⚠ WARNING!

Never store the device:

1. Outside.
2. In direct sunlight (plastic parts may discolor).
3. Near a source of direct heat.
4. In a damp environment.
5. In a cold environment.
6. With the batteries connected (even if power is switched off).

Avoiding all of the above will minimize battery discharge and extend battery lifetime.

When returning the device to use, reconnect the batteries and charge the device for at least 24 hours before use.

### ⚠ CAUTION!

At the end of the life of the device, it should be disposed of following local disposal and recycling regulations.

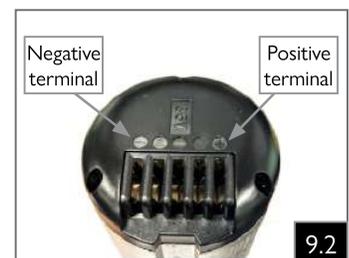
## 9.0 TROUBLE SHOOTING

### 9.0 Trouble shooting

If the device is not working as it should, check the following points:

1. Connection plugged in: Unplug and plug together again to confirm.
  - a. Motor plug to battery plug (see Section 4.4, Fig. 4.3).
  - b. Control unit plug to motor controller (Fig. 9.1).
2. Power:
  - a. Turn battery off and back on (Section 5.3, Fig. 5.3).
  - b. Test if battery is charged (Section 5.2, Fig. 5.1 and Section 6.8, Fig. 6.4).
  - c. Test battery voltage (Fig. 9.2).
    - i. Replace battery if voltage is below 31V.
    - ii. Charge battery if low (Section 6.3).

If the problem has not been resolved:  
Contact a Sunrise Medical authorized dealer.



## 10.0 SPECIFICATIONS

### Overall Physical Specifications:

- Unit Weight: 10 lbs (4.5 kgs)
- Maximum wheelchair user weight: 375 lbs (170 kgs)
- Maximum load weight: 419 lbs (190 kgs)  
(Combined weight of wheelchair, wheelchair user, and any items carried using on-board storage)

### Performance:

- Maximum speed: 3.1mph (5kph)
- Range (Range measured on a level surface with no resistance. Actual range will be dependent upon wheelchair user weight, battery age and condition, terrain, ambient temperature, frequent starts/stops, and driving surface):  
9.3 miles (15 km)
- Operation: by attendant

### Motor/Wheel:

- Rated Output Power: 250W
- Rated Voltage: 36V
- Max Current: 15A
- Wheel: 6-in Black Solid Tire

### Charger:

- Model type: Device Charger
- Input Voltage: 100-240V AC
- Input Frequency: 50/60Hz
- Charging Current: 2000mA
- Range of Temperature at start of charging: 32°F to 113°F (0°C to 45°C)  
(Battery Temp)

### Battery:

- Model type (Standard): Lithium Ion 36V
- Nominal Voltage: 36V
- Nominal Capacity: 5.8-6 Ah
- Power: 209-216 Wh

### Wheelchair Compatibility:

- Wheelchair Frame Type: Folding, Tilt
- Rear Wheel Diameter: 12-in (304mm), 16-in (406mm), 22-in (559mm), 24-in (610mm), 25-in (635mm), and 26-in (660mm)

## 11.0 SUNRISE LIMITED WARRANTY

### THIS GUARANTEE DOES NOT AFFECT YOUR LEGAL RIGHTS IN ANY WAY.

Sunrise Medical provides a guarantee, as set out in the warranty conditions, for devices to its customers covering the following.

### SUNRISE GUARANTEE/WARRANTY

1. Sunrise Medical guarantees the device against defects in material and workmanship for 3 years after delivery to the customer; then the affected part or parts will be repaired or replaced free of charge. The warranty will only cover manufacturing defects and does not apply if:
  - a. The device is subject to abuse.
  - b. The device is not maintained as recommended in the owner's manual.
  - c. The device is transferred to a different person from the original owner.
2. **FOR ONE (1) YEAR** - We warrant all Sunrise-made parts and components of this device including: controller and electronic components, against defects in materials and workmanship for one year from the date of first consumer purchase
3. **FOR SIX (6) MONTHS** - We warrant batteries and chargers for six months from the date of first consumer purchase.
4. **LIMITATIONS**
  - a. Claims from this warranty shall not arise, if a repair or replacement of a device or a part is required for the following reasons:
    - i. Normal wear and tear on items such as tires and tubes, upholstery, chargers.
    - ii. Damage from neglect, accident, misuse, or from improper installation or repair.
    - iii. Changes or modifications made without Sunrise Medical's express written consent.
    - iv. Damage from exceeding the weight limit.
  - b. This warranty is VOID if the original serial number tag is removed or altered.
  - c. This warranty is non transferrable and only applies to the first consumer purchase of this device through a Sunrise Medical authorized dealer.
  - d. This warranty applies in the USA and Canada only. Check with your Sunrise Medical authorized dealer to find out if international warranties apply.
5. **WHAT WE WILL DO** - Our sole liability is to repair or replace covered parts. This is the exclusive remedy for consequential damages.

### 6. WHAT AUTHORIZED DEALER MUST DO -

1. Obtain from Sunrise Medical, while this warranty is in effect, prior approval for return or repair of covered parts. Contact Customer Service for a Returned Material Authorization (RMA) number and information as to where to return the product. Upon contacting Customer Service please provide Model number, Serial number, description of what is required for service/repair, and any additional information as to reason for service being performed to the device.

### 7. NOTICE TO CONSUMER -

1. You must pay the cost of labor to repair, remove, or install parts even if they are covered under warranty.
2. If allowed by law, this warranty is in place of any other warranty (written or oral, express or implied, including a warranty of merchantability, or fitness for a particular purpose).
3. This warranty gives you certain legal rights. You may also have other rights that vary from state to state or province to province.
8. This guarantee is subject to the law of the country in which the product was purchased from Sunrise Medical. Check with your supplier to find out if international warranties apply.

\* Denotes the Sunrise Medical facility from which the product was purchased.

### ADDITIONAL WARRANTY INFORMATION FOR AUSTRALIA ONLY

1. For goods provided by Sunrise Medical Pty Ltd in Australia, our goods come with a guarantee by Sunrise Medical that cannot be excluded under the Australian Consumer Law.
2. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage.
3. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
4. The benefits to you given by this warranty are in addition to your other rights and remedies under a law in relation to the goods to which the warranty relates.

Record your serial number here for future reference:

(See section 2 for serial number label location)

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