

# PARAVAN®

PARAVAN WHEELCHAIR SERIES

## User manual *PR biolution*

 EN V3.3



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Dear Customer,

We would like to thank you for choosing our PARAVAN standing wheelchair.

In these operating instructions you will receive all the important information and instructions regarding your new Biolution. We would like to ask you to carefully read the following to ensure that your Biolution will continue to work without problems for many years to come. Keep these operating instructions "to hand" for future reference. Our operating instructions contain the answers to questions which relate to the equipment, the operation and the care of Biolution. However, if you still have questions or comments regarding the Biolution, do not hesitate to contact us.

Your PARAVAN Team

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# 1. Legal notice

## 1.1 Your manufacturer



Fig. 1: QR code

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Many mobile telephones and PDAs have built-in cameras and software which allows the interpretation of QR codes, and with these you can directly transfer our contact information into the address book of your mobile phone or PDA.

## 1.1.1 Copyright

This documentation and all of its parts are protected by copyright. The rights arising from this copyright, especially those of the translation, reprint, presentation, use of illustrations and tables, radio broadcasting, microfilming or reproduction of information in other ways and saving of it in data processing systems, also when using specific extracts only, remain reserved. Reproduction of this text or parts of this text is also permitted in isolated cases only and within the limits of the legal provisions of the Federal Copyright Act of Germany of 9th September 1965 in its respective up-to-date version. It is generally subject to remuneration. Contraventions are subject to the penal provisions of the Copyright Act.

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## 1.1.2 Technical nature of documentation

All details on technical data / specifications, illustrations and information in these operating instructions comply with the status of the editorial deadline in July 2014.

The operating instructions for the Biolution have been produced in the German language and can be translated into other languages, however in the case of potential differences the German version is legally binding.



## 2. Regarding these operating instructions



Fig. 2: Travel direction

These operating instructions do not constitute a maintenance and repair manual and therefore are not suitable to use for the private carrying out of maintenance and repair work, or to provide instruction on this. You will receive information on the type of design and operation throughout the complete transport life cycle (delivery) to the decommissioning (shutdown) of the Biolution. The most significant product features are listed and described in the following. All the specified product features can be combined with one another in different variants and functions, and can potentially differ from the series-production standard.



These operating instructions are an essential part of the power wheelchair product and must always be kept near to the Biolution so that you can quickly access all important information.



All page and directional information in this documentation is always specified from the point of view of the operator and in the direction of travel!

## 2.1 **Liability exclusion**

The operation of the Biolution without faults or malfunctions can only be guaranteed if the knowledge gained from these operating instructions is observed and implemented. PARAVAN GmbH does not accept any liability or guarantee for damage or malfunctions which result during operation due to the non-observance of these operating instructions or due to modifications made to the Biolution.

In order to be able to guarantee the fault-free operation of your Biolution, please observe the maintenance information or intervals.



See chapter “17 Maintenance and Servicing”

## 2.1.1 Guarantee

Guarantee services are based entirely on the respective PARAVAN guarantee provisions.

Excluded from guarantee claims is damage which has occurred due to:

- > Wear
- > Improper operation or use, e.g. overloading
- > Incorrect/infrequent maintenance
- > Incorrect/infrequent care



See your personal “guarantee card”.


## 2.1.2 Technical modifications

All modifications to safety installations and technical modifications to the Biolution, even if minor, are strictly prohibited! All modifications must be authorised or carried out by PARAVAN GmbH.

PARAVAN GmbH reserves the right to undertake technical modifications and improvements to the product in the interest of our customers and progressive development.



Claims relating to the guarantee and warranty shall expire in the case of all modifications made to the Biolution not authorised by PARAVAN GmbH. Furthermore, dangerous malfunctions cannot be ruled out!

 <b>WARNING</b>	
<p><b>Danger of injury</b> for persons when operating a Biolution which does not correspond to the original or delivered condition.</p> <p><b>Material damage</b> to the Biolution by the use of non-authorized parts or incorrectly installed parts.</p>	
>	Do not carry out any technical modifications to the power wheelchair.
>	Only operate the Biolution in its original or delivered condition.
>	Only use original or authorized spare parts.
>	Check the operating status of the Biolution before each trip.

## 2.2 Target group

The operator must acquire or gain a level of knowledge relating to the following points before operating the Biolution:

- Knowledge of the content of the operating instructions in order to safely operate and also be able to move the Biolution.
- Knowledge of the safety and operating provisions listed herein in order to recognise potential dangers or dangerous situations and avert these for the user and the environment.



Only trained or instructed persons may operate a power wheelchair to ensure personal safety. As a user, please ensure you receive sufficient training when the product is supplied. If necessary, please contact us.



See section “24.4 Log of instructions upon supply”

## 2.3 Explanation of symbols

When reading the operating instructions you will encounter the following symbols and warning symbols.



### The “Caution Danger!” logo

indicates danger points. The counteraction measures specified in the respective text must be followed in all cases. This symbol is always used in combination with the respective signal word which reflects the level of danger:

- > **Danger!** - Direct danger to life and limb (irreversible).
- > **Warning** - potential danger to life and limb (irreversible).
- > **Caution** - potential danger to life and limb (reversible).
- > **Caution** - potential damage to the vehicle.



Additional information for the user e.g. in order to simplify the operation of the Biolution and/or to avoid damage to the Biolution.



This symbol refers the user to further sections or further documentation e.g. also to annexes of these operating instructions.

*Regarding these operating instructions*

## 2.3.1 Structure of safety information

The security information provides the following information:

- Warning or hazard symbol ①.
- Type and source of danger ②.
- Signal word ③.
- Consequences upon the occurrence of danger ④.
- Measures to counteract danger ⑤.



Fig. 3: Safety instruction




### 3. Safety instructions

#### 3.1 Generally valid safety instructions

##### 3.1.1 Operation instructions

For your protection and for the protection of people in your vicinity and of the environment, the following safety instructions must be observed and followed at all times.

 <b>DANGER!</b>	
<p><b>Danger of crushing</b> from touching moving parts e.g. from the rotational movement of the drive wheels or the lifting motion of the lifting arm, as well as the horizontal movement of the seat.</p> <p><b>Danger of falling</b> due to unintentional movement of the Biolution due to inactive braking mechanism.</p> <p><b>Danger of falling</b> from abrupt braking of the Biolution if the vehicle is without power.</p>	
<ul style="list-style-type: none"><li>&gt; Do not touch moving parts.</li><li>&gt; Assistants must not touch parts in the danger zones while operating the power wheelchair.</li><li>&gt; Brake lock release lever must be in the "LOCK" position.</li><li>&gt; Never switch the power of the Biolution off or shut it down while travelling.</li></ul>	




## WARNING

**Danger of tipping** for persons when operating a Biolution when travelling at an incline of more than 10°.

**Danger of tipping** for persons when operating a Biolution when travelling downhill and if the sitting position is in the front position.

**Danger of tipping** for persons when operating a Biolution when travelling across obstacles.

- > Avoid routes with inclines greater than 10°.
- > Put the seat of the Biolution back when travelling downhill.
- > Do not cross any obstacles which are higher than 60-70mm.
- > Only drive with your seatbelt fastened
- > Do not drive in a horizontal position.
- > Only drive in the lowest seat position.
- > Only use the lifting, recline and tilting function on level surfaces.

 <b>WARNING</b>	
<b>Danger of injury</b> for persons when operating a Biolution which does not correspond to the original or delivered condition. <b>Material damage</b> to the Biolution by the use of non-authorized parts or incorrectly installed parts.	
<ul style="list-style-type: none"><li>&gt; Do not carry out any technical modifications to the power wheelchair.</li><li>&gt; Only operate the Biolution in its original or delivered condition.</li><li>&gt; Only use original or authorized spare parts.</li><li>&gt; Check the operating status of the Biolution before each trip.</li></ul>	



## WARNING


**Danger of Injury** for persons while travelling with a Biolution on rough ground.

**Danger of falling and tipping** for persons while operating the Biolution on grounds with diminished load bearing capacity.

**Material damage** to the Biolution from mechanical and physical influences while travelling on rough terrain.

- > Avoid travelling on flat, slippery or greasy ground (e.g. ice, snow, wet grass and foliage etc.).
- > Avoid travelling through water with a depth of 50mm or more.
- > Observe the gross load weight of the vehicle.
- > Observe the load bearing capacity (e.g. in the case of bridges or crosswalks) or condition of the ground.
- > Only travel with your seatbelt fastened.

### 3.1.2 Information regarding use

 <b>CAUTION</b>	
<b>Material damage</b> to the Biolution from overloading the vehicle.	
<b>Material damage</b> to the Biolution from the effect of high temperatures above 41°C.	
<b>Material damage</b> to the Biolution from overcharging of the batteries when travelling downhill.	
<ul style="list-style-type: none"><li>&gt; Only use the Biolution for its intended purpose.</li><li>&gt; Overloading the Biolution (e.g. with a second person or other loads) is not permitted.</li><li>&gt; Protect the Biolution from strong solar radiation and other sources of heat.</li><li>&gt; Switch on the electricity consumers (e.g. the lights) when travelling downhill.</li><li>&gt; When using the reclining function, always remove the warning triangle.</li></ul>	

### 3.1.3 Notes on transport



## CAUTION

**Material damage** to the electric wheelchair through slipping from ramps or lift while being loaded.

**Material damage** to the electric wheelchair through being secured and transported improperly in and electric wheelchair transporter.

- > Secure ramp from slippage.
- > Both the ramp and the electric wheelchair transporter must be positioned on even and firm surfaces.
- > The ramp or lift must be clean and dry.
- > The ramp must be wider than the electric wheelchair and should be clearly visible to allow corrective steering.
- > Mount the ramp and lift in a single movement in order to prevent the electric wheelchair rolling backwards.
- > Secure the electric wheelchair in the transporter according to the usual legal regulations.
- > Use only suitable and authorised securing equipment.
- > Switch the electric wheelchair off during transport.

National regulations may prevent you from taking it on buses, trains and air transport.



Ask your transport company about possible restrictions.



Before travelling by air, clarify the specific transport conditions with your airline as well as the legal regulations applicable in your country of origin or at your destination with regard to air transport.

## 4. **Performance description**

### 4.1 **Manufacturing standard**

The PARAVAN Biolution is a multifunctional power wheelchair which is highly suitable for indoor and outdoor use due to its compactness and mobility.

The Biolution is designed and tested so that the largest possible level of safety is provided for the operator and their environment. Our products are checked for faults after their manufacture. If a fault with your Biolution nevertheless still arises, we request that you contact your dealer or PARAVAN GmbH directly so that the fault can be dealt with.

PARAVAN power wheelchairs are manufactured and tested in accordance with:

- > DIN EN 12184 Electrically powered wheelchairs, scooters and their chargers.

and are classified in this in category B.

## 4.2 Correct use

The PARAVAN Biolution's function and design are intended to transport a person indoors and outdoors. The control panel including joystick or optional operating units in the case of/for special operation is the interface relating to user operation and the liability of the manufacturer for the Biolution.



The Biolution is only intended for the uses listed in the section "Usability of the vehicle".



See section "3 Safety information"



See section "4.2.1 Usability of the Biolution"



## 4.2.1 Usability of the Biolution

### - unproblematic

- > Transport of a person with a maximum body weight of 150kg.
- > Use as driver's or co-driver's seat depending on equipment.
- > Use within the German road traffic regulations ("StVO"), assuming complete and intact lighting.



See section "12 Driving with the Biolution"

### - problematic or prohibited

- > Use as a means of tractive transport of loads or of several people.
- > Use of the Biolution in extremely climatic conditions (heat/cold/moisture).



See section "2.1 Liability exclusion"



See section "3 Safety information"

## 4.2.2 Declaration of no objection dangerous goods (storage battery)

PARAVAN GmbH uses storage batteries which are classified as “non-dangerous goods”, as long as these storage batteries are not mechanically damaged in any way.

The maintenance-free non-woven lattice storage batteries and the maintenance-free lead gel storage battery are leakproof and **non-hazardous** for all methods of transport in accordance with:

- > IATA, regulation A 67
- > ADR, regulation 238 B
- > IMDG, regulation 238.2

UN 2800 Special Provisions.



See “Certificate of no objection hazardous goods”



You will receive the respective appropriate certificate of no objection for your storage batteries when your Biolution is supplied.

### 4.3 Approvals, certifications

#### 4.3.1 EU approval as a driver seat

The anchoring of the safety belt has been certified and approved in accordance with 76/115/EEC as has the seat in relation to its anchoring in accordance with 74/408/EWG with the Paravan docking system.


 <b>DANGER!</b>
<b>Potential risk of injury or serious injury or death</b>
<p>In conjunction with the Dahl Docking system the wheelchair has been successfully crash-tested according to ISO 7176-19:2008 - Wheeled mobility devices for use as seats in motor vehicles. The test was carried out with vehicle anchored safety belt system only. The integrated 3- or 4-point seat belt should not be used or relied on for occupant restraint in a moving vehicle. Use a vehicle anchored occupant restraint system instead.</p>



Fig. 4: TÜV Logo

> Technical Reports Nos. 08-00719-CP-GBM and 08-00723-CP-GBM.



See Section "23 Annexes and technical documentation"

### 4.3.2 German regulations on assistive technology (Hilfsmittelverordnung, HMV no.)

The Biolution standing wheelchairs are approved in accordance with the assistive technology guidelines:

- Kassenarztrecht in Nordwürttemberg – Richtlinien und Normen und Verordnungen und Leistungen (Panel doctors law in Northern Württemberg - guidelines and standards and regulations and services), page B 2 - 1 ff

As auxiliary equipment permitted under the German regulations on assistive technology number:

- HMV no. 18.99.03.2027

### 4.3.3 Definition of auxiliary equipment (incomplete excerpt)

Auxiliary devices are physical medical services i.e. things which succeed in making medical treatment safe by their compensatory, supportive or relieving effect, or which allow physical hindrances to be overcome. They include prostheses, orthopaedic and other auxiliary equipment, visual aids, physical tools or technical products...

#### 4.3.4 Indication

The inability to walk or severely limited ability to walk within the context of the basic need to move in your own home.

The provision of wheelchairs with a standing feature is advisable if regular (several times per day) standing training must be carried out as a therapeutic action, and other standing aids, e.g. underarm crutches, axillary crutches, walking frames, cannot be used.

These wheelchairs are only used if manually operated standing devices cannot be operated due to the wheelchair user's low level of residual strength.

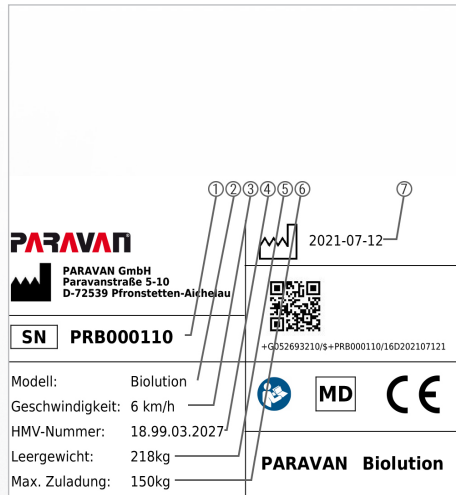
#### 4.3.5 Contraindications

The provision of power wheelchairs is unsuitable for persons with:

- > Severe balance disorders
- > Limited and inadequate vision
- > Severely limited cognitive abilities
- > Loss of both arms, or the inability to sit

## 5. Product-specific information

### 5.1 Trademark and type designation (type plate)



This information can be found on the type plate. It is very important to provide this in any correspondence with PARAVAN GmbH so that you receive relevant professional advice.

- > Series number, chassis no. ①
- > Model name ②
- > Max. speed ③
- > HMV number ④
- > Tare weight of the Biolution ⑤
- > Max. payload (body weight) ⑥
- > Production date ⑦

Fig. 5: Type plate



See section “5.3.1 Type plate of your Biolution”

## 5.2 Location of the type designation (type plate)

The type designation (type plate) is affixed to the Biolution in a 1-fold design. The type designation (type plate) has dimensions of approx. 70mm x 40mm.

- > The type designation (type plate) is situated at the bottom on the right of the battery box ① of the Biolution.



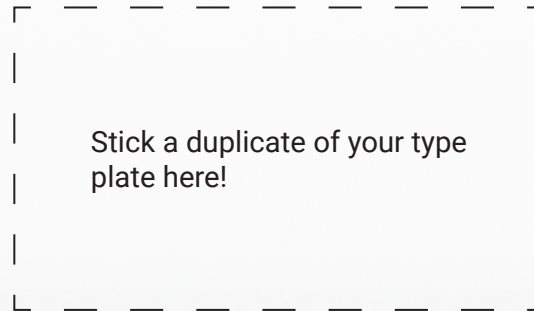
Fig. 6: Location of type plate

## 5.3 **Information on your Biolution**

Please ensure that this information is recorded upon the supply of the Biolution, or if necessary enter the information yourself, so that you always have it to hand.

- > Day of delivery/supply
- > Supply by (dealer or branch)

### 5.3.1 The type plate of your Biolution





## 5.4 Accessories

### 5.4.1 Supplied accessories

- Charger with charging cable.
- Operating instructions.
- Socket wrench with T-handle, SW 13.
- Allen key, size 5.

### 5.4.2 Deliverable accessories

- DAHL docking station for quick and easy fastening of the PR biolution in a vehicle.



Fig. 7: DAHL docking station



Fig. 8: DAHL VarioDock (Height adjustable)

## 6. **Description/function of the Biolution**

### 6.1 **The special orthopaedic seat**

The special orthopaedic seat is an in-house development by PARAVAN GmbH that has been tailored to the precise needs of its customers. It is equipped with:

- Special shock absorbers in the seat to provide relief to the thigh muscles.
- 6-axle with 12-fold individual adjustment of the armrest in order to be able to set an optimum and fatigue-free position for the arms.
- MeshTex textile cover made from breathable nanofabric to reduce the risk of decubitus.

## 6.2 Joystick control

All the functions of the Biolution can be selected or accessed via the joystick, the control panel and the integrated control system, such as e.g.:

- > Steering of the Biolution,
- > Braking behaviour of the Biolution,
- > Speed, control of the two drive motors,
- > Secondary functions depending on which control system is used or equipment.

## 6.3 Special control system

A multitude of special controls such as e.g.

- > Chin control,
- > Environmental control,
- > etc.

can be implemented on the Biolution



If you have requests or suggestions for us regarding this, do not hesitate to contact us. Thank you.

## 6.4 ***Lift and tilt (seat inclination)***

The Biolution is equipped with a stable one arm lift which can reach an extended height of up to 80 cm. This ensures a maximum activity radius in everyday domestic life and in the work environment. The raising process can be interrupted and fixed in any direction of movement and at any position.

The seat tilt (angle) can be set as follows at the touch of a button:

- Forwards, and thus receives a standing aid
- or
- Backwards – for relaxing, preventing pressure sores, easing back pain and better weight distribution.



See section “11 The special orthopaedic seat, operation”

## 6.5 Road-safe in accordance with The Road Traffic Licensing Act (StVZO)

The Biolution can be optionally upgraded so that it becomes a vehicle permitted in traffic with:

- LED headlights for optimum illumination ①.
- LED direction indicator ②.
- LED rear lights for the best possible visibility ③.
- Identification by yellow reflectors on the side in the middle of the wheel.

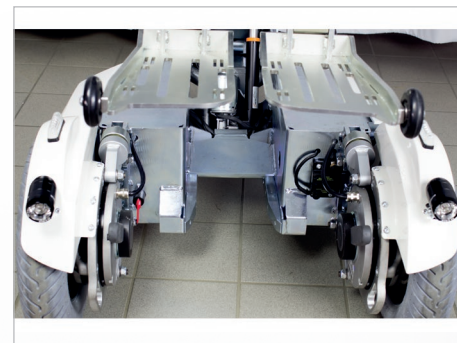


Fig. 9: Illumination at the front

### 6.5.1 § 24 Special means of transportation



The Road Traffic Licensing Act (StVZO) makes reference to wheelchairs. In it, it is stated that:

- (1) Push and gripping wheelchairs, sledges, prams, scooters, children's bikes and similar means of transportation are not vehicles as defined in this Act.
- (2) Wheelchairs or other wheelchairs as defined in section 1 may be driven in places where there is pedestrian traffic, however only at walking speed.

*Description/function of the Biolution*



Fig. 10: Illumination at the rear

## 7. Overview of the Biolution

### 7.1 Definition of parts and their location

General

Information

Prepare

Operate

Help

Technology



Fig. 11: Wheelchair overview

The following terms for parts or individual parts are used in the operating instructions. Their location on the Biolution is shown in the illustration.

- > Control panel with joystick ①
- > Armrest axle adjustable ②
- > Back rest (electric) ③
- > Headrest ④
- > Footplate/footrests ⑤
- > Brake lock release lever, emergency release ⑥
- > Drive wheel, standard version puncture-resistant ⑦
- > Battery box ⑧
- > Casing ⑨
- > Rear wheel, standard version puncture-resistant ⑩

## 7.2 Definition of parts and their installation position, chassis

The following terms for parts or individual parts are used in the operating instructions. The installation position on the chassis of the Biolution is shown in the diagram.

- Seat plate ①
- Seat guides ②
- Lifting arm ③
- Rear wheel ④
- Rigging eye, rear ⑤
- Swing axle ⑥
- Drive motor lifting arm ⑦
- Actuator module ⑧
- Battery box ⑨
- Storage battery ⑩



Fig. 12: Parts, chassis rear



- Drive wheel ①
- Rigging eye ②
- Control units ③
- Preparation of docking station ④
- Brake lock release lever, emergency release ⑤
- Drive motor ⑥
- Lifting motor with lifting rod and gear mechanism ⑦
- Fuse auxiliary units ⑧

Fig. 13: Parts, chassis front



## 8. ***Supply of Biolution***

### 8.1 ***Receiving your new Biolution***

Check your Biolution for completeness and compare the items received with the delivery with your order documents. If anything is unclear, contact PARAVAN GmbH immediately!

Check (visually inspect) that the Biolution is in proper condition. Report damage which can be attributed to delivery or transport immediately in writing to your

> dealer, forwarding agent or medical supply store

**and**

> PARAVAN GmbH.

### 8.2 ***Biolution is supplied to you in accordance with this procedure***

The Biolution is supplied to you in the following ready to drive and ready to operate condition:

- > Fully assembled and with equipment corresponding to your specifications upon ordering.
- > All attachments and control elements are preset to your body measurements in accordance with the order.
- > Precharged storage batteries.

## 8.3 Tools supplied

You will receive the following tools when the Biolution is delivered:

> Socket wrench with T-handle, SW 13.

> Allen key, size 5.



Fig. 14: Socket wrench



Fig. 15: Allen key

The setting and configuration of the PARAVAN control unit is very complex and, for your own safety, can only be undertaken by your service technician.

All parameters of the PARAVAN control unit can be subsequently set to your requirements and desires. These include:

- > All driving features such as e.g. moving off and braking.
- > Steering behaviour.



If an adjustment of the control parameters is necessary or desired, please contact PARAVAN GmbH or your dealer.

## 10. **Settings on the Biolution, mechanical**

### 10.1 **Receiving your new Biolution**

All mechanical parts or equipment and control elements are set to your body dimensions. If adjustment is still needed however, this can be undertaken at any time. Your PARAVAN Biolution is designed in such a way that it can be adjusted to the body dimensions in all requirements.



For your own safety, only allow your service technician to carry out all mechanical settings or modifications to the equipment. The customer should not change these settings himself!



See section “24.4 Log of instructions upon supply”

### 10.2 **Combination with non-manufacturer products**



Any combination with components not supplied by us generally constitutes a modification of your power wheelchair. Ask us whether there is a valid combination approval from us.

## 10.3 The armrest pad



The angle of the armrest pad can be tilted. It can also be adjusted horizontally, and positioned further forwards or backwards, allowing it to be adapted for any purpose and every body size.

### 10.3.1 Set the angle of the armrest pad.

These instructions apply to both the right and left sides.

- Loosen hexagonal cap nut ①.
- Swing the armrest pad ② into the desired position.
- Tighten hexagonal cap nut ①, approx. 8 Nm.



See section “8.3 Tools supplied”



Fig. 16: Angle of armrest pad

## 10.3.2 Set the horizontal position of the armrest pad



Fig. 17: Position of the armrest pad

These instructions apply to both the right and left sides.

Proceed as follows to check and set the position of the armrest pad:

- > Loosen the ① wing bolt.
- > Push the armrest pad ② forwards or backwards to the desired position.
- > Tighten the wing bolt ① hand-tight.



See section “8.3 Tools supplied”

## 10.4 Armrest

The armrest is multi-horizontal in all directions (projection) and can be vertically adjusted or adjusted at an angle, and thus can be adapted to every body measurement.



Changing the position of the armrest potentially involves using another setting!

Proceed as follows to check and set the position of the armrest:

- > Height ① of the armrest.
- > Angle ② of the armrest.
- > Projection ③ of the armrest.
- > If required, correction of the armrest pad.



See section “8.3 Tools supplied”



Fig. 18: Position check of the armrest

## 10.5 Set the height of the armrest



Fig. 19: Height of armrest

These instructions apply to both the right and left sides.



The clamping screw is a tappet spanner in its function and design! This involves the following function:

- > Clamping screw loose -> armrest is locked or fixed.
- > Clamping screw fixed-> armrest is loose or movable.

Proceed as follows to check and set the height of the armrest:

- > Tighten ① clamping screw.
- > Move the armrest ② in the guide to the desired position.
- > Loosen the ① clamping screw.



After changing the position of the armrest, the lever of the clamping screw must be reset if necessary so that no danger can result from this (injury of passers-by or the pulling off of the lever).

- > Lift ① lever.
- > Lift ① lever in the direction of travel and align rearwards.
- > Lower ① lever.

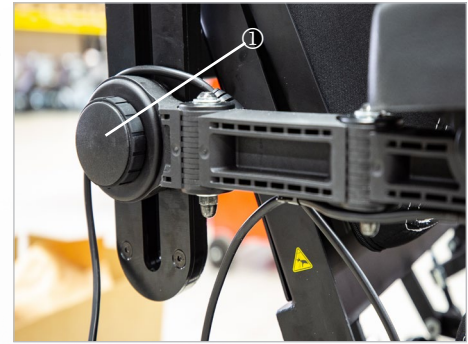


Fig. 20: Lever, clamping screw

## 10.6 Set the angle of the armrest



Fig. 21: Armrest angle

The armrest is pivoted on the attachment point. This allows the complete armrest to be swung upwards for comfortable sitting and standing or moving from the wheelchair's seat.

These instructions apply to both the right and left sides.

The following setting options are available:

- > Screw in the knurled screw ① -> armrest is moved at an angle.
- > Screw out the knurled screw ① -> armrest is lowered.



Do not screw the knurled screw out or in when loaded. Lift the armrest slightly to reduce the load on the knurled screw.

## 10.7 Set the projection of the armrest

This work instruction applies to the right and left sides, if necessary the rotational direction of the screw connection is laterally reversed!

Proceed as follows to check and set the projection of the armrest:

- > Loosen hexagonal cap nut ①.
- > Loosen hexagonal cap nut ③.
- > Move the armrest ② into the desired position.
- > Hexagonal cap nut ① and ③ tighten approx. 8 Nm.



See section "8.3 Tools supplied"



Fig. 22: Armrest projection

## 10.8 *Setting the mobility of the control panel*



Fig. 23: Swivel mechanism

The horizontal swivel mechanism of the control panel can be set in relation to the degree of hardness (response behaviour or the mobility of the joints).



This level of stiffness can only be set by your service technician!



See section “8.3 Tools supplied”

## 10.9 Footrest unit

The length of the footrest unit and its angle relative to the seat can be adjusted using the electrical angle and length compensation function. The angle of the footplates can only be altered manually using a set screw.

### 10.9.1 Setting the lower leg length

The support of the lower leg or the lower leg length can be electrically set via the PARAVAN control unit in the length adjustment setting.

- > Manually adjustable



Fig. 24: Lower leg length

## 10.9.2 Setting the tibial angle



Fig. 25: Tibial angle

The support of the lower leg or the tibial angle (between upper and lower leg) can be electrically modified via the PARAVAN control unit in the angle adjustment setting, depending on the equipment version.

- > Select menu in the control unit.
- > Select the settings.



See section "15 Control"

## 10.10 Mechanically folding biometric knee joints

- > Completely retract the foot support until the screw head can be seen in the middle of the hole. Under heavier loads, manual intervention may be required to reach the end position.



Fig. 26: Biometric foot angle

- > Insert the quick-release pin ① until it clicks into place and releases the joint lock.

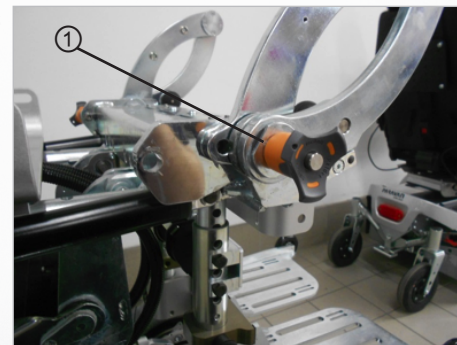


Fig. 27: Biometric joints

- Pull out the inner spring plunger latch ① and twist gently to lock.

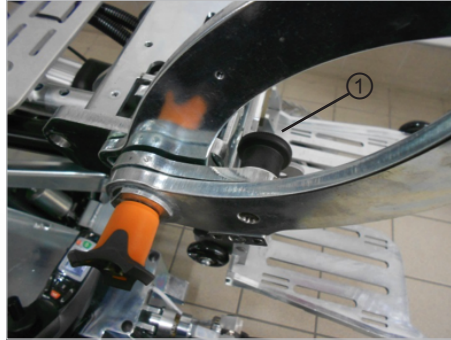


Fig. 28: Spring plunger latch locked



Fig. 29: Spring plunger latch unlocked

- The joint is now released and can be folded up.

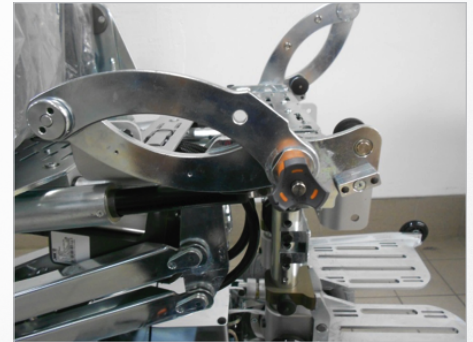


Fig. 30: Folded joint



- Swing the joint back into its starting position and push the black latch ① back into place.

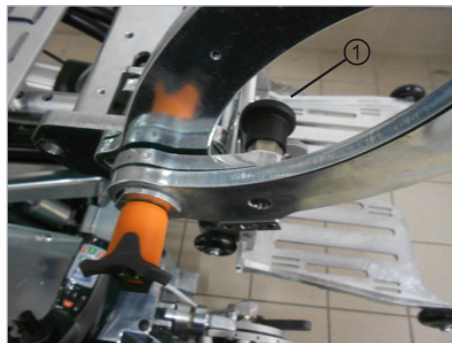


Fig. 31: Spring plunger latch unlocked



Fig. 32: Spring plunger latch locked

- Remove the quick-release pin and make sure that both joint locking pins ① also slide back into the joint smoothly. If they do not, the joint must be pushed back manually to make sure the pins lock into place.

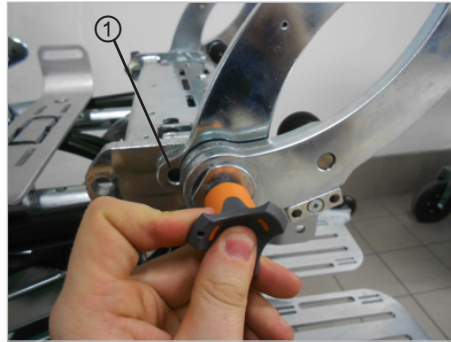


Fig. 33: Decoupling biometric joints

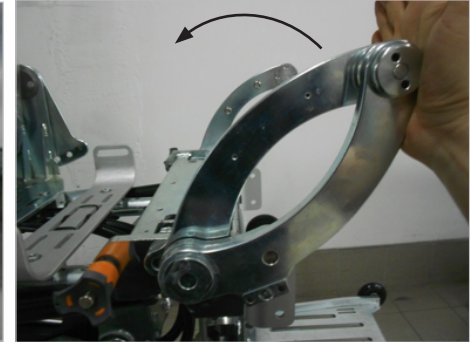


Fig. 34: Folding up the joint

- Insert the quick-release pin into the rear hole for transportation.

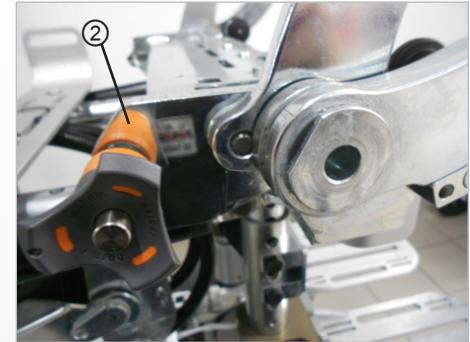


Fig. 35: Inserting the quick-release pin


# 11. Driving with the Biolution

## 11.1 Insurance, liability insurance

We recommend that you speak with your insurance advisor before starting to use the Biolution so that its use is included in your insurance - in particular in your liability insurance.



Please note that a legal requirement may exist to insure the Biolution during use in road traffic within the context of the respective legal provisions.

 <b>WARNING</b>	
<b>Danger of injury</b> for persons when operating a Biolution which does not correspond to the original or delivered condition. <b>Material damage</b> to the Biolution by the use of non-authorized parts or incorrectly installed parts.	
>	Do not carry out any technical modifications to the power wheelchair.
>	Only operate the Biolution in its original or delivered condition.
>	Only use original or authorised spare parts.
>	Check the operating status of the Biolution before each trip.

## 11.2 *Function check before the trip*

Before commencing each trip, the following points must be checked for your own safety:



It might be necessary to draw on the expertise of a second person for the check.

> Function check of the brakes.



The brake lock release lever ① must be set to **“LOCK”**, i.e. point upwards.

> Charging status of the storage batteries.

> Function check of the lighting installation.



See section “12.9.1 Operation of the brake lock release lever (emergency release)”



See section “20 Electrical Equipment”

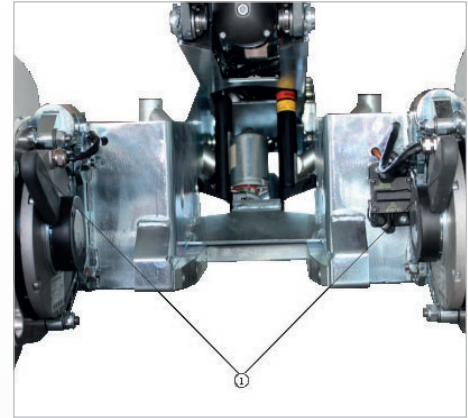


Fig. 36: Brake lock release lever (emergency release)

## 11.3 Controlling the Biolution, directions of travel



The Biolution is controlled via the joystick on the control panel.

The following basic control options are available if you put the joystick into the position below:

- > Joystick forwards -> The Biolution travels forwards.
- > Joystick left or right -> The Biolution changes the direction of travel in accordance with the position selected.
- > Joystick backwards -> The Biolution travels backwards.
- > Joystick in the neutral position (middle) -> The brakes are active, the wheelchair does not travel.



Do not carry out any backwards-like movements (driving commands) on the joystick in order to avoid unwanted movement of the Biolution!



Firstly, practise controlling the wheelchair on a safe and accessible terrain.



When the backrest and reclining function is activated, the Scoot Control collides with the backrest and the headrest holder. Therefore, please fold down the Scoot Control before operating this function!



Fig. 37: Joystick

## 11.4 Navigating bends, turning corners



The PARAVAN Biolution is equipped with front-wheel drive. This means that the rear swings out during steering motions i.e. turning corners.

This is how you navigate a bend:

- > Push the joystick into the required travelling position (forwards or backwards).

And at the same time,

- > push the joystick into the required travelling direction (left or right).

### Example:

- > Push the joystick into the position, from the point of view of the operator, to the right upwards (2.00pm position)  
-> The Biolution turns right.



See section “3 Safety information”

## 11.5 **Braking with the Biolution**

### 11.5.1 Braking systems on the Biolution

Two independently working braking systems (safety systems) are used in the PARAVAN Biolution in order to guarantee the greatest possible level of safety. The Biolution has a parking and service brake which complies with the Road Traffic Licensing Act (StVZO.) The functions of the individual safety systems are as follows:

- > Safety during the trip: By releasing the joystick (the joystick always returns to its neutral position in the middle) in driving mode, the motor brake automatically switches itself on and brakes the Biolution.
- > Safety in the case of a power cut or interruption: If there is an interruption to the power supply e.g. due to a discharged storage battery, the safety magnet brake locks and the Biolution comes to a standstill. If this is the case, it can only be mechanically unlocked and manually moved.



See section “12.9.1 Operation of the brake lock release lever (emergency release)”

## 11.6 ***Braking the Biolution***

The braking distance i.e. the distance from initiating the braking process until the Biolution comes to a standstill is heavily dependent on factors such as:

- > Ground or condition of the road.
- > Total weight (vehicle and driver) of the Biolution.



When braking from full speed at approx. 6km/h, your Biolution has a braking distance of approx. 1 metre!



During the braking process from high speeds, especially in the case of downhill travel, the power wheelchair can lurch from side to side or swerve. For this reason avoid sharp braking!



## 11.7 Travelling on hills, up and downhill travel

You must observe the following information for your own safety when travelling up and downhill:

- Put the longitudinal seat adjustment mechanism into the furthest back position in order to avoid slipping.
- Only travel with your seatbelt fastened.
- Avoid sharp braking during downhill travel so that the Biolution does not lurch from side to side or swerve.
- When travelling up and downhill select a low movement level or speed so that you don't lose control over the Biolution at any time.
- When travelling up and downhill from an incline of more than 7°, the stability of the Biolution cannot be guaranteed, or there can be a danger of the Biolution tipping.
- The power generated during downhill travel is diverted into the battery. If the battery is fully charged upon commencing the trip, the safety system switches to emergency stop in order to avoid damage due to the overloading of the electronics. If this is the case, switch an electricity consumer (light) on in order to run down the battery, and then continue your trip.



The brake lock release lever must be set to **“LOCK”** when travelling up or downhill. The motor brake is only effective when set to **“LOCK”**. The result of this would be travelling downhill without braking!



See section “12.9.1 Operation of the brake lock release lever (emergency release)”

## 11.8 *The movement programs / movement levels*

The PARAVAN Biolution has five different movement programs or levels. You can select the desired movement level or final speed of the Biolution on the control panel.

The maximum final speed in the respective movement level is reached by moving the joystick as far as it will go.

The functions of the individual movement levels are as follows:

- > Movement level 1  
Highest control of the Biolution  
20% of the final speed, driving indoors.
- > Movement level 2  
40% of the final speed.
- > Movement level 3  
60% of the final speed.
- > Movement level 4  
80% of the final speed.
- > Movement level 5  
Only for practised drivers/operators  
Max final speed.



See section "15 Control"

## 11.9 Manual driving, push mode

### 11.9.1 Operation of the brake lock release lever (emergency release)

- > If you want to push the Biolution you must set both brake lock release levers ① on the left and right drive side to **“UNLOCK”** (downwards). A push handle can be optionally installed on the backrest.



Do not set to **“UNLOCK”** on a gradient! In this position, the drive motor is unable to brake!

#### Positions of the brake lock release lever ①

##### LOCK

- > Lever position upwards,  
= Driving, braking system is active!

##### UNLOCK

- > Lever position downwards  
= Pushing, braking system is deactivated!

**CAUTION:** During push mode the control unit must be switched off!

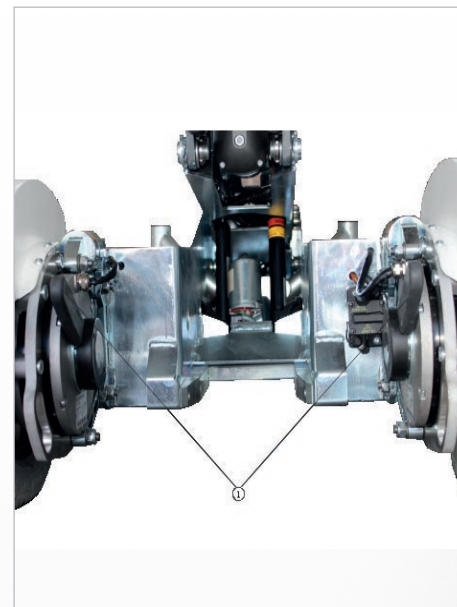


Fig. 38: Brake lock release lever (emergency release)

## 11.10 Requirement for roads, grounds

General

Information

Prepare

Operate

Help

Technology



### WARNING

**Danger of tipping** for persons when operating a Biolution when travelling at an incline of more than 10°.

**Danger of tipping** for persons when operating a Biolution when travelling downhill and if the sitting position is in the front position.

**Danger of tipping** for persons when operating a Biolution when travelling across obstacles.

- > Avoid routes with inclines greater than 10°.
- > Put the seat of the Biolution back when travelling downhill.
- > Do not cross any obstacles which are higher than 60-70mm.
- > Only travel with your seatbelt fastened.

### 11.10.1 Forging ability, driving through water

- > When driving through water, damage to the electronic parts (motors, control units etc.) as well as to the storage batteries due to the ingress of water can occur.

### 11.10.2 Climbing / traversing ability

- > While travelling over obstacles that are higher than approx. 60-70mm, you could touch the ground and get stuck or tip over with your Biolution with the battery box.

### 11.10.3 Load bearing capacity

- > Do not travel across grounds on which there is a danger that you could fall and therefore could become stuck or tip over. Keep the total weight of the vehicle in mind.



See section “22.1 Technical data and dimensions”

### 11.10.4 Rough ground or terrain

- > When travelling on rough ground or terrain there is a danger that you could get stuck or tip over with your Biolution.
- > On difficult terrain or over kerbs, only drive with the seat completely lowered! (because of the impact on the engine)

### 11.10.5 Slippery ground, traction

- > When travelling over slippery ground (e.g. uncoated ramps, wet grass, snow, ice etc.) your Biolution can lose traction. This means that the drive power or the braking power is not transferred.



The Biolution has a parking and service brake which complies with the Road Traffic Licensing Act (StVZO.)

## 12. *Parking and storing the Biolution*

In order to avoid damage to the Biolution you must observe the following rules if you park the Biolution e.g. overnight, or do not use it for an extended time period:

- Create a connection to the charging device.
- Choose a dry parking space.
- Do not expose the Biolution to high or too low temperatures.
- Cover the Biolution with a suitable cover.

## 13. *Loading and transport of the Biolution*



The Biolution must always be shut down and correctly secured or fastened in the vehicle during transport. For loading the Biolution, loading aids like:

- > ramps, lifts and hoists

with sufficient load-bearing capacity must be used.

### 13.1 *Rules for loading wheelchairs*

The following rules must be observed for and during loading:

- > The maximum support height specified on the ramp must be greater than the height from the ground to the support edge to be cleared (e.g. in the case of a car, the car boot area).
- > Check the loading capacity of the ramp(s), of the lift or the hoist.
- > Due to safety reasons, the Biolution must only be loaded into cars or on split ramps unoccupied (without baggage or a person).
- > Loading must only be carried out by a person who can safely operate the Biolution.
- > A Biolution which is unfit to drive must only be loaded by your authorised specialist workshop. This workshop is the only entity aware of the possible danger situations and how to counter them.

## 13.2 Securing of the Biolution, fastening

The Biolution must be connected or tied to the transport vehicle with tightening straps, hooks or loops in order to prevent slipping. Fastening the Biolution must be undertaken in accordance with the guideline

- DIN 75078 (parts 1 and 2) Vehicles for the transportation of persons with limited mobility

The Biolution has the following attachment points:

- At the front, two rigging eyes ①
- At the rear, one rigging eye ②



If your vehicle is equipped with a PARAVAN docking station, further fastening is not necessary.



See section “5.4.2. Deliverable accessories”

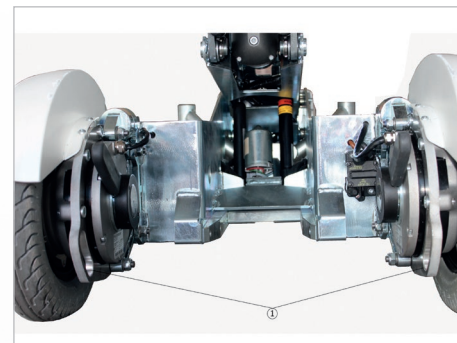


Fig. 39: Attachment point at the front



Fig. 40: Attachment point at the rear



### 13.3 Fasten the seatbelt in a moving vehicle

	<b>DANGER</b>
<b>Potential risk of injury or serious injury or death.</b>	
The Wheelchair integrated 3 or 4 point belts should not be relied on for occupant restraint in a moving vehicle. An approved, vehicle anchored safety belt system, should be used to secure occupant instead.	

	<b>DANGER</b>
Belt must not be held away from the body by wheelchair components such as armrests or wheels.	


	<b>DANGER</b>
Belt restraints should make full contact with the shoulder, chest and pelvic. Belts should be positioned low on the pelvis near the thigh-abdominal junction.	



Fig. 41: Illustration of improper belt-restraint fit

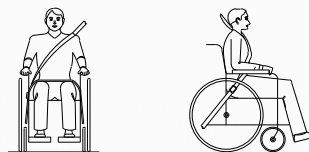


Fig. 42: Illustration of proper belt-restraint fit

### 13.4 Securing the wheelchair with a 4 point strap restraint system

Standard ISO 10542-1 tie down straps are only tested to 85 kg + user.

It is recommended to use with 4 point strap restraint system rated for the total weight of the wheelchair including any option, 2 at front and 2 at the back that conforms to ISO 10542-1.

If using a standard 4 point WTORS for securing a wheelchair heavier than 85 kg, use 6 straps to secure the wheelchair, 2 straps at the front and 4 straps at the back.

Recommended angle for tie down straps.

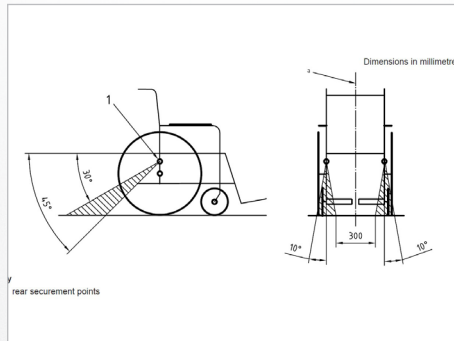


Fig. 43: Rear securement points

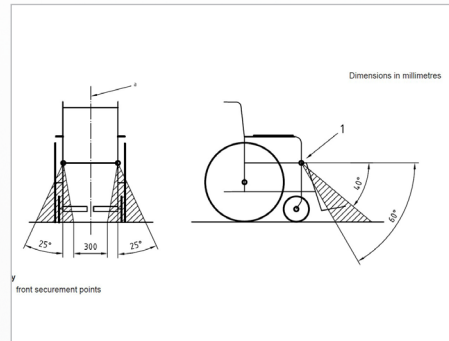


Fig. 44: Front securement points

### 13.5 Occupant restraint instruction

- > Use a vehicle anchored occupant restraint system to secure the occupant.
- > Both pelvic and upper torso restraint belts must be used to restrain the occupant to reduce the possibility of head and should not be held away from the body by wheelchair components such as armrest or wheels.
- > Restraints should be mounted to appropriate vehicle pillar and should not be held away from the body by wheelchair components such as armrest or wheels.

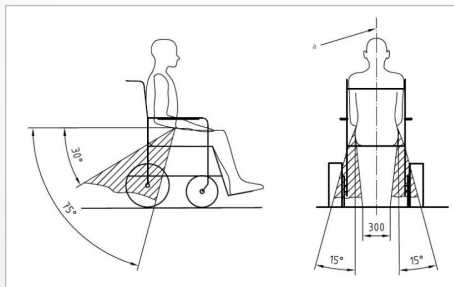


Fig. 45: Positioning the occupant restraint with 4 point strap system



#### WARNING

Positioning the occupant restraint with 4 point strap system

- > Pelvic restraint belt must be worn low across the front of the pelvis so that the angle of the pelvic belt is within the preferred zone of 30° - 75° to the horizontal.

- The upper torso restraint belt must fit over the shoulder and across the chest as illustrated Fig. 47. Restraint belts must be adjusted as tightly as possible consistent with use comfort.
- Restraint belt webbing must not be twisted when in use.
- Care should be taken when applying the occupant restraint to position the seatbelt buckle so that the release button will not be contacted by wheelchair components during a crash.

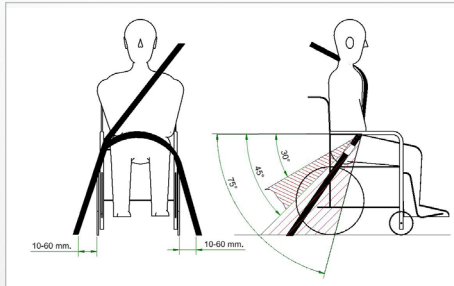


Fig. 46: Positioning the occupant restraint for use with dahl docking system only



## WARNING

Positioning the occupant restraint for use with Dahl docking system only

- When using wheelchair with Dahl docking system, the floor anchorage points for occupant restraint should be located 10 - 60 mm outside wheels, on each side. The pelvic belt must be worn low across the front of the pelvis - so that the angle of the pelvic belt is within the optional or preferred zone of 30° - 75°. As shown a steeper (greater) angle within the preferred zone, 45° - 75° is desirable i.e. closer to, but never exceeding 75° degrees.

## 13.6 Dahl Docking Systems Assembly

According to ISO 7176-19:2008, the Dahl Docking Station MK II and VarioDock™ are suitable for power wheelchair models PR50, PR Piccolino, PR Biolution and PR Heavy Duty from Paravan.

The following instructions explain how to assemble the Dahl Docking Station MK II and VarioDock™ on the wheelchair, using the PARAVAN adaption kit. Please also refer to Dahl Engineering's instructions for vehicle installation, use and maintenance.



The operation of the electric wheelchair without faults or malfunctions can only be guaranteed if the knowledge gained from these assembly instructions is observed and implemented. PARAVAN GmbH assumes no liability or warranty for damage or operating faults resulting from non-compliance with these assembly instructions or from modifications to the electric wheelchair.



Fig. 47: Dahl docking system



## WARNING

**Risk of injury** through incorrect handling of the batteries.

**Damage to property** through incorrect handling of the batteries.

- > Handle with special care.
- > May only be connected and disconnected by qualified personnel.
- > Keep away from fire.
- > Dispose of damaged batteries properly.

### 13.6.1 Content of Dahl docking stations



Fig. 48: Content of Dahl Docking Station MK II standard set # 501750



Fig. 49: Content of Dahl VarioDock™ standard set # 503600



## 13.6.2 Fitting of the Dahl lock plate on wheelchair

In order to fit the Dahl Lock plate an additional wheelchair specific adaptation kit is required. It contains special nut and plastic spacers, which are to be fitted inside the battery box.

- ① Angle plate for Dahl system (PV-Art. Nr: 000033185)
- ② Side mounting for Dahl system (PV-Art. Nr: 000034091)
- ③ 8 mm intermediate piece for locking plate 10069 DAHL (PV-Art. Nr: 000010131)
- ④ Locking rail for Dahl-System (PV-Art. Nr: 000033184)
- ⑤ Oval-head screw ISO 7380 - M8 x 12
- ⑥ Socket cap screw DIN 912 - M12 X 20
- ⑦ Countersunk screw TORX ISO 14581 - M8 x 35 -14.9
- ⑧ Hexagon nut ISO 4032 - M8

- > To install the Dahl Locking plate use PARAVAN Adaption kit, article 33187.
- > To assemble the adapter set of the Dahl docking station, you need two Allen keys, size 5 and size 10, a Torx 27 and a wrench SW 13.
- > Tighten the Torx screws to a torque of 16-18 Nm.
- > The panelling must first be removed in order to mount the Dahl docking station to the Paravan wheelchair.

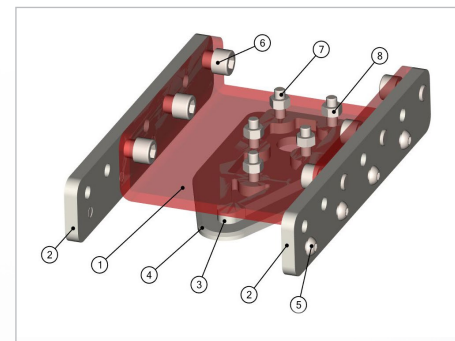


Fig. 50: PARAVAN Adaptation kit for Dahl docking station

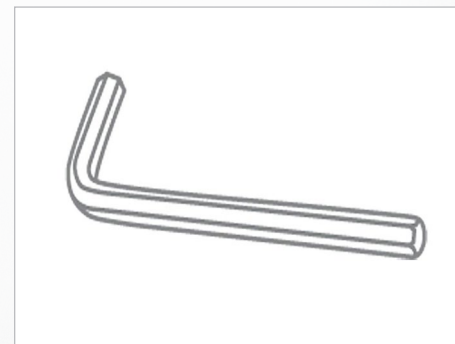


Fig. 51: Torx 27

- To remove the cover, loosen all four knurled screws ①.
- Remove the rear panel ② first, then the side panels ③.
- Disconnect the main cable plug from the batteries left and right ④.

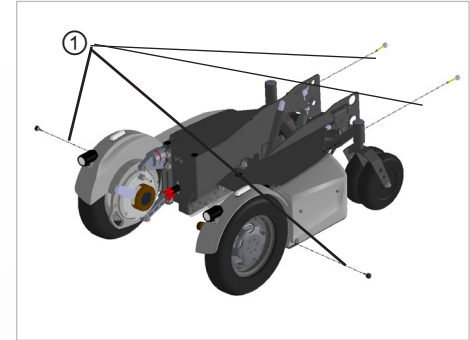


Fig. 54: Knurled screws Paravan



Fig. 52: Main Cable battery



Fig. 53: Disconnect battery

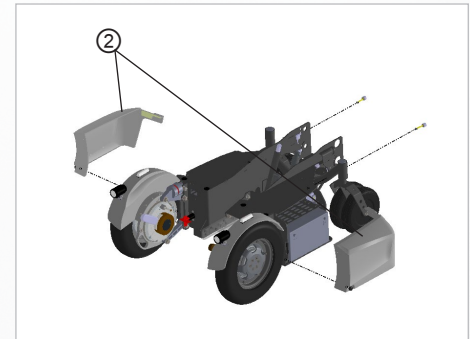


Fig. 55: Rear and side panels Paravan

- Then remove the left and right batteries.
- Position the Dahl system on the wheelchair chassis.
- Fasten the Dahl system on both sides with four M8 x 12 pan-head screws each.
- Screw them in medium-tight with a screw lock

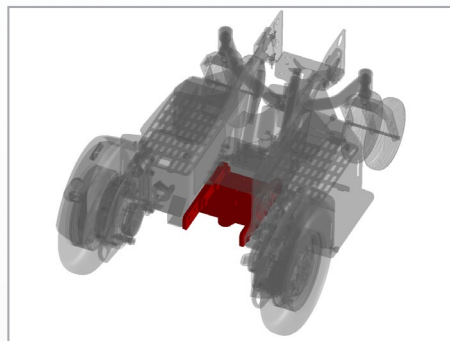


Fig. 56: Position the Dahl system

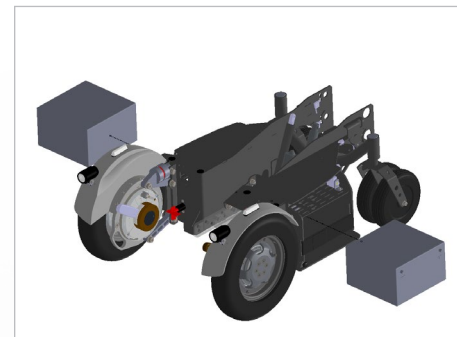


Fig. 57: Remove batteries Paravan

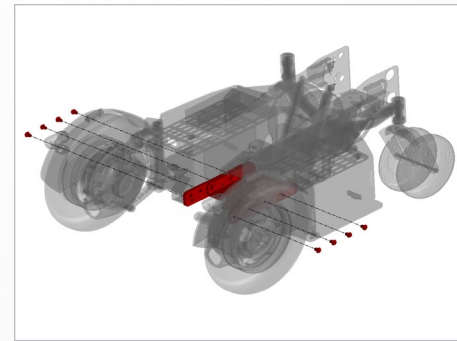


Fig. 58: Fasten the Dahl system

After the Dahl system has been attached to the wheelchair chassis, reinsert the batteries and reattach the panelling in reverse order.

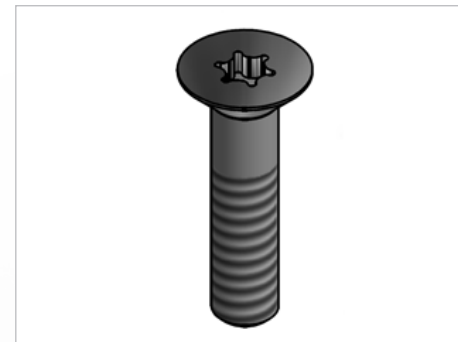


The PARAVAN adapter kit can also be pushed further forwards or backwards and fastened accordingly, depending on the position of the counterpart in the vehicle.



Installation of the Dahl Docking systems in the vehicle: Only professional companies in the business of converting or building wheelchair accessible vehicles can order the docking system from Dahl Engineering. A qualified and experienced technician must carry out the installation. Dahl Engineering can provide vehicle specific installation instructions for a large range of vehicles, which must be respected by the fitter. Please contact Dahl Engineering for further information about approved vehicles and fitting positions.

To attach the Dahl Docking Station to the PR Biolution, use the screws provided.



## DANGER

**Potential risk of injury or serious injury or death due to use of incorrect screws.**

- > Use the screws provided.
- > Do not use any other screws than those supplied from Dahl Engineering (part no. 502800 which is quality 14.9 with torx 27 key). Standard screws will not be strong enough in the event of a collision.

### 13.6.3 Description of the Dahl Docking system functions

- ① Dahl Docking station
- ② Lock plate and spacer
- ③ Lock pin
- ④ Red LED
- ⑤ Green LED
- ⑥ Control panel
- ⑦ Release button
- ⑧ Manual emergency release lever
- ⑨ Manual operating lever



Please refer to Dahl Engineering's installation and user guide for height adjustable VarioDock™ system.

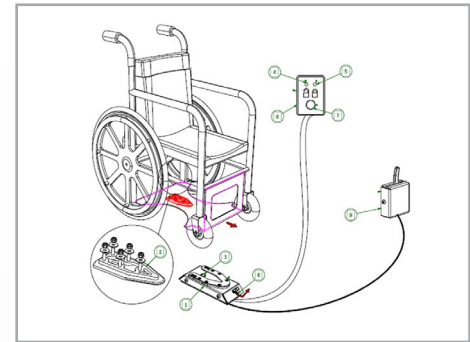


Fig. 59: System functions Dahl

## 13.6.4 Securing the wheelchair in the docking station

- Maneuver the wheelchair slowly and in a uniform direction over the docking station. The lock plate under the wheelchair helps to guide the wheelchair into place in the docking station. When the lock plate is fully engaged in the docking station, a spring-action locking pin automatically secures the lock plate.
- The docking station is equipped with a control switch that indicates whether the lock plate is correctly secured in the docking station. As soon as the lock plate comes into contact with the locking pin, a warning tone will sound (a high-pitched howl), and the red diode/lamp (LED) in the control panel will light up until the lock plate is either fully engaged or else the wheelchair is removed from the docking station.
- As an indication that the wheelchair is properly secured, the warning tone will cease, the red lamp (LED) in the control panel will go out and the green lamp (LED) will light up.
- Do not forget to buckle up for driving.



Please refer to Dahl Engineering's installation and user guide for height adjustable VarioDock™ system.



## DANGER

**Potential risk of injury or serious injury or death! Do not move the vehicle:**

- > Whilst the wheelchair is being maneuvered into position in the docking station
- > If the wheelchair and user are not correctly secured.
- > If the warning tone sounds and/or the red warning lamp (LED) in the control panel flashes or is lit!

Always check if the lock plate is properly engaged in the docking station by trying to reverse the wheel chair out of the docking station before moving the vehicle. (It must not be possible to reverse out of the docking station without pressing the red release button in the control panel).



## 13.6.5 Release from the docking station

- > When the vehicle has been brought to a halt, remove the safety belt.
- > To unlock commence by driving the wheelchair forward to release pressure on the lock pin.
- > Press the red release button in the control panel. The locking pin will be triggered/ released for approx. 5 or 8 seconds, after which the locking pin is automatically locked/activated again.
- > Move the wheelchair away from the docking station within this 5 or 8 second period. Do not attempt to reverse out of the docking station until the red LED on the control module, which indicates the unlock position, has been illuminated.



Please refer to Dahl Engineerings installation and user guide for height adjustable VarioDock™ system.



### WARNING

Attempting to reverse the wheelchair before the red LED has been illuminated will result in blocking the docking stations locking mechanism, which makes it impossible to reverse. If this happens repeat above unlocking procedure.

## 13.6.6 Manual release in case of electric failure

A manual emergency release is located at the front edge of the docking station.

- Move wheelchair forward to remove the pressure on the lock pin and push the red release arm to one side and hold it there while the wheelchair moves away.
- A cable-activated manual operating lever can also be fitted (accessory). The red release arm is also pushed to one side and should be held there whilst the wheelchair moves away.

If the described manual release procedures fails, an emergency release tool made from red plastic comes with each docking station.

- Move wheelchair forward to remove the pressure on the lock pin
- Place the emergency release tool in the gap between the locking plate and the docking station.
- Push the release tool and wheelchair forward until the locking pin has been forced down - after which the wheelchair can reverse out of the docking station.
- Please also refer to Dahl Engineering instructions for installation, use and maintenance for Dahl Docking Station MK II and VarioDock™ systems.

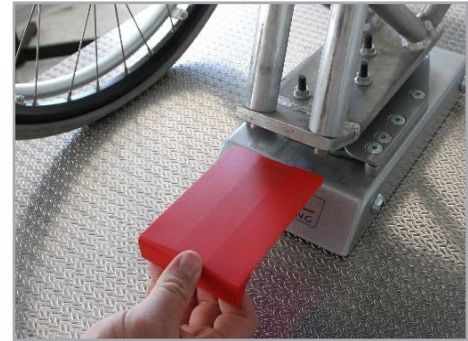


Fig. 60: Manual release step 1

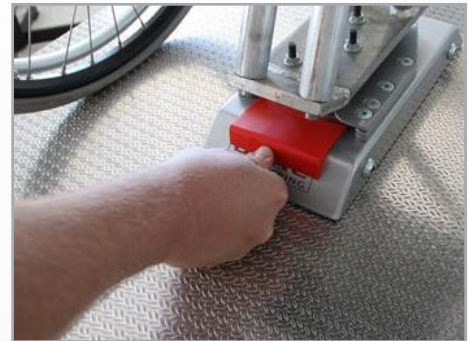


Fig. 61: Manual release step 2

# 14. Controls

## 14.1 Control panel R-NET CJSM2

### 14.1.1 Overview of the control elements



Fig. 62: Control panel R-NET CJSM2

With the control panel (joystick) built into your power wheelchair, you can control all of the power wheelchair's driving, steering and braking processes. All additional functions which are equipped with displacement motors, such as the lifting arm and the sitting functions, must also be operated via the control panel.

- > “On/off” key ①
- > Selection of profile (movement levels)/mode (seat functions)
- > “Direction indicator, right/left” keys ②
- > LCD diagnostic LED brightness sensor ③
- > Display ④ (colour)
- > MODE key ⑤ for switching function – drive program/seat functions
- > PROFILE key ⑥ (selection of movement levels)
- > Joystick ⑦ (determines direction of travel)
- > “Horn” key ⑧
- > Function key ⑨ for selecting/drilling down to movement levels
- > “Hazard lights” key ⑩
- > “Light” key ⑪
- > Charging status indicator for storage battery ⑫

General

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## 14.1.2 Status display

The function keys are used to select the specific functions displayed in the assigned fields on the display.

Symbols of the status indicator:

- Charging status of the storage batteries ①
- Direction indicator, left ②
- “On/off” light ③
- System status ④ (“tortoise” → speed control active)
- Direction indicator, right ⑤
- Time ⑥
- Hazard lights “on/off” ⑦
- Current seat function ⑧ / current driving profile



Symbols ② + ⑤ play an active part in the “hazard lights” function!



Fig. 63: Function keys



Fig. 64: Status display

### 14.1.3 Start, switch off



Fig. 65: "On / off" key

#### Start

Push the "on/off" switch ① upwards.

- > The status display briefly flashes and the last selected function in terms of movement level/seat function is shown.
- > Press the switch ① downwards again to:
  - Select movement levels 1 to 5.
  - Then switch to the seat functions.

#### Switch off

Push the "on/off" switch ① upwards.

- > The power wheelchair switches itself off (assuming it is already switched on).

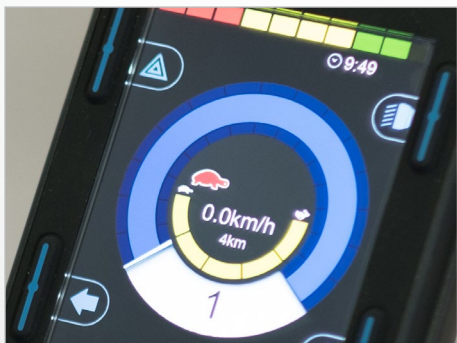


Fig. 66: Speed control (tortoise) active

## 14.1.4 Switch direction indicator on and off

Press key ① or ② for the respective direction indicator, left or right.

- The selected direction indicator will flash.
- Press once more → direction indicator switches off.



Fig. 68: Turn signal right / left

## 14.1.5 Switch light on and off

Press the key ① for the “light on” function.

The lighting installation switches itself on and the light symbol lights up blue.

Press once more:  
→ Light off



Fig. 67: Light on and off

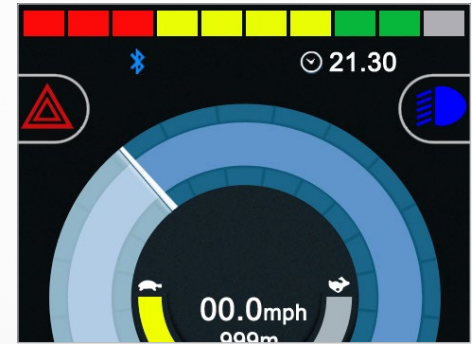


Fig. 69: Light symbol (colour)

## 14.1.6 Switch hazard lights on and off

Press the “hazard lights” key ① for the “hazard lights on” function.

- The hazard lights switch themselves on, while the hazard lights symbol flashes red and both direction of travel symbols flash green.
- Press the key again → the hazard lights/hazard lights symbol switch themselves off.



Fig. 70: Hazard lights on / off

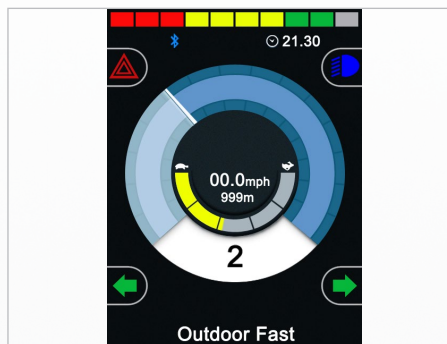


Fig. 71: Symbols (colour)

## 14.1.7 Driving functions overview



Fig. 72: Driving functions

Overview of the driving functions shown on the display of the control panel during driving, steering and braking actions of the power wheelchair.

- > Selected drive program/movement level ①
- > Respective setting (having drilled down) for the selected movement level (1 to 5) Maximum speed in the selected drive program ②
- > Key ③ (Profile) to switch to a higher or lower drive program (1 to 5)
- > Key ④ to change speed in the drive program
- > Display of the current speed (km/h) ⑤
- > “Trip” display in kilometres ⑥



Fig. 73: Charging status indicator (driving function blocked)

Display turns black when a charging device is connected.

- > If the wheelchair is switched on, the charging status indicator is the only thing shown.
- > First connect the charging lead for the charging device at the joystick, then plug the power cable for the charging device into the socket.



If the power wheelchair is being charged via the charging socket on the control panel, driving mode is automatically blocked.



### 14.1.8 Select drive program, drive

The power wheelchair must be in driving mode.

- > The last selected drive program is shown on the display (profiles 1 to 5). Drive profiles 1 to 5 are further divided into 5 levels once you drill down.

Press the switch upwards ① or downwards ② to switch to a higher or lower sub-level.

- > The selected drive program and sub-level will appear on the display.

Push the joystick in the direction in which you wish to travel.

- > The power wheelchair moves in the selected direction.
  - ① Move forwards
  - ② Turn to the right
  - ③ Move backwards
  - ④ Turn to the left



See section “3 Safety notes”



Fig. 74: Select drive program



Fig. 75: Joystick travelling direction

## 14.1.9 Electrical seat adjustment

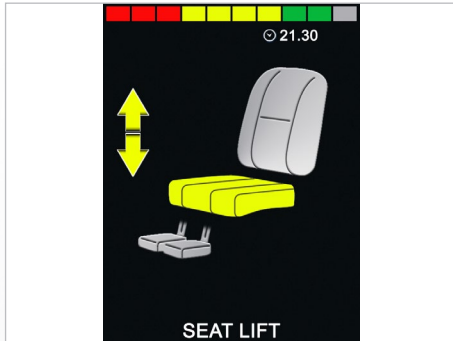


Fig. 76: Display of seat functions

Use the MODE key to switch from the drive program to the seat functions. Select the desired seat function by moving the joystick “← left/right →”.

> The adjustment functions menu will appear on the display.



Only the released or available functions can be selected.

To make the desired setting:

adjust the seat, seat position, lifting of seat, backrest, tilting of seat, angle for legs, legroom or electric footrest via the joystick (by moving it forwards or backwards).

Switch back to the drive program with the profile key.

> The power wheelchair is ready to drive.



See section “3 Safety notes”

### 14.1.10 Set time/date

Press and hold the “hazard lights” key to access the “Settings” menu.

> The special functions menu will appear on the display.

Move the joystick → left/right to access the options “year, month, date, day of the week, hours and minutes”. Select the desired option by moving the joystick “← left/right →”.

Move the joystick “↑ up/down ↓” to select exactly the setting you want. To save and quit the menu, go to “Quit” and close it by moving the joystick “↑ up/down ↓”.



Fig. 77: “Set time” function menu

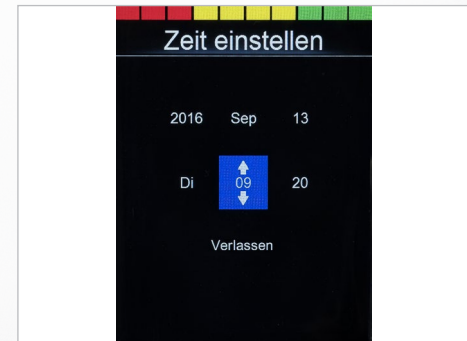


Fig. 78: Setting the time and date

## 14.1.11 Show/hide clock, configure 12h/24h display



Select the program function:

- > Press and hold the “hazard lights” key.
- > The “Settings” menu appears.
- > Use the joystick to select “Set time”. Move the joystick “← left/right →”.
- > Select “12h/24h display” or “Off” by moving the joystick “← left/right →”.
- > To save → quit the program. Move the joystick “← left/right →”.

Fig. 79: Set clock to visible/invisible

### 14.1.12 Adjust display brightness

Select the program function:

- > Press and hold the “hazard lights” key.
- > Select “Back lighting” from the settings.
- > Select the intensity of the lighting (0 to 100% in 10% stages) by moving the joystick “← left/right→”.
- > To save → quit the menu.

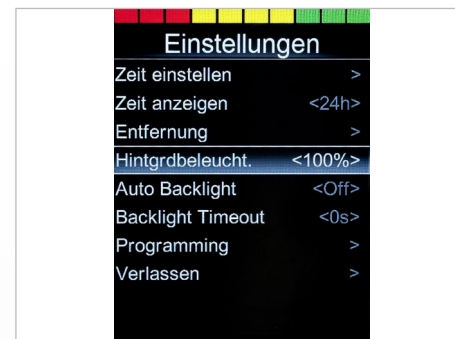


Fig. 80: Setting the display brightness

### 14.1.13 Adjust display brightness, automatic



The display brightness is automatically adjusted to lighting conditions by the factory. Menus may be arranged slightly differently, depending on the software version.

Select the program function:

- > Press and hold the “hazard lights” key.
- > Select “Auto Backlight” from the settings.
- > Select “On/Off” by moving the joystick “← left/right→”.
- > To save, quit the menu.

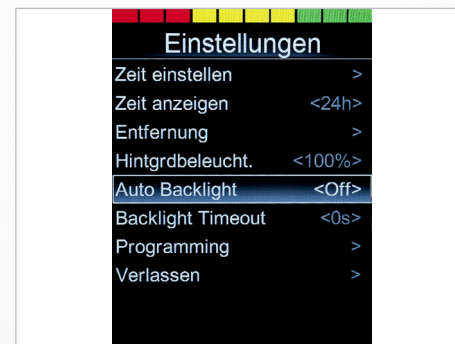


Fig. 81: Autom. display brightness


### 14.1.14 Block the controls (with the wheelchair switched on)

- Turn the controls on and press and hold the ON/OFF button ① until you hear a beeping sound
- Move the joystick ② forwards until you hear a beeping sound
- Move the joystick ② backwards until you hear a beeping sound



Fig. 82: Turn signal right / left

### 14.1.15 Release the controls (with the wheelchair switched off)

- Switch on → and a “padlock symbol” appears .
- Move the joystick ② forwards until you hear a beeping sound
- Move the joystick ② backwards until you hear a beeping sound
- The “Functions” menu is now available – the last function selected is shown.

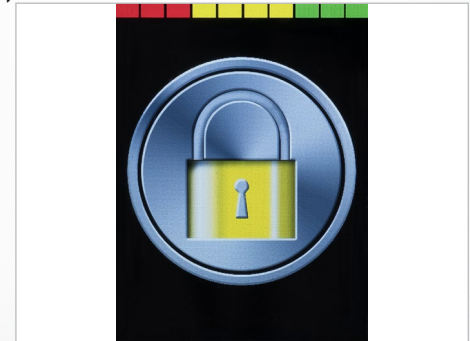


Fig. 83: Lock symbol

## 15. *Moving from the Biolution's seat*

The following points must be followed for your own safety in order to independently move from the seat of your Biolution:

- > You should be able to safely carry your own weight.
- > You should be able to push yourself off from the Biolution with both arms simultaneously using the same amount of strength.
- > You should have a safe position to support yourself, from which you cannot slip.
- > You should have practised it often enough in the presence of another person.
- > You should consider all eventualities in case you fall on the floor and there is no one present with you.



We recommend that you enlist the help of another person. However, you should point out the dangers to this person. In all cases, discuss the implementation process together. Never support yourself on the control panel, the Biolution could be accidentally activated and start following uncontrolled commands.



If you want to move to the seat of another Biolution, the brake lock release lever must be set to **"LOCK"** (upwards) and the Biolution must be switched off.



See section "12.9.1 Operation of the brake lock release lever (emergency release)"

## 15.1 Procedure when moving sideways from the seat

When moving sideways from the seat, proceed as follows:

- Position the Biolution sideways
- Set required seat height
- Switch off the Biolution
- Fold up ① footrests
- Swing ② armrest upwards
- Move from the seat



Fig. 84: Move from the seat, footrests



Fig. 85: Move from the seat, armrest



When using and operating the PARAVAN Biolution according to its intended purpose, the power wheelchair is subject to a recommended annual maintenance plan. All driven parts and in particular the lift arm are designed so that the operation of the Biolution is guaranteed to be low-maintenance and fault-free.

However, in order to guarantee its perfect functioning, the Biolution must nonetheless:

- > Be treated with care,
- > Be kept clean,
- > Be maintained periodically on an annual basis.

### 16.1 **Service partner**

If problems occur, please contact your medical supply store or your dealer, or PARAVAN GmbH directly.



In order to have maintenance work carried out, please contact your medical supply store or your dealer, or PARAVAN GmbH directly. Maintenance and servicing works must only be carried out by trained persons.

## 16.2 *Cleaning and care*



High-pressure cleaners should not be used to clean the electric wheelchair. Be careful that no electronics come in contact with water.

Regular care and maintenance will prevent unnecessary wear and damage to your PARAVAN power wheelchair. Switch off the power supply before cleaning the wheelchair.

### 16.2.1 Metal surfaces

The high-quality powder coating ensures optimum corrosion protection. Use a soft cloth or sponge, warm water and a mild cleaning agent for normal cleaning. Carefully wipe with a damp cloth and then dry. Treat abrasion marks on semi-matt surfaces with soft wax. Follow the instructions of the soft wax manufacturer. Abrasion marks and scratches can be removed from shiny surfaces with car polish. You can use liquid car polish or pastes. Apply soft car wax after polishing to restore the original surface shine. Spray the covers of the springs on the rear wheel suspensions regularly with a commercially available multi-function oil or lubricant.

### 16.2.2 Plastics

For normal cleaning of plastic surfaces, use a soft cloth, mild detergent and warm water. Rinse thoroughly and dry the surfaces with a soft cloth. Do not use solvents or abrasive household cleaners.

### 16.2.3 Upholstery, fabric and vinyl

For normal cleaning of the upholstery, use lukewarm water and a mild, non-abrasive soap. Use a soft cloth or brush. Wipe any water or soapy water residue dry with a clean, dry cloth. Allow the surface to dry. Repeat this process for stubborn dirt or stains. Ink stains may be removed with soap and water followed by treatment with isopropyl alcohol.

Do not use cleaning methods other than those listed here. Other cleaning methods may attack and damage the vinyl, which may void the wheelchair's warranty. If necessary, you can remove the cover before cleaning. For more information, see the washing instructions on the upholstery.

### 16.2.4 Disinfection

Spraying and washing with tested and approved disinfectants is permitted. A current list of all approved disinfectants can be found on the website of the Robert Koch Institute at [www.rki.de](http://www.rki.de).

## 17. *Disposal and environmental protection*

General

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The Biolution itself and its individual components are technically durable. Recyclable and harmless raw materials have been primarily used for design and manufacture. After it has been shut down, the Biolution is best suited to the correct recycling procedure and economically sustainable disposal.



The national and regional waste disposal provisions must be followed.

The Biolution can be dismantled into the following main parts for purposes of recycling:

- > Metals,
- > Plastic or composite materials,
- > Electronic waste,
- > Storage batteries.

A top-end recycling procedure in accordance with the type and character of the waste should be sought (“Closed Substance Cycle and Waste Management Act”). This is economically viable if the costs associated with recycling are not disproportionate to the costs which would be incurred for waste disposal.

## 17.1 Packaging material

The packaging consists of largely recyclable material which is harmless to the environment, such as e.g.:

- > Wood, e.g. pallets or outer packaging,
- > Metal, e.g. tightening straps,
- > Bubble wrap.

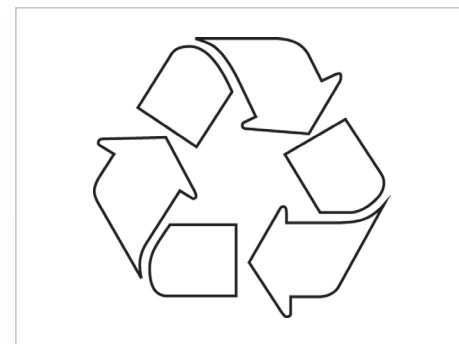


Fig. 86: Recycling



Take advantage of the opportunity to recycle the packaging in an environmentally-friendly way. Recycling of rubbish should take priority over its disposal.

## 17.2 Advice on corrosion protection

All metal parts on your PARAVAN power wheelchair are corrosion-protected, e.g. by hot-dip galvanising, electroplating and powder-coated surfaces.



Please observe the cleaning instructions see „16 Maintenance and servicing“.

## 17.3 **Recommissioning**

If the Biolution has been out of service for a long time, the following work steps must be carried out before it is recommissioned again:

- > Check protective devices, repair if necessary,
- > Complete maintenance or review,
- > Complete cleaning.



The Biolution must be completely cleaned and approved for use after a thorough inspection by a service technician authorised by PARAVAN GmbH.



See chapter “17 Maintenance and Servicing”

## 17.4 Information regarding transfer

When transferring the PARAVAN Biolution standing wheelchair you must also pass on all the necessary technical documents for safe handling and operation, such as:

- > Operating instructions,
- > Proofs of maintenance

to the new user.



See chapter “17 Maintenance and Servicing”

## 18. **Fault elimination**

### 18.1 **Flash code of the status display of the control panel**

Flash code	Meaning	Immediate action	Further action
1 x flash	Module defect.	-	Speak to specialist dealer
2 x flash	Accessories fault.	-	Speak to specialist dealer
	Lifter raised.	Completely lower lifter	-
3 x flash	Fault on the right motor. Loose/defect connection or motor defect.	Check connectors	Speak to specialist dealer
4 x flash	Fault on the left motor. Loose/defect connection or motor defect.	Check connectors	Speak to specialist dealer
5 x flash	Fault/braking fault on the left motor. Loose/defect connection or motor defect.	Check connectors	Speak to specialist dealer
	Motors disengaged.	Engage motors. Switch control panel off and then on again.	-

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Flash code	Meaning	Immediate action	Further action
6 x flash	Fault/braking fault on the left motor. Loose/defect connection or motor defect.	Check connectors	Speak to specialist dealer
7 x flash	Deeply discharge storage battery.	Precharge storage battery	Speak to specialist dealer
8 x flash	Voltage of storage batteries too high.	-	Speak to specialist dealer
9 or 10 x flash	Incorrect data transfer between the modules.	-	Speak to specialist dealer
11 x flash	Motors overloaded.	Switch control panel off and then on again	Speak to specialist dealer
12 x flash	Compatibility problems between the modules.	-	Speak to specialist dealer

## 19. **Electrical unit**

### 19.1 **Automatic fuses**

The PARAVAN standing wheelchair Biolution is equipped with two automatically triggering fuses and an overload protection device. These include:

- > **The main fuse**  
This protects the complete electrical unit in the event of overloading of the electrical consumer of the Biolution by an instant response and the complete switching off of the entire power wheelchair.



See section “20.2 Main fuse”

- > **Minor fuse**  
This protects all the additional power consumers or auxiliary units, such as e.g. ventilators.
- > **Overload protection**  
The power generated is diverted into the storage batteries during downhill travel. If the storage batteries were already charged, the safety system switches to emergency stop.



See section “20.3 Overload protection”

## 19.2 Main fuse



The main fuse is located at the rear on the left of the power wheelchair.



An active (triggered) main fuse is signalled by the swung out green lug.

### 19.2.1 Reset triggered main fuse

- > Push the lug ① of the active main fuse ② back into its original position ③.  
-> The lug must audibly or visibly lock into place.
- > Biolution is ready for operation again.

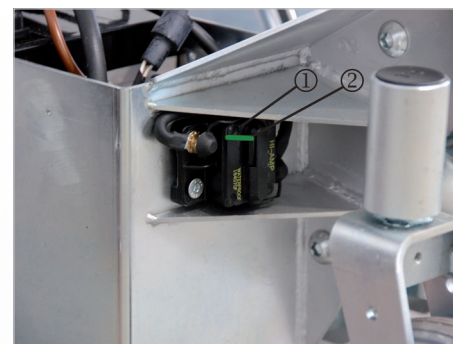


Fig. 87: Main fuse, active

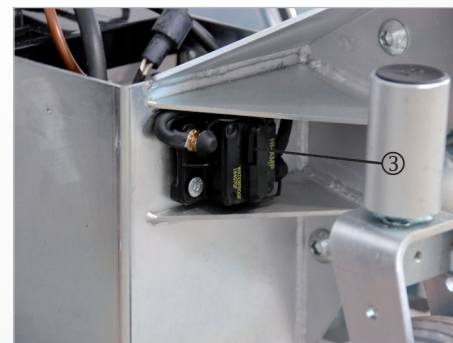


Fig. 88: Main fuse

## 19.3 *Operating the battery disconnect switch*

By activating the battery disconnect switch, the installed 2x12 V AGM batteries are disconnected from the power circuit of the wheelchair to ensure safe transport.

The disconnect switch is located on the right rear part of the chassis below the panelling. Turning and removing the disconnect key will disconnect the batteries so that the wheelchair cannot be started up even by pressing the on switch on the joystick.

Completely fold up the wheelchair and ensure that nothing can be damaged during transport. Switch off the control unit.

Now turn the key 90° and remove it, now no more adjustment can be made. The chair can now only be pushed by disengaging the mechanical brake on the motor. After securely lashing the wheelchair, lock the brakes again.



Fig. 89: *Battery disconnect switch*



Fig. 90: *Battery dicon. switch, inactive*

## 19.4 Overload protection



While travelling downhill, the generated power is diverted into the storage batteries - the drive motors work like a dynamo in this case. If you have fully charged your Biolution before commencing downhill travel, the security system switches to emergency stop in order to avoid damage to the electrical unit (control, electronics etc.).



An active (triggered) overload protection is signalled by gradual braking until the Biolution stands still.

### 19.4.1 Reset the triggered overload protection:

- > Switch on the power generators, e.g. lighting.  
The generated excess power is now immediately used again.
- > Biolution is ready for operation again.

## 19.5 **Connection option for auxiliary units**



The PARAVAN-Biolution offers the option of connecting different auxiliary units with a voltage of 12 volts or 24 volts to the Biolution internal wiring system.

If you require e.g. a ventilator for this connection, please contact PARAVAN GmbH. The external connections are individually adjusted for the respective consumer and the cable harness is cut to size or moved in position.

## 19.6 The lighting installation

Depending on the version, the PARAVAN-Biolution is equipped with a lighting installation using LED technology which is fully approved in road traffic. Due to the LED lamps used, the wearing out or maintenance of this installation is practically impossible/unnecessary. If your Biolution has been supplied to you without a lighting installation, retrofitting one is possible at any time.

Proceed in order as follows to switch on the lighting installation:

- > Select menu in the control unit.
- > Switch on the lighting installation.



See section "15 Control"

Parts of the lighting installation:

- > LED front headlamps ①
- > LED direction indicator ②
- > LED rear light ③

Electrical unit

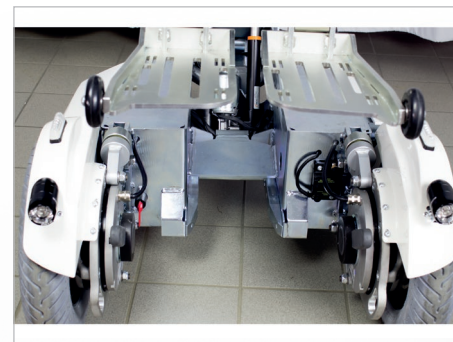


Fig. 91: Illumination at the front



Fig. 92: Illumination at the rear

## 19.7 **Maintenance-free storage batteries**

Your PARAVAN Biolution is equipped with high quality and powerful storage batteries. These maintenance-free storage batteries are completely closed. Refilling or topping up the electrolyte (battery acid) is therefore not intended or possible.

The charging status or the capacity of the storage batteries can be read on the control panel.

- Red zone  
Low capacity, immediate recharging necessary.
- Yellow zone  
Energy is still sufficient, recharging should be an option.
- Green zone  
Accumulator fully charged, full capacity.



See section "15 Control"



See section "20.8 Charging the Biolution"



## 19.8 Information regarding storage batteries



Sealed storage batteries must never be opened. Opening the storage batteries will result in irreparable damage to them and could lead to a complete power failure.



See section “22.1 Handling of closed storage batteries”



The storage batteries must be recharged after every use (even if they have only been minimally discharged) with the supplied charger. Always connect the charger during periods of non-use of the power wheelchair. The supplied charger automatically switches to “trickle charging” and thus guarantees the full use of the storage battery's functions, and that the storage battery is always ready to use. If you leave the storage batteries uncharged for too long they will deeply discharge and recharging will no longer be possible, or they will need to be replaced.



See section “20.8.2. Charger”



When disposing of storage batteries, please observe the current regulations relating to waste disposal. For information regarding these, please contact the responsible city council or municipal authority, or contact a disposal company directly.



See section “18 Disposal and Environmental Protection”

## 19.9 *Charging the Biolution*



Only charge the storage batteries with the charger supplied by us.

- > IEB Filon Futur (63559, model: E23OG24/8 B 65-FP WR) **or**
- > CHAMP 24/12



When using the external charging socket, the joystick is deactivated during the charging process. This means that the wheelchair is completely inoperable during the charging process!

### Care tips:

- > Always ensure that the storage batteries have full charging capacity.
- > Daily overnight charging is recommended.
- > The Biolution should be charged for at least 8 hours uninterrupted.
- > The charging cycle ends when the green lamp is lit up.
- > Always connect the charger during periods of non-use (trickle charging).



If you observe these care tips, the performance and service life of the storage batteries will be maximised.



See section “20.6 Maintenance-free storage batteries”



See section “20.7 Information regarding storage batteries”

## 19.9.1 Procedure when charging the Biolution



Fig. 93: Plug in charging cable

- > Switch off the Biolution.
- > Put the charger on a heat-insensitive base e.g. on the footrests.
- > Put the charger plug ① into the charging socket on the control panel.
- > Connect the charger to the power supply  
-> The charging process starts.
- > Read the charging status.  
-> Are the storage batteries at full capacity? The charging process is complete.
- > Disassembly in reverse order.



Terminate the connection between the power at the power socket and the charger.

## 19.9.2 The charger

The purpose of the charger is to automatically charge the storage batteries. The charger is housed in splashproof sheet-steel casing. It complies with the guidelines and protection requirements of the:

- Low Voltage Directive 2006/95/EC,
- Electromagnetic Compatibility Directive 2004/108/EC.



Read the operating instructions included separately with the charger.

## 19.9.3 Installing the charger, installation site

- Only install in dry rooms.
- Do not cover casing openings.
- Ensure sufficient ventilation.
- Do not install near to radiant heaters (e.g. under lamps, on heaters etc.)



During the charging process, put the charger on the foot supports of the wheelchair.



Fig. 94: Set up charger

## 20. *Technical equipment*

### 20.1 *Technical data and dimensions*

#### 20.1.1 The average lifespan

We assume an expected average product life of 8-10 years for this product, provided that the product is used within the intended use and all maintenance and service specifications are complied with.

When the life cycle expires, this date can be extended annually after evaluation by the manufacture PARAVAN.

The service life of your product depends on the frequency of use, the environment in which it is used and the care it receives. The service life can be extended by using original spare parts.



The stated service life does not constitute an additional guarantee!

## 20.1.2 Technical Data

<b>Wheelchair versions</b>	
Version G1	150 to 175cm body height
Version G2	175 to 200cm body height
<b>Seat adjustment</b>	
Seat height	370 to 840mm
Seat angle forwards (standing function)	90°
Seat angle backwards (tilting)	37°
Backrest angle	8° to 85°
Foot support angle	0° - 90°
<b>Main measurements (version G1, G2)</b>	
Width	650mm
Length	1200mm
Length (footplates folded up)	960mm

## 20.1.3 Dimensions

<b>Other special features</b>	
Front wheel suspension	Fold-up footplate
Puncture-resistant tyres	Fold-away biometric hinged joint
Swing axle	Foot support with freewheeling gear (automatically locked in the standing position)
Version medium & large compatible with PARAVAN docking station	Controls: Dynamics DX2
Individual seat pad adjustment	Maintenance-free gel batteries
<b>Electrics</b>	
Accumulators	2 x 12 Volt / 55 Ah / C20
Lighting	LED direction indicators LED front and rear lights
Range	Approx. 30 km
<b>Chassis / tyres</b>	
Spacer width at the drive axle	650mm
Spacer width at the rear axle	370mm
Wheelbase	650mm
Measurements of front wheel	3.00 - 8 clearance
Measurements of rear wheel	2.50 - 3 clearance

<b>Seat features</b>	
Seat width	45 cm
Seat depth	39-52 cm
Backrest height	61 cm
<b>Driving features</b>	
Ground clearance	70mm
Maximum obstacle clearance	60mm
Turning circle	1400mm
Maximum (upward) climb	12% / 4%**
Maximum (downward) slope / (sitting/standing)	12% / 4%**
Maximum camber (sitting/standing)	12% / 4%**
Speed (sitting/standing)	6km/h* or 10km/h (optional)*
<b>Weights</b>	
Unladen weight (version small / version medium, large)	198 Kg / 204 Kg
Maximum load	150 Kg
<b>Operating conditions</b>	
Temperature	10° - 40°
Humidity	20% - 90%
* The maximum range was measured under test conditions. The actual range achieved may vary according to weight, terrain and weather conditions. The HMV version is limited to 6 Km/h.	



## Details regarding the pads on the arm supports, seat and rear, description of the frame

<b>Arm support pads</b>	
Pad material:	PV foam
Thickness:	20mm
Compression hardness:	7.2 kPa
Density:	56 kg/m <sup>3</sup>
Cover:	BC 12 / Floridas



<b>Seat pads</b>	
Pad material:	PR foam / MOI system
Thickness:	50 - 110 mm
Compression hardness:	-
Density:	340 +/- 25 N
Cover:	Matt black



Seat pad and backrest are moulded foam parts. Therefore not measurable in volumetric weight. Moulded parts are measured in accordance with DIN standards. Measurement is made in N.

## Details regarding the pads on the arm supports, seat and rear, description of the frame



<b>Back pads</b>	
Pad material:	PR foam / MOI system
Thickness:	30 - 50 mm
Compression hardness:	77 kg/m <sup>3</sup> ± 5%*
Degree of hardness:	340 +/-25 N*
Density:	260 +/- 25 N
Cover:	Matt black

\* These are not cut foam cuboids and are therefore foamed as moulded parts. And therefore measured in N in accordance with Din ISO 2439.

<b>Frame</b>	
Pad material:	S2 235 JR / S3 55 M2
Coating:	Galvanisation
Corrosion protection:	Galvanisation



Seat pad and backrest are moulded foam parts. Therefore not measurable in volumetric weight. Moulded parts are measured in accordance with DIN standards. Measurement is made in N.

## 20.2 Spare parts

\*\* When travelling on steep slopes, please do not travel at maximum speed or use the seat height adjustment, tilt or seat slide functions and please exercise particular caution when travelling on uneven surfaces (e.g. grass, gravel, sand, ice and snow)!



See section "3 Safety information"



Replacing original parts with non-original parts or parts made in the style of the original (copied) is strictly prohibited or forbidden!

Only obtain your replacement parts from your dealer or PARAVAN GmbH.



## WARNING

**Danger of injury** for persons when operating a Biolution which does not correspond to the original or delivered condition.

**Material damage** to the Biolution by the use of non-authorized parts or incorrectly installed parts.

- > Do not carry out any technical modifications to the power wheelchair.
- > Only operate the Biolution in its original or delivered condition.
- > Only use original or authorised spare parts.

## 21. **Electromagnetic compatibility (EMC)**

### 21.1 **Information regarding electromagnetic compatibility**

The installation and maintenance of the device must only be carried out by specialist staff.

Only the supplied charging stations IEB Filon Futur (63559, model: E23OG24/8 B 65-FP WR) **or** CHAMP 24/12 may be used.

The connector must be securely installed. Electronic components and cables must not be damaged.

The use of longer cables lengths can result in increased emitted interference or reduced interference immunity.

Only the original accessories supplied by the manufacturer may be used.

In special cases, e.g. if highly sensitive equipment is being used in the direct vicinity of the device, additional remedial action might need to be taken so that the electromagnetic interference emission is further lowered below the set limit values.

## 21.2 Compliance level

The interference immunity levels in accordance with IEC 60601 are fulfilled.

### Manufacturer's declaration - electromagnetic interference

Biolution is designed to be operated under the electromagnetic conditions specified below. The customer or the user of the device should ensure that it is used under these conditions.

Emission measurements	Compliance	Electromagnetic conditions - guidelines
HF emissions in accordance with CISPR11	Group 1	Biolution only uses HF energy for its internal functions. Therefore its HF emissions are very low, and it is unlikely that adjacent electronic devices will be disturbed by these.
HF emissions in accordance with CISPR11	Class B	The device is designed to be used in all set-ups including living areas and those which are directly connected to a public power grid that also supplies power to buildings being used for living purposes.
Emission of harmonics in accordance with IEC61000-3-2	Class A	
Emission of voltage fluctuations/ flickers in accordance with IEC61000-3-3	fulfilled	

Table 201 in accordance with DIN EN 60601-1-2, 6.8.3.201

## Manufacturer's declaration - electromagnetic immunity

Biolution is designed to be operated under the electromagnetic conditions specified below. The customer or the user of the device should ensure that it is used under these conditions.

Interference immunity tests	IEC 60601- test level	Compliance level	Electromagnetic conditions - guidelines
Electrostatic discharge (ESD) in accordance with IEC 61000-4-2	$\pm 6$ kV Contact discharge $\pm 8$ kV Air discharge	$\pm 6$ kV Contact discharge $\pm 8$ kV Air discharge	Floors should be made from wood or concrete, or have ceramic tiles. If the flooring is made from synthetic material, the relative humidity must be at least 30%.
Fast transient electric bursts in accordance with IEC 61000-4-4	$\pm 2$ kV for power cables $\pm 1$ kV for input and output cables	$\pm 1$ kV for input and output cables	The quality of the power supply should correspond to that of a typical business or hospital environment.
Surges in accordance with IEC 6100-4-5	$\pm 1$ kV differential mode voltage $\pm 2$ kV common-mode voltage	Not usable	The quality of the power supply should correspond to that of a typical business or hospital environment.

Voltage dips, short interruptions and in the case of fluctuations, the power supply in accordance with IEC 61000-4-11	< 5% $U_T$ (>95% dip of $U_T$ for 0.5 periods 40% $U_T$ (60% dip of $U_T$ ) for 5 periods 70% $U_T$ (30% dip of $U_T$ ) for 25 periods < 5% $U_T$ (>95 % dip of $U_T$ for 5 seconds	Not usable	The quality of the power supply should correspond to that of a typical business or hospital environment. If the Biolution user requires continued functionality upon the interruption of the power supply, discharging from an uninterrupted power supply or battery is recommended.
Magnetic field in the power supply frequency (50/60 Hz) in accordance with IEC 61000-4-8	3 A/m	3 A/m	Magnetic fields in the mains frequency should correspond to the typical values which are present in a business and hospital environment.
NOTE $U_T$ is the mains voltage before using the test level.			

Table 202 in accordance with DIN EN 60601-1-2, 6.8.3.201



### 22.1 ***Handling of sealed storage batteries***

When charging sealed storage batteries by water electrolysis at the positive electrode, the oxygen released is guided through a glass mat from the positive to the negative electrode and finally converted back to water again after a series of chemical reactions. During charging, part of the oxygen also enters the shared gas compartment. The housing of sealed storage batteries is designed to act as a pressure vessel through which reinforced walls prevent the excess oxygen from escaping until complete recombination at the negative electrode occurs. If improper charging is carried out, hydrogen along with oxygen also arises at the negative electrode. This hydrogen cannot be converted to water, but rather discharges including the oxygen present in the gas compartment via the safety valves after the permitted excess pressure level has been exceeded. If improper charging is avoided, no water loss will occur in sealed storage batteries and the storage batteries are completely maintenance-free. During storage and energy extraction there is no oxygen in the gas compartment and the storage battery has low pressure. Opening the valves must be avoided in all cases as if oxygen enters them, the negative electrode will be oxidised. This will result in irreparable damage and could lead to the complete power failure of the storage battery.

## 22.2 *Maintenance plan & maintenance recommendations*

When	What	Note
<b>Before driving</b>	<b>General</b> Check for proper function	Carry out check yourself or with an assistant
	<b>Check magnetic brake</b>	Carry out check yourself or with an assistant  If the power wheelchair can be pushed, have the brake repaired immediately by a specialist workshop. - Danger of accident!
<b>Before driving in the dark</b>	<b>the lighting unit</b> Check that the lighting system & reflectors are working properly	Carry out check yourself or with an assistant
<b>Check, if driving behaviour is suspicious</b>	<b>Have the tyre pressure checked.</b>	Visit a specialist workshop. (Sanitary shop/contact PARAVAN)
	<b>Adjustment screws &amp; Bolt connections</b> Check screws or nuts for tight fit.	Carry out check yourself or with an assistant  Tighten loosened screws.  Visit a specialist workshop.

<b>When</b>	<b>What</b>	<b>Note</b>
<b>Every 6- 8 months</b>	<b>Wheel fastenings</b> Check wheel nuts or bolts for tightness	Carry out check yourself or with an assistant  Tighten loosened wheel nuts or bolts firmly and retighten after 10 operating hours or 50 km  If necessary, visit a specialist workshop.
<b>Every 2 months</b>	<b>Check tyre tread</b> Minimum tread depth = 1 mm	Carry out visual inspection yourself or with an assistant.  If the tyre tread is worn or damaged, consult a specialist workshop for repair..
<b>Every 6 months</b>	<b>Check:</b> - Cleanliness - General condition	See chapter <b>18.2 Cleaning &amp; maintenance</b>  Carry out yourself or with an assistant.
<b>Every 12 months</b>	<b>Inspection work</b> - Wheelchair - Charger	To be carried out by the specialist workshop

## 22.3 *Customer service book*

General

- > 1. Inspection (12 months after commissioning)  
Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Stamp: \_\_\_\_\_

Information

- > 2. Inspection (annual)  
Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Stamp: \_\_\_\_\_

Prepare

Operate

- > 3. Inspection (annual)  
Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Stamp: \_\_\_\_\_

Help

- > 4. Inspection (annual)  
Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Stamp: \_\_\_\_\_

Technology

> 5. Inspection (annual)  
Date:

Signature:

Stamp:

> 6. Inspection (annual)  
Date:

Signature:

Stamp:

> 7. Inspection (annual)  
Date:

Signature:

Stamp:

> 8. Inspection (annual)  
Date:

Signature:

Stamp:

## 22.4 EC declaration of conformity

### Declaration of Conformity

Version 1



**PARAVAN GmbH**  
Paravanstraße 5-10  
72539 Pfromstetten-Aichelau  
GERMANY

#### We declare under our sole responsibility that the product listed below

Wir erklären in alleiniger Verantwortung, dass das unten aufgeführte Produkt  
Nous déclarons sans notre propre responsabilité que le dispositif médical

#### Product description; Code, Type, Model, Intended purpose

Produktbezeichnung; Code, Typ, Modell, Anwendungszweck

Description du produit; code, type, modèle, destination,

Power Wheelchair, designed for the mobility of  
a person with dissability indoors and outdoors.  
Elektrorollstuhl, konzipiert für die Mobilität einer Person  
mit Behinderung im Innen- und Außenbereich.

Fauteuil roulant électrique conçu pour la mobilité  
d'une personne handicapée à l'intérieur et à l'extérieur.

#### PR Biolution

G052195980

PARAVAN GmbH  
Paravanstraße 5-10  
72539 Pfromstetten Aichelau  
GERMANY

DE-MF-000006423

#### Single registration number (SRN)

**meets all the provisions of the Regulation (EU) 2017 /745 on medical devices, especially Annex I - III, which apply to it.**

allen Anforderungen der Verordnung (EU) 2017/745 über Medizinprodukte, insbesondere Anhang I-III, entspricht; die anwendbar sind  
remplit toutes les exigences du Règlement (UE) 2017/745 relatif aux dispositifs médicaux, en particulier annexe III, qui le concernent.

#### Device Classification according to Annex VIII

Produktklassifizierung nach Anhang VIII  
Classification selon l'annexe VIII

Class I

Klasse I  
Classe I

#### Initial date of first Declaration of Conformity:

Erstmalige Ausstellung der Konformitätserklärung:  
Année de première Déclaration de Conformité :

10/2015

31.12.2025

#### Valid until:

Gültig bis:  
valable jusqu'au:

#### Operations Manager

Roland Arnold



Geschäftsführer  
Le Directeur des Opérations

**Place and issue date:** Aichelau, 20.05.2021

Ausstellungsort und -datum:

Lieu et date de délivrance:

Geschäftsführer: Roland Arnold  
Ansprechlich: Stuttgart HRB 370585  
Umsatsteuer-ID: DE237525479  
IK: 590941201

Kreissparkasse Reutlingen - IBAN: DE68 6405 0000 0100 0048 10 - BIC: SOLA DE31 FREU  
Volksbank Münsingen - IBAN: DE30 6409 1300 0042 7430 10 - BIC: GENO DE31 MUN  
Commerzbank AG Reutlingen - IBAN: DE27 6404 0033 0428 8270 00 - BIC: COBA DEFF 640

1

Fig. 95: EC declaration of conformity

## 22.5 *Log of instructions upon supply*

Due to the flexible setting options of the Biolution, the following information should be observed:

### **When using the tilt function:**

- > It must be ensured that the seat is not tilted too far forwards or backwards, as otherwise you could slip out of the seat.
- > The tilt function is set to your weight.
- > Tilt the wheelchair first, then set the backrest.
- > Always wear the seatbelt when using the tilt function.
- > When using the tilt function, only half the speed of the selected movement level is possible.

### **Seat / backrest in the special orthopaedic seat**

- > The backrest must only be adjusted as far as is necessary, as the motor is not powerful enough to lift the weight of the driver. Use the tilt function first.
- > When adjusting the backrest and the tilting angle, be aware of attachments (rucksack, etc.).

### **Lifting arm**

- > When raising and lowering the seat, be aware of head and leg space, the footrests must not be in contact with the floor.
- > When raising the seat, the Biolution will only travel at half speed after approx 100mm.











# PARAVAN®

PARAVAN WHEELCHAIR SERIES

## *User manual* *PR biolution*

ORIGINAL INSTRUCTION MANUAL



 **EN** V3.3

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