

*Otto Bock*<sup>®</sup>

QUALITY FOR LIFE



# **A200**

## **Service Instructions**





## Service Instructions for the A200 Power Wheelchair

Table of Contents	Page
<b>1 General Information .....</b>	<b>5</b>
1.1 <i>Preface</i> .....	5
1.2 <i>Intended Use</i> .....	5
<b>2 Safety Instructions .....</b>	<b>5</b>
2.1 <i>Explanation of Symbols</i> .....	5
2.2 <i>General Safety Instructions</i> .....	5
2.3 <i>Safety Instructions for the Use of Tools and Aids</i> .....	6
2.4 <i>Safety Instructions for Service and Maintenance Tasks</i> .....	7
2.5 <i>Safety Instructions for Maintenance Tasks on Electrical Components</i> .....	8
2.6 <i>Safety Instructions for Disposal</i> .....	9
<b>3 Transportation and Storage .....</b>	<b>10</b>
3.1 <i>Transportation</i> .....	10
3.2 <i>Storage</i> .....	11
<b>4 Required Tools and Aids.....</b>	<b>11</b>
<b>5 Information Display .....</b>	<b>12</b>
<b>6 Service and Maintenance.....</b>	<b>13</b>
6.1 <i>Inspecting the General Condition</i> .....	13
6.2 <i>Batteries / Fuses</i> .....	13
6.2.1 <i>Battery Charging</i> .....	13
6.2.2 <i>Battery Replacement</i> .....	15
6.2.3 <i>Fuse Replacement</i> .....	16
6.2.4 <i>Reinstalling the Battery Cable</i> .....	16
6.2.5 <i>Contact Strip Replacement</i> .....	17
6.3 <i>Controller Replacement</i> .....	18
6.4 <i>Side Panels</i> .....	19
6.4.1 <i>Adapting / Replacing the Side Panels</i> .....	19
6.4.2 <i>Replacing the Clothing Protector</i> .....	21
6.5 <i>Footrests</i> .....	21
6.5.1 <i>Adapting / Replacing the Footrests</i> .....	21
6.5.2 <i>Replacing the footplate</i> .....	25
6.6 <i>Wheels</i> .....	25
6.6.1 <i>Inspecting the General Condition</i> .....	25
6.6.2 <i>Replacing the Casing or Inner Tube of Pneumatic Tyres</i> .....	26
6.6.3 <i>Replacing the Drive Wheel</i> .....	26
6.6.4 <i>Replacing the Wheel Flange</i> .....	27
6.6.5 <i>Replacing the Steering Caster</i> .....	28
6.6.6 <i>Replacing the Caster Fork</i> .....	29
6.6.7 <i>Replacing the Anti-Tipper Wheels</i> .....	30

---

<b>6.7 Control Panel.....</b>	<b>30</b>
6.7.1 VR2 Control Panel .....	30
6.7.2 Replacing the Control Panel Holder .....	31
<b>6.8 Seats.....</b>	<b>32</b>
6.8.1 Replacing the Bearing Plate .....	32
6.8.2 Standard Seat: Replacing / Adjusting the Back Upholstery .....	33
6.8.3 Standard Seat: Replacing the Seat Brackets .....	33
6.8.4 Standard Seat: Adjusting the Seat Angle .....	34
6.8.5 Standard Seat: Replacing the Seat Plate .....	34
6.8.6 Standard Seat: Replacing the Seat Frame .....	35
6.8.7 Standard Seat: Replacing the Seat Angles.....	36
6.8.8 Standard Seat: Replacing / Adjusting the Side Panel Attachment Device .....	36
6.8.9 Installing the Contour Seat (Option) .....	37
<b>6.9 Base Frame.....</b>	<b>38</b>
6.9.1 Replacing the Base Frame.....	38
<b>6.10 Drive Unit .....</b>	<b>38</b>
6.10.1 Replacing the Complete Drive Unit .....	38
6.10.2 Replacing the Drive Motor.....	39
<b>6.11 Accessories.....</b>	<b>40</b>
6.11.1 Retrofitting the Mechanical Back Angle Adjustment .....	40
6.11.2 Attaching the Bowden Cable (for Back Angle Adjustment).....	41
6.11.3 Retrofitting the Curb Climbing Assist.....	42
6.11.4 Retrofitting the Rear View Mirror .....	43
6.11.5 Installing the Headrest Installation Kit (Option).....	43
6.11.6 Retrofitting the Lap Belt (Option) .....	44
6.11.7 Retrofitting the Swivelling Control Panel Holder (Option).....	44
6.11.8 Additional Lighting.....	45
<b>7 Error Diagnosis.....</b>	<b>45</b>
7.1 Diagnostic Steps.....	46
7.2 Diagnosis with Battery Capacity LED Indicator .....	46
7.3 Diagnosis Using the Handheld Programming Device (s. also Section 8.3).....	48
7.4 Other Errors (not displayed).....	51
<b>8 VR 2 Wheelchair Control – Installation and Programming.....</b>	<b>52</b>
8.1 Overview.....	52
8.2 Installation and Wiring.....	52
8.3 Programming Tools.....	53
8.3.1 Handheld Programming Device.....	53
8.3.2 PC Programming Device .....	53
8.4 Programmable Parameters.....	54
8.4.1 Speed Settings .....	54
8.4.2 General Parameter Settings.....	57
8.4.3 Log Functions .....	58
<b>9 Maintenance and Service Plan A200 .....</b>	<b>59</b>

---

# 1 General Information

## 1.1 Preface

These service instructions describe all regular maintenance tasks as well as repair and replacement tasks for the A200 from Otto Bock. They include all information required by dealers in order to correct functional and mechanical defects in components of the A200.

The information in these service instructions is essential in order to work on the A200 correctly and safely. This is why this document, in particular the section "Safety Instructions", must be read carefully by all persons working on the A200. This ensures the functionality of the A200 is fully utilised.

## 1.2 Intended Use





The A200 power wheelchair is intended for indoor and outdoor individual self-transportation by persons with limited mobility. The A200 power wheelchair may only be used by persons who have the required physical and mental capabilities.

Any other use is considered improper use. The manufacturer is not liable for any personal injury or damage to property resulting from improper use; in such cases, the user has sole liability.



The A200 power wheelchair may only be used by properly trained persons. Training is one of the prerequisites in order to protect against personal risks and to operate the A200 power wheelchair safely and properly.

# 2 Safety Instructions

## 2.1 Explanation of Symbols

 <b>WARNING</b>	Warnings regarding possible risks of severe accident or injury.
 <b>CAUTION</b>	Warnings regarding possible risks of accident or injury.
 <b>NOTICE</b>	Warnings regarding possible technical damage.
 <b>INFORMATION</b>	Information regarding operation. Information for service personnel.

## 2.2 General Safety Instructions

<b>INFORMATION</b>	Regular maintenance is important. It increases safety and prolongs the service life of the product.
 <b>CAUTION</b>	<b>Risk of suffocation.</b> Packaging materials must be kept out of reach of children.
 <b>NOTICE</b>	<b>Risk of damage due to unauthorised service.</b> Service and maintenance tasks may only be completed by skilled specialists. Only original spare parts may be used for all service and maintenance tasks.

**NOTICE**

**Risk of damage caused by failure to comply with maintenance intervals.** Otto Bock recommends having the A200 power wheelchair inspected and maintained for functionality and operational safety by authorised personnel at least once a year. In case of frequent user changes (growing children or youths) or users with changing clinical pictures, the wheelchair should be inspected, adjusted and maintained twice a year.

**NOTICE**

**Risk of damage caused by failure to comply with the service documentation.** Knowledge of the service instructions and the instructions for use is essential for proper service.

The service and maintenance instructions must be read carefully before commencing work. The service instructions apply in conjunction with the instructions for use and the spare parts catalogue. All documents must be used together.

All safety instructions contained in these service instructions and all other applicable documents must be observed and complied with. They must be available to service and maintenance personnel at all times.

**NOTICE**

**Risk of damage due to excessive heat or cold.** The A200 may only be operated in the temperature range from -25 °C to +50 °C (-13 °F to 122 °F). It must not be operated at temperatures outside this range.

**NOTICE**

**Risk of damage caused by overload.** The maximum load capacity for the A200 power wheelchair is 100 kg / 220 lbs.

**INFORMATION**

Familiarise yourself with the functions of the product. If you are not familiar with the product, read the instructions for use prior to inspection. The instructions for use are available from the manufacturer (see overview of all Otto Bock subsidiaries under "Otto Bock Worldwide"). Additional documentation can be downloaded from the Otto Bock homepage at [www.ottobock.de](http://www.ottobock.de) or [www.ottobock.com](http://www.ottobock.com).

## **2.3 Safety Instructions for the Use of Tools and Aids**

**⚠ CAUTION**

**Risk of health impairment due to the use of incorrect tools.** When completing the tasks, only use tools that are suitable for the conditions at the place of work and for which safety and the protection of health are assured with proper use.

Verify proper functionality before use. In the use of tools and supplies, also consider the ergonomic relationships between the place of work, tools and supplies, workplace organisation, workflow and tasks; this is particularly important in regards to posture during the use of tools and supplies.

**⚠ CAUTION**

**Risk of health impairment due to the use of improper work clothing.** Ensure legally prescribed protective work clothing is worn.

**⚠ CAUTION**

**Risk of injury during tasks that involve lifting.** When repair and maintenance tasks must be completed under raised parts or equipment, ensure suitable precautions are taken to secure the applicable components against falling. Equipment used to raise loads must prevent the load from accidentally shifting in a dangerous manner, dropping in free fall or being accidentally released.

When using lifting platforms, ensure that the A200 power wheelchair is centred on the platform and no parts such as the anti-tipper project into the danger area.

**⚠ CAUTION**

**Risk due to hazardous materials.** Hazardous materials may only be kept at the place of work in quantities required for ongoing tasks. Regularly and safely remove waste and residue. Clean up spilled substances immediately.

## 2.4 Safety Instructions for Service and Maintenance Tasks

**⚠ CAUTION**

**Risk of injury due to pinch points.** For design reasons, there are pinch points between the seat and frame of the A200. Special caution is required during all work on the corresponding components.

**⚠ CAUTION**

**Hazards while working on the brake system.** Note that there is no braking functionality when the brake is unlocked. The brake must only be unlocked in hazardous situations and for maintenance or repairs. The corresponding force required for acceleration and deceleration must come from the person pushing.

Once push mode is no longer needed, the brake release lever must be locked immediately.

**NOTICE**

**Risk of damage due to improper preparation of maintenance tasks.**

- The A200 power wheelchair must be turned off and the fuse must be removed for all maintenance tasks. This does not apply to functional tests of the electrical components.
- Secure the product to prevent it from tipping over or falling, e.g. off the workbench.
- Some components of the power wheelchair, e. g. the batteries, frame, seat and motors, are very heavy. Hoisting devices of sufficient capacity must be used where applicable.
- Clean / disinfect the product before you start the inspection. Consult the instructions for use regarding product care or product-specific inspection information.

**NOTICE**

**Risk of damage due to unsecured screw connections.** Unsecured screw connections can become loose while using the product. Secure screws and nuts. The screw connections must be tightened properly after all installation tasks. Defined torque specifications must be followed.

The screws and nuts for many of the screw connections are equipped with thread lock. If you have to undo such screw connections, the nuts or screws must be replaced with nuts/screws equipped with new thread lock. If screws or nuts with thread lock are not available, apply a medium-strength liquid thread lock substance (such as Loctite<sup>®</sup> 241 or Euro Lock A24.20) to the existing screws.

**NOTICE**

**Risk of damage to the padding.** During any work on the seat, the padding must be adequately protected against mechanical and chemical damage. The back rest and seat bottom are flame retardant but nevertheless flammable. They must not come into contact with open flame or embers.

**NOTICE**

**Risk of damage due to improper cleaning after the completion of maintenance tasks.** The A200 may not be cleaned with a jet of water or a pressure washer under any circumstances. A cloth or sponge may be used for cleaning. Water must not come into direct contact with the motor under any circumstances.

Check the operating performance of the A200 power wheelchair after cleaning.

**INFORMATION**

The tyres of the A200 power wheelchair contain chemical substances that can react with other chemical substances (e.g. cleaning agents, acids etc.).

## **2.5 Safety Instructions for Maintenance Tasks on Electrical Components**

**⚠ CAUTION**

**Risk of injury while working on the battery.**

Only use a battery charger supplied by Otto Bock which has been tested and approved by Otto Bock for the respective batteries (observe information on the charger). Failure to do so can result in a battery explosion and possible impairment of health due to contact with battery acid.

Smoking and open flame are prohibited while working on the battery. Sparks must be avoided.

Explosive gases can develop while the batteries are charging. Observe the safety instructions provided by the battery manufacturer. Wear protective goggles. Ensure sufficient ventilation when charging the batteries in an enclosed room.

Drive batteries can supply very large amounts of energy and may arc if they are short-circuited. Therefore, always disconnect the batteries when working on the motor control or wiring.

**NOTICE**

**Risk of damage due to improper preparation of maintenance tasks.**

- If the driving function is not required, turn off the control unit or jack up the drive wheels in order to prevent uncontrolled operation through accidental joystick activation.
- Water must not come into direct contact with the electronics or battery during maintenance tasks.
- When attaching plug connections on the controller, ensure the contacts are assigned correctly.

**NOTICE**

**Risk of battery damage.** In order to prevent short circuits, always use insulated tools when working on the batteries.

Prevent deep discharge of the batteries in order to avoid loss of functionality and permanent battery damage.

Ensure correct polarity is used when connecting the batteries.

**NOTICE**

**Risk of damage to the battery charger.** Prevent overheating of the charger during the charging process. Ensure that the cooling ribs on the back of the device are not covered.



**INFORMATION**

The A200 has been tested according to EMC regulations. The following particularities must be observed during operation and communicated to the user:

- The driving characteristics of the A200 can be affected by electromagnetic fields (mobile phones or other radiating devices). Therefore all mobile devices must be turned off when driving.
- The A200 can generate electromagnetic fields that can cause interference for other devices. Therefore, turn off the control unit whenever you do not need it.

**INFORMATION**

During extended periods of disuse or shipment of the A200 power wheelchair, remove the fuse from the battery packs in order to prevent deep discharge of the batteries due to standby consumption.

## ***2.6 Safety Instructions for Disposal***

**INFORMATION**

If the power wheelchair is no longer in use, it must be disposed of properly in accordance with national regulations.

If a wheelchair is to be disposed of, all components and materials of the power wheelchair must be recycled or disposed of properly.

### 3 Transportation and Storage

The following environmental conditions apply to transportation and storage:

Ambient temperature -40 °C to +65 °C (-40 °F to 149 °F)

#### 3.1 Transportation

##### ⚠ CAUTION

**Risk of accidents due to insufficient fastening.** The A200 power wheelchair must be properly fastened to the transportation vehicle in order to secure it against shifting, e. g. with tensioning straps.

##### NOTICE

**Risk of damage due to falling.** The maximum net weight of the A200 power wheelchair is 66 kg / 145 lbs. Hoisting devices and transportation vehicles used for transportation must have sufficient capacity.

##### INFORMATION

It is also possible to disassemble the A200 power wheelchair for transportation. To do this, follow the information given in Section 5.2 of the instructions for use (647G545).

Secure the A200 power wheelchair inside the transportation vehicle, e. g. using tensioning straps. In order to do so, use the eyebolts at the front and back of the power wheelchair and the defined mounting points in the transportation vehicle.

Before transporting the power wheelchair, switch off the control unit and engage the brake.

You can reduce the size of the power wheelchair for transportation by folding down the back rest and removing the side panels and footrests.

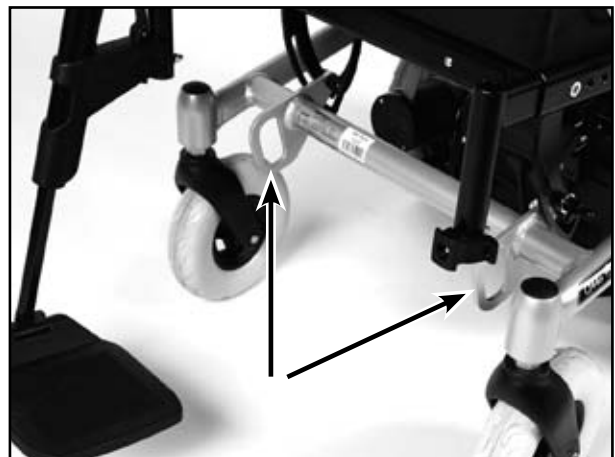
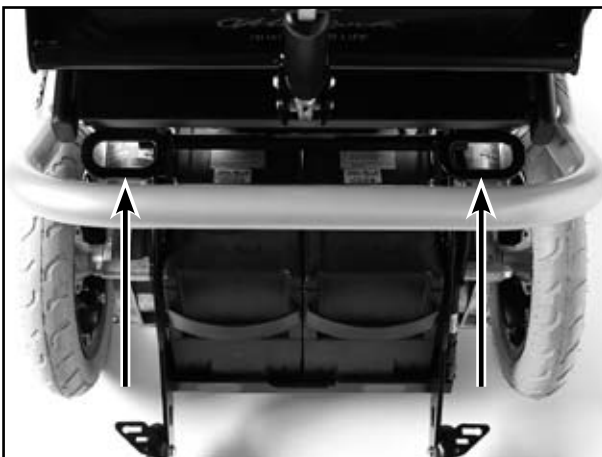


Fig. 1 Eyebolts

### **3.2 Storage**

#### **INFORMATION**

If the A200 power wheelchair is not moved for several days, permanent colour changes may occur where the wheelchair comes into contact with the surface it is standing on. Otto Bock therefore recommends parking the wheelchair on a suitable surface during extended periods of disuse.

The A200 power wheelchair must be stored in an enclosed area. Remove the fuse; otherwise, there is a risk of deep discharge.

The storage location must be dry and have sufficient air circulation. There must not be any build-up of humidity. The A200 power wheelchair must not be subjected to any damaging exterior influences, e. g. rain, snow, or strong solar radiation during storage.

Otto Bock recommends storing the A200 power wheelchair with slightly elevated tyre pressure and using assembly stands or wooden blocks in order to raise the tyres (completely) off the ground in order to protect them from frost. Regularly rotating the wheels helps to prevent flat spots.

## **4 Required Tools and Aids**

Suitable tools and aids for the completion of service tasks are listed below:

- ☐ Suitable tools and aids for the completion of service tasks are listed below:
- ☐ Screwdrivers, blade widths: 2.5 / 3.5 / 5.5 mm
- ☐ Phillips head screwdriver, 2 mm
- ☐ Ring or open-end wrenches, 8 – 24 mm
- ☐ Allen wrenches, 2 – 8 mm
- ☐ Torque wrench
- ☐ Reversible ratchet handle wrench and sockets, 8 – 20 mm
- ☐ Puller
- ☐ Pin punch, Ø 3 mm
- ☐ Hammer, approx. 300 g
- ☐ Plastic hammer
- ☐ Drill bit, 4 / 5 mm + hand drill
- ☐ Plastic tyre mounting lever
- ☐ Inner tube repair kit
- ☐ Side cutting pliers
- ☐ Water pump pliers, gripping width up to 32 mm
- ☐ Liquid thread lock “medium strength”



Fig. 2 Tools



Fig. 3 Handheld programming device

## 5 Information Display

### INFORMATION

Please see Section 7 “Error Diagnosis” for information on the display of error messages using the battery capacity LED indicator or the handheld programming device / PC software.

The wheelchair functions are displayed on the LED display fields of the control panel:



Display	Function
	The LEDs show the battery capacity (see instructions for use, 647G545).
	The LEDs show the currently selected speed level (from 1 to 5).

Table 1 LED display fields on the control panel

## 6 Service and Maintenance

### 6.1 Inspecting the General Condition

- ☐ Check all safety-related components for corrosion, repair if required and reapply corrosion protection.
- ☐ Check weld seams.
- ☐ Check tightness of screw connections; replace thread-locking compound if required; observe defined torque specifications; replace defective screws (e.g. in case of corrosion).
- ☐ Check cables for ruptures, signs of wear and proper attachment; replace defective components according to the cable layout plan.
- ☐ Check cable connections and plug connections.

### 6.2 Batteries / Fuses

#### CAUTION

**Risk of injury while working on the battery.**

Smoking and open flame are prohibited while working on the battery. Sparks must be avoided.

Explosive gases can develop while the batteries are charging. Observe the safety instructions provided by the battery manufacturer. Wear protective goggles. Ensure sufficient ventilation when charging the batteries in an enclosed room.

Drive batteries can supply very large amounts of energy and may arc if they are short-circuited. Therefore, always disconnect the batteries when working on the motor control or wiring.

#### NOTICE

**Risk of battery damage.** In order to prevent short circuits, always use insulated tools when working on the batteries.

Prevent deep discharge of the batteries in order to avoid loss of functionality and permanent battery damage.

Ensure correct polarity is used when connecting the batteries and battery capacity meter.

The A200 power wheelchair comes factory-equipped with two maintenance-free 32 Ah/ 12 V GEL batteries.

#### 6.2.1 Battery Charging

#### NOTICE

**Risk of damage due to incorrect battery handling.** Please note the following when handling the batteries:

- Charge the batteries immediately if only 2 segments of the battery capacity LED indicator are lit.
- During extended periods of disuse, charge the batteries of the A600 power wheelchair weekly.
- Otto Bock assumes no liability for damage caused by deep discharge.

**NOTICE**

**Risk of damage to the battery charger / risk of damage caused by the battery charger.** Please note the following when using the charger:

- Only use a battery charger supplied by Otto Bock which has been tested and approved by Otto Bock for the respective batteries (observe information on the charger). Failure to do so can result in a battery explosion.
- The information on the nameplate of the charger must match the country-specific voltage of the respective power supply network.
- Only use the battery charger within the specified ranges of temperature and humidity.
- Place the rubber feet of the battery charger on a level surface.
- When setting the charger up close to a window, protect it against direct sunlight.
- Keep the charger from overheating. The vent openings on the back of the charger must not be covered.
- Turn off the control unit during the charging process so that the entire charging current flows to the battery.
- Avoid dust and dirt. Only clean with a dry cloth.

The remaining battery capacity determines the range of the A200 power wheelchair. The following factors affect the battery capacity:

- ☐ Ambient temperature
- ☐ Age of the batteries
- ☐ Amount of use
- ☐ Charging process

Driving for an extended period of time in the lower range of the battery indicator will result in deep discharge and therefore battery damage. In addition, there is the risk that the A200 power wheelchair may stop due to zero battery capacity and put the user in a dangerous situation.

**Tools:**

- ☐ Charger intended for use by Otto Bock

**Steps:**

1. Turn off the control unit on the power wheelchair.
2. Connect the plug of the battery charger to the charging receptacle on the underside of the control panel.
3. Connect the battery charger to a wall socket. The batteries will start charging automatically, and the current charge status is indicated on the LEDs of the battery charger (see Table 2).
4. When the charging process is complete, disconnect the battery charger from the wall outlet and from the control panel.
5. Turn on the control unit; the power wheelchair is now ready for operation.

The battery charger indicates the following states:

Display	Function
All LEDs light up for a moment	Once the connection to the mains supply has been established
Yellow LED is lit	Battery is charging
Yellow LED flashes	Battery is charged to 90 %
Green LED is lit	Battery is fully charged; battery charger has changed to trickle charge
Red LED is lit	Incorrect polarity (immediately unplug the battery charger from the wall outlet and reconnect the cables with correct polarity)
Red LED flashes	Error in the course of the characteristic curve; charging time has been exceeded

**Table 2** LED display on the battery charger

The battery charger features a programmed recharging phase. Once a discharged battery is completely charged (after approximately 8 hours), the battery charger can remain connected with no risk of overcharging or damaging the battery.

### 6.2.2 Battery Replacement

The batteries are to be replaced as complete units (battery packs). Except for battery charging, they do not require servicing.

#### Steps:

1. Undo the lock, hold the battery packs by the handle and pull up to remove them (Fig. 4).
2. Place the new battery packs back into the drive unit sustainer. Make sure that the red arrows on the battery packs point in driving direction and that the plug contacts (Fig. 5, item A) engage with the battery contacts.
3. The locking mechanism should be reengaged to prevent the battery packs from falling out.



**Fig. 4** Battery pack removal

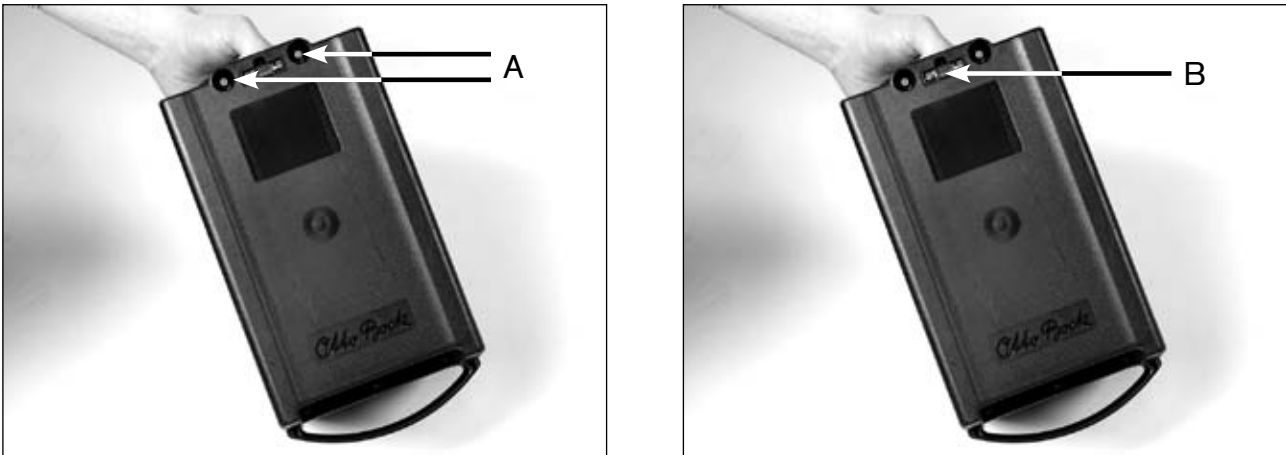


Fig. 5 Battery pack bottom side

### 6.2.3 Fuse Replacement

The two 60 A fuses are located in the fuse holders on the bottom side of the battery packs (Fig. 5, item B).

#### Preparation:

- ☐ Remove the battery pack (see Section 6.2.2).

#### Steps:

1. Pull out the fuse on the bottom side.
2. Insert the new fuse into the holder between the contacts on the bottom side of the batteries. Make sure that the fuse is pressed into the centre of the spring contacts and that it is not at an angle.

### 6.2.4 Reinstalling the Battery Cable

#### NOTICE

**Risk of battery damage.** Ensure correct polarity is used when connecting the batteries.

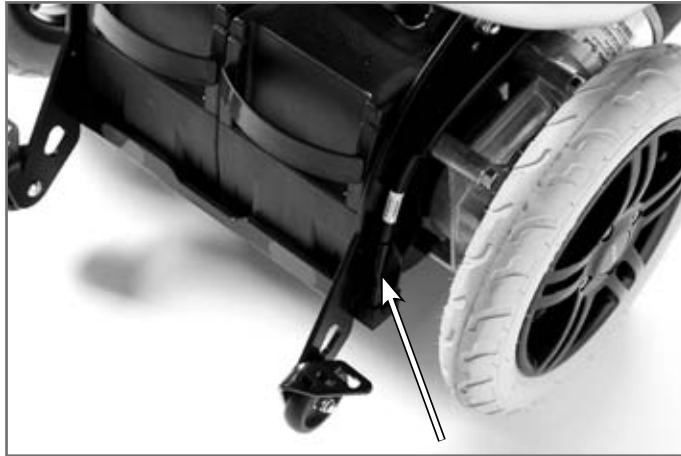
#### Tools:

- ☐ Side cutting pliers

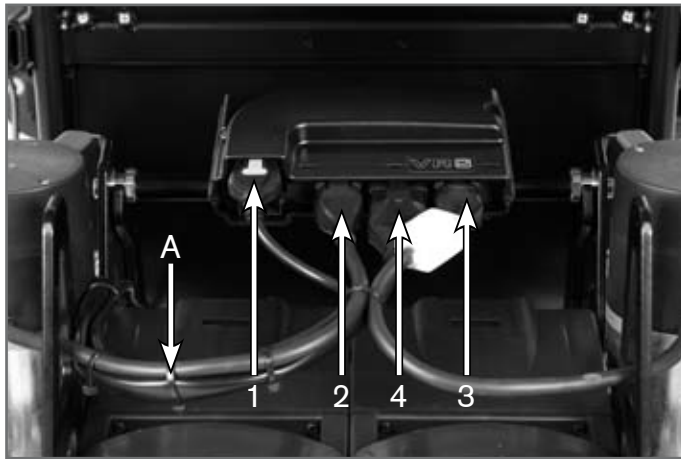
#### Steps:

1. Disconnect the old main battery cable from the contact strip (Fig. 6).
  2. Disconnect the old main battery cable from the controller (for connections on the controller, see Figure 7).
  3. Cut the cable ties with side-cutting pliers (Fig. 7, item A).
  4. Connect the new battery main cable to the controller and to the contact strip.
  5. Apply and tighten new cable ties around the cable and cut off the protruding ends.
- Properly reassemble all components upon completion of the work.





**Fig. 6** Battery cable on the contact strip



**Fig. 7** Controller with connector plugs

- 1 Control device connector
- 2 Motor 1 connector
- 3 Motor 2 connector
- 4 Battery cable connector

### 6.2.5 Contact Strip Replacement

The contact strip is used to establish the connection between the battery packs and the main battery cable. The contact strip needs to be exchanged only for replacement.

#### Preparation:

- ☐ Separate the frame from the drive unit sustainer (see instructions for use 647G545, Section 5.2).
- ☐ Remove the battery packs (see Section 6.2.2).

#### Tools:

- ☐ Allen wrench, 6 mm

**Steps:**

6. Disconnect the old main battery cable from the contact strip (Fig. 6).
7. Remove the contact strip and replace, if necessary (Fig. 8).

Properly reassemble all components upon completion of the work.



---

**Fig. 8**     Contact strip replacement

### **6.3 Controller Replacement**

<b>INFORMATION</b>
--------------------

Ensure correct polarity is used when connecting the cables.

**Preparation:**

- ☐ Separate the frame from the drive unit sustainer (see instructions for use 647G545, Section 5.2).
- ☐ Remove the battery packs (see Section 6.2.2).

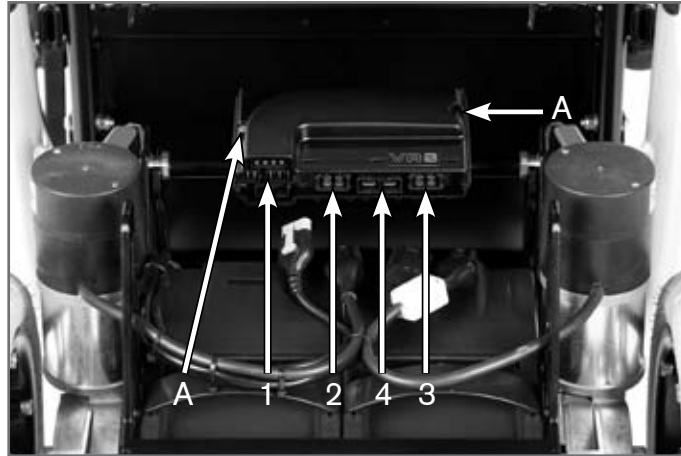
**Tools:**

- ☐ Allen wrench, 3 mm

**Steps:**

1. Remove the protective cover (Fig. 9, item A).
2. Remove all connectors on the controller.
3. Loosen the two Allen head screws, remove the controller and replace if required.

Properly reassemble all components upon completion of the work.



**Fig. 9** Removing the protective cover / connectors on the controller

- 1 Control device connector
- 2 Motor 1 connector
- 3 Motor 2 connector
- 4 Battery connector

## 6.4 Side Panels

### INFORMATION

For adjusting the side panel attachment devices (width setting), refer to Section 6.8.7.

### 6.4.1 Adapting / Replacing the Side Panels

A side panel attachment device is located on the left and right sides of the seat frame. The side panels with arm rests are inserted into these attachment devices. The height and position of the side panels can be individually adapted to the arm length of the wheelchair user.

#### Tools:

- ☐ Allen wrench, 2 mm

#### a) Adapting to the forearm length

##### Side panel without control panel:

#### Steps:

1. Loosen the two Allen head screws (Fig. 10, item A).
2. Change the position of the arm rests by moving them forward or backward, or remove and replace them if required.

##### Side panel with control panel:

#### Steps:

1. Loosen the sliding nuts in the C-profile (Fig. 10, item B).
2. Adjust / replace the arm rest and tighten the sliding nuts.

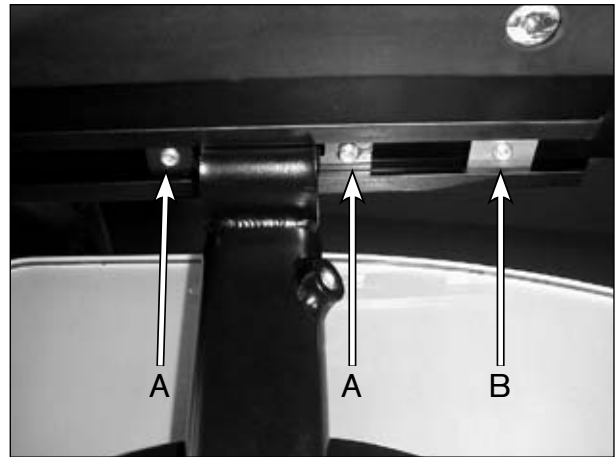
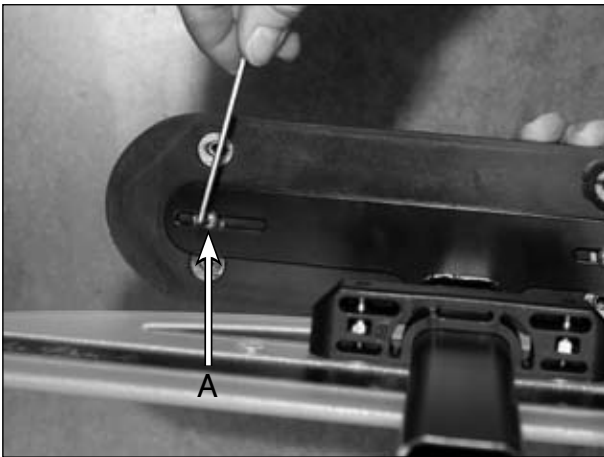


Fig. 10 Adapting the side panel to the forearm length

### b) Adapting to the upper arm length

#### Steps:

1. Loosen the set screw at the top of the side panel attachment device.
2. Move the arm rest to the required height.
3. Tighten the set screw.



Fig. 11 Adapting the side panel to the upper arm length

### c) Replacing the side panel

#### Steps:

1. Loosen the wing nut laterally at the bottom of the side panel attachment device.
2. Pull the side panel up and out, and replace if required.

Properly reassemble all components upon completion of the work.



Fig. 12 Replacing the side panel

### 6.4.2 Replacing the Clothing Protector

Preparation:

- ☐ Remove the side panel.

**Tools:**

- ☐ Allen wrench, 3 mm

**Steps:**

1. Loosen two Allen head screws on the side panel.
2. Change the position of the clothing protector, or remove and replace it if required.

Properly reassemble all components upon completion of the work.



Fig. 13 Replacing the clothing protector

## 6.5 Footrests

### 6.5.1 Adapting / Replacing the Footrests

Various footrest systems with the same adjustment and mounting options are available for the A200 power wheelchair. The length and position of the footrests can be individually adjusted to the wheelchair user.

As an option to the standard version, elevating footrests with calf and knee pads may be installed.

**Tools:**

- ☐ 2 x Allen wrench, 5 mm
- ☐ Allen wrench, 6 mm
- ☐ Ring or open-end wrench, 10 / 13 mm

**a) Adapting to the lower leg length**

**Steps:**

1. Pull the footrest lock lever back and pull the footrest up and out (Fig. 14).
2. Loosen the two set screws (Fig. 15).
3. Adjust the length by pulling out or pushing in the footrest tube.

Properly reassemble all components upon completion of the work.



**Fig. 14** Unlocking the footrest



**Fig. 15** Adjusting the lower leg length

1 Set screw

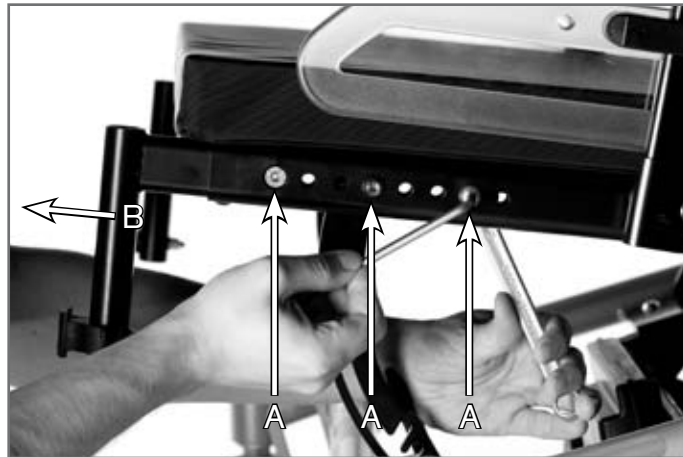
#### **b) Adapting to thigh length (adjusting the footrest receiver)**

This setting is changed on the footrest holders that are mounted to the seat frame.

##### **Steps:**

1. Pull the footrest lock lever back and pull the footrest up and out (see Figure 14).
2. On either side, loosen the three Allen head screws on the seat frame (Fig. 16, item A).
3. Adjust the footrest receiver to a different length (Fig. 16, item B).

Properly reassemble all components upon completion of the work.



**Fig. 16** Adapting the footrest to the thigh length

#### **c) Installing elevating footrests with calf and knee pads**

##### **Tools:**

- ☐ Allen wrench, 3 mm
- ☐ Ring or open-end wrench, 10 mm

##### **Steps:**

1. Remove and replace the standard footrests.
2. Remove the standard footrest receiver (see paragraph b).
3. Install the footrest receiver for elevating footrests.
4. Insert the elevating footrests into the footrest receiver.

#### **d) Replacing the knee pad**

##### **Steps:**

1. Remove the footrest.
2. Loosen the Allen head screw.
3. Remove the knee pad or replace if required.

Properly reassemble all components upon completion of the work.



---

Fig. 17 Replacing the knee pad

**e) Replacing the calf pad**

The calf pad is attached to the footrest tube.

**Steps:**

1. Remove the footrest.
2. Loosen the Allen head screw.
3. Remove the calf pad or replace if required.

Properly reassemble all components upon completion of the work.



---

Fig. 18 Replacing the calf pad



### 6.5.2 Replacing the footplate

Various footplates are available for the A200 power wheelchair. As an alternative to the standard version with individual footplates, a continuous aluminium footplate may be installed.

#### Tools:

- Allen wrench, 6 mm

#### Steps:

1. Loosen the Allen head screw that connects the footplate to the installation kit.
2. Remove the footplate and replace if required.

Properly reassemble all components upon completion of the work.



Fig. 19 Replacing the footplate

## 6.6 Wheels

### CAUTION

**Risk of accidents due to worn or defective tyres.** Replace wheels with PU tyres if the material is cracking or damaged, or when the tread becomes worn down to such an extent that there is only 5 mm of radius left on the outer edges of the tyre.

Replace the casing of pneumatic tyres if it is bald or shows signs of cracking or other damage.

The A200 power wheelchair propelled by two 12.1" rear wheels and steered by means of two 8" front wheels.

### 6.6.1 Inspecting the General Condition

#### Steps:

1. Verify the tyre condition in regards to tread, porosity and cracking.

### 6.6.2 Replacing the Casing or Inner Tube of Pneumatic Tyres

Both the steering casters and drive wheels have two-piece rims that can be separated by removing the Allen head screws

#### Tools:

- ☐ Plastic tyre mounting lever
- ☐ Inner tube repair kit
- ☐ Allen wrench, 6 mm

#### Steps:

1. Let the air out of the tyre.
2. Loosen all five Allen head screws.
3. Separate the two pieces of the rim.
4. Pry back the casing from the edges of the rim.
5. Push the valve completely through to the inside of the rim and pull out the tube.
6. Replace the tube or repair it with a conventional bicycle tube repair kit.

Properly reassemble all components upon completion of the work.



Fig. 20 Removing the casing

### 6.6.3 Replacing the Drive Wheel

#### NOTICE

**Risk of damage due to improper preparation of maintenance tasks.** Use suitable objects such as wooden blocks to secure the A200 power wheelchair against sliding or tipping. The drive wheels must rotate freely.

#### Tools:

- ☐ Torque wrench
- ☐ Allen wrench, 6 mm

**Steps:**

1. Jack up the drive wheels.
2. Loosen all four Allen head screws, remove the wheel and replace if required.

Properly reassemble all components upon completion of the work.

**INFORMATION**

When installing the wheel, tighten all four Allen head screws to a torque of **25 Nm (18.4 ft.lbf/221 in.lbf)**.



Fig. 21 Removing the drive wheel

#### 6.6.4 Replacing the Wheel Flange

**Preparation:**

- ☐ Remove the wheel.

**Tools:**

- ☐ Socket, 18 mm
- ☐ Puller

**Steps:**

1. Loosen the wheel flange screw (Fig. 22).
2. Use the puller to remove the wheel flange and replace it required (Fig. 23).

Properly reassemble all components upon completion of the work.

**INFORMATION**

When installing the wheel, tighten all four Allen head screws to a torque of **55 Nm (40.6 ft.lbf/487 in.lbf)**.



Fig. 22 Loosening the wheel flange screw



Fig. 23 Putting puller in place

### 6.6.5 Replacing the Steering Caster

#### NOTICE

**Risk of damage due to improper preparation of maintenance tasks.** Use suitable objects such as wooden blocks to secure the A200 power wheelchair against sliding or tipping. The drive wheels must rotate freely.

#### INFORMATION

When installing the steering caster, ensure that the steering caster and drive wheel are aligned.

#### Tools:

- ☐ Two Allen wrenches, 4 mm

#### Steps:

1. Loosen the Allen head screw.
2. Remove the steering caster and replace if required.

Properly reassemble all components upon completion of the work.



Fig. 24 Removing the steering caster

### 6.6.6 Replacing the Caster Fork

#### INFORMATION

Do not tighten the fork too snugly; the fork must be able to turn by approximately 180° at a time.

The caster forks for the A200 power wheelchair are supplied as complete units.

#### Tools:

- Socket, 19 mm

#### Steps:

1. Remove the black plastic protective cap.
2. Loosen the nut.
3. Remove the caster fork and replace if required.

Properly reassemble all components upon completion of the work.



Fig. 25 Standard caster fork

### 6.6.7 Replacing the Anti-Tipper Wheels

**Tools:**

- ☐ Allen wrench, size 4
- ☐ Ring or open-end wrench, 10 mm

**Steps:**

1. Loosen the mounting screw.
2. Remove the anti-tipper wheel and replace if required.

Properly reassemble all components upon completion of the work.



---

Fig. 26 Replacing the anti-tipper wheel

## 6.7 Control Panel

### 6.7.1 VR2 Control Panel

The control panel needs to be exchanged only for replacement.

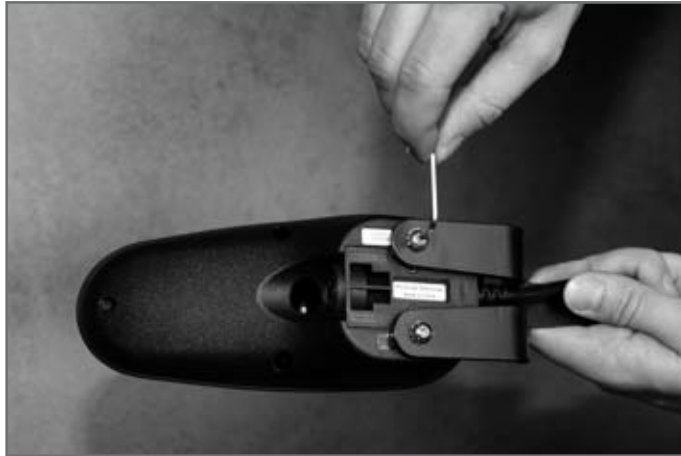
**Tools:**

- ☐ Phillips screwdriver

**Steps:**

1. Loosen the two Phillips head screws on the holder (Fig. 27).
2. Remove and replace the control panel.

Properly reassemble all components upon completion of the work.



---

Fig. 27 Replacing the control panel

### 6.7.2 Replacing the Control Panel Holder

The control panel holder for the A200 power wheelchair is clamped to the underside of the arm rest with an iron rail.

#### Preparation:

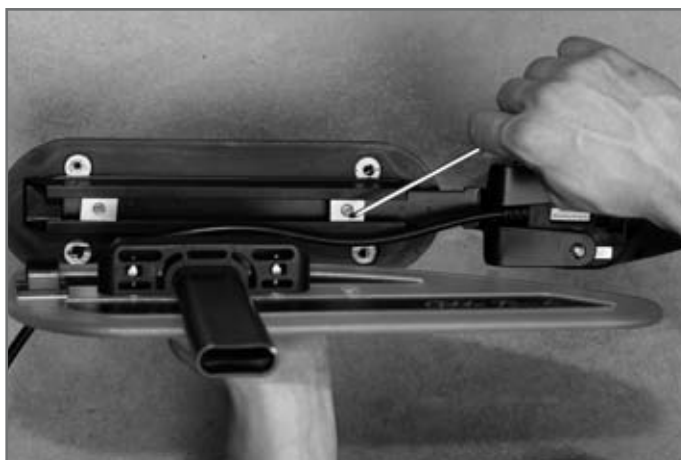
- ☐ Remove the side panel.
- ☐ Remove and set aside the control panel.

#### Tools:

- ☐ Allen wrench, 3 mm

#### Steps:

1. Remove the side panel from the holder.
2. Loosen the two set screws.
3. Change the position of the control panel holder, or remove the control panel holder and replace if required.



---

Fig. 28 Replacing the control panel holder

## 6.8 Seats

### **⚠ CAUTION**

**Risk of burns in the proximity of fire.** The back rest and seat bottom of the A200 power wheelchair are flame retardant but nevertheless flammable. Therefore utmost caution is required near any sources of open flame or sparks, especially lit cigarettes.

### **NOTICE**

**Risk of damage to seat padding.** During any work on the seat, the padding must be adequately protected against mechanical and chemical damage.

### 6.8.1 Replacing the Bearing Plate

#### **INFORMATION**

When mounting a mechanical back angle adjustment device, a cross brace (491D32=SV125 / 491D32=SV1269) is installed instead of the bearing plates. Removal and installation correspond to the procedure described here.

#### **Tools:**

- ☐ Allen wrench, 5 mm
- ☐ Ring or open-end wrench, 13 mm

#### **Steps:**

1. Loosen the three Allen head screws identified with arrows.
2. Remove the bearing plate and replace if required.

#### **INFORMATION**

The fourth screw in the centre of the plate serves as a stop for the back angle adjustment.

Properly reassemble all components upon completion of the work.

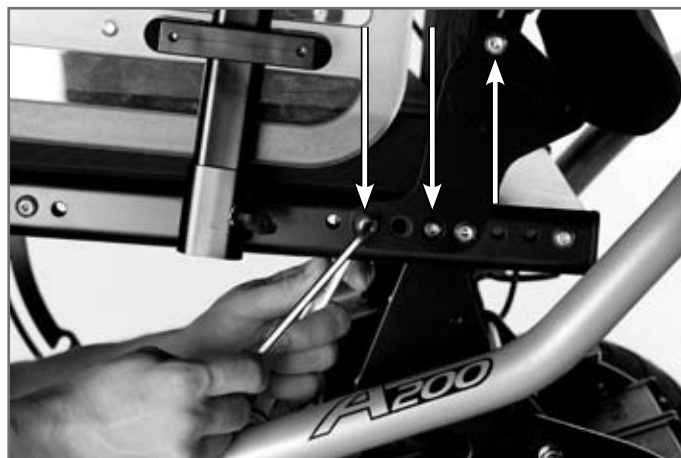


Fig. 29 Replacing the bearing plate



### 6.8.2 Standard Seat: Replacing / Adjusting the Back Upholstery

#### Steps:

1. Completely remove the back upholstery and readjust, remove or replace the hook and loop straps according to individual user requirements.



Fig. 30 Standard seat: back upholstery

### 6.8.3 Standard Seat: Replacing the Seat Brackets

In conjunction with the quick clamps, the seat brackets serve to adjust the seat inclination.

#### Tools:

- 2 x Allen wrench, 5 mm
- Water pump pliers

#### Steps:

1. Loosen the quick clamps.
2. Remove the knurled nuts of the quick clamps.
3. Loosen the Allen head screws of the seat brackets.
4. Remove the seat brackets and replace if required.

Properly reassemble all components upon completion of the work.



Fig. 31 Standard seat: replacing the seat brackets

#### 6.8.4 Standard Seat: Adjusting the Seat Angle

**⚠ CAUTION**

Risk of injury due to improper adjustment work. The user must not sit in the wheelchair during seat angle adjustments. Ensure the quick clamps are snugly tightened after all seat angle adjustments.

The A200 power wheelchair offers seat angle settings in 3 different positions (0°, 3°, 6°). For setting the position, the two quick clamps are used which are located at the front below the seat.

**Steps:**

1. Loosen the quick clamps (Fig. 32, arrow).
2. Lift the seat slightly and simultaneously press the seat brackets to the rear.
3. Adjust the seat inclination. Ensure that the brackets completely engage in the respective locking position.

Properly reassemble all components upon completion of the work.



Fig. 32 Adjusting the seat angle

#### 6.8.5 Standard Seat: Replacing the Seat Plate

Only standard seats have a seat plate.

**Steps:**

1. Remove the seat cushion.
2. Unlock the back rest and fold it forward.
3. Pull the seat plate up with a sharp tug and replace if required.

Properly reassemble all components upon completion of the work.



**Fig. 33** Replacing the seat plate of the standard seat

- 1 Seat cushion
- 2 Seat plate

### 6.8.6 Standard Seat: Replacing the Seat Frame

#### Preparation:

- ☐ Remove the side panels.
- ☐ Remove the footrest receiver (see Section 6.5.1 b).
- ☐ Remove the seat brackets (see Section 6.8.4).
- ☐ Remove the seat plate.

#### Tools:

- ☐ 2 x Allen wrench, 5 mm

#### Steps:

1. Loosen the screw connections between the seat frame and seat angles.
2. Remove the seat frame and replace if required.

Properly reassemble all components upon completion of the work.



**Fig. 34** Standard seat: replacing the seat frame

### 6.8.7 Standard Seat: Replacing the Seat Angles

#### INFORMATION

The seat angle is part of the seat inclination bracket set.

The seat angles connect the seat frame to the base frame.

#### Preparation:

- ☐ Remove the seat frame (see Section 6.8.6).

#### Tools:

- ☐ Allen wrench, 5 mm
- ☐ Ring or open-end wrench, 13 mm

#### Steps:

1. Loosen the screw connections between the seat angles and base frame.
2. Remove the seat angles and replace if required.

Properly reassemble all components upon completion of the work.



Fig. 35 Replacing the seat angles

### 6.8.8 Standard Seat: Replacing / Adjusting the Side Panel Attachment Device

The attachment is located on either side on the cross brace under the seat.

#### Tools:

- ☐ Allen wrench, 4 mm

#### Steps:

1. Loosen the two set screws.
2. Remove the side panel attachment device and replace or readjust as required.

Properly reassemble all components upon completion of the work.



**Fig. 36** Replacing the side panel attachment device

1 Side panel attachment device

### 6.8.9 Installing the Contour Seat (Option)

The optional contour seat is attached to the seat plate with hook and loop straps. You can mount the contour seat on the frame of the standard seat.

#### Tools:

□ Allen wrench, 3 mm

#### Steps:

1. Set the seat bottom with hook and loop straps onto the seat plate and press it into place.
2. Remove the back upholstery.
3. Slip three mounting clamps for the back of the contour seat onto the right and left of the frame, respectively.
4. Put the seat back in place and mount it with six Allen head screws.



**Fig. 37** Contour seat: Back rest with clamps

1 Frame for back rest  
2 Contour seat back rest  
3 Mounting clamp (6 pieces)

## 6.9 Base Frame

### 6.9.1 Replacing the Base Frame

**Tools:**

- ☐ Water pump pliers
- ☐ Allen wrench, 5 mm
- ☐ Ring or open-end wrench, 13 mm
- ☐ Socket, 19 mm

**Steps:**

1. Unscrew the seat brackets from the base frame (see Section 6.8.3).
2. Remove the seat angles (see Section 6.8.7).
3. Remove the caster fork (see Section 6.6.6).
4. The base frame is exposed now and can be replaced if required.

Properly reassemble all components upon completion of the work.



Fig. 38 Replacing the base frame

## 6.10 Drive Unit

### 6.10.1 Replacing the Complete Drive Unit

**⚠ CAUTION**

**Risk of injury due to electric current.** Before working on the drive unit, turn off the A200 power wheelchair.

The drive unit can be separated from the base frame and replaced if required without the use of tools.

Make sure that the control panel cable runs inside the base frame after reassembly.

### Preparation:

- ❑ Loosen the control panel from the side panel (see Section 6.7.1).

### Steps:

1. Separate the drive unit from the base frame (see instructions for use 647G545, Section 5.2).
2. Position the new drive unit behind the base frame.
3. Lay the control panel with cable down on the floor.
4. Connect the drive unit to the base frame (see instructions for use 647G545, Section 5.2).
5. Push the control panel with cable through between the seat plate and base frame and attach it to the side panel.

Properly reassemble the control panel to the side panel upon completion of the work.

### INFORMATION

Static electricity caused by factors such as friction may lead to electrostatic discharge (high voltage with low current) upon contact with the wheelchair; however, this does not represent a health hazard. Since this may impair comfort, it can be prevented by mounting a ground strap on the drive unit sustainer / wheelchair frame.



Fig. 39 Replacing the complete drive unit

### 6.10.2 Replacing the Drive Motor

### ⚠ CAUTION

**Risk of injury due to electric current.** Turn off the control unit of the A200 power wheelchair and disconnect the plug connections to the controller before performing any work on the drive motors.

### Preparation:

- ❑ Remove the drive wheel (see Section 6.6.3).

### Tools:

- ❑ Open-end wrench, 13 mm

**Steps:**

1. Disconnect the motor connection on the controller.
2. Loosen the four self-locking nuts.
3. Remove the motor and replace if required.

Properly reassemble all components upon completion of the work.



**Fig. 40** Replacing the drive motor

---

## **6.11 Accessories**

### **6.11.1 Retrofitting the Mechanical Back Angle Adjustment**

For installation of the mechanical back angle adjustment device, a back frame with mounting brace to receive the gas compression spring and a cross brace (including bearing plates) are required, which are contained in the replacement kit.

**Preparation:**

- ☐ Remove the side panel (Section 6.4.1).
- ☐ Remove the bearing plates with back tube (see Section 6.8.1).
- ☐ Mount the cross brace and back frame for receiving the gas compression spring (see Section 6.8.1; contained in the replacement kit, can be ordered separately).

**Tools:**

- ☐ Allen wrench, 3 mm
- ☐ Two Allen wrenches, 4 mm

**Steps:**

1. Insert the upper end of the gas compression spring between the two lugs in the centre of the back rest.
2. Slide spacers onto the brass bushing to the left and right of the gas compression spring.
3. Slide the gas compression spring on to the brass bushing and tighten both Allen head screws.
4. Hook the lower end of the gas compression spring into the Bowden cable.
5. Slide the bolt through the end of the gas compression spring and secure with a retaining ring.



6. Hook the bolt into the receiver on the cross tube at the bottom of the back frame.
7. Install the Bowden cable and mount it to the arm rest on the left or right (see Section 6.11.2).

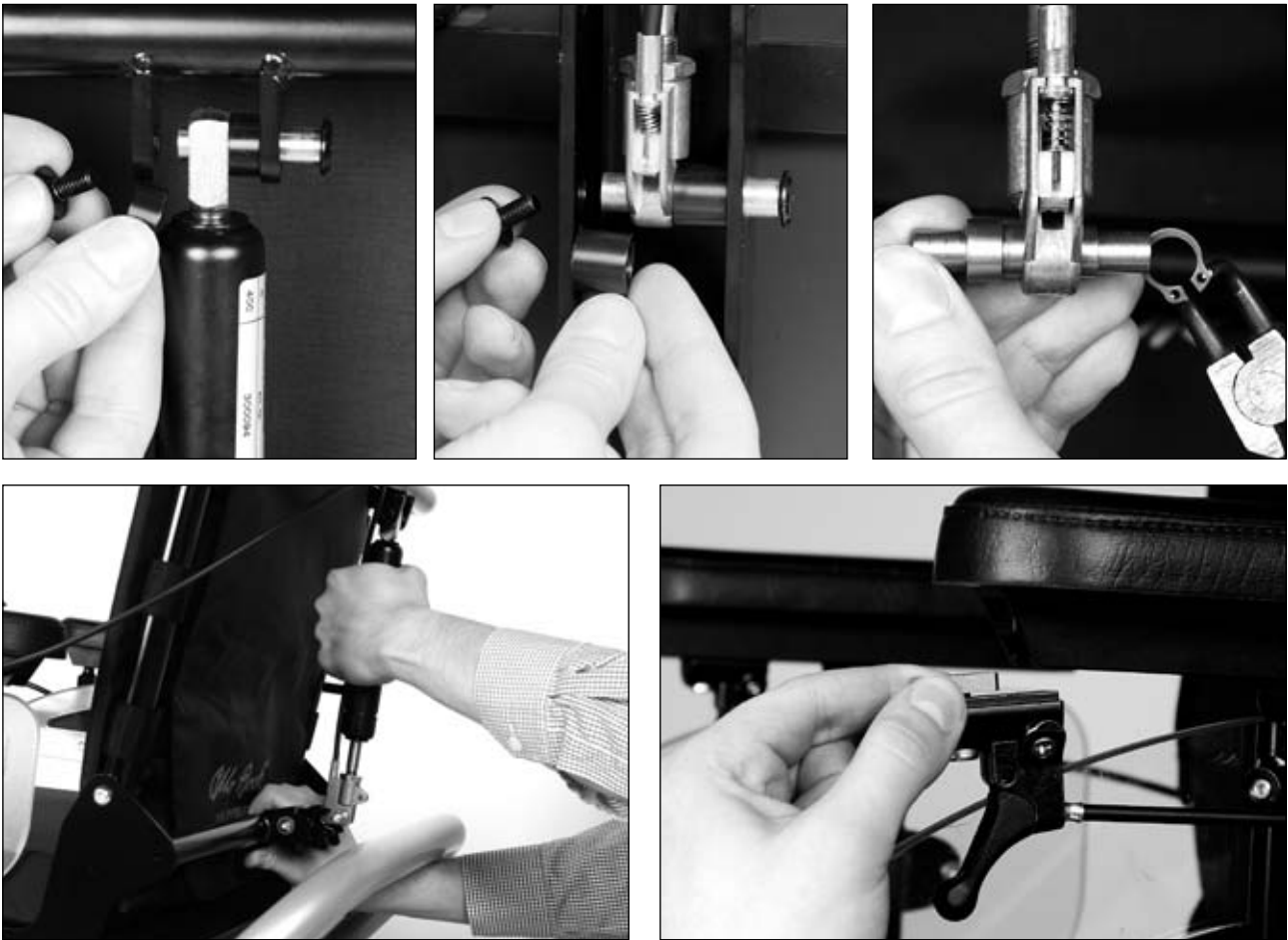


Fig. 41 Retrofitting the mechanical back angle adjustment

#### 6.11.2 Attaching the Bowden Cable (for Back Angle Adjustment)

##### Preparation:

- ☐ Mount the gas compression spring.
- ☐ Remove the side panel.

##### Tools:

- ☐ Allen wrench, 2.5 mm

##### Steps:

1. Mount the C-profile for the Bowden cable attachment beneath the arm rest.
2. Mount the clamp piece and sliding nut.
3. Position the release lever with the sliding nut and tighten the Allen head screw.
4. Mount the side panel, making sure to correctly position the Bowden cable.



Fig. 42 Attaching the Bowden cable

### 6.11.3 Retrofitting the Curb Climbing Assist

#### INFORMATION

The central curb climbing assist of the A200 cannot be used in combination with a single-panel footrest.

#### Preparation:

- ☐ Remove the footrests.

#### Tools:

- ☐ Allen wrench, 5 mm

#### Steps:

1. Attach the clamps to the frame tube but do not yet tighten the screws.
2. Feed the retainer bar with curb climbing assist through the clamps and centre. Make sure that the curb climbing assist fits through between the two footrests.
3. Finally tighten the mounting screws and thereby fasten the clamps on the frame tube.

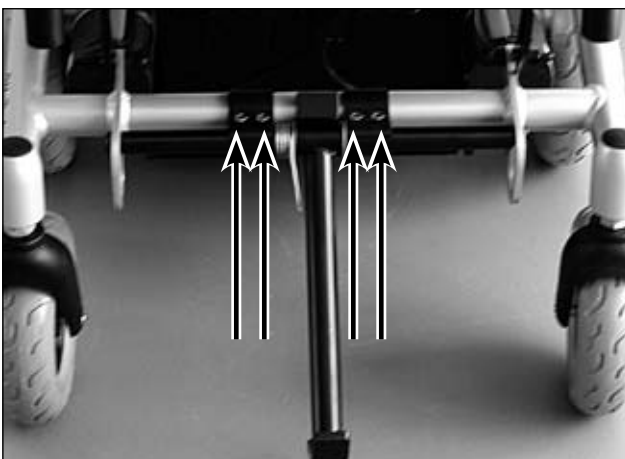


Fig. 43 Mounting the curb climbing assist

#### 6.11.4 Retrofitting the Rear View Mirror

**Tools:**

- Allen wrench, 3 mm

**Steps:**

1. Mount the rear view mirror opposite the control panel holder to the C-profile of the arm rest.
2. Individually adjust it to user requirements by turning it manually.



---

Fig. 44 Retrofitting the rear view mirror

#### 6.11.5 Installing the Headrest Installation Kit (Option)

The headrest holder is attached to the back frame.

**Tools:**

- Allen wrench, 3 mm
- Ring or open-end wrench, 10 mm

**Steps:**

1. Attach the holder to the top of the back tube with two screws.

A round back tube requires an adapter plate in order to compensate for the curvature (can be ordered separately). The holes are predrilled.



---

Fig. 45 Installing the headrest installation kit

#### 6.11.6 Retrofitting the Lap Belt (Option)

The lap belt is available for both seat models and is attached to the sides but not to the back of the seat frame.

The belt is attached and screwed to the bearing plate with a bracket with an eyelet.



---

**Fig. 46** Retrofitting the lap belt

#### 6.11.7 Retrofitting the Swivelling Control Panel Holder (Option)

To be able to use the swivelling control panel holder for the A200 power wheelchair, a new holder must be mounted underneath the control panel.

##### **Preparation:**

- ☐ Remove the side panel.
- ☐ Remove the control panel and lay it aside (see Section 6.7.2).

##### **Tools:**

- ☐ Allen wrench, 3 mm

##### **Steps:**

1. Remove the old holder.
2. Screw the new holder to the bottom side of the control panel.
3. Slide the swivelling control panel holder underneath the arm rest and clamp (see Section 6.7.2; Fig. 28).
4. Plug the control panel onto the engaging position of the swivelling control panel holder.



Fig. 47 Replacing the holder

#### 6.11.8 Additional Lighting

The optionally available additional lighting for the A200 power wheelchair may be retrofitted at any time. For installation please refer to the instructions for use of the additional lighting.

## 7 Error Diagnosis

### NOTICE

**Risk of damage due to unauthorised service.** Improper or poorly executed repairs may result in the unsafe operation of the power wheelchair. The error diagnosis may therefore only be carried out by authorised dealers who have established knowledge of electronic controllers from Otto Bock. Otto Bock will not assume any liability for damages that are due to improperly or poorly executed repairs.

### INFORMATION

Experience has shown that problems with the wheelchair electrical system are frequently caused by errors and defects in the plug connections and cabling. They should be inspected first for this reason.

Errors are displayed either by flashing signals on the battery capacity LED indicator (see Section 7.2) or with the aid of the handheld programming device (see Section 7.3). The handheld programming device can capture errors more precisely using error codes.

With these service instructions you will be able to assign displayed errors to one of 10 error types. This will allow drawing conclusions with regard to the possible error cause and repairing measures.

All problems that have ever occurred are saved in a list and can be retrieved, e. g. in case of a general overhaul of the A200 (see Section 8.4.3). The saved data can be used to determine future service and maintenance intervals, for example.

## 7.1 Diagnostic Steps

For an efficient and successful error diagnosis, proceed as follows:

- ☐ Verify whether the error was generated for a concrete reason or if the error was displayed sporadically.
- ☐ Find out the type of error.
- ☐ Check the possible causes in the error type table (Section 7.3, Table 6) and perform the recommended checks and corrective actions.

## 7.2 Diagnosis with Battery Capacity LED Indicator

On the battery capacity LED indicator, error messages are displayed as follows:

LED indicator	Meaning	Measure
Fast flashing	The control system has detected an error.	Interpret the flashing signals (see Table 4). Connect the programming device, read the error code (see Table 5), and find out the type of error (see Table 6).
Slow flashing	There is no error release in the control system, but maybe an error has been released earlier. <b>INFORMATION</b> The less LEDs are flashing, the less battery capacity remains.	Read the control system's error diagnosis log and find out the type of error (see Section 7.3).  Charge the batteries.
Indicator is permanently lit	There is no error release in the control system, but maybe an error has been released earlier.	Read the control system's error diagnosis log and find out the type of error (see Section 7.3).
Indicator is not lit	Control system is not energised.	Check the remaining battery capacity. Check all connections between the battery and control system. If the connections are okay, maybe the power module is defective.

**Table 3** Identifying LED error messages

The following table lists the error messages/flashing signals on the battery capacity LED indicator as well as causes and corrective measures:

Flashing LED(s)	Error/warning	Cause	Measure
	Low battery capacity Battery cable malfunctioning / faulty connection to the battery	Battery deep discharge	Charge the battery  Check the connection to the battery; in case of proper connection, charge the battery
	Incorrect/defective cabling of the left motor  Defective motor	E.g. faulty plug connection	Check the connections to the left motor  Check the motor
	Short circuit on the battery connection to the left motor	E.g. broken cable	Check the battery connection to the left motor
	Faulty cabling of the right motor  Defective motor	E.g. faulty plug connection	Check the connections to the right motor  Check the motor
	Short circuit on the battery connection to the right motor	E.g. broken cable	Check the battery connection to the right motor
	Driving function is blocked due to external influences	Maybe the battery charger is connected	Disconnect the battery charger
	Joystick error	Joystick not in zero position when switching on	Bring joystick to zero position before switching on
	Controller error		Check all connections
	Brake release error	Brake release is open	Check the motor brakes Check the connections to the controller
	Battery over voltage	Battery contacts are loose	Check the plug contacts
	Communication error between the control panel (joystick) and controller	Defective cable; loose plug connection	Check the connections

**Table 4** LED error types, causes, and corrective measures

### 7.3 Diagnosis Using the Handheld Programming Device (s. also Section 8.3)

#### INFORMATION

The programming device may only be connected to the control system, once the LED indicator has started flashing. If the programming device was connected before the indicator started flashing, the error code will not be displayed.

The following table lists the error codes and error types as well as references to the detailed error descriptions. The error types as well as causes and corrective measures are described in Table 6.

Error code	Error type	Description number	Description (for more information refer to Table 6)
1320	–	(13)	Current limitation is active
1505	9	(9)	Error in the electromagnetic brake, left
1506	9	(9)	Error in the electromagnetic brake, right
1600	10	(10)	High battery voltage
1E03	Charging	(6)	Battery charger connected
1E04	6	(13)	
1E05	Charging	(14)	
2C00	1	(1)	Low battery voltage
2C02	–	(1)	Switch-off due to low battery voltage
2F00	User	(7) (11)	Possible joystick error Joystick was moved when switching on
3B00	2	(2)	Left motor disconnected
3C00	4	(4)	Right motor disconnected
3D00	3	(3)	Error in the cabling of the left motor
3D01	3	(3)	Error in the cabling of the left motor
3E00	5	(5)	Error in the cabling of the right motor
3E01	5	(5)	Error in the cabling of the right motor
4401	8	(8)	Error in the control system
5400	7 + S	(12) Error S	(12): Communication error (S): Flashing LEDs of the speed indicator
7100	–	(7)	Joystick error
7101	–	(7)	Joystick error
7102	7	(7)	Joystick error
7103	7	(7)	Joystick error
7104	7	(7)	Joystick error
7147	User	(11)	Joystick was moved when switching on
7902	–	(14)	High temperature
Other codes	7 or 8	(7) or (8)	Possible errors in the control system

**Table 5** List of error codes



No.	Cause / Measures
(1)	<p><b>Low battery voltage</b></p> <p>The control system has detected a decline of the battery voltage to below 16 V. Check the condition of the batteries and the connections to the control system. If the error persists, there might be a defect in the power module.</p> <p><b>INFORMATION</b> If error code 2C02 applies, the control system creates a log about the frequency of switch-offs caused by low battery voltage.</p>
(2)	<p><b>Left motor disconnected</b></p> <p>The control system has detected that the left motor is disconnected. Check the left motor and its plug connections / check the cabling. If the error persists, there might be a defect in the power module.</p> <p><b>INFORMATION</b> If the outputs of the left and right motors have been inverted during programming, this paragraph refers to the right motor. Please contact Otto Bock if you have any questions.</p>
(3)	<p><b>Error in the cabling of the left motor</b></p> <p>The control system detects errors in the cabling to the left motor, especially if there is a short circuit in the connection between the motor and battery. Check the plug connections and cabling of the left motor. If the error persists, there might be a defect in the power module.</p> <p><b>INFORMATION</b> If the outputs of the left and right motors have been inverted during programming, this paragraph refers to the right motor. Please contact Otto Bock if you have any questions.</p>
(4)	<p><b>Right motor disconnected</b></p> <p>The control system has detected that the right motor is disconnected. Check the right motor and its plug connections / check the cabling. If the error persists, there might be a defect in the power module.</p> <p><b>INFORMATION</b> If the outputs of the left and right motors have been inverted during programming, this paragraph refers to the left motor. Please contact Otto Bock if you have any questions.</p>
(5)	<p><b>Error in the cabling of the right motor</b></p> <p>The control system detects errors in the cabling to the right motor, especially if there is a short circuit in the connection between the motor and battery. Check the plug connections and cabling of the right motor. If the error persists, there might be a defect in the power module.</p> <p><b>INFORMATION</b> If the outputs of the left and right motors have been inverted during programming, this paragraph refers to the left motor. Please contact Otto Bock if you have any questions.</p>
(6)	<p><b>Battery charger connected</b></p> <p>The control system has detected that an external battery charger is connected. Disconnect the battery charger. If the error persists, there might be a defect in the joystick module.</p>
(7)	<p><b>Possible joystick error</b></p> <p>The control system detects problems with the system's own joystick or when there is a communication error between the joystick module and power module.</p> <p><b>INFORMATION</b> Replacement of the joystick and all subsequent work may only be carried out by persons authorised by the manufacturer of the wheelchair.</p> <p><b>7100/7101:</b> Loss of communication connection to the joystick. Check the joystick cable, flat ribbon cable of the joystick, connections, and corresponding sockets.</p> <p><b>7102:</b> Loss of power supply to the joystick. Check the joystick cable, flat ribbon cable of the joystick, connections, and corresponding sockets.</p> <p><b>7103/7104:</b> Internal error release. Check the joystick cable, flat ribbon cable of the joystick, connections, and corresponding sockets. Verify, whether the cable is correctly connected to the joystick and to the PCB.</p>

No.	Cause / Measures
(8)	<b>Possible error in the control system</b> The control system has detected an internal problem. The control system may only be repaired by an authorised specialist.
(9)	<b>Error in the electromagnetic brake</b> The control system has detected a problem in the electromagnetic brakes or in the connections of the brakes. <b>1505:</b> Error released by left brake <b>1506:</b> Error released by right brake Check the connections and the electromagnetic brake. If the error persists, there might be a defect in the power module.
(10)	<b>High battery voltage</b> The control system has detected a battery voltage of more than 35 V. The most frequent causes: Overcharging of the battery or faulty connections between the control system and batteries. Check the batteries and their connections. If the error persists, there might be a defect in the power module.
(11)	<b>Joystick was moved when switching on</b> The most frequent cause: The joystick is not in zero position when switching the system on. Make sure that the user does not move the joystick prior to switching the system on. If the error persists, check the items in paragraph (7).
(12)	<b>Communication error</b> The most frequent cause: Faulty cable between the power module and joystick module. Check the cable for damage and replace, if necessary. If the error persists, there might be a defect in the power module or joystick module. <b>INFORMATION</b> Replacement of the connection cable may only be carried out by persons authorised by the manufacturer of the wheelchair. <b>INFORMATION</b> Detailed information on the replacement of the cable is contained in the document SK 77898 „VR2 SERIES WHEELCHAIR CONTROL SYSTEM; OPERATION, INSTALLATION & PROGRAMMING“. If the error persists, there might be a defect in the joystick module.
(13)	<b>Current limitation is active (indicator function)</b> The control system has been working above the current limitation threshold for a longer time than the current limitation time. This information shows the service technician that the control system was in operation beyond the programmed range.
(14)	<b>High temperature (indicator function)</b> The control system has heated up to above the defined temperature threshold. The driving operation will be stopped until the controller has cooled down. Each overheating of the controller will be recorded in the system log.

**Table 6 Error types, causes, and corrective measures**

## 7.4 Other Errors (not displayed)

These are errors that are not displayed by the handheld programming device or the LED indicator. The reasons can be: The control cannot be switched on, the error is not serious enough, or the control system cannot detect the error for any other reason.

Error	Possible cause	Measure
The control system does not switch itself on.	There is no connection between the battery and control system (If the error persists, there might be a defect in the power module). Faulty cable connection between the power module and joystick module (If the connection is functioning, one of the modules might be defective).	Check the plug connections/ the power module.  Check the plug connections/ the modules.
Wheelchair moves only slowly	The control system has not been properly programmed. A speed limitation function is active. Defective motor or defective brake.	Programme the speed.  Switch off the limitation function. Check/replace the motor/brake.
The wheelchair does not properly drive straight forward	Error in the motor or brake	Check/replace the motor/brake.
The motor or one brake runs hot	Error in the motor or brake	Check/replace the motor/brake.
Battery gets discharged too quickly	Used or damaged batteries.  A defective or unsuitable battery charger is used (check the operation of the battery charger). Wrong batteries are used.  The motor is blocked or one brake is stuck.	Check and replace the battery, if necessary.  Replace the battery charger.  Select the appropriate type of battery with the aid of the instructions for use. Replace the motor.

**Table 7 Other errors**

## 8 VR 2 Wheelchair Control – Installation and Programming

### 8.1 Overview

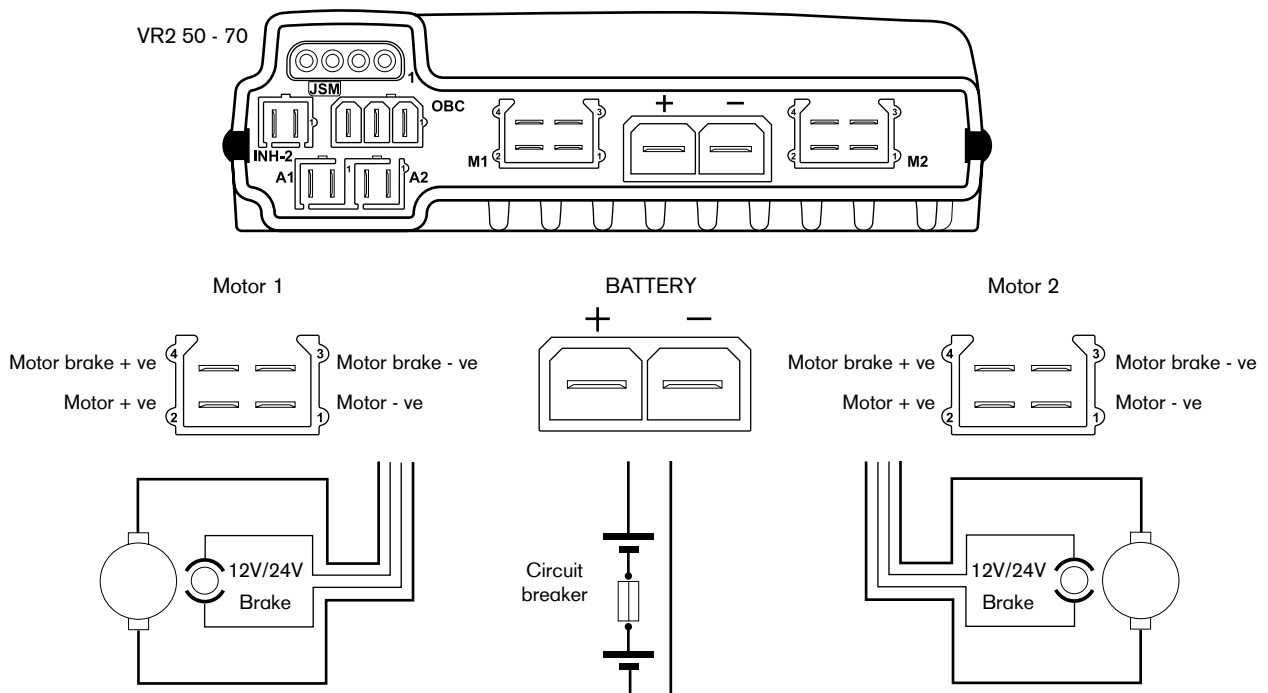
The VR2 control offers the possibility to display causes of error messages.

Error sources in the drive section and in the electric options are indicated by flashing of the LEDs of the control unit (see Section 7.2).

The parameters can be changed with the handheld programming device or using a PC software and interface cable (can be ordered separately).

### 8.2 Installation and Wiring

VR2 CONTROLLER CONNECTION



**Fig. 48** Connectors on the controller

## 8.3 Programming Tools

### WARNING

**Risk of injury as a result of incorrect programming.** Programming may only be conducted by specialist staff with in-depth knowledge of the VR2 control. Incorrect programming could result in an unsafe set-up of a wheelchair for a user. Otto Bock or the manufacturer of the control accept no responsibility for losses of any kind if the programming of the control system is altered from the factory pre-set values.

### 8.3.1 Handheld Programming Device

#### INFORMATION

If you have a PP1a, read the PP1a user guide before you use it.

If you re-program your control system, make sure that you observe any restrictions given in your wheelchair user manual.

Document any changes you make for future reference.

The PP1a handheld programming device gives access to programmable parameters in order to adjust the wheelchair to individual patient requirements and to read the Fault Log and Timer (see Section 8.4). To alter the program settings, the device is connected to the control system with a plug.

For details of how to use the handheld programming device refer to the “Programming and Diagnostics” guide supplied with the PP1a handheld programming device.

### 8.3.2 PC Programming Device

The PC programming device gives the same access level as the PP1 the handheld programming device. For details of how to use these software packages with the VR2 control, refer to the documentation supplied with the software.

## 8.4 Programmable Parameters

The following programmable parameters represent a selection. Information on other programmings is contained in the document "VR2 SERIES WHEELCHAIR CONTROL SYSTEM; OPERATION, INSTALLATION & PROGRAMMING".

### 8.4.1 Speed Settings

Parameter	Setting range	Description
Acceleration	Single steps from 0 to 100	Adjusts the value for forward and reverse acceleration of the wheelchair. A higher value gives faster acceleration. This programmed value of acceleration occurs when speed setting 5 is selected. Its value at other settings depends on the value of the Minimum Acceleration parameter.
Deceleration	Single steps from 0 to 100	Adjusts the value for forward and reverse deceleration (or braking) of the wheelchair. A higher value gives faster deceleration. This programmed value of deceleration occurs when speed setting 5 is selected. Its value at other settings depends on the value of the Minimum Deceleration parameter.
Turn Acceleration	Single steps from 0 to 100	Adjusts the value for turning acceleration of the wheelchair. A higher value gives faster acceleration. This programmed value of acceleration occurs when speed setting 5 is selected. Its value at other settings depends on the value of the Minimum Turn Acceleration parameter.
Turn Deceleration	Single steps from 0 to 100	Adjusts the value for turning deceleration (or braking) of the wheelchair. A higher value gives faster deceleration. This programmed value of deceleration occurs when speed setting 5 is selected. Its value at other settings depends on the value of the Minimum Turn Deceleration parameter.
Forward Speed	Single steps from 0 to 100	Adjusts the minimum and maximum values for forward speed of the wheelchair. A higher value gives a faster speed. The minimum value occurs when the speed setting 1 is selected, and the maximum value occurs at speed setting 5.
Reverse Speed	Single steps from 0 to 100	Adjusts the minimum and maximum values for reverse speed of the wheelchair. A higher value gives a faster speed. The minimum value occurs at speed setting 1, and the maximum value occurs at speed setting 5.
Turning Speed	Single steps from 0 to 100	Adjusts the minimum and maximum values for the turning speed of the wheelchair. A higher value gives a faster speed. If Drive Profile 0 is selected then the minimum value occurs when speed setting 1 is selected, and the maximum value occurs when speed setting 5 is selected.

Parameter	Setting range	Description
Power	Single steps from 0 to 100 %	<p>Sets the power of the wheelchair. Power is the ability of a wheelchair to climb a hill or overcome an obstacle. If it is set to 100% then the wheelchair will provide full power. Values below 100% will result in reduced power.</p> <p>A typical use is to minimise damage to doorways or furniture if the wheelchair is being used indoors. The values can be set independently between drive profiles, meaning separate indoor and outdoor profiles can be defined. Programming example:</p> <ul style="list-style-type: none"> <li>• Current Limit Max. = 70 Amps</li> <li>• Power (Profile 1) = 100%</li> <li>• Power (Profile 2) = 50 % (This means that in profile 1 the VR2 control will output 70 A, but in profile 2 will output 50 % of 70 A = 35A).</li> </ul>
Number of Drive Profiles	Profiles 0 to 5	<p>The VR2 control can operate with single or multiple drive profiles. A drive profile is a collection of programmable parameters comprising of Acceleration, Deceleration, Turn Acceleration, Turn Deceleration, Forward Speed, Reverse Speed and Turning Speed. The number of drive profiles is determined by the programmable parameter "Number of Drive Profiles".</p> <p>If Number of Drive Profiles is set to 0, then there is one setting for each of the parameters listed previously, and the control system's maximum speed setting can be changed with the maximum speed / profile increase and decrease buttons.</p> <p>If the values of Number of Drive Profiles is 2 to 5, there is a corresponding number of drive profiles and each listed parameter can be individually set within a profile. The maximum speed / profile increase and decrease buttons are then used to switch between the available profiles.</p>
		<p><b>INFORMATION</b> Although a number of Drive Profiles can be set to one, the operation is the same as setting to 0 but without the ability to change maximum speed settings.</p>
Minimum Acceleration	1% increments of the parameter Acceleration	<p>Adjusts the minimum value for forward and reverse acceleration of the wheelchair.</p> <p>This percentage of the Acceleration value occurs when the speed setting is at 1. Programming example:</p> <ul style="list-style-type: none"> <li>• Acceleration = 80 and Minimum Acceleration = 25%</li> <li>• Acceleration at step 1 = 25% of 80 = 20</li> <li>• Speed settings 2, 3 and 4 will interpolate linearly between 20 and 80</li> <li>• Acceleration at step 2 = 35</li> <li>• Acceleration at step 3 = 50</li> <li>• Acceleration at step 4 = 65</li> </ul>

Parameter	Setting range	Description
Minimum Deceleration	1% increments of the parameter Deceleration	<p>Adjusts the minimum value for forward and reverse deceleration of the wheelchair.</p> <p>This percentage of the Deceleration value occurs when the speed setting is at 1. Programming example:</p> <ul style="list-style-type: none"> <li>• Deceleration = 80 and Minimum Deceleration = 25%</li> <li>• Deceleration at step 1 = 25% of 80 = 20</li> <li>• Speed settings 2, 3 and 4 will interpolate linearly between 20 and 80</li> <li>• Deceleration at step 2 = 35</li> <li>• Deceleration at step 3 = 50</li> <li>• Deceleration at step 4 = 65</li> </ul>
Minimum Turn Acceleration	1% increments of the parameter Turn Acceleration value	<p>Adjusts the minimum value for turning acceleration of the wheelchair.</p> <p>This percentage of the Turn Acceleration value occurs when the speed setting is at 1. Programming example:</p> <ul style="list-style-type: none"> <li>• Turn Acceleration = 80 and Minimum Turn Acceleration = 25%</li> <li>• Turn Acceleration at step 1 = 25% of 80 = 20</li> <li>• Speed settings 2, 3 and 4 will interpolate linearly between 20 and 80</li> <li>• Turn Acceleration at step 2 = 35</li> <li>• Turn Acceleration at step 3 = 50</li> <li>• Turn Acceleration at step 4 = 65</li> </ul>
Minimum Turn Deceleration	1% increments of the Turn Deceleration value	<p>Adjusts the minimum value for turning deceleration of the wheelchair. This percentage of the Turn Deceleration value occurs when the speed setting is at 1. Programming example:</p> <ul style="list-style-type: none"> <li>• Turn Deceleration = 80 and Minimum Turn Deceleration = 25%</li> <li>• Turn Deceleration at step 1 = 25% of 80 = 20</li> <li>• Speed settings 2, 3 and 4 will interpolate linearly between 20 and 80</li> <li>• Turn Deceleration at step 2 = 35</li> <li>• Turn Deceleration at step 3 = 50</li> <li>• Turn Deceleration at step 4 = 65</li> </ul>

**Table 8 Programming of speed parameters**



## 8.4.2 General Parameter Settings

Parameter	Setting range	Description
Sleep Timer	1-minute increments from 0 to 30 min.	Sets the period of time before the control system will turn itself off if the wheelchair is not driven. If the time is set to 0 the system will never turn itself off.
Joystick Throw		This allows programming so that full speed can be reached with a reduced joystick movement (throw). This is particularly useful for wheelchair users with limited hand or arm movement.
Invert Joystick	On / Off	This parameter inverts the direction of travel when moving the joystick. On: Deflecting the joystick Forward will result in Reverse drive. Off: Deflecting the joystick Forward will result in Forward drive. Left and Right deflection of the joystick remain unchanged.
Soft Stop Rate	Single steps from 0 to 200	Adjusts the deceleration rate that is used while the wheelchair is soft-stopping. Soft-stopping happens if the VR2 control is switched off while the wheelchair is being driven.
Soft Reverse Deceleration	Single steps from 25 to 100 %	Adjusts the deceleration rate used while the wheelchair is stopping in reverse. This rate is separately adjustable from the Deceleration parameter, to prevent the wheelchair tipping when reversing down a gradient. The value is a percentage of the Deceleration parameter. A typical value is 70%.
Reverse Driving Alarm	On / Off	Sets whether the VR2 control gives an audible warning while driving in reverse. On: Means there is an audible alarm given. Off: Means there is not.
Lock Function Enabled	On / Off	Sets whether the VR2's locking sequence can be used to prevent the wheelchair being driven by unauthorised persons. On: Means the Lock function is available. Off: Means it is not.
Brake Fault Detect	On / Off	Sets whether the VR2 control detects a fault in the wheelchair's electrical brakes or the connections to them. On: Means brake faults will be detected. Off: Means the VR2 will not detect brake faults. <div style="border: 1px solid black; padding: 2px; display: inline-block;">INFORMATION</div> This parameter should only ever be set to off if there are no electrical brakes fitted to the wheelchair.

**Table 9** Programming of general parameters

### 8.4.3 Log Functions

The following functions are logged by the VR2 control and can be read with corresponding hardware:

Function	Description
Memory Functions	The VR2 has a timer and a diagnostic log. These can be read and cleared using the PP1a programming device or the PC programming device.
Read Timer	The VR2 has a timer which records how long the wheelchair is in use. The timer runs whenever the joystick is moved away from the centre position, and stops when the joystick is returned. The timer records the number of hours the wheelchair has been in use.
Clear Timer	This function resets the VR2 control's timer. This function can only be made use of with the PCPb and PCPc versions of the PC programming device.
Read System Log	The VR2 has a diagnostic log facility which stores the number of occurrences of the last eight detected system problems. This allows you to view the contents.
Erase System Log	This function clears the VR2 control's diagnostic log. This function can only be made use of with the PCPb and PCPc versions of the PC programming device.

**Table 10 Log functions**

## 9 Maintenance and Service Plan A200

Customer:

Re-use

Yes	No
-----	----

Year of manufacture:	Serial no.:
----------------------	-------------

A200 general condition

Driving report:

### Component (group)

Carefully check all components listed here for correct function, setting, damages or deformations, and whether the screw connections are tightened!

		OK	Damage	Replacement
1	Control unit			
	Control unit holder			
	Control cable			
	Control panel			
2	Batteries			
	Battery packs			
	Cabling			
3	Motors			
	Brake release			
4	Tyres			
	Drive wheels			
	Steering casters			
5	Frame			
	Drive unit sustainer			
6	Seat			
	Back			
	Upholstery/ cushion			

**Maintenance and Service Plan A200**

<b>7</b>	<b>Side panel</b>			
	Attachment devices			
	Clothing protector			
<b>8</b>	<b>Footrests</b>			
	Receivers			
	Elevating footrest			
<b>9</b>	<b>Options</b>			
	Belt			
	Curb climbing assist			
	Adapter for headrest			
	Mechanical back adjustment			

Comments:

The maintenance service was carried out by:	Place / date:	Signature:
---	---------------	------------





# Kundenservice/Customer Service

## Europe

### Otto Bock HealthCare Deutschland GmbH

Max-Näder-Str. 15 · D-37115 Duderstadt  
Tel. +49 5527 848-3433 · Fax +49 5527 848-1460  
e-mail: healthcare@ottobock.de · www.ottobock.com

### Otto Bock Healthcare Products GmbH

Kaiserstraße 39 · A-1070 Wien  
Tel. +31 1 5269548 · Fax +31 1 5267985  
e-mail: vertrieb.austria@ottobock.com  
www.ottobock.at

### Otto Bock Suisse AG

Pilatusstrasse 2, Postfach 87 · CH-6036 Dierikon  
Tel. +41 41 4556171 · Fax +41 41 4556170  
e-mail: suisse@ottobock.com

### Otto Bock Healthcare plc

32, Parsonage Road · Englefield Green  
GB-Egham, Surrey TW20 0LD  
Tel. +44 1784 744900 · Fax +44 1784 744901  
e-mail: bockuk@ottobock.com · www.ottobock.co.uk

### Otto Bock France SNC

4 Rue de la Réunion · B.P. 11  
F-91941 Les Ulis Cedex  
Tél. +33 1 69188830 · Fax +33 1 69071802  
e-mail: information@ottobock.fr · www.ottobock.fr

### Otto Bock Italia S.R.L.

Via Filippo Turati 5/7 · I-40054 Budrio (BO)  
Tel. +39 051 692-4711 · Fax +39 051 692-4720  
e-mail: info.italia@ottobock.com · www.ottobock.it

### Otto Bock Iberica S.A.

C/Majada, 1 · E-28760 Tres Cantos (Madrid)  
Tel. +34 91 8063000 · Fax +34 91 8060415  
e-mail: info@ottobock.es · www.ottobock.es

### Industria Ortopédica Otto Bock Unip. Lda.

Av. Miguel Bombarda, 21 · 2º Esq.  
P-1050-161 Lisboa  
Tel.: +351 21 3535587 · Fax: +351 21 3535590  
e-mail: ottobockportugal@mail.telepac.pt

### Otto Bock Benelux B.V.

Ekkersrijt 1412 · NL-5692 AK-Son en Breugel  
Tel. +31 499 474585 · Fax +31 499 476250  
e-mail: info.benelux@ottobock.com  
www.ottobock.nl

### Otto Bock Scandinavia AB

Koppargatan 3 · Box 623 · S-60114 Norrköping  
Tel. +46 11 280600 · Fax +46 11 312005  
e-mail: info@ottobock.se · www.ottobock.se

### ООО Otto Bock Service

p/o Pultikovo, Business Park „Greenwood“,  
Building 7, 69 km MKAD  
RUS-143441 Moscow Region/Krasnogorskiy Rayon  
Tel. +7 495 564-8360 · Fax +7 495 564-8363  
e-mail: info@ottobock.ru · www.ottobock.ru

### Otto Bock Hungária Kft.

Tatai út 74. · H-1135 Budapest  
Tel. +36 1 4511020 · Fax +36 1 4511021  
e-mail: info@ottobock.hu · www.ottobock.hu

### Otto Bock Polska Sp. z o. o.

Ulica Koralowa 3 · PL-61-029 Poznań  
Tel. +48 61 6538250 · Fax +48 61 6538031  
e-mail: ottobock@ottobock.pl · www.ottobock.pl

### Otto Bock ČR s.r.o.

Protetická 460 · CZ-33008 Zruč-Senec  
Tel. +420 37 7825044 · Fax +420 37 7825036  
e-mail: email@ottobock.cz · www.ottobock.cz

### Otto Bock Slovakia s.r.o.

Čajákova 25 · SK-81105 Bratislava 1  
Slovenská Republika  
Tel./Fax +421 2 52 44 21 88  
e-mail: info@ottobock.sk · www.ottobock.sk

### Otto Bock Romania srl

Șos de Centura Chitila-Mogoșoia Nr. 3  
RO-Chitila 077405, Jud. Ilfov  
Tel: +40 21 4363110 · Fax: +40 21 4363023  
e-mail: lonut.savescu@ottobock.ro · www.ottobock.ro

### Otto Bock Adria D.O.O.

Dr. Franje Tuđmana 14 · HR-10431 Sveta Nedelja  
Tel. +385 1 3361544 · Fax +385 1 3365986  
e-mail: info@ottobock.hr · www.ottobock.hr

### Otto Bock Adria Sarajevo D.O.O.

Omladinskih radnih brigada 5 · BIH-71000 Sarajevo  
Tel. +387 33 766200 · Fax +387 33 766201  
obadria@bih.net.ba · www.ottobockadria.com.ba

### Otto Bock Sava d.o.o.

Maksima Gorkog bb · 18000 Niš, Republika Srbija  
Tel./Fax +381 18 539 191  
e-mail: info@ottobock.rs · www.ottobock.rs

### Otto Bock Ortopedi ve Rehabilitasyon Tekniği Ltd. Şti.

Ali Dursun Bey Caddesi · Latı Lokum Sokak  
Meriç Sitesi B Blok No: 6/1  
TR-34387 Mecidiyeköy-İstanbul  
Tel. + 90 212 3565040 · Faks +90 212 3566688  
e-mail: info@ottobock.com.tr · www.ottobock.com.tr

### Otto Bock Algérie E.U.R.L.

32, rue Ahcène outalab · Coopérative les Mimosas  
Mackle-Ben Aknoun · Alger · DZ-Algérie  
Tel. + 213 21 913863 · Fax + 213 21 913863  
e-mail: information@ottobock.fr · www.ottobock.fr

### Otto Bock Egypt S.A.E.

115, El- Alameen St. · Mohandeseen – Giza · ET-Egypt  
Tel. +20 23 302 43 90 · Fax +20 23 302 43 80  
e-mail: info@ottobock.com.eg · www.ottobock.com.eg

## Americas

### Otto Bock Argentina S.A.

Piedras, 1314 · Código Postal:  
RA-1147 Ciudad Autónoma de Buenos Aires  
Tel. + 54 11 4300 0076  
e-mail: ventas@ottobock.com.ar

### Otto Bock do Brasil Ltda.

Rua Jovelino Aparecido Miguel, 32  
BR-13051-030 Campinas-São Paulo  
Tel. +55 19 3729 3500 · Fax +55 19 3269 6061  
e-mail: ottobock@ottobock.com.br · www.ottobock.com.br

### Otto Bock HealthCare Canada Ltd.

5470 Harvester Rd, Burlington, Ontario L7L 5N5  
CA-Canada  
Tel. +1 289 288-4848 · Fax +1 289 288-4837  
e-mail: info@ottobock.ca · www.ottobock.ca

### Otto Bock HealthCare Andina Ltda.

Clinica Universitaria Teletón, Autopista Norte km 21  
La Caro · Chia, Cundinamarca  
Bogotá / Colombia  
Tel. +57 1 8619988 · Fax +57 1 8619977  
e-mail: ottobock@telesat.com.co

### Otto Bock de Mexico S.A. de C.V.

Av. Avila Camacho 2246 · Jardines del Country  
MEX-Guadalajara, Jal. 44210  
Tel. +52 33 38246787 · Fax +52 33 38531935  
e-mail: info@ottobock.com.mx  
www.ottobock.com.mx

### Otto Bock HealthCare LP

Two Carlson Parkway North, Suite 100  
U.S.A.-Minneapolis, Minnesota 55447  
Phone +1 800 328 4058 · Fax +1 800 962 2549  
e-mail: usa.customerservice@ottobock.com  
www.ottobockus.com

## Asia/Pacific

### Otto Bock Australia Pty. Ltd.

Suite 1.01, Century Corporate Centre  
62 Norwest Boulevard · Norwest Business Park  
AUS-Baulkham Hills NSW 2153  
Tel. +61 2 88182800 · Fax +61 2 88182898  
e-mail: healthcare@ottobock.com.au  
www.ottobock.com.au

### Beijing Otto Bock Orthopaedic Industries Co. Ltd.

HengXiang Tower · No.15 Tuanjiehu South Road  
Chaoyang District · Beijing 100026 · P.R.China  
Tel. +86 10 85986880 · Fax +86 10 85980040  
e-mail: china@ottobock.com.cn · www.ottobock.com.cn

### Otto Bock Asia Pacific Ltd.

Suite 3218, 32/F., Sun Hung Kai Centre  
30 Harbour Road, Wanchai · Hong Kong  
Tel No. +852 2598 9772 · Fax No. +852 2598 7886  
e-mail: info@ottobock.com.hk

### Otto Bock HealthCare India Pvt. Ltd.

Behind Fairlawn Housing Society  
Sion Trombay Road  
Chembur · IND-Mumbai 400 071  
Tel. +91 22 2520 1268 · Fax +91 22 2520 1267  
e-mail: information@indiaottobock.com  
www.ottobockindia.com

### Otto Bock Japan K. K.

Yokogawa Building 8F · 4-4-44 Shibaura, Minato-ku  
J-Tokyo 108-0023  
Tel. +81 3 3798-2111 · Fax +81 3 3798-2112  
e-mail: ottobock@ottobock.co.jp  
www.ottobock.co.jp

### Otto Bock Korea HealthCare Inc.

Beakyong B/D 2FL · 37-22, Samsung-dong  
Gangnam-gu · ROK-Seoul 135-090  
Tel. +82 2 577-3831 · Fax +82 2 577-3828  
e-mail: info@ottobockkorea.com  
www.ottobockkorea.com

### Otto Bock South East Asia Co. Ltd.

1741 Phaholyothin Road,  
Kwaeng Chatuchark, Khet Chatuchark,  
T-Bangkok 10900  
Tel. +66 2 930 3030 · Fax +66 2 930 3311  
e-mail: obsea@ottobock.co.th  
www.ottobock.co.th

## Other countries

### Otto Bock HealthCare GmbH

Max-Näder-Str. 15 · D-37115 Duderstadt  
Tel. +49 5527 848-1590 · Fax +49 5527 848-1676  
e-mail: reha-export@ottobock.de · www.ottobock.com

Ihr Fachhändler/Your specialist dealer:

**Versandanschrift für Rücksendungen/Address for Returns:**

**Otto Bock Manufacturing Königsee GmbH**  
Lindenstraße 13 · 07426 Königsee/Germany

**Hersteller/Manufacturer:**

**Otto Bock Mobility Solutions GmbH**  
Lindenstraße 13 · 07426 Königsee/Germany  
Phone +49 69 9999 9393 · Fax +49 69 9999 9392  
ccc@ottobock.com · www.ottobock.com



Otto Bock Mobility Solutions GmbH has been certified by the German Society for the Certification of Quality Assurance Systems (DQS) in accordance with DIN EN ISO 9001 standard, reg. no. 779 (management system)