

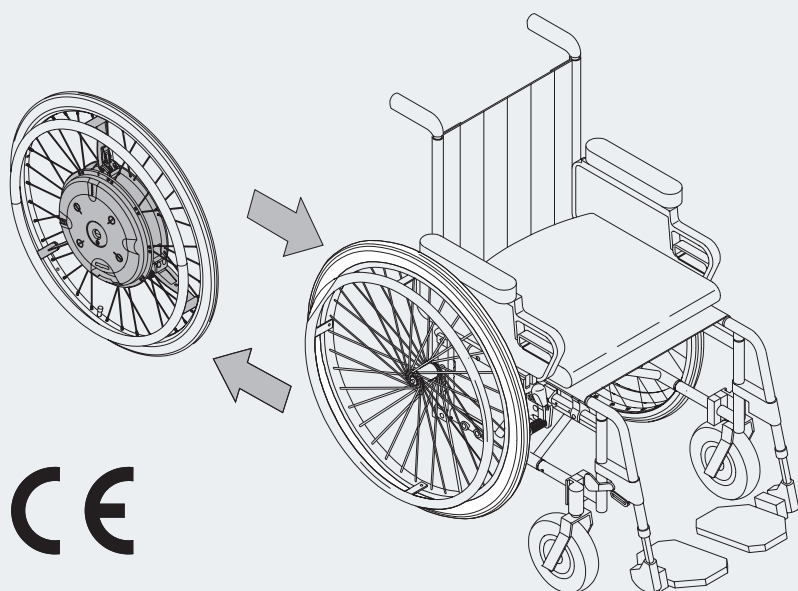
alber®

KRAFT, DIE AUS DEN
RÄDERN KOMMT.

e-motion®

User manual

GB/US



CE

Service Center (Deutschland)

Montag bis Donnerstag von

8.00 - 18.00 Uhr

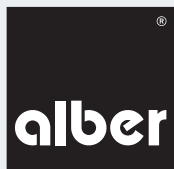
Freitags von

8.00 - 16.00 Uhr

erreichbar unter

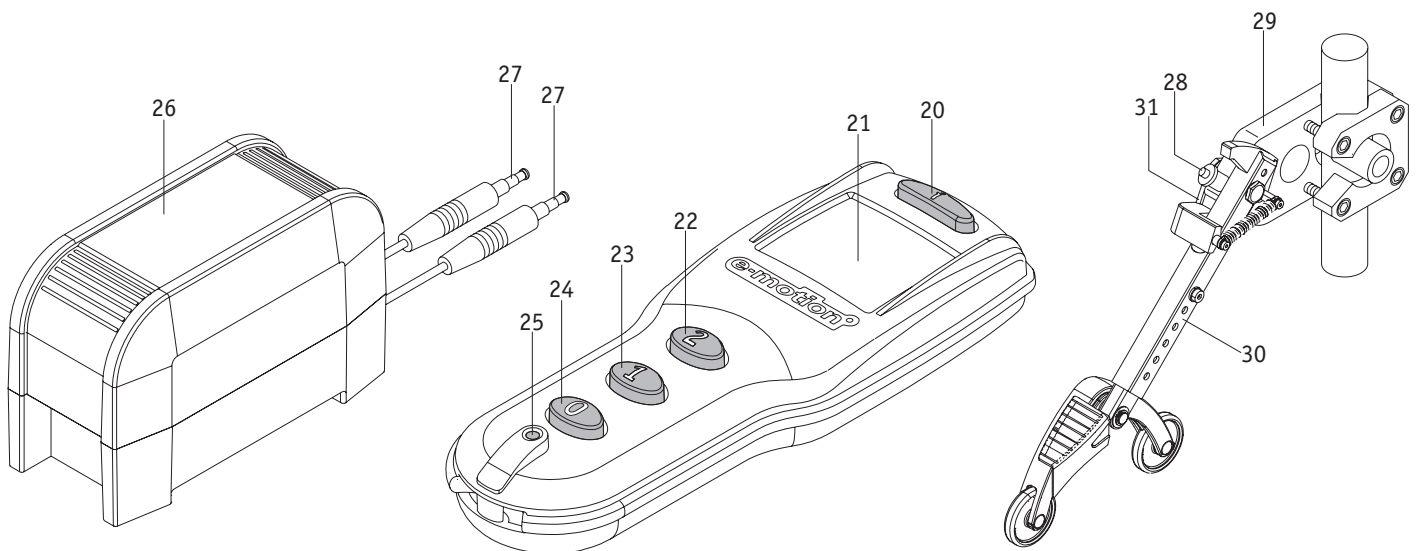
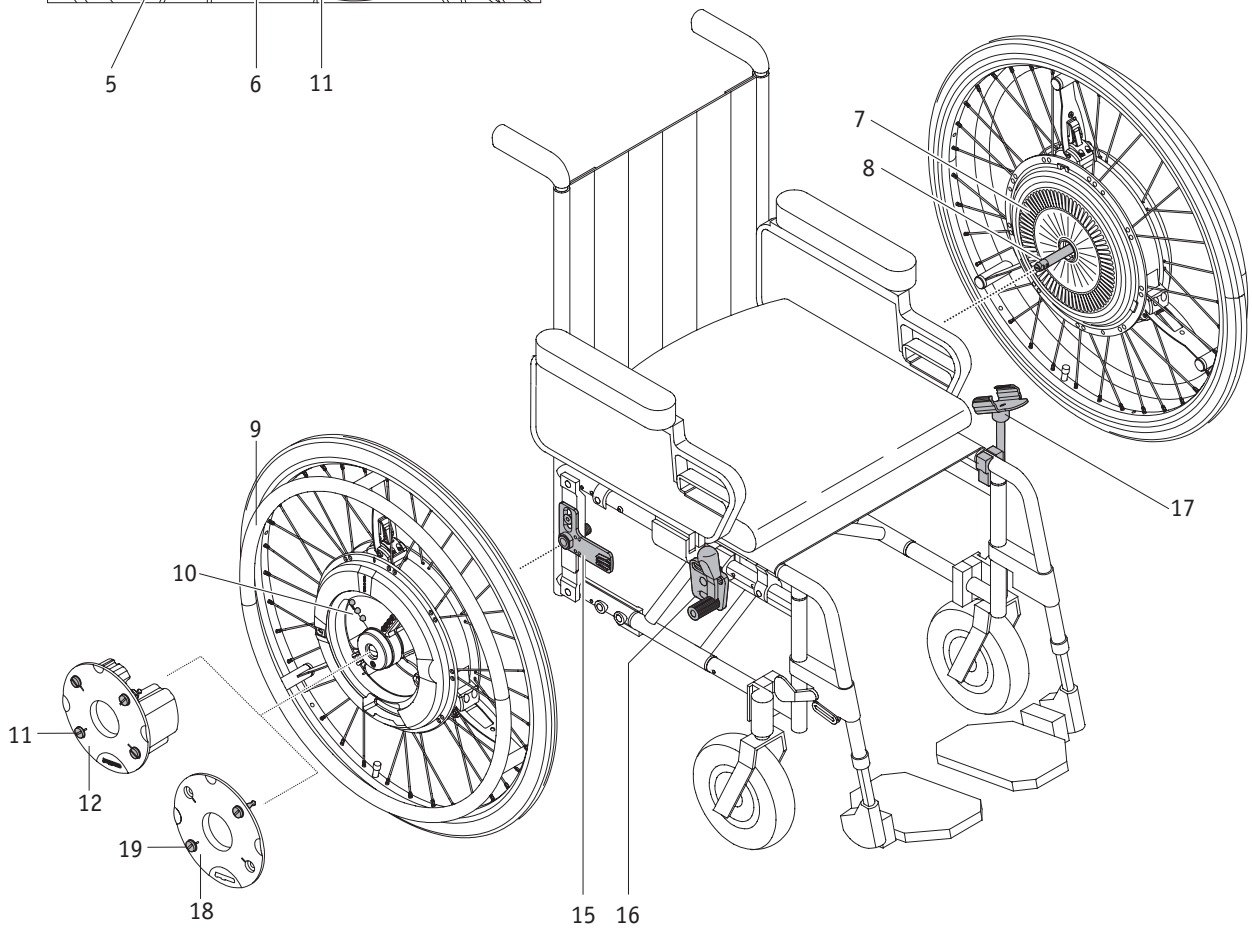
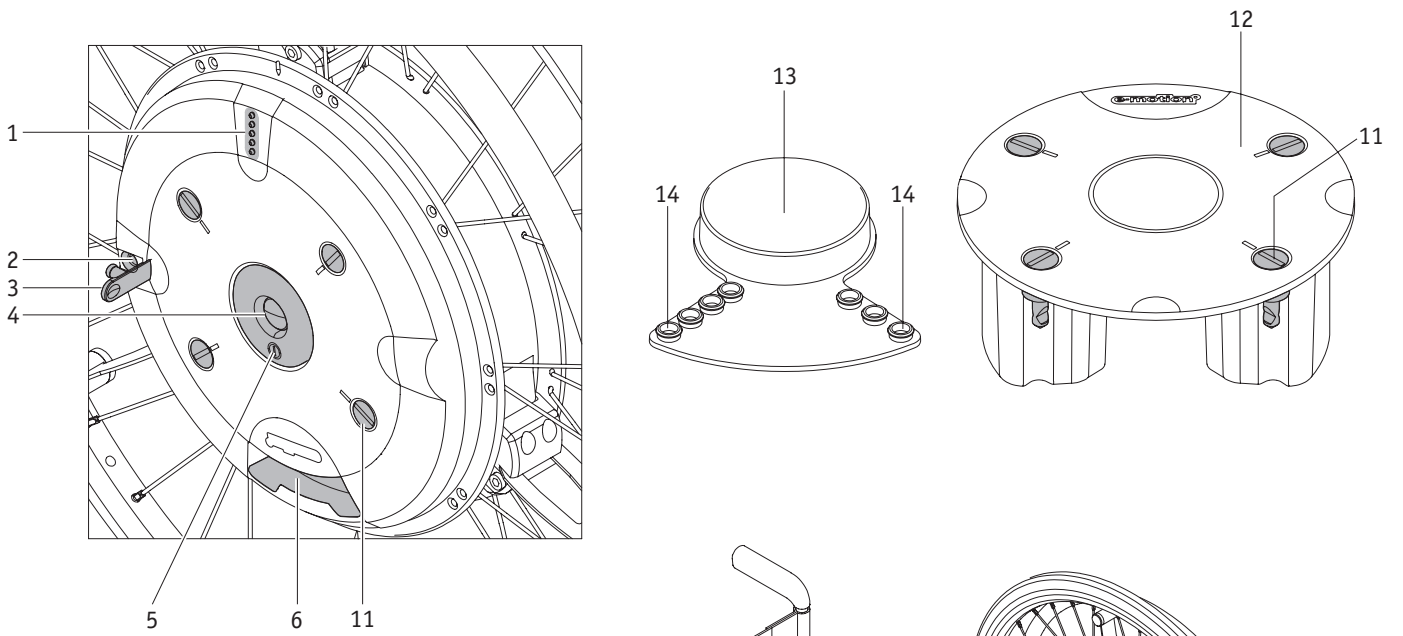
Telefon (0800) 9096-250

(gebührenfrei)



Der e-motion ist klassifiziert als Gerät Typ B.





USA and CANADA only

⚠ CAUTION Federal law restricts this device to sale by or on the order of a practitioner licensed by the law of the State in which he/she practices.

Powered Wheelchair Electromagnetic Interferences (EMI)

Because EM energy rapidly becomes more intense as one moves closer to the transmitting antenna (source), the EM fields from hand-held radio wave sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of EM energy very close to the powered wheelchair's control system while using these devices. This can affect powered wheelchair movement and braking. Therefore, the warnings listed below are recommended to prevent possible interference with the control system of the powered wheelchair.

⚠ WARNING Radio wave sources may affect powered wheelchair control

Electromagnetic interference (EMI) from sources such as radio and TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones can affect powered wheelchairs and motorized scooters. Following the warnings listed below should reduce the chance of unintended brake release or powered wheelchair movement which could result in serious injury.

- 1) Do not operate hand-held transceivers (transmitters-receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered wheelchair is turned ON;
- 2) Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
- 3) If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;
- 4) Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to interference from radio wave sources.

(Note: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair); and

- 5) Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a radio wave source nearby.

Important Information

20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection). All other power-drives have an immunity level of 20 V/m; adventure has an immunity level of even 30 V/m.

⚠ CAUTION IT IS VERY IMPORTANT THAT YOU READ THIS INFORMATION REGARDING THE POSSIBLE EFFECTS OF ELECTRO-MAGNETIC INTERFERENCE ON YOUR POWERED WHEELCHAIR.

Electromagnetic Interference (EMI) From Radio Wave Sources

Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy (EM) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself, or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the interfering EM energy can be measured in volts per meter (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called its "immunity level". The higher the immunity level, the greater the protection.

There are a number of sources of relatively intense electromagnetic fields in the everyday environment. Some of these sources are obvious and easy to avoid. Others are not apparent and exposure is unavoidable. However, we believe that by following the warnings listed below, your risk to EMI will be minimized. The sources of radiated EMI can be broadly classified into three types:

- 1) Hand-held portable transceivers (transmitters-receivers) with the antenna, mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, "walkie talkie", security, fire and police transceivers, cellular telephones, and other personal communication devices.
Note: Some cellular telephones and similar devices transmit signals while they are ON, even when not being used;
- 2) Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances, and taxis. These usually have the antenna mounted on the outside of the vehicle; and
- 3) Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.

Note: Other types of hand-held devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, and cassette players, and small appliances, such as electric shavers and hair dryers, so far as we know, are not likely to cause EMI problems to your powered wheelchair.

| | |
|---|-----------|
| Content | 2 |
| 1. Introduction | 2 |
| 1.1 Important safety information –You must read, understand and follow all of the warnings and instructions in this manual. Failure to do so might cause serious bodily injury. | 2 |
| 1.2 Intended use of the e-motion | 2 |
| 1.3 Permissible operating conditions/places of use | 3 |
| 1.4 Standard scope of delivery | 3 |
| 1.5 Optional accessories | 3 |
| 1.6 Specifications | 4 |
| 1.7 The most important elements at a glance | 4 |
| 2. Start-up | 5 |
| 2.1 Mounting the wheels | 6 |
| 2.2 Switching on the wheels on the wheel hub | 7 |
| 2.3 Switching on the wheels with the remote control (optional) | 7 |
| 2.4 Switching off the wheels on the wheel hub | 8 |
| 2.5 Switching off the wheels with the remote control (optional) | 8 |
| 2.6 Removing the wheels | 9 |
| 2.7 Transport and storage of the wheels | 10 |
| 3. General safety instructions for driving with the e-motion | 11 |
| 4. Battery pack | 12 |
| 4.1 Safety instructions on charging the battery pack | 12 |
| 4.2 Charging the battery pack | 14 |
| 4.3 Removal and protection of the battery pack | 15 |
| 4.4 Storage and transport of the battery packs removed from the wheel | 16 |
| 4.5 Protection of the wheel with the battery pack removed | 16 |
| 4.6 Inserting the battery pack | 17 |
| 5. Indicators and error messages on the wheel | 19 |
| 5.1 Charge status of the battery pack | 19 |
| 5.2 Display during charging of battery pack | 20 |
| 5.3 Acoustic error messages | 21 |
| 6. Power stages and stored parameters | 22 |
| 6.1 Power stages | 22 |
| 6.2 Power assistance | 22 |
| 6.3 Rollback delay (only with e-motion wheels with remote control) | 22 |
| 7. Automatic self switch-off | 23 |
| 7.1 Automatic wheel self switch-off | 23 |
| 7.2 Remote control (optional) self switch-off | 23 |
| 8. Fuse replacement | 23 |
| 9. Remote control (optional) | 24 |
| 9.1 Operating controls | 24 |
| 9.2 Function display | 25 |
| 9.3 Display of the battery pack charge status | 26 |
| 9.4 Display of error messages | 27 |
| 10. Anti-tippers | 30 |
| 10.1 Attaching and removing the Alber anti-tippers | 30 |
| 10.2 Using the Alber anti-tippers | 31 |
| 10.3 Important operating and safety information | 32 |
| 11. Safety Instructions: Always follow these instructions to prevent damage or personal injury. | 33 |
| 11.1 Safety notes | 33 |
| 11.2 Safety instructions on using the e-motion in vehicles | 34 |
| 11.3 Obstacles | 34 |
| 11.4 Hazardous locations and situations | 35 |
| 12. Care, safety checks (maintenance), reuse and disposal | 35 |
| 12.1 Care | 35 |
| 12.2 Safety checks (maintenance) | 35 |
| 12.3 Re-use | 36 |
| 12.4 Disposal | 36 |
| 13. Guarantee, warranty and liability | 36 |
| 13.1 Warranty for defects | 36 |
| 13.2 Guarantee of durability | 36 |

1. Introduction

1.1 Important safety information –You must read, understand and follow all of the warnings and instructions in this manual. Failure to do so might cause serious bodily injury.

The e-motion is an add-on drive for wheelchairs. For safety reasons it must only be operated by persons who

- have received instructions and training from a therapist or specialist dealer on its handling, operation and use,
- can move and coordinate both hands or arms without major restrictions,
- are physically and mentally able to safely operate the device in all operating situations.

For new units, orientation regarding the device operation is included in the scope of delivery and is provided by arranging an appointment with your specialist dealer. This service is free of charge.

Please contact your specialist dealer also if you have any questions about the operation, use or handling of the e-motion. In case of possible technical malfunctions, you may contact your specialist dealer or the Alber Service Center (Phone 0800 9096-250).

When operating the e-motion, you must exactly follow the instructions and data specified by the manufacturer of your wheelchair (for example, the maximum slopes, the tire pressure in the wheels, etc.) as well as its general operating instructions. Specifications on limit values must never be exceeded.

The e-motion must first be turned off on safe terrain before using mobile phones or similar devices. Travel near strong electrical interference fields should also be avoided.

The operation of the e-motion may possibly cause disturbances in other facilities, for example, anti-theft barriers in department stores.



Do not start up, operate or use the e-motion before you have been properly trained by an authorized specialist dealer and you have read this manual in full. Failure to do so can cause serious bodily injury.

1.2 Intended use of the e-motion

Wheelchairs with added e-motion wheels are exclusively intended for the transport of persons with walking impairments. No other parts may be added on except the accessories approved by Alber for operation.

The e-motion must be handled, operated or used only under the following circumstances:

- Observing the specifications, instructions and recommendations of this instruction manual
- The device is handled, operated or used exclusively by a person having been properly instructed and trained in its correct and safe operation and use.
- Neither the user nor third parties have made technical modifications to the device
- Operate only on firm surfaces. Do not operate on loose gravel, sand, mud, snow, ice or deep puddles.
- Do not use or operate on escalators, motorized walkways or stairs.
- Do not use to carry or transport loads, objects or other persons.
- Do not add or install accessories or components not approved by Alber.
- Do not operate or use the e-motion in an abrupt, sudden or jerky manner. Perform all operations and functions in a smooth, uniform, gentle and steady manner.
- When driving the e-motion, always look into the direction of travel and do not become distracted.

A person having received proper training is someone who has been instructed on the proper operation, use, responsibilities and possible hazards resulting from improper handling, operation or use of the e-motion.

Instruction and training is to be provided by authorized specialist dealership or Ulrich Alber GmbH.

Handling, operating or using the e-motion by persons not having received proper instruction and training is explicitly prohibited.

The intended use also includes compliance with this instruction manual's specifications and requirements on performing safety checks and following safety procedures in operating or driving the e-motion.

Any handling, use or operation contrary to the directions and instructions of this operating manual or exceeding the technical performance limits defined in this manual is a misuse of the device and can cause serious bodily injury.

Alber refuses any liability for resulting damage or injury.

1.3 Permissible operating conditions/places of use

Follow the instructions on permissible operating conditions in the user manual of your wheelchair to which the e-motion is attached. Any limitations on permissible operating conditions (e.g. maximum climbing capacity, maximum permissible obstacle height, maximum user weight, etc.) must also be observed when operating the e-motion!

The e-motion can be operated only at temperatures between -25 °C and +50 °C.

Avoid travel on non-solid surfaces (e.g. on loose gravel, sand, mud, snow, ice or through deep puddles).

Follow the safety instructions and hazard notes in Chapter 11.

1.4 Standard scope of delivery

- two e-motion wheels
- two battery packs (maintenance free)
- two protective covers for the wheel contacts
- two protective covers for the battery contacts
- one mains charger inc. operating instructions
- These operating instructions

The wheelchair must have special brackets for attaching the e-motion. If this is not the case, please contact your specialist dealer directly or one of the Alber factory representatives.

1.5 Optional accessories

- Rechargeable battery pack / spare battery
- Anti-tippers for the wheelchair
- Remote control
- Bracket for remote control
- Spoke cover

Use only original Alber accessories.

The e-motion is designed to yield superb performance when using with original Alber accessories. Alber is not liable for damages on the product or accidents (e.g. fires, etc.) caused by a malfunction of non-original accessories or spare parts (e.g. leakage or explosion of a battery pack). The warranty does not cover any repair required due to a malfunction of non-original accessories. However, you may commission repairs on a chargeable basis.

USA / Canada

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the users' authority to operate the equipment.

1.6 Specifications

| | |
|------------------------|------------------------|
| Range: | 25 km per ISO 7176 - 4 |
| Max. speed: | 6 km/h |
| Drive power: | 2 x 60 W |
| Motor voltage: | 24 V |
| Operating temperature: | -25 °C - +50 °C |
| Max. load capacity: | 130 kg |

Battery pack

| | |
|----------------------------|--------------|
| Battery type: | Lithium-Ions |
| Nominal operating voltage: | 25.2 V |
| Charge temperature: | 0 °C - 40 °C |

Weight of the individual parts

| | |
|------------------|------------------------|
| Wheel: | 9.2 kg |
| Battery pack: | 1.3 kg |
| Battery charger: | 0.8 kg |
| Overall weight: | 21.0 kg |
| Range: | 25 km per ISO 7176 - 4 |

(*) The range varies depending on the terrain traversed and the prevailing driving conditions. The stated range can be achieved if driving conditions are optimal (even terrain, freshly charged batteries, ambient temperature of 20 °C, even travel, etc.).



The e-motion complies with the EC directive for medical products 93/42/EEC.

We reserve the right to make alterations to the technology and design as part of ongoing further developments.

Battery charger

Please refer to the technical notes and instructions in the manual accompanying the charger.

1.7 The most important elements at a glance

(Please unfold the general drawing contained in the envelope)

Wheel

| | |
|--|----|
| LED display | 1 |
| Rubber cover of the charger socket | 2 |
| Charger socket | 3 |
| Lock of the stub axle | 4 |
| On/Off button | 5 |
| Handle area | 6 |
| Fins (rear of wheel) | 7 |
| Stub shaft | 8 |
| Push rim | 9 |
| Battery contacts (inside of wheel hub) | 10 |

Protective cover for battery contacts

| | |
|--------------------------|----|
| Cover | 18 |
| Locking pin of the cover | 19 |

Remote control (optional)

| | |
|--------------|----|
| Info button | 20 |
| Display | 21 |
| Button 2 | 22 |
| Button 1 | 23 |
| Button 0 | 24 |
| Reset button | 25 |

Battery pack

| | |
|---------------------------------------|----|
| Battery pack locking pin | 11 |
| Battery pack | 12 |
| Protective cover for battery contacts | 13 |
| Burls of plastic cover | 14 |

Battery charger

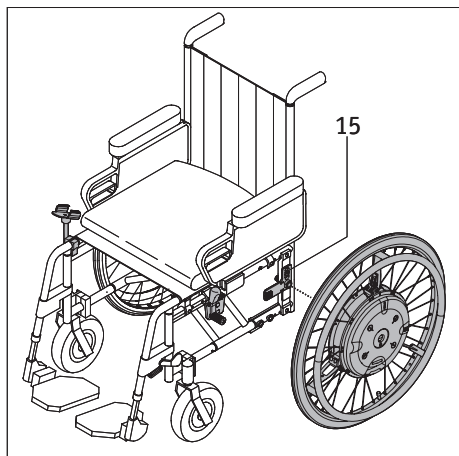
| | |
|--------------|----|
| Housing | 26 |
| Charger plug | 27 |

Wheelchair (not included in scope of delivery)

| | |
|---------------------------------------|----|
| Bracket with wheel receiver | 15 |
| Parking brake of wheelchair | 16 |
| Bracket for remote control (optional) | 17 |

Anti-tippers (optional)

| | |
|--------------------------|----|
| Quickpin | 28 |
| Receiver fork of bracket | 29 |
| Holding rod | 30 |
| Clamping piece | 31 |



2. Start-up

The e-motion wheels and, if applicable, the accessories you ordered are mounted to your wheelchair by Alber or your specialist dealer and delivered to you ready for operation. Both sides of your wheelchair are therefore equipped with new brackets [15] with wheel receivers into which the two e-motion wheels are inserted (see Chapter 2.1). The manual wheelchair wheels which you have previously used are also returned to you for possible future use.

When the e-motion is delivered to you, your specialist dealer will instruct you about the operation of the system and the accessories you may have ordered. He will also hand the operating instructions to you which contain important information on driving, in addition to the technical information.



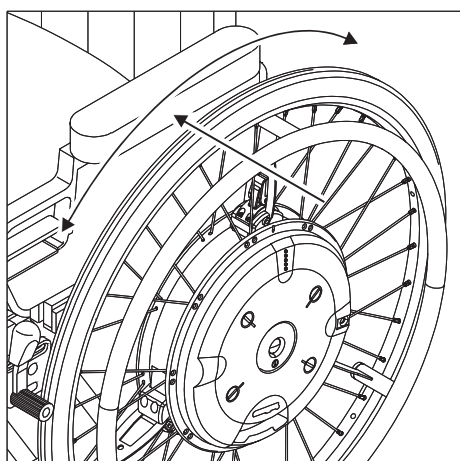
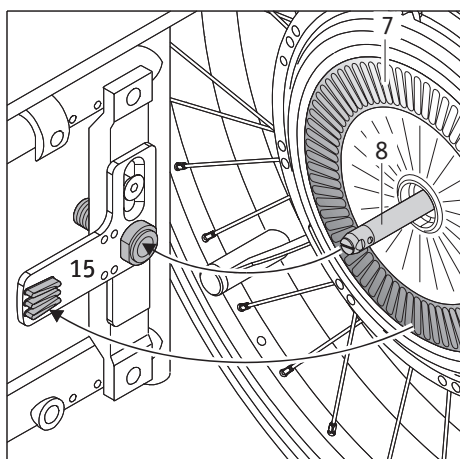
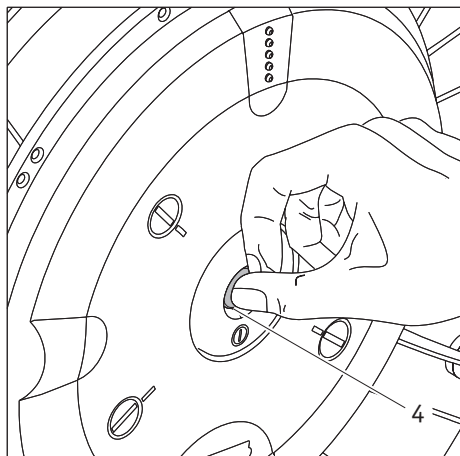
The brackets [15] may only be mounted to the wheelchair by Alber or a specialist dealers authorized by Alber.



Regularly inspect and check the brackets [15] to verify that they are tightly and securely screwed onto the wheelchair. If these screw connections have become loose or have even unscrewed, you must have them retightened by an authorized specialist dealership. Failure to do so can cause the wheels to detach and serious bodily injury.



Alber manufactures brackets in different designs, for example, as a complete single part or made up of separate parts. For this reason, graphic representations in this operating manual may differ from the bracket mounted to your wheelchair.



2.1 Mounting the wheels

Different driving parameters can be assigned to each e-motion wheel. It is therefore absolutely necessary to always mount the two e-motion wheels according to their identification on the left and right side of your wheelchair, respectively!

The stub axles [8] of the e-motion wheels are similar to the stub axles of your previously used manual wheelchair wheels. Therefore, you may mount the e-motion wheels to your wheelchair as you are used to.

- Unless already done, place the battery pack [12] into the wheel hub and lock it with the same (see Chapter 4.6).
- Push on the locking mechanism [4] located in the center of the wheel hub and at the same time push the stub axle [8] of the e motion wheel into the wheel receivers [15] on the wheelchair.
- You might need to turn the a-motion wheel a few millimetres around its axis to allow the fins [7] located at the rear of the wheel to engage with the torque receiver.
- Check if the e-motion wheel can be pulled out of the wheel receiver [15] without pushing the lock [4]. If this is the case, the e-motion wheel is not seated correctly in the wheel receiver [15] and must be reintroduced into the wheel receiver [15] as described above.
- Attach the second e-motion wheel on the other side of the wheelchair.
- Before using or operating, confirm that the wheels have been properly seated.

These few steps complete the mounting of the e-motion wheels on your wheelchair.



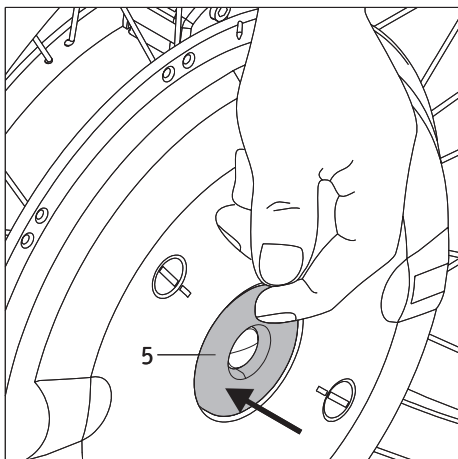
Operation or driving is only permitted with e-motion wheels that are correctly engaged and seated in the wheel receiver [15].



Check the proper function of your wheelchair brakes [16] before each drive. They must be adjusted correctly to the e-motion wheels and be able to prevent the unintentional rolling away of the wheelchair at any time. Do not use or operate the wheelchair if the brakes are not in proper working order.



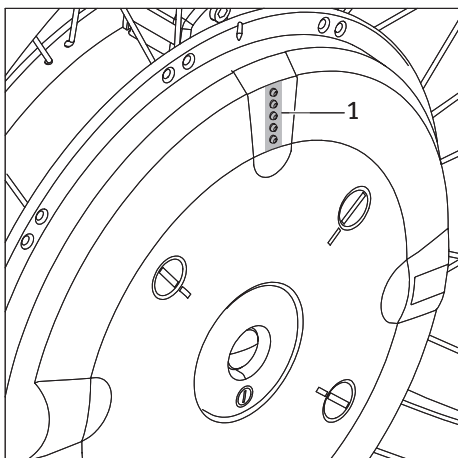
Always mount the e-motion wheels according to their identification on the left and right side of your wheelchair, respectively.



2.2 Switching on the wheels on the wheel hub

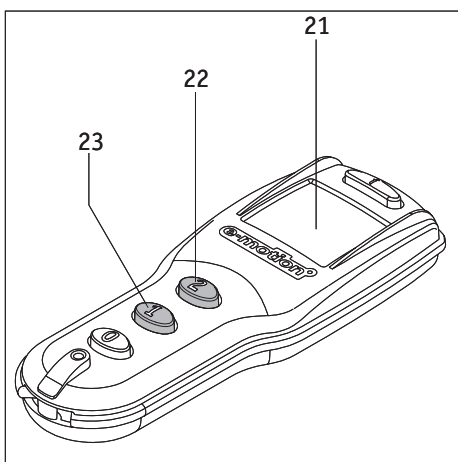
You can now switch on the system if the two e-motion wheels were correctly and securely mounted to your wheelchair as described in Chapter 2.1.

- Push the On/Off buttons [5], located in the wheel hub, for approximately one second.
- **e-motion with remote control (optional):**
Depending on the power stage used last (refer to chapter 6), an acoustic signal sounds (one signal tone for power stage 1, two signal tones for power stage 2).
- **e-motion with remote control (optional):**
A signal tone sounds.
- All five LEDs [1] of the display light up briefly and then change to the display status for the charge status of the battery pack (see Chapter 5.1).
- The wheel is operational after approx. 2-3 seconds and you can start driving. Please note the instructions in Chapters 3 and 11.



Note

If the switched on wheels are not used, they switch off automatically after a predefined period (refer to the information in Chapter 7).



2.3 Switching on the wheels with the remote control (optional)

Instead of activating the wheels via the On/Off switch [5] in the wheel hub, they can also be switched on by the optionally available remote control.

- When pushing button 1 [23], both wheels are switched on in power stage 1 and one signal tone each sounds on the wheels.
- When pushing button 2 [22], both wheels are switched on in power stage 2 and two signal tones each sounds on the wheels.

After the wheels have been switched on, the charge status of the two battery packs and the selected power stage are indicated on the display [21].

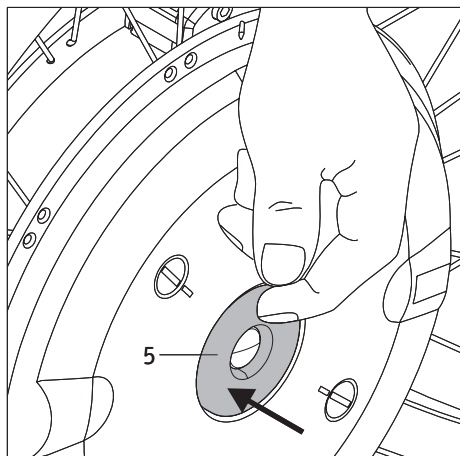
Please refer to Chapter 9 for a detailed description of this and other functions, displays and possible error messages.



A fault is present if no or more than 2 signal tones sound when switching on the wheels. Do not use or operate, and refer to Chapters 5.3 or 9.4.



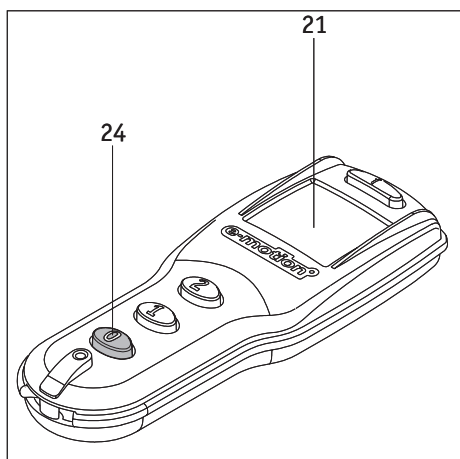
For e-motion systems without remote control, switch on the wheels one after the other and not at the same time. Activating the wheels at the same time can cause you not to hear possible warning signals (see Chapter 5.3) or allocating them to the wrong wheel.



2.4 Switching off the wheels on the wheel hub

After you are done driving, always switch off the two e-motion wheels and engage the parking brakes on the wheelchair. This will save the energy of the two battery packs and prevents a possibly inadvertent rolling away of your wheelchair.

- Push the On/Off buttons [5], located in the wheel hub, for approximately one second.
- To confirm the switch-off, an acoustic signal (1 beep) sounds on each wheel.
- The LED [1] on the wheels goes off.
- Secure your wheelchair against unintentional roll away by engaging the parking brakes of the wheelchair.



2.5 Switching off the wheels with the remote control (optional)

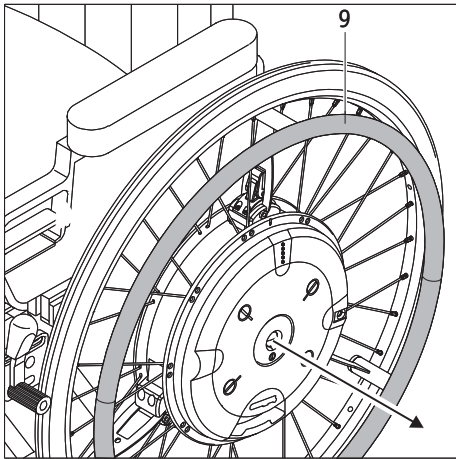
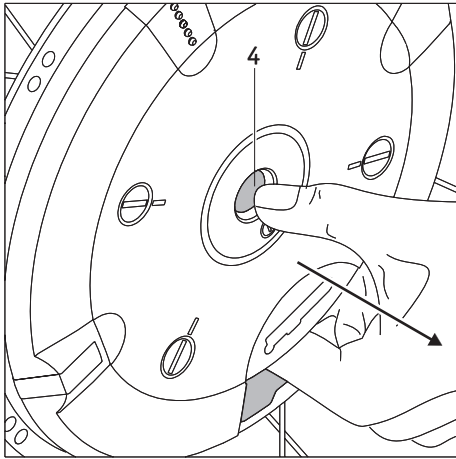
Please proceed as follows if you are switching off the wheels with the optional remote control:

- Push the „0“ [24] button; both wheels are switched off at the same time.
- To confirm the switch-off, an acoustic signal (1 beep) sounds on each wheel.
- The LED [1] on the wheels goes off.
- The display (21) goes off after approx. 5 seconds.
- Secure your wheelchair against unintentional rolled away by pulling the parking brakes of the wheelchair.

Please refer to Chapter 9 for a detailed description of this and other functions, displays and possible error messages.



The e-motion wheels are not quipped with their own built-in brakes. It is therefore absolutely necessary to properly adjust the brakes installed on your wheelchair to the e-motion wheels to prevent the wheelchair from unintentionally rolling away. Please contact your specialist dealer in this regard.



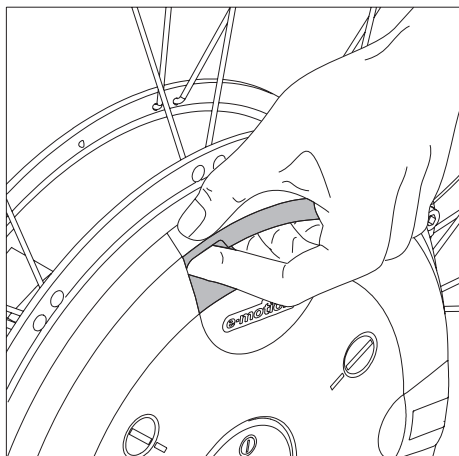
2.6 Removing the wheels

The e-motion wheels will usually remain on your wheelchair. If they need to be removed (for example to facilitate transport), then please proceed as follows:

- Switch off the e-motion wheels if not yet done (see Chapter 2.4).
- **When using Alber anti-tippers:**
 - Lift your wheelchair as described in Chapter 10.2 and operated the anti-tippers.
 - Reach with the fingers into the opening between wheel hub and battery pack as shown in the graphic.
 - Push on the locking mechanism [4] located in the center of the wheel hub and pull the e-motion wheel with care off the wheelchair.
 - Once both wheels have been removed, you can return the anti-tippers to the original position as described in Chapter 10.2.
- **Without Alber anti-tippers:**
 - Lift the wheelchair by its push handles.
 - Reach with the fingers into the opening between wheel hub and battery pack as shown in the graphic illustration.
 - Push on the locking mechanism [4] located in the center of the wheel hub and pull the e-motion wheel with care off the wheelchair.



When removing an e-motion wheel, never pull on its push rims [9]. This could damage the sensors attached to them.



2.7 Transport and storage of the wheels

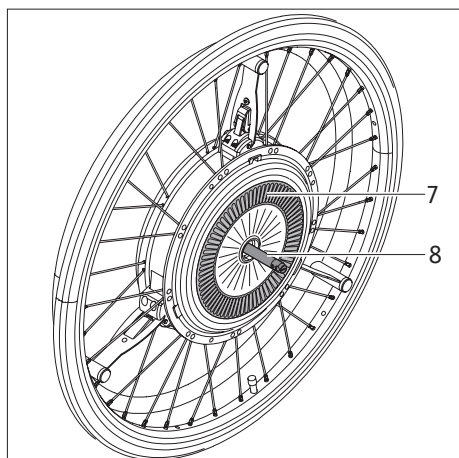
Do not lift or hold the e-motion wheels by the push rims [9] when transporting the wheels. This can damage the sensors attached to them.

Instead, reach into the opening between the battery pack and wheel hub as shown in the graphic illustration or carry the e-motion wheel by its rim. There is no risk of damaging the wheel at these points.

Pay special attention to the fins [7] and the stub axle [8] on the rear of the wheel when putting or placing down the wheel. Both parts may not be damaged.

The specifications of the respective wheelchair manufacturer regarding the securing of the complete wheelchair and/or its individual parts apply for transport.

Remove the e-motion wheels from the wheelchair and transport them individually.



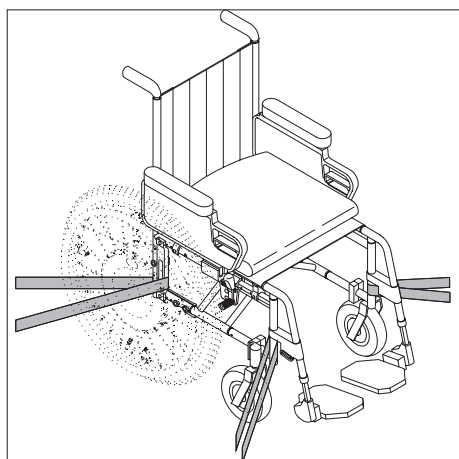
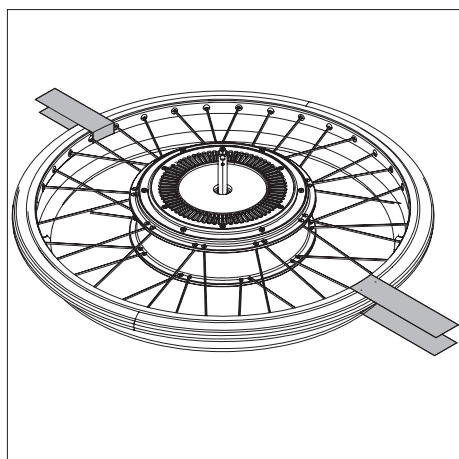
During transport, the wheels must be secured against moving or flying about in all cases, so that they cannot lead to danger for the occupants during a braking maneuver. To secure the wheels, fasten them in the vehicle with sufficiently strong fabric straps as shown in the graphic illustration.

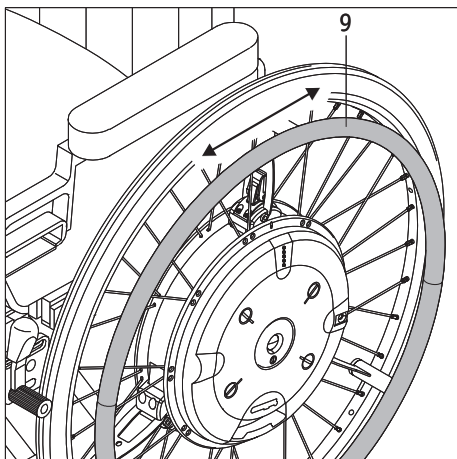
If there are national regulations regarding the securing of wheelchairs and wheels in your country, these must be observed.

When encountering dangerous traffic situations or an accident, sitting in the wheelchair during transport is strictly forbidden. Remain seated in your vehicle.

The national legal regulations apply in all cases and observe all traffic laws.

Ulrich Alber GmbH and its representatives reject any liability for accidents of any kind and their consequences, which arise as a result of the non-observance of these instructions.





3. General safety instructions for driving with the e-motion

The operation of the e-motion wheels is similar to the manual wheels you have used so far. This means that you can move your wheelchair with the push rims [9] as usual. The power assist function of the e-motion will cause the wheelchair to react or function more quickly and at a greater speed. Do not engage the push rims abruptly, suddenly or too forcefully to avoid unintended movements. Always engage the push rims in a smooth, uniform and gentle manner. (See Chapter 6).

After being trained on the e-motion, practice driving until you are comfortable that you can properly and safely utilize the power assist function. This will help you to thoroughly familiarize yourself with the drive and its features.

- Adjust the parking brakes [16] of your wheelchair to the e-motion wheels to prevent unintentional rolling away. If this has not been done, contact the specialty dealership authorized by Alber and have the brakes readjusted.

e-motion with remote control (optional):

- First select power stage 1 for the initial driving attempts. Switch only to power stage 2 after you have thoroughly familiarized yourself with the power assistance of the drive.

e-motion without remote control:

- After you have been properly trained on the e-motion, begin driving slowly, on level surfaces and in locations free of obstacles.

Important information

- Learn and familiarize yourself with the e-motion's power assist function characteristics in areas without obstacles.
- Before driving the e-motion on slopes or hills, master handling and operating the device safely on flat terrain.
- Always adjust your speed to the surroundings and surface to safely circumvent obstacles that may suddenly occur or to stop your wheelchair timely and safely.
- Always drive up slopes with full battery packs.
Although the wheels continue to run when the battery packs are empty, the power assistance for the rolling motion and especially the braking maneuver is no longer available!
- Special care and caution must be exercised when driving down slopes of any kind. Adjust your speed and braking as needed to maintain safe control.
When descending slopes with fully charged battery packs and at too high a speed, a forced shut-down of the e-motion due to overvoltage can occur. Although the wheels continue to run, the power assistance for the braking process is no longer available!
For this reason, drive down slopes only at a low speed to avoid suddenly occurring obstacles or to bring the wheelchair to a stop.
- Observe the information, safety and hazard notes of your wheelchair manufacturer. They apply also for driving with the e-motion.



Drive slowly on downhill slopes with fully charged battery packs!

The system may shut down automatically at fully charged battery packs and at high speed. Reduce your speed for this reason to maintain safe control.



Overcome obstacles (e.g. curbs) only by driving backward, if possible. The maximum permitted height of the obstacle is 50 mm.

Attention! When driving over obstacles backward, the proper function of the Alber anti-tippers is not guaranteed! Therefore, drive slowly and carefully in reverse until the wheels of your e-motion touch the obstacle. Then, carefully drive over the obstacle. The assistance of an accompanying person is strongly recommended.



Observe the safety and hazard notes in Chapter 11!

4. Battery pack

4.1 Safety instructions on charging the battery pack

The battery packs [12] always remain in the wheel hubs of the e-motion wheels and should be removed only in case of air transport or for service situations. The charge process takes place only directly on the wheels which do not have to be removed from the wheelchair for this purpose. Principally, both battery packs should always be recharged at the same time; the charger is therefore equipped with two charger cables.

Read and follow all instructions and warning information included with the charger before starting with the charging process and pay attention to the following warning notes. Failure to do so may damage the unit or cause personal injury.

Wheelchair

Switch off both wheels before beginning with the charge process and secure the wheelchair with its parking brakes against rolling away unintentionally.

Battery charger

- Only use the supplied Alber charger to charge the e-motion battery pack. This switches off automatically as soon as the battery pack is charged up. For this reason, overloading is not possible.
- Do not charge any other battery packs with the charger except those delivered.
- When the e-motion wheels are not used for some time (more than 1 day), the charger must first be disconnected from the line supply socket and then from the battery pack.
- Never use a charger not supplied by Alber.
- Never subject the charger to humidity (water, rain water, snow) during the charge process.
- Caution with condensation. If the charging device is brought from a cold room into a warm room, condensation can form. Wait using the charger in this case until the condensate has evaporated. This may take several hours.
- Never carry out the charging process in rooms where humidity may settle on the charger.
- Never carry the charger on the power cable or the charger cables.
- Never pull on the power cable to remove the charger from the socket.
- Route the power cable and the attached two charger cables to prevent persons from stepping on them or tripping over them and to keep them from being exposed to damaging impacts or stresses.
- Do not operate the charger if the power cable, one or both charger cables or the plugs attached to them are damaged. Damaged parts must be replaced without delay by the specialist dealership authorized by Alber.
- Never use or dismantle the charger if it has incurred a hard blow, was dropped or damaged otherwise. Bring the damaged charger for repair to a specialist dealer authorized by Alber.
- The charger is not to be used by small children.
- The charger may only be operated at 100 V - 240 V AC.
- Do not disassemble or modify the charger.
- Do not cover the charger during the charging process and do not place any objects on top of the device.
- Place the charger securely in a vertical position on a level surface.
- Do not expose the cable and the plug to any pressure. Excessive stretching or bending the cable, pinching the cable between a wall and a window frame or placing heavy objects on the cable or the plug may cause electrical shock or fire.
- Never shorten the two poles with metallic objects.
- Make sure that the plug is firmly plugged into the socket.
- Do not touch the plug with wet hands.
- Do not use the plug of the charger and/or the plug of the power cable if they are wet or soiled. Clean them with a dry cloth before plugging them into the socket.
- After the charge procedure is completed, first pull the plug of the charger from the socket and then the charger plug from the e motion wheels.
- Do not plug the charger plug into the charge socket while the battery has been removed.

Battery pack

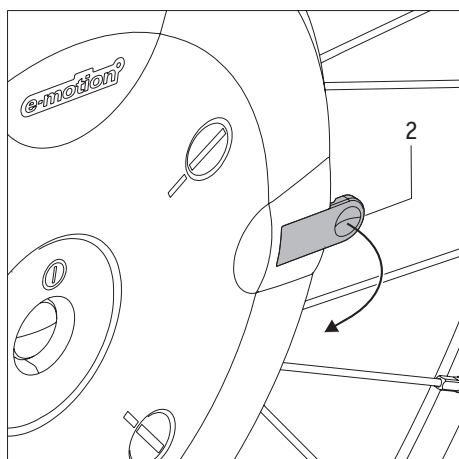
- Only the battery packs supplied by Alber are to be used for the operation of the e-motion wheels. Other battery might burst and cause injuries or property damages.
- Never charge the batteries in the presence or vicinity of flammable liquids or gasses.
- Keep the battery pack away from fire.
- Never subject the wheels with the battery packs in them to humidity (water, rain water, snow) during the charge process.
- In the (unlikely) event of overheating or fire of the battery pack it must not come into contact with water or any other liquids at any rate. The battery manufacturers recommend sand as the only useful means to extinguish the fire.
- Never carry out the charging process in rooms where humidity may settle on the wheels with the battery packs in them.
- Never charge the battery packs at temperatures below 0 °C or over 40 °C.
- When attempting to charge the batteries outside of this temperature range, the automatic mechanism of the e-motion wheel cuts off the charge process automatically.
- Your e-motion uses power each time it is used. Never run the battery pack completely empty since this may damage it over time. We recommend recharging the battery pack after each use if possible.
- Only use the Alber charger supplied with the e-motion to charge the battery pack. This switches off automatically as soon as the battery pack is charged up. For this reason, overloading is not possible.
- When the e motion wheels are not used for some time (more than 1 day), the charger must first be disconnected from the line supply socket and then from the battery pack.
- Use the battery packs only for the purposes outlined in these operating instructions.
- Do not disassemble or modify the battery pack.
- Never shorten the poles of the battery pack with metallic objects.
- Never shorten the poles with metallic objects.
- Do not submerge the battery pack in water. This could cause irreparable damages.
- Attach the protective cover for the battery contacts [13] as soon as you have removed it from the wheel.
- The service life of a battery pack also depends on its storage location. Therefore do not leave the battery pack at hot locations for longer periods (regardless whether it is installed in the wheel hub or has been removed from it). Especially the trunks/boots of passenger cars parked in the sun should be used only for transport but not for general storage.

Wheel

The orientation of the sensors is checked during the charge process; for this reason, neither compression nor tensile forces may be exerted on the push rim during this time. Make sure during each charge process that both push rims are free from any load or weight. If the push rims was accidentally exposed to any forces during the charge process and the sensor orientation was therefore misadjusted, please proceed as follows:

- Do not expose the push rim to any loads, that is, neither to tensile or compression forces.
- Carry out the charge process once more for approx. 10 minutes; this will readjust the sensors.
- Complete the charge process.

The correct charging process on the e-motion wheels is described below.
Carry out the charging process only according to these instructions!



4.2 Charging the battery pack

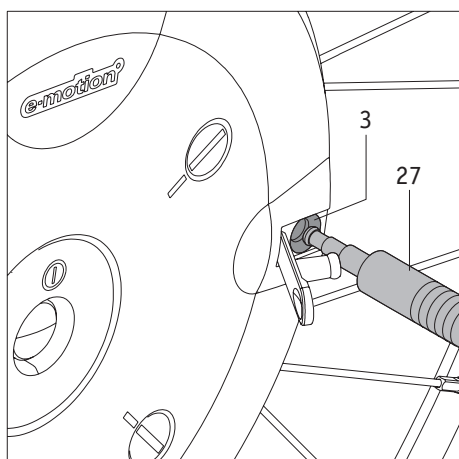
- Open the rubber cover [2] attached on the wheel hub above the charge socket [3].
- Push the charger plug [27] into the charger socket [3].
- Push the power cable of the charger only now into an outlet.
- Depending on the remaining capacity in the batteries, one or several LEDs on the wheel come on (see also Chapter 5.1).
- All five LEDs come on if the battery pack is fully charged.
- Pull the power plug of the charger from the socket.
- Pull the charger plug [27] only now from the charger socket [3].
- Close the charger socket [3] again with the rubber cover [2].



When the e-motion wheels are not used for some time (more than 1 day), the charger must first be disconnected from the dine supply socket and then from the battery pack.

Always check the charge status of the battery packs each time you prepare to drive. They should be fully charged before beginning to drive.

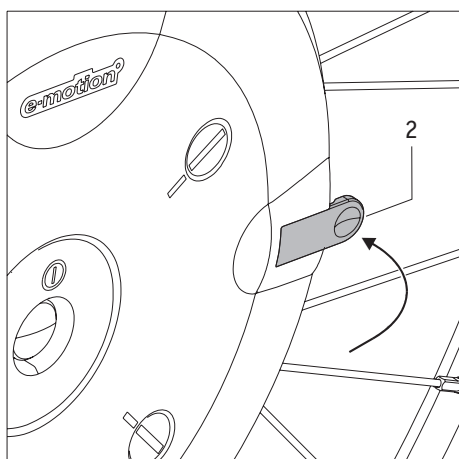
Please follow also the notes and instructions in the manual accompanying the charger.



The e-motion wheel shuts off automatically if the charger plug [27] is pulled or removed from the charger socket [3].



If a fault occurs during the charging process, all 5 LEDs flash at the same time. Proceed accordingly.

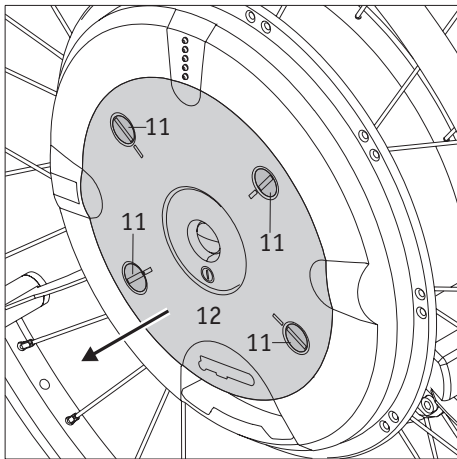


If the e-motion wheels remain attached to the wheelchair during charging, switch off both wheels before beginning with the charge process and secure the wheelchair with its parking brakes against rolling away unintentionally.

If you disregard this and the wheels roll away during the charging process, an acoustic warning signal sounds (several beeps) to alert you to this critical safety condition.



Remove the rubber covers [2] only to charge the battery pack. Attach the rubber covers [2] again to the wheel hub after the charging process is completed.



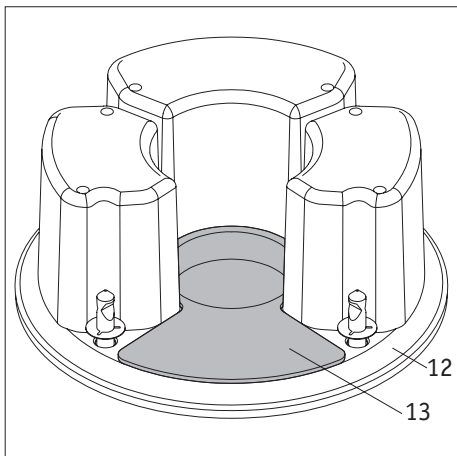
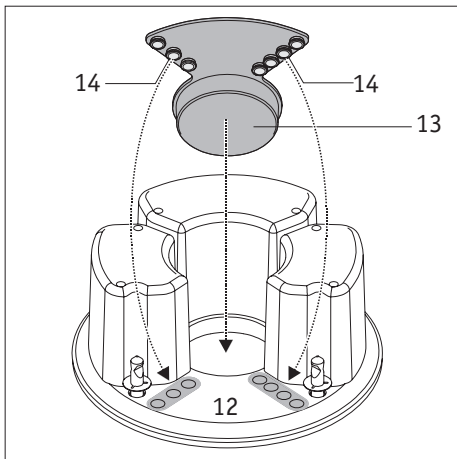
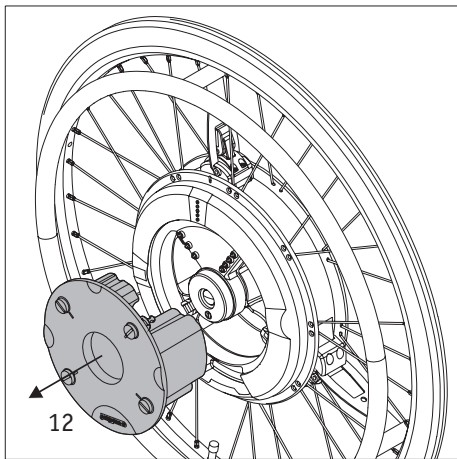
4.3 Removal and protection of the battery pack

The battery pack always remains in the wheel hub of the e-motion wheel and should be removed only in case of air transport or for service situations. Please proceed as follows in this case:

- Loosen the 4 locking pins [11] using a coin.
- After loosening the last locking pin, the battery pack [12] jumps slightly out of the wheel hub.
- Remove the battery pack [12] from the wheel hub.

On the bottom of the battery pack:

- Immediately after removing the battery pack, place the round side of the protective cover [13] in the center of the battery pack housing [12] as shown in the graphic illustration and firmly push it in place.
- Push the burls [14] of the protective cover into the openings on the bottom of the battery pack housing and push them in place.
- The protective cover [13] and its burls [14] must be connected firmly enough with the battery pack housing so that they cannot become detached from it on their own.

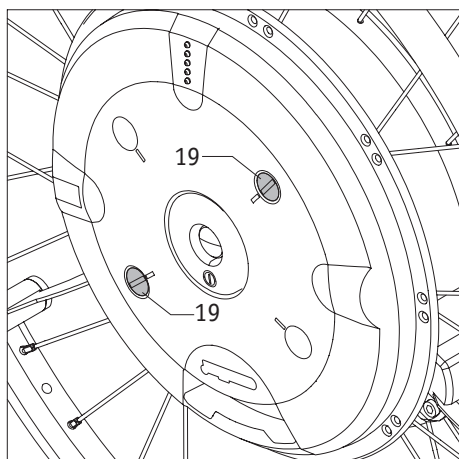
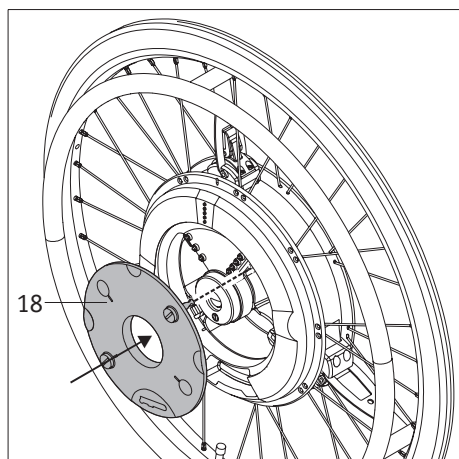
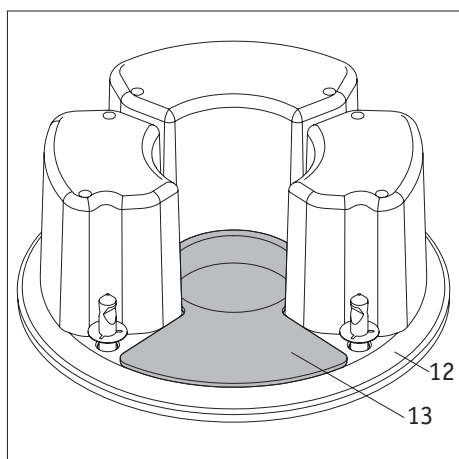
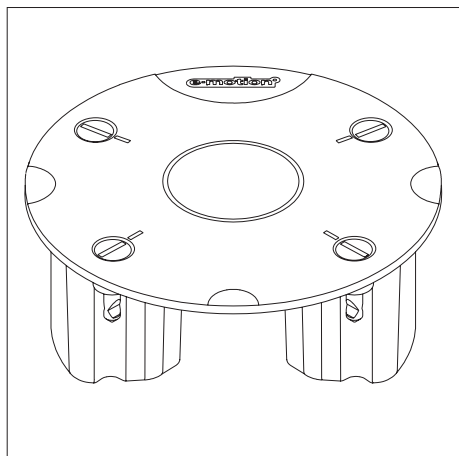


Protect the battery pack immediately after removing it from the e-motion wheel to prevent damaging it. Neither humidity nor foreign objects (e.g. metal shavings, small nails or other conducting metals) may enter the openings on the battery pack.



The battery pack must only be removed from an e-motion wheel in case of air transport. Status of current knowledge (as of June 2008):

The wheels are transported in the cargo compartment of the plane, the two battery packs are to be carried as hand luggage in the passenger cabin. However, make sure to contact the respective airline carrier on the applicable regulations in this matter before commencing your journey and also on the applicable legal regulations in your country of origin or your vacation destination in regard to the air transport of batteries and rechargeable lithium-ion batteries.



4.4 Storage and transport of the battery packs removed from the wheel

Never subject the battery pack to humidity (water, rain water, snow, etc.)!

Information regarding storage:

- The battery pack removed from the wheel should always be stored upright as shown in the graphic illustration and inaccessible to children.
- Charge the battery pack before long-term storage and check the charge status every 3 months.
- Store the battery pack at a cool and dry location where it is protected from damage and unauthorized access.

Information regarding transport:

- The battery pack should be transported in the original package (therefore keep the carton).
- The battery pack may remain in the wheel with all types of transport except air transport. This must be clarified with the respective airline when transporting the battery pack by plane (see note in Chapter 4.3).
- Contact your specialist dealer or the Alber Service Center for clarification prior to shipping or transporting a damaged battery pack.

Instructions in case of damages or defect of the battery pack

If the battery pack is damaged or defective, it must be set apart and inspected. Please contact your specialist dealer and discuss the further procedure regarding return shipment and repair with him.

A defective/damaged battery pack must not to be used or opened to prevent damage or personal injury.

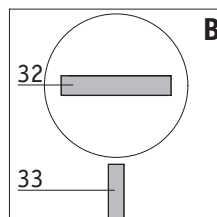
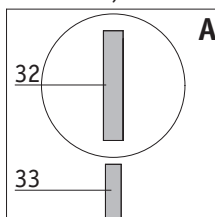


The battery pack [12] removed from the wheel must only be stored or transported with the protective cover [13] in place. Transport or storage without the protective cover in place [13] is not permitted to prevent damage or personal injury.

4.5 Protection of the wheel with the battery pack removed

After you have removed the battery pack and secured it as described in Chapter 4.3, you must next protect the wheel against dirt and damage as follows:

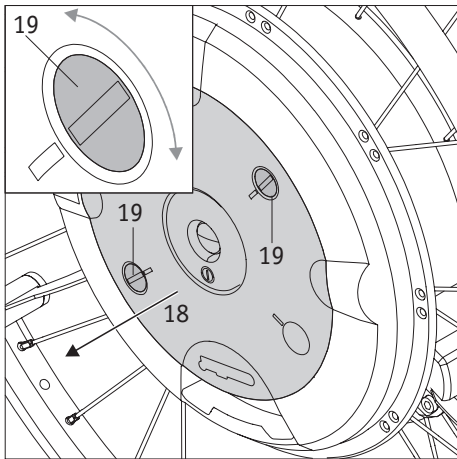
- Remove the cover [18] and push it slightly into the wheel hub in place of the battery pack as shown in the graphic illustration.
- Insert a coin into the slot [32] of one of the two locking pins [19].
- Push the locking pin [19] inside and rotate it by 90 degrees.
- Repeat the procedure with the second locking pin [19].
- The cover [18] has only been correctly inserted into the wheel hub if it does not protrude beyond it at any point.
- The cover [18] is only correctly secured in the wheel hub if its marks [33] and the slots [32] of the locking pins [19] are properly aligned (refer to the following graphic illustration).



**A=Locking pin locked
B=Locking pin released**



Protect the wheel immediately after removing the battery pack. Neither humidity nor foreign objects (e.g. metal shavings, small nails or other conducting metals) may enter the wheel hub.

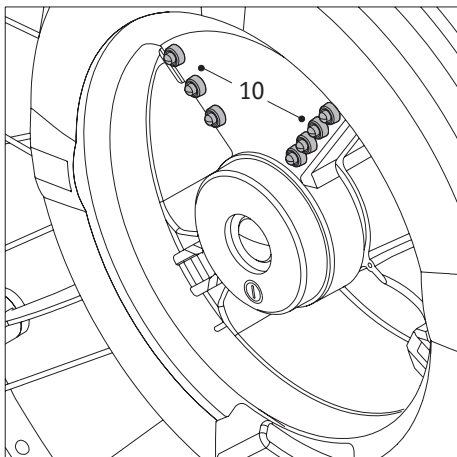
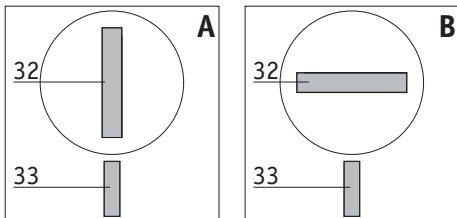


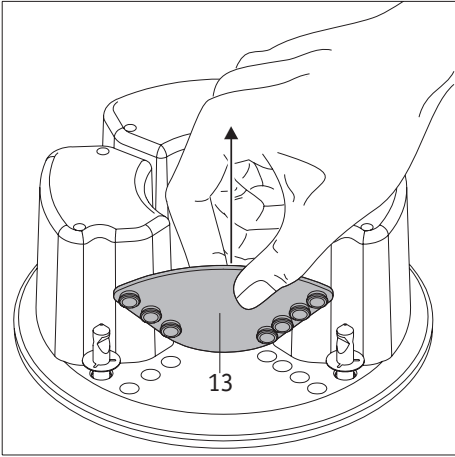
4.6 Inserting the battery pack

Carry out the following steps to insert a battery pack again in the wheel hub:

Wheel

- Insert a coin into the slot [32] of one of the two locking pins [19].
- Push the locking pin [19] slightly toward the inside and turn it by approx. 90 degrees until the slot [32] and the marks [33] of the cover [18] are properly aligned (refer to the graphic illustration). This releases the locking pin and it jumps out slightly. The graphical illustration explains:
A= locking pin locked
B= locking pin released
- Repeat the procedure with the second locking pin.
- Remove the cover [18] from the wheel hub and store it for future transports of the wheel.
- Check if moisture is present inside the wheel hub. Dry wet spots immediately with a clean, dry cloth.
- Check if dirt or foreign objects (especially metal shavings, small nails or other conducting metals) are present inside the wheel hub and remove them.
- Dry and clean especially the battery contacts [10] inside the wheel hub if necessary.





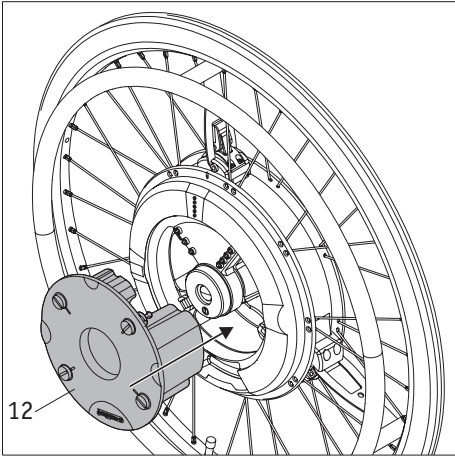
Battery pack

- Pull the protective cover [13] from the bottom of the battery pack. Keep the protective cover [13] for further transports.
- Take the battery pack [12] and push it into the wheel hub.
- Push the four locking pins [11] one after the other slightly to the inside and rotate them by 90 degrees.
- The battery pack [12] has only been correctly inserted into the wheel hub if it does not protrude beyond it at any point.
- The cover [12] is only correctly secured in the wheel hub if its marks [33] and the slots [32] of the locking pins [11] are property aligned (refer to the graphic illustration).

The graphical illustration explains:

A= locking pin locked

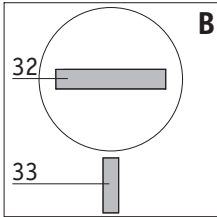
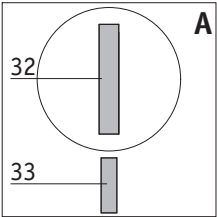
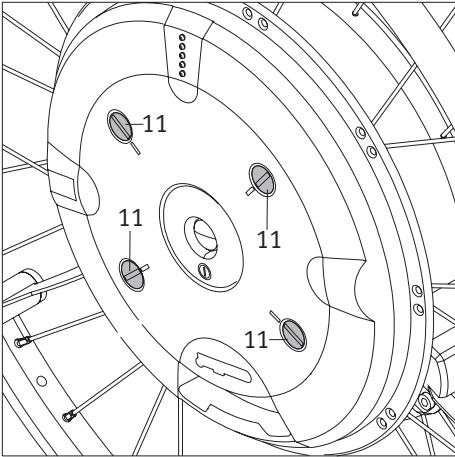
B= locking pin released

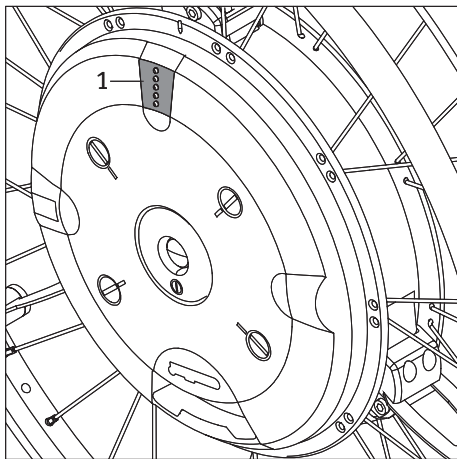


Your e-motion wheel is now completely ready for the next ride.



Insert the battery pack only into the wheel hub if both are clean and dry. Both parts must never be joined in case of dirt and moisture. Observe the notes in on cleaning in Chapter 12.1.





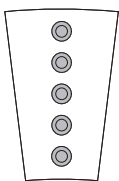
5. Indicators and error messages on the wheel

5.1 Charge status of the battery pack

The charge status of the two e-motion battery packs is indicated by the LEDs [1] attached to the wheel. Please note that because of different drive moments or possibly differently adjusted wheels the current consumption may also vary (see Chapter 6).

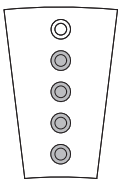
Each time when switching on a wheel and after each operation of the push rim, one or several LEDs come on (refer to the following table) and indicate the respective charge status of the battery pack. The LEDs go off after approx. 10 seconds and the top green LED (signal for the operational readiness of the wheel) flashes approx. every 2 seconds.

They mean:

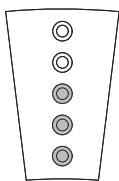


5 LEDs come on – Battery pack is charged 100 %.

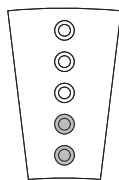
Avoid driving down slopes at high speeds because a forced shut-down of the wheel may occur due to the current return in the wheels and the risk of overvoltage in the battery pack.



4 LEDs come on – Battery pack is charged 80 %.

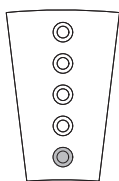


3 LEDs come on – Battery pack is charged 60 %.



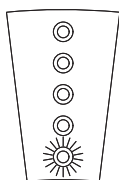
2 LEDs come on – Battery pack is charged 40 %.

We recommend not driving too far without charging the batteries first.



1 LED comes on – Battery pack is charged 20 %.

Charge the batteries before starting a ride.

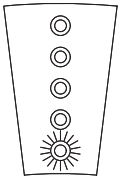


1 LED (red) flashes – Battery pack is charged 10 %.

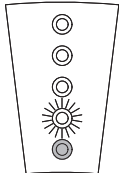
Charge the batteries before starting a ride.

5.2 Display during charging of battery pack

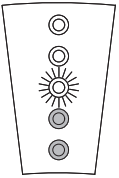
1 LED (red) flashes – Battery pack is charged less than 20 %.
LED (red) flashes



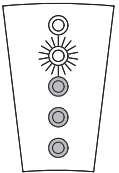
1 LED flashes, 1 LED come on – Battery pack is charged between 20 % and 40 %.



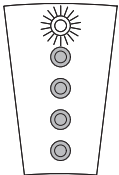
1 LED flashes, 2 LEDs come on – Battery pack is charged between 40 % and 60 %.



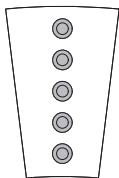
1 LED flashes, 3 LEDs come on – Battery pack is charged between 60 % and 80 %.



1 LED flashes, 4 LEDs come on – Battery pack is charged between 80 % and 100 %.



5 LEDs come on – Battery pack is fully charged.



The e-motion wheel shuts off automatically if the charger plug [27] is pulled from the charger socket [3].



If a fault occurs during the charging process, all LEDs flash slowly and an acoustic warning tone sounds (refer to Chapter 5.3).

5.3 Acoustic error messages

The following table describes the errors occurring most frequently and are mainly due to faulty handling of the e-motion wheel. They mean:

- Short signal tone, duration approx. 0.2 seconds
- Long signal tone, duration approx. 0.8 seconds

| Acoustic signal on the wheel | Repetition Acoustic signal | Error description | What to do |
|------------------------------|---|--|--|
| ● ● | every 8 seconds | Overvoltage in the battery pack; a forced shut-down is immediately pending. | The error occurs especially when driving down slopes with fully charged battery pack. Drive at a slower speed. |
| ● ● | every 10 seconds | Overvoltage of the battery pack, the drive was shut down by force. | The error occurs especially when driving down slopes with fully charged battery pack. Drive at a slower speed. |
| — ● | every 10 seconds | The charging process was terminated because the ambient temperature is below 0 °C or above 40 °C. | Charge the battery packs only at temperatures above 0 °C and below 40 °C. |
| ● ● ● | every 5 minutes | Voltage of the battery pack < 20 % remaining capacity | Charge the battery pack as soon as possible. |
| ● ● ● | every 60 seconds | Undervoltage of the battery pack (< 10 % remaining capacity), a forced shut-down is immediately pending. | Charge the battery pack immediately. |
| ● ● ● | every 10 seconds | Undervoltage of the battery pack (< 5 % remaining capacity), a forced shut-down is immediately pending. | Complete a ride down a slope. Charge the battery pack immediately. |
| — ● ● | every 5 seconds | The charger plug is inserted in the charger socket but no charge current is flowing. | Check the operational readiness of the charger. Possible defect on the charger or wheel; repair is then required. |
| — — — | Each time when switching on the e-motion 1 time | The battery pack has less than 60 % capacity of a new battery. | The achievable range is significantly reduced. Replace the battery pack against a new one. |
| — ● ● ● | every 10 seconds | The battery pack was charged longer than 12 hours but is not completely charged. | The charger is defective if both battery packs are charged at the same time and the error messages is indicated for both battery packs. If both battery packs are charged at the same time and the error message is indicated for only one battery pack, this battery pack is defective. Repair is required in both cases. |
| ● ● ● ● ● | every 10 seconds | The voltage in the battery pack is no longer sufficient for operation, the drive was shut down by force. | Charge the battery pack immediately. |

Acoustic error messages (continued)

| Acoustic signal on the wheel | Repetition Acoustic signal | Error description | What to do |
|------------------------------|----------------------------|---|--|
| — ● ● ● ● | every 3 seconds | The charger plug is inserted in the charger socket; the wheel turns at the same time. | Pull the charger plug from the charger socket or stop the movement of the wheel. |
| — ● ● ● ● | every 10 seconds | The charge process was terminated because one battery pack is defective. | Repair is required. |
| — — — ● ● | every 10 seconds | Overtemperature of the motor. | Switch off the system and allow it to cool down; observe the ambient temperature. |
| — — — — ● | every 10 seconds | The signal coming from the push rim is applied longer than one wheel rotation. | A foreign object may have become wedged in the push rim. Remove this foreign object. Defect in the wheel, repair required. |



A major fault of the system is present if error messages other than those shown in the list are signaled. The e-motion wheel is then no longer operational and must be sent to the Alber factory for inspection. Do not operate or use the e-motion wheel if a fault exists to prevent damage or personal injury.

6. Power stages and stored parameters

6.1 Power stages

Individual driving parameters can be assigned individually to each e-motion wheel to possibly adapt a wheel to the particular physical limitations or restrictions of the wheelchair driver. With regards to this topic, please contact your specialist dealer.

The standard version of the e-motion is equipped with only one power stage. Both power stages can only be utilized with a remote control which is offered as optional accessory and can be retrofitted at any time.

Power stage 1 (factory setting)

A beep sounds when switching on the wheel, the motor output is 50 % of the maximum possible output of the e-motion.

This power stage is primarily recommended for driving indoors. This results in low current consumption, the battery packs are preserved and achieve a greater range per battery charge than in power stage 2.

Power stage 2 (factory settings, only in connection with optional remote control)

Two beeps sound when switching on the wheel, the motor output is 80 % of the maximum possible output of the e-motion.

This power stage is primarily recommended for driving outdoors. The current consumption is higher than in power stage 1 resulting in a correspondingly lower range per battery charge.

6.2 Power assistance

To start moving an e-motion wheel, gently, smoothly and uniformly move the push rim mounted forward (to drive forward) or backward (to drive backward). This movement requires a certain amount of force in the hands of the wheelchair driver. Do not move push rim suddenly, abruptly or in a jerky manner. After the e-motion starts moving, only a small, gentle push of the push rim of the e-motion wheel is sufficient to keep the wheel in motion.

Programming is done by the specialist dealer authorized by Alber who will also be glad to educate you on additional options of the individual adjustment of the e-motion.

6.3 Rollback delay (only with e-motion wheels with remote control)

If your e-motion is equipped with remote control, it will have a rollback delay that can be activated. This helps the wheelchair driver to drive up slopes and ramps by preventing the wheelchair from rolling back while repositioning the hands after a push motion.

Driving up slopes and down inclines with activated rollback delay.

You can drive up and down slopes as usual whereby the motors move the e-motion wheels according to the power stage selected and the preprogrammed power assistance. The automatic rollback delay kicks in when the wheel electronics senses the wheel rolling back against the original direction of travel. This means that the wheels are slowed down by braking for 5 seconds thus being prevented from rolling back. This is followed by two short signal tones and the brake function is gradually cancelled. The wheel run free after 5 seconds. Safe travel on a slope (with activated hill-holder) depends on the total weight (=weight of the person in the wheelchair, the wheelchair, both e-motion wheels and any other accessories), as well as the charge level of the battery. The following table shows which slopes can be travelled safely with only a minimally charged battery.

| Total weight | Slope that is safe to travel |
|--------------|------------------------------|
| 115 kg | 14% |
| 140 kg | 11,50% |
| 170 kg | 9% |

Activating / deactivating the rollback delay

To activate the rollback delay, push the following buttons on the remote control:

- button 1 [23] (for activation in power stage 1), or
- button 2 [22] (for activation in power stage 2).

Push the buttons longer than 3 seconds. Activation is confirmed with a long signal tone.

If you want to switch off the rollback delay, push (depending on the selected power stage) button 1 or 2 again longer than 3 seconds.

Deactivation is confirmed with a long signal sound.

Alternatively, you can also switch off the e-motion wheels. The rollback delay is deactivated if the e-motion is switched off and on again.

Safety instructions

- In case of especially steep slopes and/or very heavy wheelchair drivers, the rollback delay might not be able to prevent a slow rolling back of the wheelchair.
- The rollback delay is not a parking brake but only delays the wheelchair from rolling back for only a few seconds. Therefore, secure your wheelchair with the parking brakes to stop on a slope.
- Use the rollback delay only with sufficient battery capacity (if at least 2 LEDs are still on)!
- The rollback delay must be reactivated each time after the e-motion wheels have been switched off
- Failure to follow these instructions can cause damage or personal injury.

7. Automatic self switch-off

To save energy, time periods have been assigned to the e-motion wheels and the remote control after which they are switch off automatically.

7.1 Automatic wheel self switch-off

The value preset at the factory for the automatic self switch off is 30 minutes.

This value can be changed with the optional remote control. With regards to this topic, please contact your specialist dealer.

7.2 Remote control (optional) self switch-off

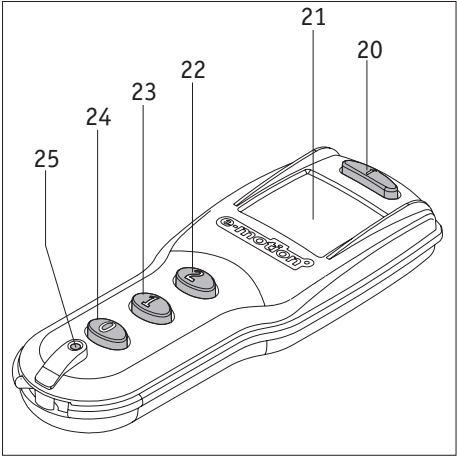
The value preset at the factory for the automatic self switch off of the remote control display is 5 minutes. This value can be changed by corresponding programming of the remote control. With regards to this topic, please contact your specialist dealer.

If the remote control does not find any wheel (for example, because the remote communication could not be established), it always switches off after 5 seconds. This value cannot be changed.

8. Fuse replacement

As any electric or electronic device, your e-motion is equipped with fuse protection. The fuse responds in case of a defect and thereby protects the electronic components from lasting and expensive damages.

The fuse of the e-motion wheel is located in the electronic system inside the wheel hub. A possibly required fuse replacement, together with a complete diagnosis of the entire electronic system may only be carried out by the authorized specialist dealer.

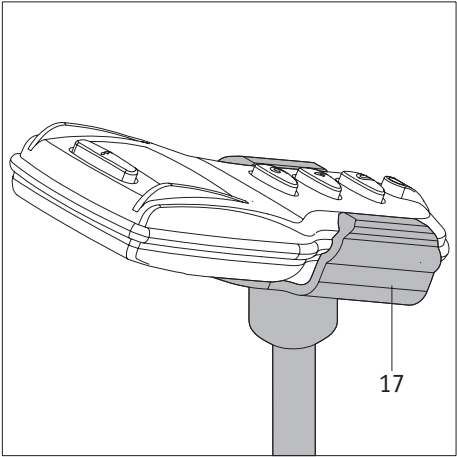


9. Remote control (optional)

9.1 Operating controls

They mean:

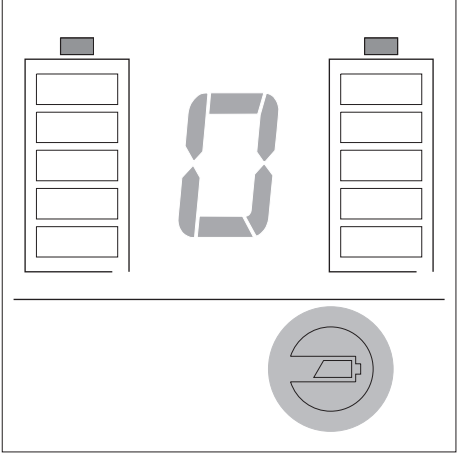
- Information button [20] to retrieve the current operating status (with the wheels switched on) as well as activate or deactivate the button lock.
- Display [21] for the optical indication.
- Button 2 [22] to simultaneously switch on both e-motion wheels in power stage 2 as well activate or deactivate the rollback lock (see chapter 6.3).
- Button 1 [23] to simultaneously switch on both e-motion wheels in power stage 1 as well activate or deactivate the rollback lock (see chapter 6.3).
- Button 0 [24] to simultaneously switch off both e-motion wheels.
- RESET button [25] to program the wheels.
- **Never push this button since the parameters stored in the software of the wheel may otherwise change requiring them to be reset by the specialist dealer.**



An optional bracket [17] is available to store the remote control on the wheelchair.

Activation / deactivation of the button lock

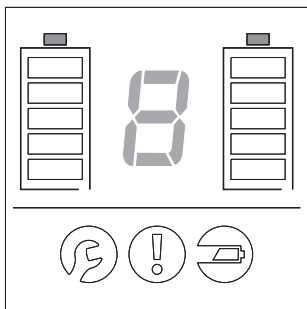
To prevent accidental activation of functions, the buttons of the remote control can be locked. For this purpose, press the information button [20] two times in quick succession. The lock of the keypad will be shown in the display [21] as „L“ (alternating with the displays of other functions already activated and an error display, if applicable). The button lock remains active until it is canceled again. For this purpose, press the information button [20] again two times in quick succession.



Based on an average daily use of the remote control, the life of the battery already inserted at the factory is roughly 5 years.

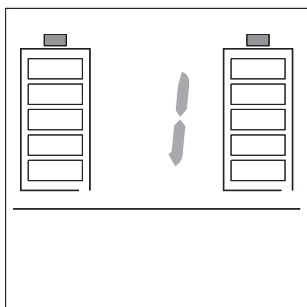
If the battery replacement becomes necessary, the battery symbol lights up at the lower right part of the display during all display situations.

The battery may only be replaced by the specialist dealer authorized by Alber.



9.2 Function display

The remote control is activated after pushing any of the operating controls introduced in Chapter 9.1. All display elements light up hereby for approx. 1 second (refer to the adjacent graphic illustration).

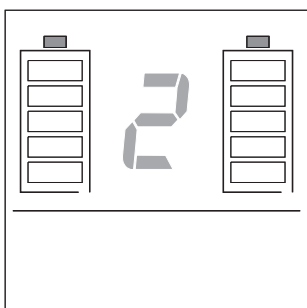


Push the button [23] on the remote control to simultaneously switch on both e-motion wheels in power stage 1.

Power stage 1 and the charge status of both battery packs is indicated in the display.

A beep sounds at the e-motion wheels. The LEDs [1] on the wheel hub also signal the charge status of the respective battery pack.

If you press the button [23] longer than 3 seconds, you will activate or deactivate the rollback lock (see chapter 6.3) with this action. Attention: Power stage 1 is also activated at the same time.

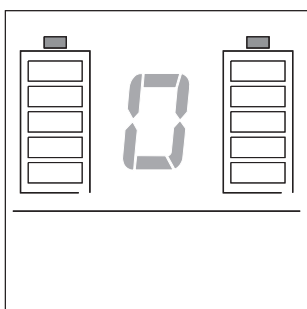


Push the button [22] on the remote control to simultaneously switch on both e-motion wheels in power stage 2.

Power stage 2 and the charge status of both battery packs is indicated in the display.

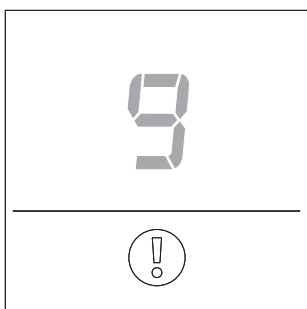
Two beeps sound at the e-motion wheels. The LEDs [1] on the wheel hub also signal the charge status of the respective battery pack.

If you press the button [22] longer than 3 seconds, you will activate or deactivate the rollback lock (see chapter 6.3) with this action. Attention: Power stage 2 is also activated at the same time.

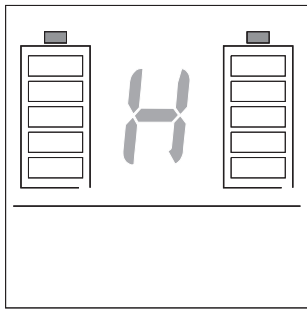


Push the button [24] on the remote control to simultaneously switch off both e-motion wheels. A zero and the charge status of both battery packs is indicated in the display.

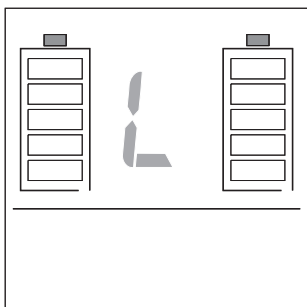
A beep sounds at the e-motion wheels.



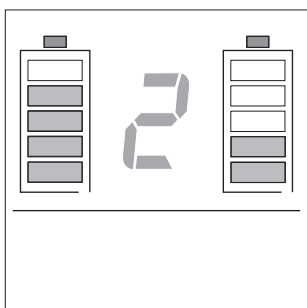
If the remote control does not detect the two wheels (for example, due to a poor remote communication), the information message shown here appears on the display.



If button 1 or 2 is pressed longer than 3 second to activate or deactivate the rollback lock, a long signal tone sounds on the e-motion wheel in each case. If the rollback lock is active, the following will be displayed: the current charge status of the two battery packs, an „H“ in alternating fashion, the power stage currently set (1 or 2) and, if applicable, additional functions (e.g. the button lock). In case of an error, only the corresponding error code is displayed.



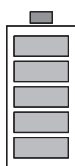
When activating the button lock, the following is shown in the display: the current charge status of the two battery packs, an „L“ in alternating fashion, the power stage currently set (1 or 2) and in case an error occurs, the corresponding error code.



9.3 Display of the battery pack charge status

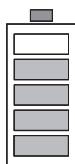
The charge status of the two e-motion battery packs is indicated in the upper half of the display [21]. Please note that because of different drive moments or possibly differently adjusted wheels the current consumption may also vary (see also Chapter 6).

The respective charge status of a battery pack is indicated as follows:

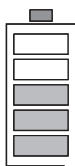


5 bars come on – Battery pack is charged 100 %.

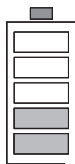
Avoid driving down slopes at high speeds because a forced shut-down of the wheel may occur due to the current return in the wheels and the risk of overvoltage in the battery pack.



4 bars come on – Battery pack is charged 80 %.



3 bars come on – Battery pack is charged 60 %.



2 bars come on – Battery pack is charged 40 %.

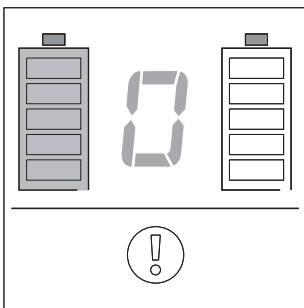
We recommend not driving too far without charging the batteries first.



1 bar comes on – Battery pack is charged 20 %.
Charge the batteries before starting to drive.

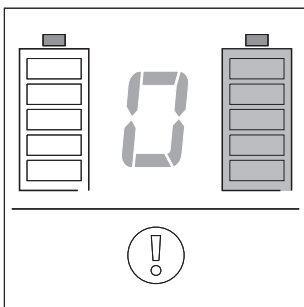


No bars come on – Battery pack is empty.
Driving without charging the battery pack is not possible.

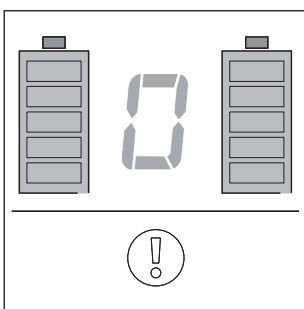


9.4 Display of error messages

If an error is indicated according to the table on the following page and the left battery symbol flashes at the same time, the error indicated occurs only in the left wheel or in the battery pack of the left wheel.



If an error is indicated according to the table on the following page and the right battery symbol flashes at the same time, the error indicated occurs only in the right wheel or in the battery pack of the right wheel.



If an error is indicated according to the table on the following page and both battery symbols flash at the same time, the error indicated occurs in both wheels or in the battery packs of both wheels.

Table Error Messages

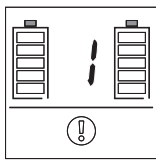
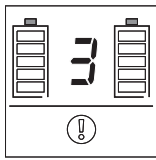
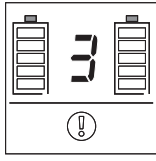
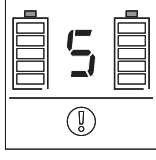
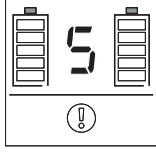
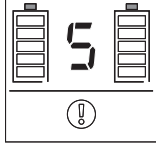
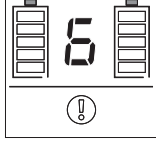
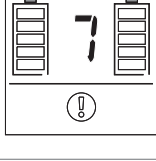
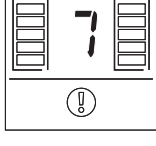
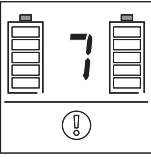
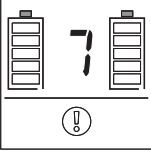
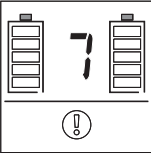
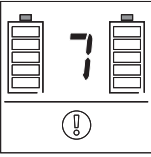
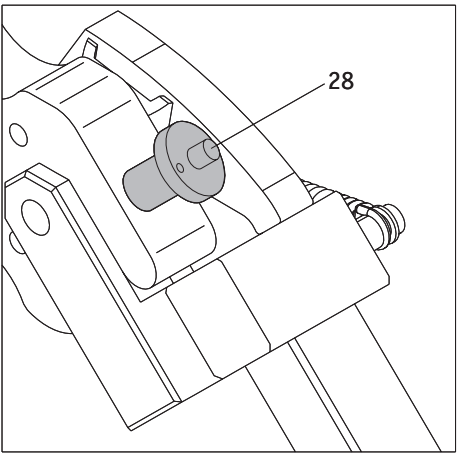
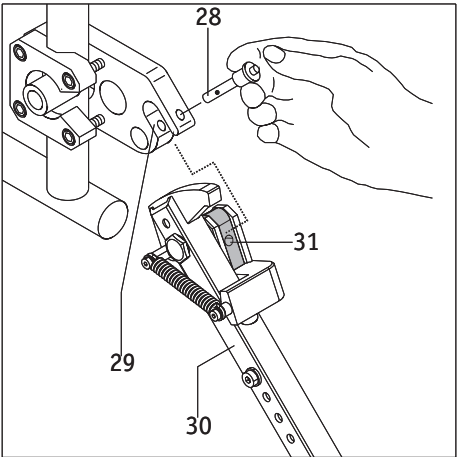
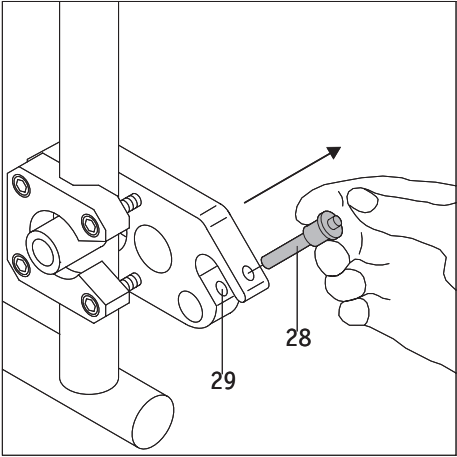
| Indication in the display | Acoustic signal on the wheel | Repetition Acoustic signal | Error description | What to do |
|---|------------------------------|--|--|--|
|  | — — — — • • | every 10 seconds | Overtemperature of the motor. | Switch off the system and allow it to cool down; observe the ambient temperature. |
|  | • • | every 8 seconds | Overvoltage in the battery pack; a forced shut-down is immediately pending. | The error occurs especially when driving down slopes with fully charged battery pack. Drive at a slower speed. |
|  | • • | every 10 seconds | Overvoltage of the battery pack. The system is shut down by force. | The error occurs especially when driving down slopes with fully charged battery pack. Drive at a slower speed. |
|  | • • • | every 60 seconds | Undervoltage of the battery pack (< 10 % remaining capacity), a forced shut-down is immediately pending. | Charge the battery pack immediately. |
|  | • • • | every 10 seconds | Undervoltage of the battery pack (< 5 % remaining capacity), a forced shut-down is immediately pending. | Complete a ride down a slope. Charge the battery pack immediately. |
|  | • • • • • | every 10 seconds | The voltage in the battery pack is no longer sufficient for operation, the drive was shut down by force. | Charge the battery pack immediately. |
|  | — — — — • | every 10 seconds | The signal coming from the push rim is applied longer than one wheel rotation. | A foreign object may have become wedged in the push rim. Remove this foreign object. Defect in the wheel, repair required. |
|  | — — — — | 1 time each time the e-motion is switched on | The battery pack has less than 60 % capacity of a new battery. | The achievable range is significantly reduced. Replace the battery pack against a new one. |
|  | — • • • • | every 3 seconds | The charger plug is inserted in the charger socket; the wheel turns at the same time. | Pull the charger plug from the charger socket or stop the movement of the wheel. |

Table Error Messages (continued)

| Indication in the display | Acoustic signal on the wheel | Repetition Acoustic signal | Error description | What to do |
|---|------------------------------|----------------------------|---|---|
|  | —•• | every 5 seconds | The charger plug is inserted in the charger socket but no charge current is flowing. | Check the operational readiness of the charger. Possible defect on the charger or wheel; repair is then required. |
|  | —••• | every 10 seconds | The battery pack was charged longer than 12 hours but is not completely charged. | The charger is defective if both battery packs are charged at the same time and the error message is indicated for both battery packs. If both battery packs are charged at the same time and the error message is indicated for only one battery pack, this battery pack is defective. Repair is required in both cases. |
|  | —• | every 10 seconds | The charging process was terminated because the ambient temperature is below 0 °C or above 40 °C. | Charge the battery packs only at temperatures above 0 °C and below 40 °C. |
|  | —•••• | every 10 seconds | The charge process was terminated because one battery pack is defective. | Repair is required. |



A major fault of the system is present if error messages other than those listed in the display are shown or other signal tones than those listed sound on the wheels. Your e-motion is then no longer operational and must be sent to the Alber factory for inspection. To prevent damage or personal injury, do not operate or use the e-motion if a fault is present.



10. Anti-tippers

Because your wheelchair may already be equipped with anti-tippers, Alber anti-tippers are only offered as accessory. Do not remove the anti-tippers with which your wheelchair is equipped. When using the original wheelchair anti-tippers, the instructions and safety information of the manufacturer apply to their usage.

- If your wheelchair has no anti-tippers, you must install Alber anti-tippers. Failure to do so might cause serious damage or personal injury.

When using Alber anti-tippers, two additional brackets are attached to your wheelchair in which the anti-tippers are introduced. The following instructions and safety information applies.

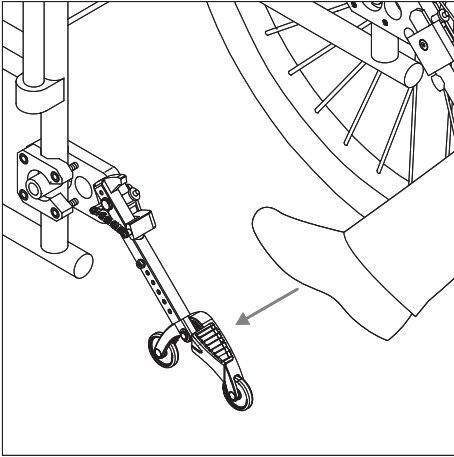


To prevent damage or personal injury, never use or operate the e-motion unless anti-tippers are properly installed.

10.1 Attaching and removing the Alber anti-tippers

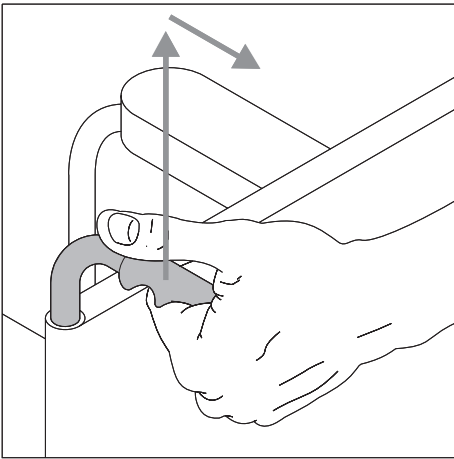
- Pull the quickpin [28] out of the receiver fork of the bracket [29] by using your thumb to press on the pin and at the same time using your forefinger and middle finger to pull it out.
- Insert the clamping piece of the anti-tipper [31] into the receiver fork of the bracket [29].
- Lock the receiver for of the bracket [29] with the quickpin [28]. Press on the pin with your thumb and then push it all the way against the stop in the bracket.
- Check the secure seat of the quickpin [28] in the receiver fork of the bracket [29]. It may not be pulled out again without pushing the unlocking mechanism.
- Attach the second anti-tipper.

Remove anti-tippers in the reverse order.

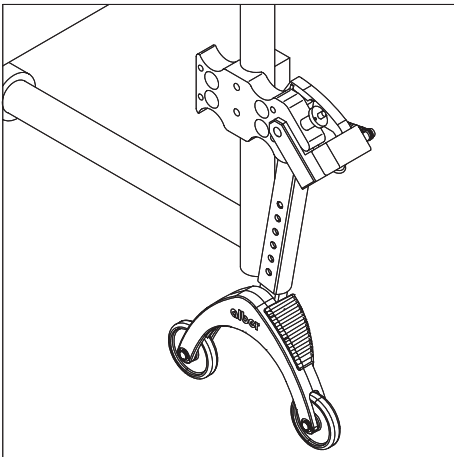


10.2 Using the Alber anti-tippers

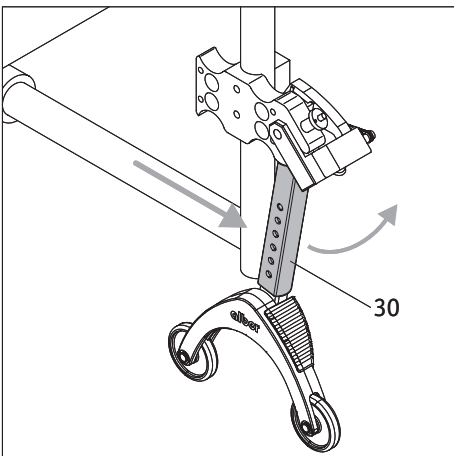
- Push with the foot against an anti-tipper as shown in the graphic illustration.



- At the same time, pull the wheelchair by its handles slightly to the top and rear until the wheelchair was raised and the anti-tippers engage in a fixed position.

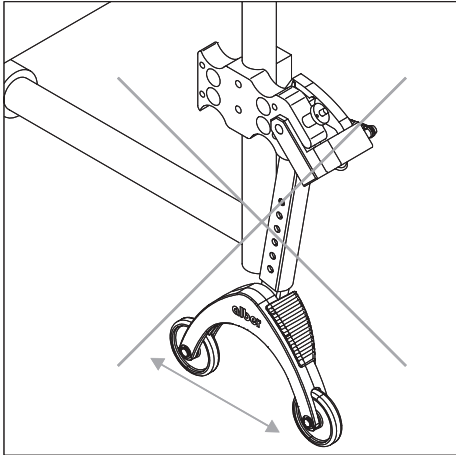


- You can not attach or remove a wheel. Repeat the process with the second anti-tipper on the other side of the wheelchair.



- Once the wheels have been attached, you can return the anti-tippers to the original position. To do so, push the wheelchair forward and the holding rod [30] back with the foot at the same time.

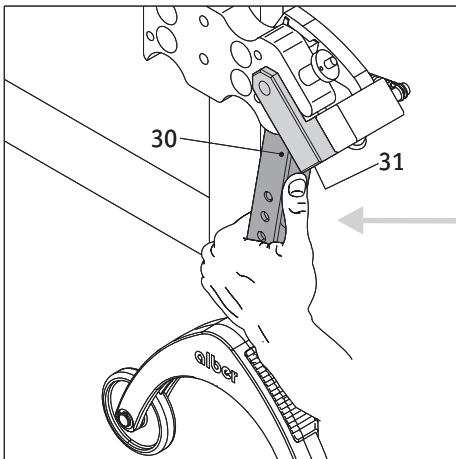
10.3 Important operating and safety information



Jacking up the wheelchair while the driver is in it is not permitted!



**Anti-tippers are no transfer rolls!
Do not move the wheelchair while jacked up!**



Use caution when adjusting or folding the anti-tippers, especially when making the settings or operation with your hand. There is a risk of crushing due to the required high spring force between holding rod [30] and the clamping [31].

11. Safety Instructions: Always follow these instructions to prevent damage or personal injury.

For safety reasons, apply the wheelchair parking brakes when you have stopped, especially on hills and slopes to prevent the wheelchair from rolling away unintentionally.

TO ENSURE SAFE USE OF YOUR E-MOTION AND TO PREVENT DAMAGE OR PERSONAL INJURY, THE FOLLOWING INSTRUCTIONS MUST BE STRICTLY OBSERVED AT ALL TIMES.

11.1 Safety notes

In the (unlikely) event of overheating or fire of the battery pack it must not come into contact with water or any other liquids at any rate. The battery manufacturers recommend sand as the only means to extinguish the fire.

Before starting a ride/journey, observe the following:

- The e-motion must only be attached to wheelchairs with hand rims that have been approved by Ulrich Alber GmbH for this purpose.
- Therefore always mount the e-motion wheels according to their identification on the left and right side of your wheelchair, respectively. Incorrectly attached wheels can lead to accidents because of their different programming.
- The bracket for the e-motion must only be assembled and altered by Ulrich Alber GmbH or the medical supplies provider authorized by Alber.
- The wheelchair user manual must be followed when using the e-motion.
- The wheelchair must not be driven without the two anti-tippers properly attached. Drive only with both anti-tippers attached.
- Always have properly attached the original anti-tippers of the wheelchair manufacturer or the optionally available Alber anti-tippers to your wheelchair.
- Before each use or operation, always check the condition of the e-motion wheels. The e-motion must not be operated after the tires have reached their wear limit (a tire thread can no longer be seen).
- Before each use or operation, always check the function of the parking brakes of your wheelchair. You must not drive without properly functioning parking brakes.
- If your wheelchair has pneumatic tires:
Check the tire pressure of the e-motion wheels at regular intervals. It must be between 6.0 bar (85 psi) and 10.0 bar (145 psi). Check the tire pressure of the steering wheels according to the notes and specifications of the wheelchair manufacturer. If the air pressure is too low, this can severely influence the driving behaviour and range.
- Check the correct seat of the e-motion wheels in the two wheel receivers on your wheelchair before each ride.

When driving with the e-motion, always observe the following to prevent personal damage or personal injury:

- Before driving the e-motion on slopes or hills, you must be able to master safely handling and operating of the device on flat terrain.
- The maximum permissible gradient specified by the wheelchair manufacturer must not be exceeded.
- Approach curbs, steps or steep drops with exceptional care and caution.
- When the e-motion is switched on, each impulse on the push rims is converted into a drive command. When stopping or waiting at potentially hazardous locations (e.g. while waiting at a pedestrian crossing on street corners, on hills and slopes, on ramps of any type, on motorized, elevating, or lift platforms, in tight or narrow spaces or confines) remove your hands from the push rims and secure your wheelchair with the parking brakes.
- Never reach into the wheel while the e-motion is switched on.
- Never insert or throw any objects into an e-motion wheel that is switched on or off.
- Never attach any objects to the push rims! This could lead to undesirable drive movements.
- When driving on paths, keep a sufficient distance (if possible, at least a wheelchair's width) from the curbstone edge.
- Do not travel on non-solid surfaces (e.g. on loose gravel, sand, mud, snow, ice, or through deep puddles).
- Never leave the e-motion unattended, either switched off or on.
- The performance of the e-motion can be impaired by the electromagnetic fields, for example, generated by mobile phones. The supplementary drive must therefore be switched off when mobile phones are used in direct proximity to the wheelchair.
- The e-motion can have a disruptive effect on the other equipment, such as security panels in department stores.
- Do not use or operate the e-motion on escalators or motorized walkways.
- While driving at the highest speed, never change the direction of travel suddenly to the left or right, as this may cause the wheelchair to tip over to the side.
- Reduce your speed when negotiating curves.
- If you intend to stop with your wheelchair on an incline or downhill slope, the wheelchair must be parked perpendicular to the slope or incline and the parking brake pulled.
- Pull the parking brakes of your wheelchair after each ride or when stopping the wheelchair to prevent unintentional rolling away!
- Never drive parallel along slopes. Only drive perpendicular to the slope.
- Never reach into the spokes of the e-motion wheels while driving or into the front wheels of your wheelchair.
- Brake the e-motion gently, uniformly, and according to your speed (not abruptly or in a jerky manner).
- While driving in vehicles, sit only on the seats installed there using the pertaining restraint systems. Disregarding these instructions bears the risk that both you and the other passengers could be injured in case of an accident.

- Secure your wheelchair and the e-motion wheels according to the respective applicable legal stipulations and rules when driving in vehicles.
- When driving on public roads and paths, observe the instructions of the Highway Code and the Federal Motor Safety Standards (StVZO).
- The e-motion is only intended for persons with limited mobility and must not be used for any other purpose, e.g. for playing children, carry loads or to transport goods. Do not allow children to play with the e-motion. Do not transport material or loads with the e-motion.
- Operating the e-motion in the vicinity of strong magnetic fields as they may be caused by magnetic clamps, transformers, tomography, etc. is not permitted.
- Do not drive the e-motion during adverse conditions, for example, during storm, snow and ice, hail and tall brushwood.
- Always move the push rims gently, smoothly and uniformly. Never move them suddenly, abruptly or in a jerky manner.

Observe the following after completing the ride with your e-motion:

- When not in operation, switch off the e-motion straightaway to avoid unintentionally triggering a drive movement through contact with the push rims and battery from self-discharging.
- Apply the parking brakes of the wheelchair at each stop.
- If possible, charge the battery pack on your e-motion after each ride.

11.2 Safety instructions on using the e-motion in vehicles

Wheelchairs or the combination of the e-motion wheels with a wheelchair are not approved in all states to be used as a seat in vehicles or transport vehicles for disabled persons.

If you plan such use, you are obligated to learn the regulations and laws applicable in your home country.

If the combination of the e-motion wheels with a wheelchair are approved in your country for use as a seat in vehicles or transport vehicles for disabled persons,

- the wheelchair and the e-motion wheels must be secured according to the applicable regulations and laws of your country.
- Suitable mechanical systems must be chosen which relieve the axles of the e-motion during this type of use and do not put additional strain on them. No additional forces may work on the stub axles of the e-motion wheels.
- If the vehicle is equipped with an elevating or lift platform, use extreme caution when driving the e-motion on the platform. Drive very slowly, gently and smoothly. Make no sudden, abrupt, or jerky movements. Always look directly into your direction of travel and avoid all distractions.

Ulrich Alber GmbH rejects any liability for accidents and their consequences or for damages to the wheelchair or the e-motion wheels due to

- non-compliance with the regulations and laws applying in your country
- and the use of prohibited or unsuitable safety systems

11.3 Obstacles

Overcome obstacles (e.g. curbs) only while driving backward. The maximum permitted height of the obstacle is 50 mm. Attention! When driving over obstacles in reverse, the full function of the Alber anti-tippers is not guaranteed! Therefore, drive slowly, smoothly and carefully in reverse until the wheels of your e-motion touch the obstacle. Then, carefully drive over the obstacle. We recommend the assistance of an accompanying person.

11.4 Hazardous locations and situations

- The operator of the wheelchair makes an independent decision about the routes and surfaces to be traveled based on his/her driving skills and physical capabilities.
- Before driving the e-motion, the user must check the e-motion wheels for run-down or damaged tires, as well as the charge status of the two battery packs and the proper functioning of the optical and acoustic signal devices on the wheel and the remote control. The tires must be undamaged and properly inflated and the battery must be properly charged.
- The brake must always be the proper and safe working order.
- These safety checks as well as the personal driving skills of the user are particularly important at the following hazardous locations which are to be negotiated at the discretion of the e-motion driver:
 - Quays, landing places and moorings, paths and places near bodies of water, unsecured bridges and dikes
 - narrow paths, sloping paths (e.g. ramps and entrance ramps), narrow paths on a downhill slope, mountain paths
 - narrow and/or steep/sloping paths on main traffic routes and side streets or near steep drops
 - Leaf and snow covered or icy tracks/roads
 - ramps, platforms and lifts on vehicles.
- Always operate the e-motion gently, smoothly and uniformly. Do not perform any sudden, abrupt or jerky movements. Look into the direction of travel and do not become distracted.



When negotiating a curve or when turning on hills or sloping paths, there can be an increased inclination to tip to the side due to a shift in the center of gravity. For this reason, carry out this drive maneuver with increased caution and at a slower speed!



Utmost caution is required when crossing roads, junctions and railway crossing points. Never cross tracks embedded in roads or at railway crossings parallel as the wheels could become jammed or stuck.



Utmost care is required when traversing ramps, platforms or lifts on vehicles. The e-motion must be switched off while the ramp or lift is being raised or lowered. Likewise, the parking brakes must be applied on the wheelchair. Rolling away, e.g. due to unintentional drive commands, is thereby prevented.



When conditions are wet, the grip of the tires on the surface is reduced; and there is an increased risk of slipping. Adjust your driving behaviour accordingly and never drive with run down tires.

12. Care, safety checks (maintenance), reuse and disposal

12.1 Care

As already pointed out in other chapters, the battery pack principally remains in the e-motion wheel and is only removed for service situations or air transport. Cleaning is therefore usually only done on the surface of the wheel and not inside the wheel hub or on the bottom of the battery pack.

Neither damp nor wet cloths or liquid cleaning agents can be used for any cleaning procedure. This means, rub the wheel and the inside battery pack only with dry cloths.

Do not allow liquids nor moisture to enter the wheel hub or the battery pack.

12.2 Safety checks (maintenance)

Your e-motion is a low-maintenance device. Nonetheless, check all attachment and accessory parts for a firm seat at regular intervals. Your e-motion shall be subjected to a professional safety inspection no later than every 2 years to examine the full functionality and safety. Especially damages due to system usage or wear and fatigue signs can be uncovered during this inspection that are not detectable from the outside. Please contact your specialist dealer, authorized by Alber, in this regard.

With the exception of the tires, no part of the drive is subject to any wear worth mentioning. The tires must not be used below their wear limit in order to safely transfer drive and braking force to your e-motion at all times



Service work and repairs to the e-motion must only be carried out by authorized specialist dealers or by Alber. If any errors occur, please contact your specialist dealer or the Alber Service Center as well.

12.3 Re-use

If your e-motion has been made available to you by your health insurance company and you do not need it any longer, you should contact your health insurance company or your medical supplies provider. Your e-motion can be re-used easily and economically.

- Alber recommends conducting a safety inspection before each re-use depending on the condition of the device. However, your e-motion shall be subjected to a professional safety inspection no later than every 2 years to examine the full functionality and safety.
- The brackets with which the e-motion is secured to the wheelchair can be easily and quickly removed from the wheelchair by the authorized specialist dealer and attached to a new wheelchair.
- The system is protected against corrosion, but as a precaution you should check it regularly by a visual check.
- In addition to the cleaning instructions detailed in Chapter 12.1, the push rims and all plastic parts of the e-motion wheel accessible from the outside as well as the optional remote control must be disinfected before re-use. To do this, use cleaning agents suitable for disinfection by wiping according to the instructions of the corresponding manufacturer.

12.4 Disposal



The battery pack and accessories are long-lasting products.

However, they may contain materials that prove to be hazardous for the environment if they are disposed of in places (e.g. landfills) that are not intended for this purpose according to the current applicable legislation in the respective country.

The symbol of the „crossed-out refuse bin“ (in accordance with WEEE Directive 2002/96/EC) is placed on this product to remind you of your obligation to recycle.

Therefore please act in an environmentally-conscious manner and bring this product to your regional recycling centre at the end of its service life.

Please familiarize yourself with the applicable legislation in your country regarding disposal, because the WEEE Directive does not apply in all European States. For example, this product does not fall under the national implementation of WEEE in the Electrical and Electronic Equipment Act as means of transport.

These components are also alternatively taken back by Alber or Alber dealers for proper and environmentally sound disposal.

13. Guarantee, warranty and liability

13.1 Warranty for defects

Alber guarantees that the e-motion is free from defects at the time of original purchase from an authorized dealer. These warranty claims expire 24 months after delivery of the e-motion.

13.2 Guarantee of durability

Alber provides a 24 month guarantee of durability for the e-motion (exception: the guarantee of durability for the battery pack is 12 months). The guarantee of durability does not include

- devices where the serial numbers have been altered, disfigured or removed
- wear parts such as tires or operating controls
- defects due to natural wear and tear, faulty handling, in particular defects due to non-compliance with this user manual, defects due to accidents, negligent damage, the effects of fire or water, force majeure and other events which lie outside the influence of Alber.
- any servicing work required due to daily use (e.g. replacing the tires)
- Checking the device without finding any fault
- Improper use or operation.

13.3 Liability

Ulrich Alber GmbH as the manufacturer of the e-motion is not responsible for its safety and reliability if:

- the e-motion is handled inappropriately
- the e-motion is not serviced by an authorized specialist dealer or by Ulrich Alber GmbH every 2 years
- the e-motion is operated contrary to instructions/notes in this user manual
- the e-motion is operated with insufficient battery charge
- repairs or other work is carried out by unauthorized persons
- foreign parts (parts not belonging to the system) are attached or connected to the e-motion
- parts of the e-motion are dismantled.
- The e-motion has been altered or modified without Alber's authorization.

Ihre Alber-Vertretung / Your Alber representative / Votre représentation Alber /
Vostra rappresentanza Alber / Su representación Alber / Din Alber representant /
Din Alber-agenturene / Uw distributeur Alber / Deres Alber-repräsentation



Ulrich Alber GmbH

Vor dem Weißen Stein 21

72461 Albstadt-Tailfingen

Telefon +49 (0)7432 2006-0

Telefax +49 (0)7432 2006-299

info@alber.de

www.alber.de