

MINKO

Power wheelchair

USER MANUAL



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Further manuals are enclosed with the product:

- Manual for the VR2 control unit
- Manual for the battery charger

1 Preface

1.1. Important information about this user manual

The user manual for this powered wheelchair consists of three separate booklets:

- The general user manual (this booklet)
- The manual for the controller
- The manual for the battery charger

Read through these user manuals carefully before using the wheelchair for the first time. The information they contain is essential for the safe use and proper maintenance (cleaning) of the wheelchair. If any of the manuals are missing on delivery of your wheelchair, please contact your dealer immediately.

A service manual for qualified specialists is also available.

1.2. Symbols used in this manual

Warning




Follow the instructions given under warnings! Failure to exercise due care in following these instructions may result in physical injury, damage to the wheelchair or damage to the environment. Where possible, the warnings are given in the section that is most relevant.

Section references

A reference to another chapter or section in this manual is given in parentheses enclosing the phrase 'see'. Example (see 2) or (see 2.4).

Cross-reference symbol

Where required, this general manual makes reference to the other manuals. This is done in the following way:

-  CONTROLLER Please refer to the user manual for the controller.
-  CHARGER Please refer to the user manual for the battery charger.
-  SERVICE Please refer to the service manual of the product (qualified specialists only).

A large-print version of the operating instructions is available for visually impaired persons at WWW.DIETZ-GROUP.DE in PDF format.

2 Safety

You can always find the latest information on your product on our homepage. For information or queries concerning product safety and on recalls, please contact DIETZ in writing or by telephone. You will find our contact information on the back of this user manual.

⚠ Warning

Follow the instructions given under warnings! Failure to exercise due care in following these instructions may result in physical injury, damage to the wheelchair or damage to the environment.

2.1. Temperature

⚠ Warning

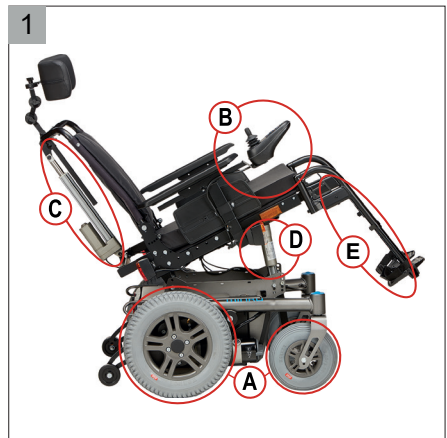
- Avoid any physical contact with the motors of the wheelchair at all times. When the wheelchair is in use, the motors are in constant motion and can reach high temperatures. Any physical contact with the motors could result in burns. After use, the motors cool down slowly.
- Ensure that the wheelchair is not exposed to direct sunlight for long periods of time when not in use. Some parts of the wheelchair (such as the seat, backrest and armrests) can become hot if exposed to the sun for too long. This may result in burns or skin sensitisation.

2.2. Moving parts

⚠ Warning

Wheelchairs contain moving and rotating parts (figure 1). Contact with moving parts may result in serious physical injury or damage to the wheelchair. You should avoid any contact with the moving parts of the wheelchair.

- A. Wheels (turning and pivoting)
- B. Swing-away controller arm
- C. Powered backrest adjustment
- D. Powered tilt adjustment
- E. Powered leg rests



2.3. Electromagnetic radiation

The standard version of your powered wheelchair has been tested for compliance with the applicable requirements relating to electromagnetic radiation (EMC requirements).

Warning

Despite testing, the following cannot be ruled out:

- electromagnetic radiation interfering with the wheelchair. For example mobile telephones, large medical devices or other sources of electromagnetic radiation
- the powered wheelchair interfering with electromagnetic fields. For example shop doors, burglar alarm systems in shops or garage door openers.
- in some configurations equipped with a R-net controller, where it is possible that extreme electrical discharge situations due to static electricity, may cause a fault message ('ISM over-current') flashing on the screen. If this occurs simply turn off your wheelchair for a few seconds and back on to clear the fault.






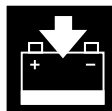
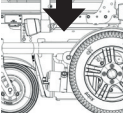

In the unlikely event of such problems arising, please notify your dealer immediately.

2.4. Markings on the wheelchair

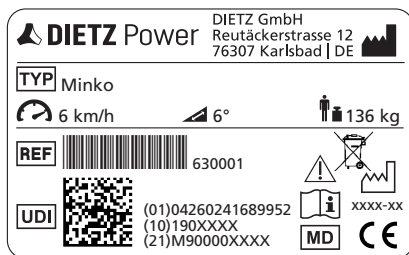
Warning

- The markings, symbols and instructions on the wheelchair are part of the safety features. They must not be covered up or removed. They must remain on the wheelchair and be clearly legible for the whole lifespan of the wheelchair.
- Immediately replace or repair any markings, symbols or instructions that become damaged or illegible. Contact your dealer in such cases.

Symbols used on the wheelchair:

	Consult the manual before use.
	<p>Freewheel switch</p> <ul style="list-style-type: none"> • Drive position • Push position <p>Warning Never set the freewheel switch to the 'Push' position when the wheelchair is on a slope.</p>
	Warning (yellow-black) <u>Pinch point hazard: Keep hands and fingers away from moving parts when adjusting the height and/or tilt angle of the wheelchair.</u>
	Securing point for transportation inside a vehicle.
	Crash-test-certified in line with ISO 7176-19
	CONTROLLER Battery charging point.
	Location Identification plate: on the left side of the chassis in driving direction.
	For custom models, which were customer made for a particular user, the product label, intended purpose and warnings are different. Please pay attention to the additional documentation!

Identification plate



DIETZ Power Trademark



Type / model



REF = Item number



UDI = Unique device identifier
(01) UDI-DI
(10) Order number
(21) Serial number



Manufacturer / contact address



Maximum load capacity / user weight



Date of manufacture YYYY-MM



Maximum speed



Maximum safe gradient that can be driven on with the wheelchair*



Follow the user manual



Caution- safety information can be found in the user manual



Medical device



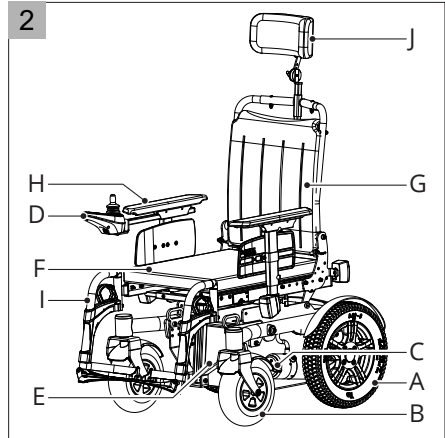
Separate disposal of electronic equipment and components

* depends on the wheelchair settings and user's abilities

3 Intended purpose / product description

Rear wheel drive wheelchairs and their major components (figure 2)

- A. Drive wheels
- B. Castor wheels
- C. Freewheel switch
- D. Controller
- E. Battery
- F. Seat cushion
- G. Backrest
- H. Armrest
- I. Leg rest
- J. Headrest (optional)



3.1. Configurations

Broadly speaking, the wheelchair is made up of an undercarriage with the seating system on top of it for excellent support for the head, torso, arms and legs. The wheelchair is available as a rear-wheel drive (RWD) with a speed of 6 km/h.

⚠ Warning

- No changes may be made to the technical specifications.
- Do not make any adjustments to the electrical circuit.
- Modification of the wheelchair or its component parts is not permitted.

3.2. The user

Driving a powered wheelchair requires the user to have cognitive, physical and visual abilities. The user must be capable of estimating the consequences of any action taken while driving the wheelchair and of correcting action where required. The wheelchair must not carry more than one person. The maximum user weight is 136 kg, unless otherwise stated on the identification plate (see 2.4). Any additional weight in the form of a bag, accessories or medical equipment must be added to the user's weight, with the resulting total weight not exceeding the maximum user weight.

The user must also be aware of the contents of this manual before using the wheelchair for the first time. The wheelchair user must also have received thorough instruction from the dealer before using public roads. A trainer/consultant must supervise the user's first experience of driving the wheelchair.

The intended purpose may differ for products which were manufactured as custom-made device and which have been labelled as such. In this case, please refer to the documentation supplied with the product.

⚠ Warning

- The wheelchair user shall at all times be fully responsible for compliance with locally applicable safety regulations and guidelines.
- You must not drive the wheelchair while under the influence of any substances that may affect your driving ability.
- Your eyesight must be good enough to allow you to use the wheelchair in any particular situation safely.
- Do not seat more than one person in the wheelchair.
- Do not allow children to drive the wheelchair without supervision.

3.3. Indications

This wheelchair provides assistance for persons who are unable to walk or who have a severe walking impediment due to

- Paralysis
- Loss of limbs / defect or deformation of limbs
- Joint contracture/joint damage

3.4. Contraindications

Use of the wheelchair is unsuitable in the case of:

- False sensations
- Severe disequilibrium
- Loss of limbs on both arms
- Joint contracture/joint damage on both arms
- Inability to sit
- Impaired or inadequate vision

3.5. Operating environment

This wheelchair has been developed for both indoor and outdoor use (EN 12184 (2014) class B). When outdoors, drive only on paved roads, pavements, footpaths and cycle paths. Always adjust your speed to your surroundings.

⚠ Warning

- A wheelchair should be regarded as a replacement for the walking function. Users must therefore travel among pedestrians and not on streets with traffic.
- The use of the wheelchair on walk ways and roads may be subject to the applicable legal requirements of National Road Laws or Road Traffic Laws.
- Drive carefully on roads that are slippery due to rain, ice or snow!
- Prevent the wheelchair from coming into contact with seawater, as it is aggressive and has a corrosive effect.

- Prevent the wheelchair from coming into contact with sand. Sand can get into the moving parts of the wheelchair, causing unnecessarily rapid wear.
- When visibility is limited, the use of lights is compulsory.
- Exercise additional care when driving at high speeds. Adjust to a lower maximum speed when driving indoors, on pavements and in pedestrianised areas.
- Do not drive off of high obstacles.
- The wheelchair is tested in accordance with ISO 7176-9 to the ambient temperatures of -25 °C up to +50 °C. This range of temperature must be maintained. DIETZ recommends not to use the wheelchair at temperatures below -10 °C, because the battery power decreases at very low temperatures.
- Do not attach any weights to the wheelchair without consulting a specialist. You may otherwise influence the stability of the product.
- Do not use the wheelchair to push and/or pull any objects along.
- Do not open doors using the leg rests.
- Do not drive through puddles of water.

4 Preparing the wheelchair for use

4.1. Assembly information

On delivery, the wheelchair is not yet ready to be operated via the controller, as the circuit still needs to be connected.

So that the wheelchair can be pushed before the batteries are installed, you must disengage the individual motors and put them into Push mode by setting the lever to the horizontal position (see 8.6).

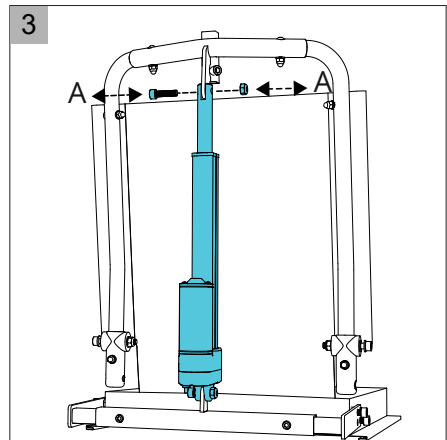
4.2. Attaching the joystick

To make it easier for us to transport the wheelchair, the joystick is not attached on delivery. Attach the joystick to the holder using the screws you will find on the bottom of the joystick.

4.3. Attaching the backrest (Minko w/ electr. backrest)


Screw the backrest actuator to the upper backrest frame.

1. To do this, remove the upper screw from the side of the actuator (A, Fig. 3).
2. Fold the backrest backwards until it surrounds the end of the actuator.
3. Use the screw that you removed previously to connect the actuator and backrest frame (A), securing it with the lock nut supplied inside the box. For details of the Minko version without actuator, see section 6.5.

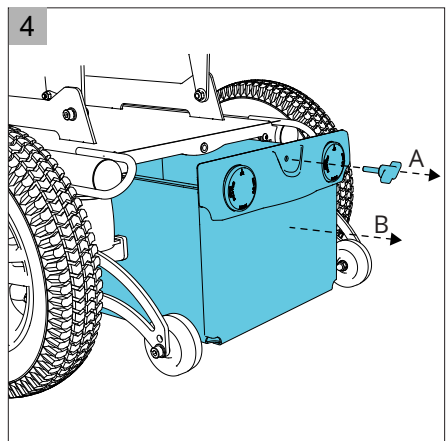


4.4. Installing the batteries

The battery drawer is located between the two driven wheels at the rear, where it is secured with a screw. Release the screw (A) and pull out the battery drawer (B) (Fig. 4).

The batteries must be connected in series using the enclosed fuse kit (see Fig. 7,  SERVICE)

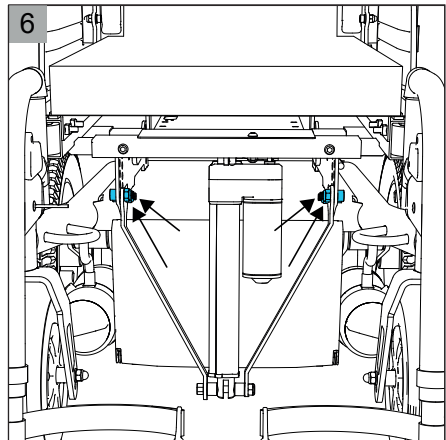
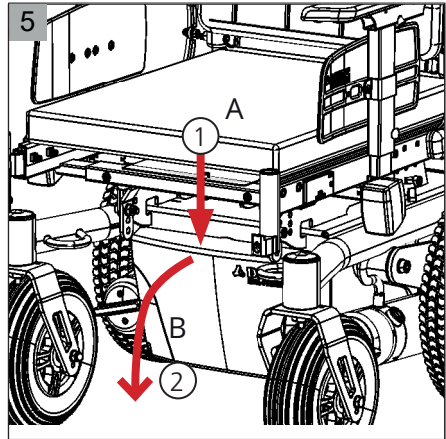
The batteries must be secured to prevent them from slipping. In the case of small batteries, use the plastic blocks supplied inside the battery box to wedge them in place. Finally, pull the battery strap tight.



4.5. Controller plug connections

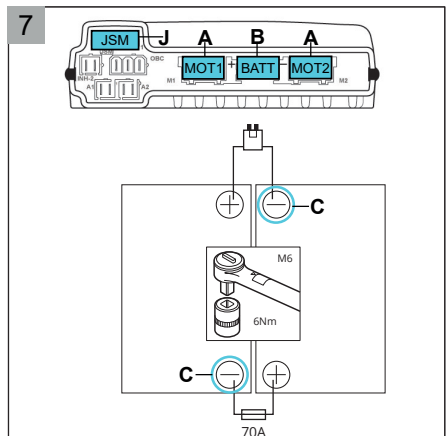
Note: Only required if the batteries have been pre-installed.
On delivery, the controller power supply is disconnected in the interest of wheelchair safety. This must be reconnected before the wheelchair can be driven.

4. To gain access to the controller, you must remove the cover. To do this, press down on the middle of the top edge (A, Fig. 5) to release the cover locking bolt.
5. You will then be able to fold the cover forward and down to remove it (B Fig. 5). On the model with electric seat tilt, you must first detach the two seat supports from the chassis using the 4 screws. This allows you to fold back the seat together with the actuator (Fig. 6)
6. Check that all plug connections on the controller are tight and secure (J, A, B, A, Fig. 7).
7. Reattach the controller cover.
 ⚠ **Warning!** Make sure that none of the cables get trapped or severely kinked (bent by $>120^\circ$) when attaching the controller cover.
 Hook the bottom of the cover into the slots, fold it up, place your hands at the top of the cover and press down in the middle so that the cover bolt engages in the wheelchair frame (A Fig. 5).



4.6. Checking operation in drive mode

The wheelchair is now ready for use. Switch the motors to Drive mode (by moving the lever out of the horizontal position, see section 8.6). Then, after switching on the wheelchair with the joystick, please check that the wheelchair is functioning correctly.



5 General procedures

Some parts can be removed/adjusted without the use of tools. The wheelchair can easily be reduced in size. For example to transport the wheelchair (see 9).

⚠ Warning!

The removal of parts might have adverse or beneficial effects on the wheelchair.

5.2. Seat cushion

To remove
Pull the seat cushion (A figure 8) upwards.

To replace
Place the seat cushion on the chair.

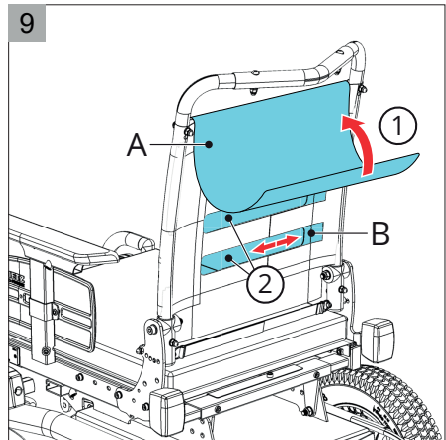
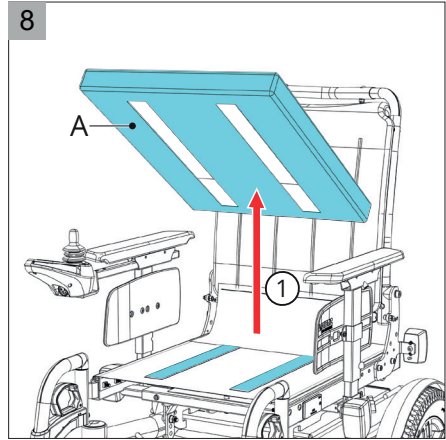
⚠ Warning

- Check the position of the cloth strap underneath the backrest. It should stick evenly and loosely to the Velcro strip on the seat and close the gap between the backrest and the seat.
- Ensure that the zip on the cushion is at the back/underneath.

5.3. Back cushion

- To remove
1. Remove the fabric (A figure 9) from the back straps.
 2. Loosen the individual Velcro straps (B).

- To replace
1. Pull the Velcro straps in the desired position. Start with the lowest strap.
 2. Fold the fabric back over the straps and secure it with the Velcro.



5.4. Leg rests

To remove

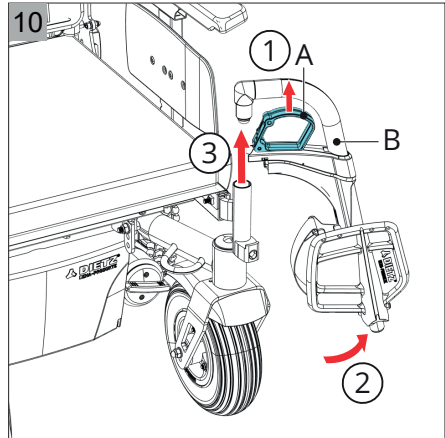
1. Press the handle (A figure 10) upwards to release the leg rest.
2. Swing the legrest (B) to the side.
3. Remove the leg rest by lifting it out of the bracket.

To replace

Place the leg rest in the bracket in reverse order.

⚠ Warning

- The leg rest is not locked into place until you hear a click.
- Removing the leg rest may affect the stability of the wheelchair.



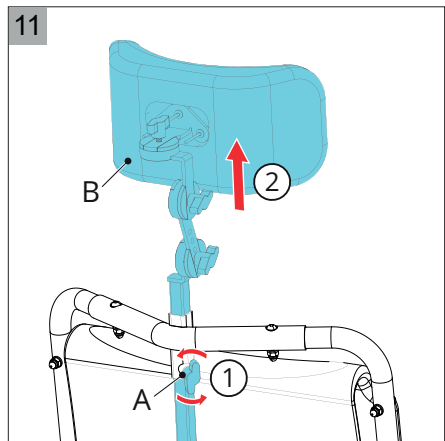
5.5. Headrest

To remove

1. Loosen the lever (A figure 11) by half a turn.
2. Remove the headrest (B).

To replace

1. Place the headrest in the desired position.
2. Lock the headrest in place by tightening the lever.



6 Wheelchair settings

(for qualified specialists only)

There is no such thing as the average wheelchair user. For this reason, DIETZ Power wheelchairs can be adjusted to suit the specific requirements and preferences of the individual user. With this in mind, we draw a distinction between wheelchair adjustment options and wheelchair settings.

- The adjustment options can be configured by the user without the need for tools.
- By contrast, the settings are a one-off operation and are – unless otherwise specified – only to be made by qualified specialists.

Warning

The sections below describe some of the settings. These settings should only be made by qualified specialists or by specialist retailers. See

 SERVICE for further information about the settings and assembly procedure.

6.1. Tools


Tools required for the settings described in this section:

- Spanner; 13 mm
- Allen keys; 4, 5 and 6 mm

6.2. Setting the seat height and tilt angle

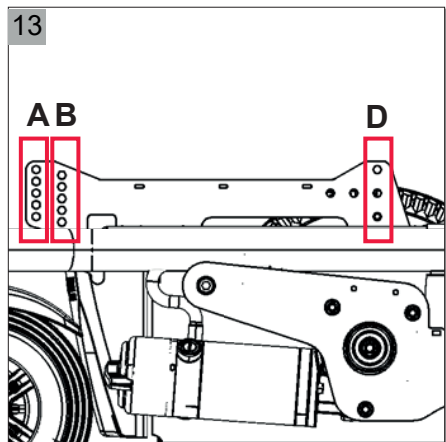
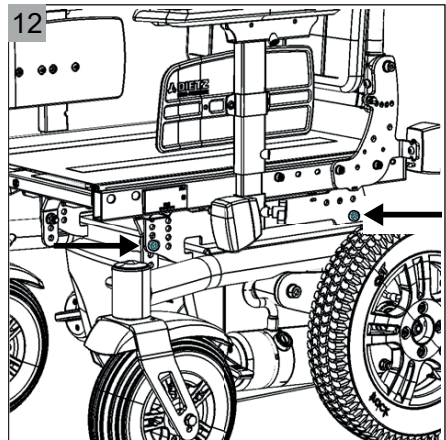
The seat height and tilt angle (Figs. 12 and 13) can be set in accordance with the wheelchair user's requirements.

All three seat heights (425, 450 and 475 mm) have been designed not to exceed the maximum safe slope of 6° (10.5%) according to EN 12184 (2014) Class B. Lowering the seat height has a positive impact on the (dynamic) stability.

The settings can be made using the series of holes labelled A/B and D (Fig. 13). For further details, please refer to the  SERVICE manual.

Warning

Increasing the seat height changes the centre of gravity. This has a negative impact on the (dynamic) stability.



6.3. Setting the seat depth

1. Remove the Allen screws (A) (Fig. 14).
2. Move the seat system (B) into the desired position (B).
3. Reinsert the Allen screws in the new position and tighten them.

⚠ Warning

Altering the seat depth also affects the centre of gravity. This has an impact on both the general and dynamic stability.

6.4. Setting the seat width

The seat width can be set by altering the armrest width (see section 6.6).

6.5. Setting the backrest angle

1. Pull the strap (A, Fig. 15) to release the locking bolts.
2. Move the backrest into the desired position (B).
3. Loosen the strap to relock.

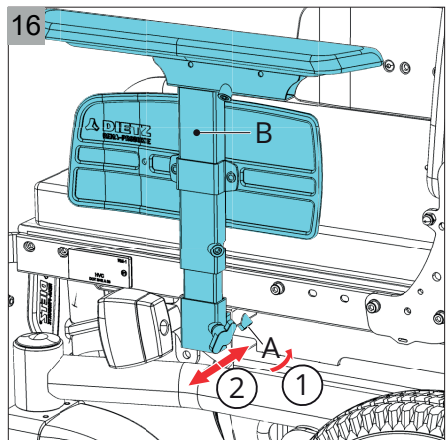
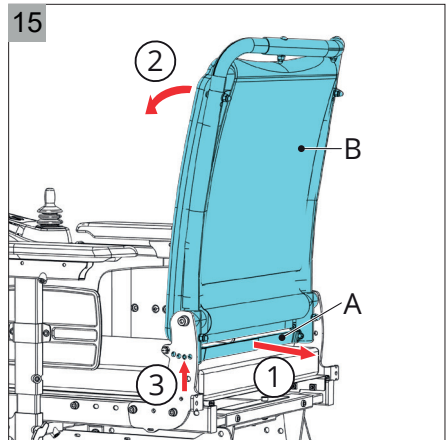
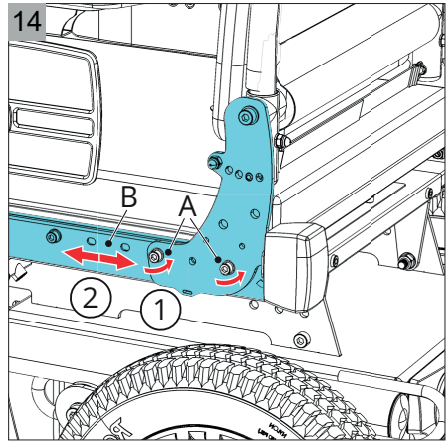
⚠ Warning

To ensure that the backrest is properly locked, you must be able to hear the locking bolts engage with an audible click.

6.6. Setting the armrests

Armrest width (also affects the seat width)

1. Loosen the Allen screw (A) by two turns (Fig. 16).
2. Move the armrest outwards (B).
3. Fully tighten the Allen screw.

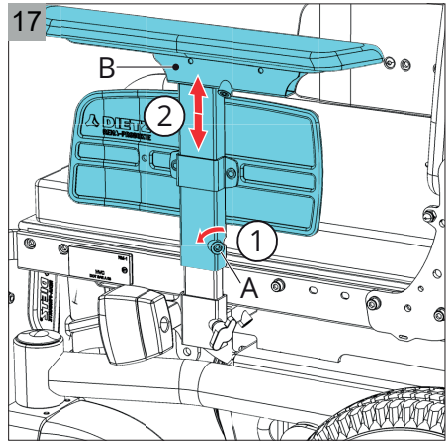


Armrest height (200–300 mm)

1. Loosen the screw by one turn (A, Fig. 17).
2. Move the armrest (B) into the desired position, up to a maximum of 300 mm.
3. Fully tighten the screw.

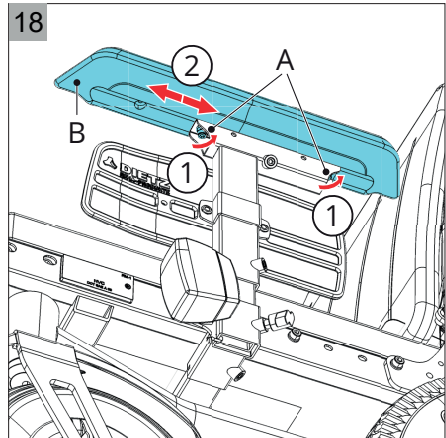
⚠ Warning

Make sure that the user's arms are well supported but that their shoulders are not being forced upwards.



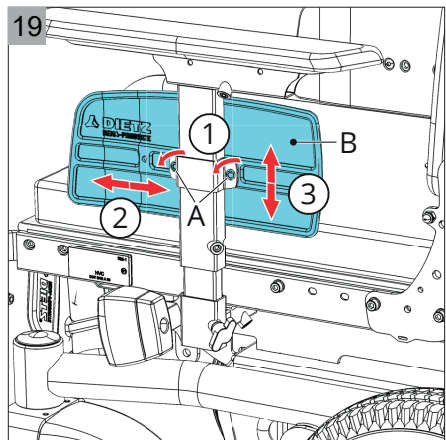
Armrest pad depth

1. Loosen the two Allen screws (A, Fig. 18).
2. Move the armrest pad (B) into the desired position (B).
3. Fully tighten the Allen screws.



Clothing protector depth and height

1. Loosen the Allen screws (A, Fig. 19).
2. Alter the depth of the clothing protector (B) by making use of the other holes that are available.
3. Alter the height of the clothing protector by sliding it up or down into the desired position.
4. Fully tighten the Allen screws.



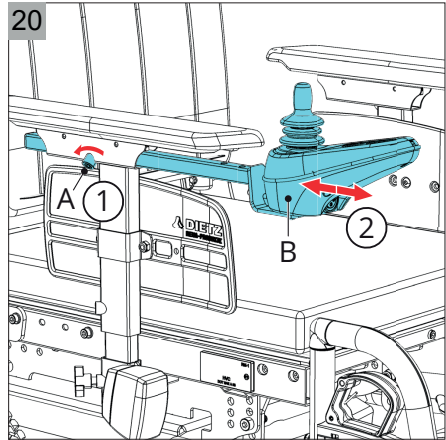
6.7. Setting the controller and joystick position

⚠ Warning

If the controller parameters are set incorrectly, it can result in some extremely dangerous situations. These settings are only to be made by qualified specialists..

Joystick depth (option)

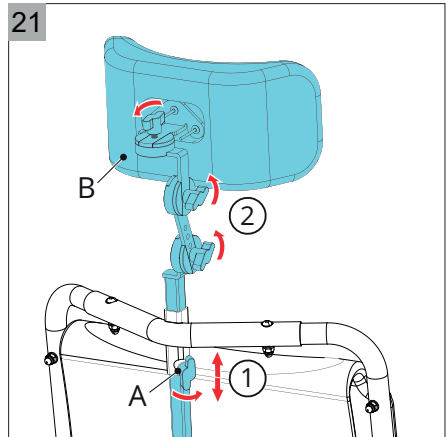
1. Loosen the wing screw (A, Fig. 20).
2. Slide the controller (B) into the desired position.
3. Fully tighten the wing screw.



6.8. Setting the headrest

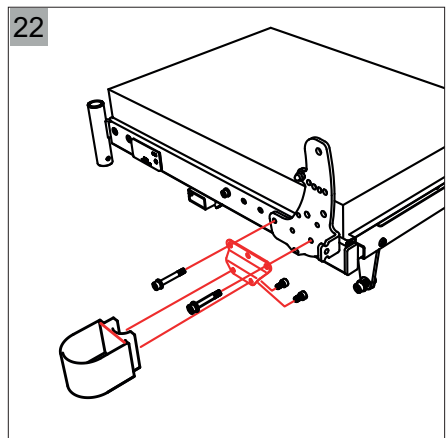
Headrest height and position

1. Loosen the four wing screws (A, Fig. 21).
2. Move the headrest (B) into the correct position.
3. Fully tighten the wing screws.



6.9. Cane holder (optional)

1. This is attached to the wheelchair by mounting it on the seat side frame element.
2. Screw the cane holder into the holes provided on the frame for this purpose using the screws supplied (Fig. 22).
3. In the case of the Minko version with electric seat, you must use the mounting plate included with that version (Fig. 22).



6.10. Elevating leg rest (optional) 23

The angle of the elevating leg rest can be adjusted within the range of 112° to 189°.

Setting/swivelling the leg rest:

1. Insert the leg rest into the holder at the side from above and swivel it forwards until it engages.
2. To swivel the leg rest away, press the push button locking lever (2, Fig. 23) forwards.

Setting the leg rest length:

1. Loosen the Allen screw (3, Fig. 23) by one or two turns. The footplate tube is now free and can be slid upwards or downwards.
2. Finally, tighten the screw firmly again.

Positioning the calf pads:

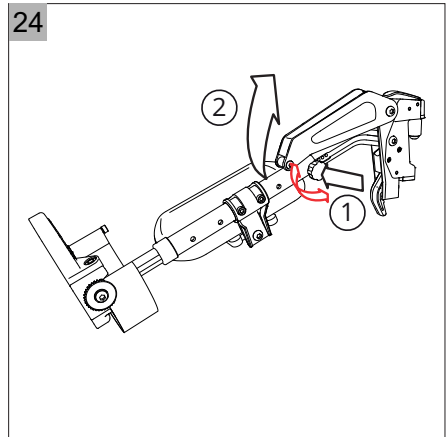
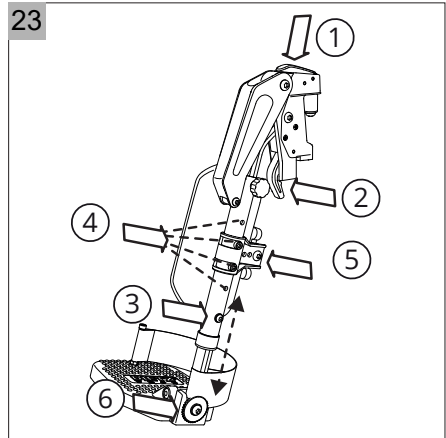
1. Loosen the two Allen screws in the calf pad holder (4, Fig. 23).
2. When you have found the correct height (4 holes), tighten the screws so that they are hand-tight.
3. Loosen the Allen screw (5, Fig.23) to enable depth adjustment.
4. When you have found the desired depth, retighten the screw so that it is hand-tight.

Setting the footplate angle:

1. To adjust the angle, loosen the Allen screw (6, Fig. 23) and pull the footplate slightly inwards until the lock is released.
2. Now set the footplate to the desired angle.
3. To lock it in place, tighten the screw firmly again.

Adjusting the angle between 112° and 189°:

1. To do this, loosen the locking screw until the screw head can be pulled out easily (1, Fig. 24) and the lock is released.
2. Now you can set the leg rest to the desired angle (2, Fig. 24.)
3. When you have found the desired angle, release the screw head over the desired position hole to allow the screw to engage.
4. Finally, retighten the screw so that it is hand-tight (1, Fig. 24).

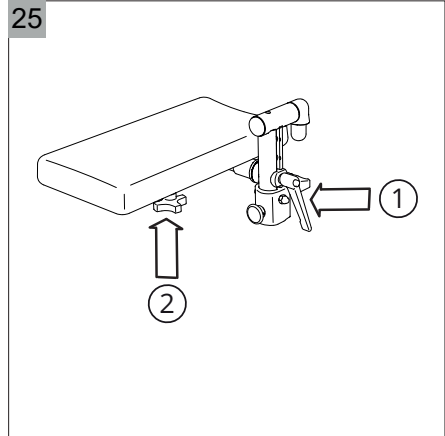


6.11. Amputee support (optional)

Attaching the amputee support:
Grasp the amputee support by the cushion and insert the upper pin into the holder on the wheelchair frame from above.

Setting the angle and height:

1. Release the clamping lever (1, Fig. 25).
2. The amputee support can now be set to the required angle and the height set to one of three levels.
3. Finally, retighten the clamping lever (1, Fig. 25).



Setting the depth:

1. Loosen the star grip screw (2, Fig. 25).
2. The amputee support can now be set to any depth.
3. When you have found the desired depth, retighten the screw so that it is hand-tight.

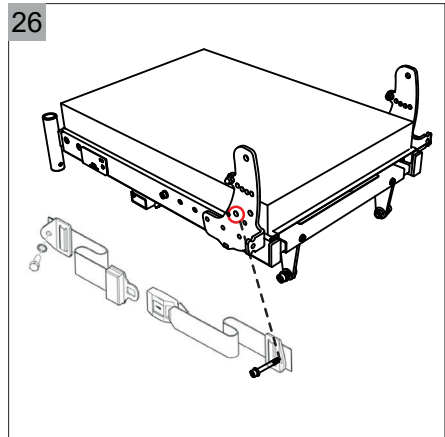
6.12. Lap belt (optional)

The lap belt keeps the person in the wheelchair from falling forwards out of it.

⚠ Warning

This lap belt is not suitable for use on motor vehicles.

1. It is attached to the wheelchair by mounting it on the seat side frame element.
2. Screw the lap belt into the holes provided on both side frame elements using the screws supplied (Fig. 26).



6.13. Accessories and add-ons from external suppliers

As a general principle, only original accessories from DIETZ GmbH are to be used. If third-party products are installed on the wheelchair, responsibility for the safety of the product passes to the person who installs the accessories or fits the add-on. In this case, the installer or fitter must issue a new declaration of conformity for the combination of accessories and product or add-on and product. The declaration of conformity issued by DIETZ according to MDR 2017/745, Annex II ceases to apply.

⚠ Warning

Should add-ons or accessories that are not sold by DIETZ be used, the safety of the product cannot be guaranteed. If accessories or add-ons are fitted to the wheelchair, then the safety instructions in the user manual for the accessories or add-ons must always be observed.


7 Wheelchair adjustments

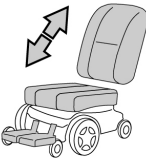
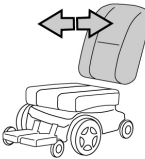
Wheelchair adjustments are those components that the user can adjust without the use of tools. The wheelchair may be fitted with powered and/or mechanical adjustment options.

⚠ Warning

- The centre of gravity and the static and dynamic stability is affected, when adjustments on the wheelchair are made. Therefore adjustments should only be made when the wheelchair is on a flat surface.
- Powered adjustments involve parts of the wheelchair moving and/or rotating. Contact with such moving parts may result in serious physical injury or damage to the wheelchair. You should avoid any contact with the moving parts of the wheelchair.
- When adjustments are made, the standard size of the wheelchair increases. Make sure that the wheelchair does not block any escape routes.
- With electrically activated seat tilt or electrical back angle adjustment, should only be driven short distances in the home area. Therefore use always the slow driving profile. Note that the viewing area is limited with activated seat tilt or electrical back.
- When driving, keep the backrest as straight as possible, with a maximum of 10 ° deviation from the vertical. For the seat plane angle, this deviation is a maximum of 4 ° with respect to the neutral position. This ensures that your field of vision is not restricted and your reflectors are clearly visible.

7.1. Powered adjustments

 **CONTROLLER** how to operate the powered adjustments by use of the controller. The following powered adjustments are possible:

Adjustment		Neutral position	Adjustment		Neutral position
Adjustable seat tilt			Adjustable backrest recline		
	Entire seat will tilt forwards/ backwards.	Upright		The backrest will tilt forwards/ backwards.	Upright

7.2. Mechanical adjustments

The following mechanical adjustments are possible:

Back frame (option)

To fold down

1. Pull the strap (A, Fig. 27) to release the locking bolts.
2. Fold down the backrest (B).

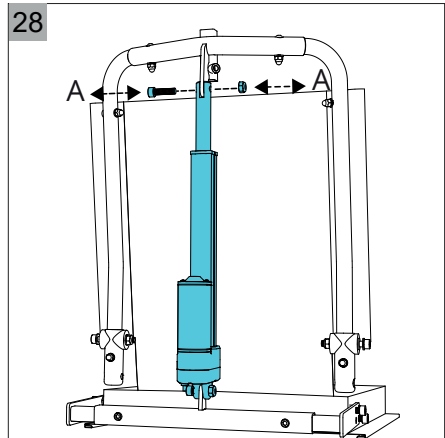
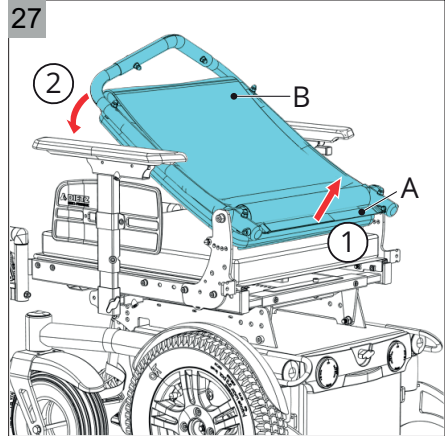
Upright position

1. Pull the strap (A Fig. 27).
2. Open out the backrest to the desired position (B).
3. Release the strap to relock the bolts in one of the four fixation positions on both sides (see also 6.5 and Fig.15).

⚠ Warning

The backrest is locked into place when you hear an audible 'click' and see the bolts locked in place. The same fixation position must be used on both sides, otherwise the backrest is crooked and instabil.

In the case of the Minko version with electric backrest, the backrest can only be folded down once the screw connection (A) has been removed. This detaches the backrest from the actuator. Then, both the actuator and the backrest frame can be folded forwards (Fig. 28).





8 Using the wheelchair

8.1. Checking the wheelchair

⚠ Warning

Carry out the following checks before using the wheelchair:

-  CONTROLLER check whether the batteries are sufficiently charged: if they are, the green lights on the battery indicator will be on.
-  CONTROLLER check whether the lights and the indicators are working.
- Check whether the tyres are sufficiently inflated (see 9.3).
- Ensure that the freewheel switch is in the 'drive' position (see 7.6).

⚠ Warning

When using the wheelchair:

- Take the length of your clothing into account. Before using the wheelchair, check to see whether any garments or accessories could come into contact with the wheels or any other moving and/or rotating parts and become entangled in them.
- Battery capacity is reduced in winter. When there is a light frost, capacity is around 75% of normal capacity. At temperatures below -5 °C, capacity is reduced by approximately 50%. This reduces the operating range.

8.2. Getting into and out of the wheelchair

Getting into and out of a wheelchair is also described as making a transfer.

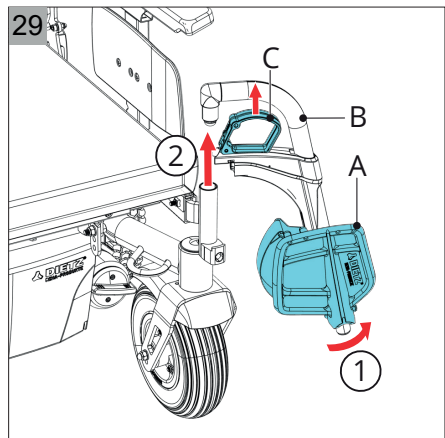
⚠ Warning

Do not stand on the footplates when making a transfer. They are not designed to carry a person's full weight. Standing on them may also cause the wheelchair to tip over. Before making a transfer, ensure that:

- The controller is turned off
- The freewheel switch is in the 'drive' position (see 8.6)

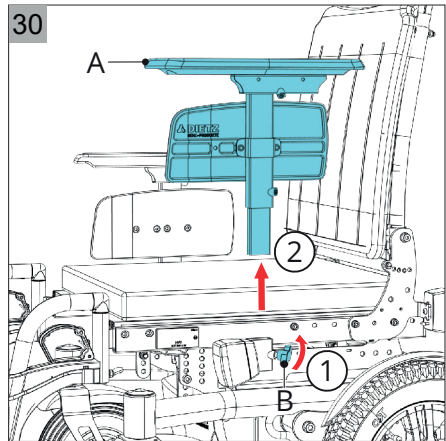
Forward transfer

1. Flip up the footrests (A figure 29).
2. If possible, remove the legrest (B): pull the handle (C), swing the legrest to the side and remove it from the bracket.
3. Sit down in the wheelchair




Side transfer

1. Follow the steps of the forward transfer (figure 30).
2. Remove the armrest (A figure 32) by loosening the wing nut (B).
3. Sit down in the wheelchair



8.3. Driving the wheelchair

 **CONTROLLER A** controller is used for driving a powered wheelchair. There is a separate manual for the controller and this is supplied with the wheelchair. Read through all the user manuals carefully before using the wheelchair for the first time. The information they contain is essential for the safe use and proper maintenance (cleaning). If any of the manuals are missing on delivery of your wheelchair, please contact your dealer immediately.

Warning

- As a wheelchair user, you are vulnerable when on the road. Remember that other road users may not always notice you.
- Observe traffic regulations.
- Stop using the wheelchair immediately if the wheelchair shows any unusual or unexpected behavior and let the wheelchair check by an authorized dealer.
- Avoid taking any deserted routes so that help is always on hand in any emergency situation.
- Adjust your speed and driving style to the conditions.
- To stop or to make an emergency stop, move the joystick to the neutral position or let go of it. The wheelchair will then brake automatically.
- Never take corners at full speed. Reduce your speed when cornering.
- Use the indicators when changing direction.
- When driving:
 - Do not press the on/off button.
 - DIETZ recommends wearing a lap belt, as electric wheelchairs can suddenly stop moving during operation for various reasons.
 - Do not suddenly start driving in the opposite direction. If you do, the wheelchair will stop abruptly and jolt. Not only is this unpleasant, it can also lead to the wheelchair tipping over.

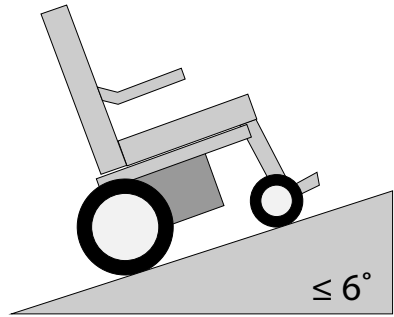
8.4. Driving on slopes or ramps

With all settings in the neutral position (see 7.1), slopes/ramps of $\leq 6^\circ$ (10.5%) are deemed to be part of the standard user environment for the RWD without stability being affected (figure 31).

Slopes or ramps outside the standard user environment

Driving on slopes/ramps that are steeper than the maximum safe slope may lead to safety risks in terms of stability. Driving on such slopes/ramps requires the user to practise extreme caution and full control. Always drive carefully and never experiment! Follow the instructions given under warnings!

31



The stability and performance of the wheelchair depend on many variables. Wheelchairs are adapted to individual users. For this reason these variables will be different from one wheelchair to another. You should therefore ensure that your dealer provides you with sufficient information about how to use the wheelchair and that the dealer informs you whether the specific adjustments or adaptations for your situation will affect the handling of the wheelchair.

⚠ Warning

- Always drive up and down slopes/ramps slowly, concentrating on what you are doing.
- Avoid any sudden, jolting movements.
- Avoid making an emergency stop on a slope/ramp.
- The braking distance on a slope can be considerably greater than on a flat surface.
- When on slopes/ramp, try to avoid changing direction as much as possible.
- Do not turn on a slope.
- Drive on slopes/ramps only when all adjustments (lift, tilt, recline) are in the neutral position.
- Never drive up or down a slope/ramp backwards.
- Do not drive on slopes/ramp with loose gravel or a sandy surface, as one of the drive wheels may slip or spin.
- Driving up or down a slope for long periods of time may result in the motor overheating.
- If you notice that your speed is being greatly reduced when driving up a slope, select a route that is less steep.
- Prevent the wheelchair from reaching high speeds when driving down slopes.

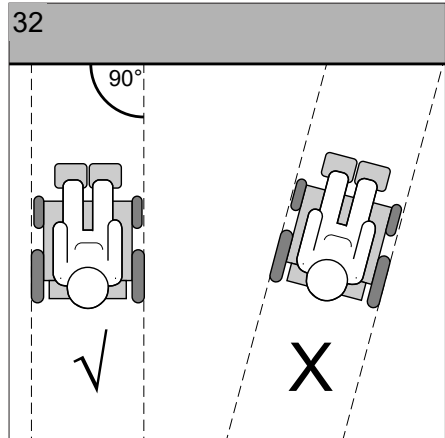
8.5. Obstacles

⚠ Warning

- Never descend steps/a flight of stairs in a wheelchair.
- Do not drive off of obstacles higher than 50 mm.
- Always drive onto or off an obstacle in forward direction.
- Drive on slopes/ramps only when all adjustments (lift, tilt, recline) are in the neutral position.

Mounting pavements

- Select the lowest section of the kerb.
- Position the wheelchair so it is facing the kerb, 20 cm in front of it. (figure 32).
- Move the joystick forwards. Drive onto the pavement without changing direction.
- Once the front wheels have mounted the pavement, you will need to maintain speed to get all of the wheels up onto it. If you are not able to mount the pavement, select a section where the kerb is lower.



Dismounting pavements

- Select the lowest section of the kerb. If in any doubt, do not take any risks and choose a different route.
- Position the front wheels so that they are facing the kerb.
- Slowly move the joystick forwards. Drive off of the pavement as carefully and as slowly as possible without changing direction.

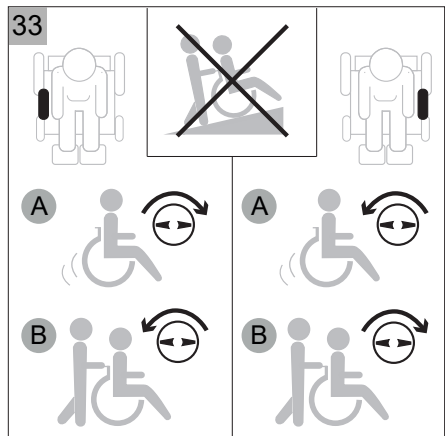
8.6. Pushing the wheelchair

The wheelchair can also be moved by pushing it. The motors need to be disengaged in order to make this possible. This is done using a freewheel switch, one for the left and one for the right motor (figure 33).

- 'Drive' position. The wheelchair can be moved by use of the controller, it cannot be pushed.
- 'Push' position. The wheelchair can be pushed, the controller cannot be used to drive the wheelchair.

⚠ Warning

- The freewheel lever was developed for the attendants of wheelchair users. The freewheel lever must never be operated by the user himself/herself. It should be used only by an attendant.



- The automatic parking brake works only in the 'Drive' position.
- The freewheel lever must be set to the 'Push' position only if the wheelchair is to be actually pushed. Set the freewheel switch to the 'Drive' position immediately after pushing is finished.
- Never use the 'Push' position on a slope! When the freewheel lever is in the 'Push' position, the automatic parking brake is turned off. This could then result in the wheelchair rolling downhill accidentally.

8.7. Storage of the wheelchair after use

When the wheelchair is not in use:

- It must be stored in a dry place where it will not be affected by the weather.
- Do not position the wheelchair in direct sunlight. Parts of the wheelchair could then become so hot that they could burn you.
- The wheelchair is according to ISO 7176-9 to the storage temperatures of -40°C to $+65^{\circ}\text{C}$ tested. However the ambient temperature for storage should be no lower than -20°C and the humidity should lie between 20 % and 60 %.
- Disconnect batteries in case of longer storage without usage.

If you start using the wheelchair again after it has been in storage for a while, you must check it again (see 8.1).

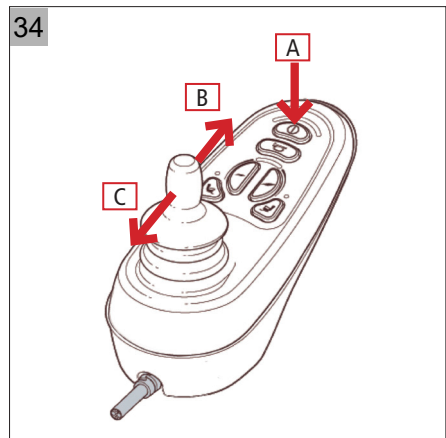
8.8. Immobilizer

The immobilizer provides protection against unauthorised use of the MINKO. The immobilizer function is only available when configured in the controller profile.

If the immobilizer does not work despite being operated correctly, then please contact the seller. The immobilizer function must first be enabled for use.

Activating the immobilizer

1. With the wheelchair turned on, press and hold the ON/OFF button [A] (Fig. 34). After approximately 1 second, you will hear a beep and should then release the button.
2. Immediately after releasing the ON/OFF button, move the joystick all the way forwards [B] until you hear a beep.
3. Then move the joystick backwards [C] straight away until you hear a beep.
4. Let go of the joystick. A longer beep will be emitted to indicate that the immobilizer has been activated



Deactivating the immobilizer

1. Press the ON/OFF button [A] normally to turn on the wheelchair (Fig. 34). The speed indicator begins to flash on and off. This signals that the immobilizer is activated. The joystick must be moved forwards [B] until you hear a beep.
2. Then move the joystick backwards [C] straight away until you hear a beep.
3. Let go of the joystick. A longer beep will be emitted to indicate that the immobilizer has been deactivated.
4. The speed indicator stops flashing. The wheelchair is ready to drive.

9 Transport

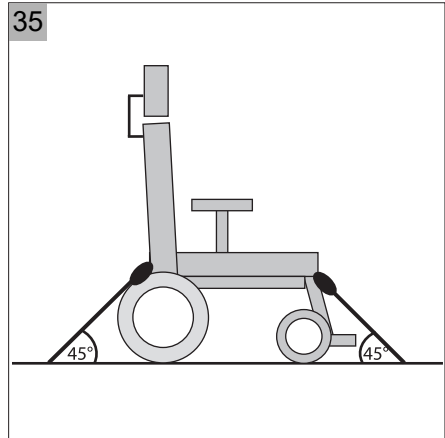
9.1. Transporting the wheelchair in motor vehicles

Powered wheelchairs are too heavy to lift. Use suitable ramps for getting the wheelchair into a vehicle.

⚠ Warning

Always take the following into account:

- Position the wheelchair in a forward-facing direction inside the vehicle.
- Any components that can easily be detached from the wheelchair must be removed (see 5). Store away any such components properly.
- The wheelchair should be secured only by using the particular provided securing points on the frame.
- No changes or replacements must be made to the anchorage points on the wheelchair, or to constructional elements or parts of the frame without consulting DIETZ.
- Use a 4-point strap tiedown system approved to ISO10542 standards and suitable for the total weight of the wheelchair. The weight of the wheelchair will depend on its composition. A list of some of the options and how much they contribute to the total weight of the wheelchair can be found in the specification table (see 9). Always take the total weight of the wheelchair into account in order to ensure that the tiedown system is the correct one.
- The tiedown straps should be attached as close as possible to the wheelchair at an angle of 45 degrees (figure 35) and tightened securely in accordance with the instructions of the manufacturer of the tiedown system.
- The wheelchair should be inspected by a DIETZ authorised dealer before re-use following involvement in any type of vehicle impact.

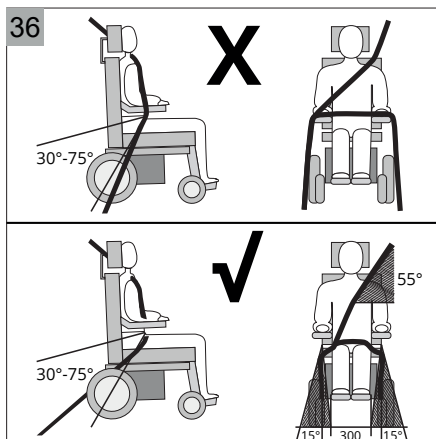


⚠ Warning

Wheelchairs are not designed to function as seats inside a vehicle and do not provide the same level of safety as a normal seat, irrespective of how well they are secured inside the vehicle. DIETZ recommends that wheelchair users transfer to a standard seat whenever possible. If this is not possible, then the following should be taken into account:

- This wheelchair is crashtested with a 4-point strap tiedown system according to ISO 7176-19 (2008) considering a maximum passenger weight of 76 kg.
- Ask the vehicle operator whether the vehicle is suitable, insured and equipped for the transportation of a user seated in a wheelchair.
- Set all adjustments of the wheelchair in the neutral position (see 7.1).
- Ensure that the controller is turned off.
- DIETZ recommends fitting and using the headrest during transportation.
- Any belt attached to the wheelchair will be purely for positioning purposes and should not be used or relied on for occupant restraint in a moving vehicle.

- It is vital that you are secured with a three-point seat belt attached to the floor and the wall of the vehicle during transportation.
- The pelvic part of the three-point seat belt must be adjusted as tightly as possible consistent with user comfort, at an angle between 30° and 75° and should not be held away from the body by wheelchair components (figure 36).
- Both the pelvic and chest belts should be used to reduce the risk of head and chest injuries in the event of colliding with parts in the car.

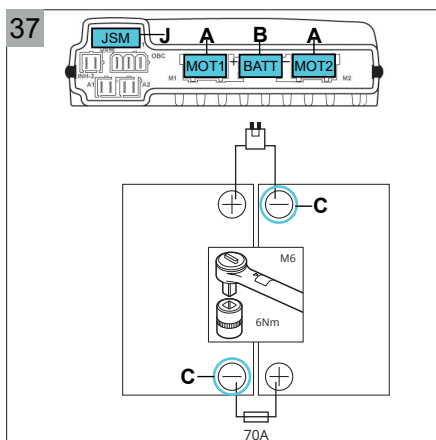


9.2. Special transport

In addition to being transported by road, the wheelchair can also be transported by rail, sea or air. Its batteries may be transported in accordance with IATA regulations.

⚠ Warning

- Before travelling, contact the organisation providing transport. Your tour operator will be able to provide you with information about any special requirements/instructions.
- Take all the user manuals delivered with your wheelchair with you. For more information about
 - reducing the wheelchair in size (see 5).
 - driving or pushing the wheelchair (see 8.6).
 - the batteries in your wheelchair (see 10.5).
 - the dimensions and weight of the wheelchair (see 11).
 - CONTROLLER for locking the controller.
- Ensure that all detachable components are mounted on your wheelchair properly or that they are packed separately and labelled so that they do not get lost during loading and unloading.



Under certain circumstances, the controller power supply must be disconnected (Fig. 37): To do this, disconnect an earth cable (C) from the battery and secure it to prevent accidental contact with metal parts. As an alternative and depending on the degree of accessibility, you can disconnect the battery cable (B) from the controller. For further information, see sections 4.4 and 4.5.

10 Servicing / maintenance

10.1. Maintenance

We recommend performing the inspections listed in the maintenance schedule at regular intervals to ensure that the wheelchair is always safe to use.

Defective or neglected care and maintenance of the wheelchair limits liability. The maintenance schedule does not give any information concerning the amount of work actually required on the wheelchair.

As the user, you will be the first to notice possible damage. If you notice a fault as described in the maintenance schedule or further defects and functional impairments, contact an authorised specialist dealer immediately.



Warnung

Repairs on the wheelchair must only be performed by specialist shops using DIETZ original spare parts to maintain the operational safety of the wheelchair.

The inspections and measures stipulated in the maintenance schedule must be performed by the user or assistant if not otherwise stated.

10.2. Maintenance schedule / inspections

(Frequency: **D** = daily prior to use; **W** = weekly; **M** = monthly)

WHAT	DESCRIPTION / CHECK	WHAT TO DO IN THE EVENT OF A MALFUNCTION / FAULT	Frequency
Batteries	Make sure that the batteries are charged. The battery capacity is indicated by 10 LEDs on the joystick: Indicator is in the green zone = capacity sufficient Indicator is in the red zone = charging required	Charge the batteries fully after each use (see section 10.5).  CONTROLLER  CHARGER	D
Screw connections	Check all connections (e.g. for backrest, armrests, leg rests, wheels) to make sure they are secure.	Contact an authorised specialist retailer.	D
Horn	Check that it is functioning properly.	Contact an authorised specialist retailer.	D
Check the light system.	Check the headlights, rear lights and indicators to make sure they are functioning properly.	Contact an authorised specialist retailer.	D

WHAT	DESCRIPTION / CHECK	WHAT TO DO IN THE EVENT OF A MALFUNCTION / FAULT	Frequency
Moving parts	Check that all moving parts are running smoothly and quietly.	Contact an authorised specialist retailer.	D
Squeaking and grinding noises	Any squeaking and grinding noises must be checked out and rectified by a specialist. There are various possible causes.	Contact an authorised specialist retailer.	D
Armrests	Check that they are being held securely in the holders.	Secure the armrests by tightening the holder screws so that they are hand-tight.	W
Leg rests	It must be possible to remove, attach and lock the leg rests without any problems. Any functional faults and surface damage must be remedied.	Contact an authorised specialist retailer.	W
Tyres (pneumatic, puncture-resistant)	Check the tyres for damage and sufficient air pressure (see section 10.6).	Pump up the tyres to the required air pressure (see section 10.6). In the event of damage, contact your specialist retailer.	W
Tyres (puncture-proof)	Check for damage.	Contact an authorised specialist retailer.	W
Entire wheelchair	Surface damage and any functional faults must be remedied to prevent the risk of injury.	Contact an authorised specialist retailer.	M
	Check the wheelchair and upholstery for dirt/soiling at least once a month.	If any is found, clean the wheelchair and upholstery in line with the cleaning information (see section 10.4).	M
Castor wheels	Check that they are free to move in every direction and are rotating evenly.	Contact an authorised specialist retailer.	M
Drive wheels	Check that they are rotating evenly.	Contact an authorised specialist retailer.	M
Electronics and connections	Check the cables and connectors to make sure they are secure..	Contact an authorised specialist retailer.	M

10.3. Servicing / maintenance

Further information on specific settings, maintenance or repair work is available from your dealer, as well as in the service manual, which is available on our website.

Always state the wheelchair type, year of construction and identification number. These can be found on the identification plate (see 2.4).

For the proper maintenance of your wheelchair, adhere to the following schedule:

Frequency	Description
Every 2 years	The wheelchair should be checked by your dealer every 24 months or, if used intensively, every 12 months. Take this manual with you and have your dealer fill out the table below.

Use only original DIETZ parts for maintenance and repairs.

Model	MINKO										
Serial number											
Year	1	2	3	4	5	Year	1	2	3	4	5
Date						Date					
Operation						Chassis					
Horn						Parts tightened					
On/off switch						Condition					
Output plug						Controls					
Joystick						Upholstery					
Brakes						Seating system					
Programme configuration						Backrest					
						Armrests					
Batteries						Electronics					
Level						Cable condition					
Connectors						Connectors					
Discharge level						Driving					
Wheels						Forwards					
Wear						Reverse					
Pressure						Emergency stop					
Bearings						Turning					
Wheel nuts						Uphill/downhill					
Motors						Obstacles					
Wiring						Parking brake					
Connectors						Light					
Noise						Lights/indicators					
Carbon brushes						Reflectors					
Brakes											
Remarks:											

10.4. Cleaning the wheelchair and its upholstery

Warning

- When cleaning the wheelchair, ensure that the controller is turned off. If the joystick is accidentally touched, this may cause the wheelchair to start moving or the powered options to be operated.
- Take care when using water because of the system being electronic.
- Clean the upholstery and the dirty parts of the wheelchair using a damp cloth and household soap. Then rub dry using a soft, dry cloth.
- Never use abrasive or aggressive detergents, as these may scratch surfaces.
- Do not use any organic solvents, such as thinner, benzine or white spirit.
- Do not chemically clean the upholstery.
- Do not iron or spin-dry the upholstery.

10.5. Batteries


The wheelchair is fitted with 'dry' gel batteries. The batteries are fully sealed and require no maintenance.

Warning

- The use of 'wet' batteries is not permitted.
- Battery capacity is reduced in winter. When there is a light frost, capacity is around 75% of normal capacity. At temperatures below -5 °C, capacity is reduced by approximately 50%. This reduces the operating range.
- Ensure that the batteries are always well charged. Long-term non-usage of the batteries can damage them.
- Do not use the wheelchair if the batteries are almost flat and never drive until the batteries are completely flat. Doing so can seriously damage them and you would also mean running the risk of coming to a standstill.
- The batteries contain gel. Damaged batteries pose a serious threat to health. Always follow the instructions on the batteries.

Charging

Technical specifications (see 10).

 CHARGER to check if the charger is suitable for use with the wheelchair batteries and for instructions on how to activate the battery charger.

 CONTROLLER for the right connection for the charger plug.

The contents of the manuals are vital in terms of the safe use of the wheelchair. If any of the manuals are missing on delivery of your wheelchair, please contact your dealer immediately.

Under normal use, the batteries will need to be charged every night. The battery charger indicates when the batteries are fully charged. Depending on how flat the batteries are, it can take up to 12 hours to fully charge them.

Replacement

If the battery capacity is steadily decreasing and the wheelchair can only be used for very short trips, this means that the batteries have reached the end of their lifespan. They then need to be replaced. Consult your dealer.

10.6. Tyres

In order to ensure optimum performance of your wheelchair, it is very important to keep its tyres at the right pressure. The correct pressure can also be found on the side of the tyres.


Wheel	Maximum tyre pressure
8" castor wheel	2,5 bar
9" castor wheel	3,5 bar
10" castor wheel	3,5 bar
12" drive wheel	2,8 bar
14" drive wheel	3,5 bar

Warning

Never exceed the maximum tyre pressure.

If tyres are too soft, the handling of the wheelchair will be reduced. Propelling the wheelchair will also require more energy, resulting in a greater drain on the batteries. Driving with soft tyres also unnecessarily increases tyre wear.

Warning

 SERVICE for comprehensive details relating to tyre repairs (qualified specialists only). Before starting any repair work on the tyres, first fully deflate them.

10.7. Re-use

The power wheelchair is ideal for use as a loaned wheelchair or for short-term use. The number of times it can be reused depends on the material wear conditions and the functional capabilities of the respective product.

If the wheelchair is passed on to a new user or specialist dealer for reuse, please remember to hand over all technical documents that are necessary for safe usage.

The wheelchair must be cleaned and disinfected, and must be checked for damage and approved by the specialist retailer. To do so, please check all the inspection points listed in the maintenance schedule on the wheelchair. (see 9)

For disinfection spray or wipe all parts of the wheelchair thoroughly with an alcohol-based surface disinfectant for medical devices (maximum 70% propylalcohol). (see list of recognized disinfectant / procedure of the Robert Koch Institute under <http://www.rki.de>)

Observe the use and processing instructions issued by the cleaning agent/ disinfectant manufacturer.

Safe disinfection cannot be guaranteed on upholstery parts featuring seams and textiles. In this case we recommend to replace these parts.

10.8. Lifetime

The technical lifetime of the wheelchair is influenced by the extent to which it is used.

Under normal use and with the prescribed maintenance, the expected technical lifetime of the wheelchair is approximately five years. In order to derive maximum benefit from the lifetime of the wheelchair, ensure that it undergoes regular maintenance (see 10).

10.9. Disposing of the wheelchair



If your wheelchair is no longer required or needs to be replaced, it will usually be possible to arrange for your dealer to take it back. If this should not be possible, consult with your local authority to find out if it can be recycled or if the materials used in it can be processed in an environmentally friendly way.

Various plastics and metals were used in the manufacture of the wheelchair. It also contains electronic components that should be disposed of appropriately. The batteries constitute chemical waste.

11 Technical specifications



11.1. Standards and requirements

This product complies with the provisions of the Medical Device Regulation (EU) 2017/745 and therefore carries the CE mark.

The wheelchair conforms to the following standards and requirements. This has been verified by independent test institutes.

Standard	Description	Weight of test dummy
DIN-EN 12182 (2012)	Assistive products for persons with disability - General requirements and test methods	136 kg
DIN-EN 12184 (2014) Class B	Electrically powered wheelchairs, scooters and their chargers - Requirements and test methods	136 kg
ISO 7176-19 (2009)	Wheeled mobility devices for use as seats in motor vehicles	76 kg

Standard	Description
MDR (EU) 2017/745	Applicable requirements as stated in Annex II
ISO 7176-8	Requirements and test methods for static, impact and fatigue strengths
ISO 7176-9	Climatic tests for powered wheelchairs (Operation -25 °C bis +50 °C, Storage -40 °C bis +65 °C)
ISO 7176-14	Power and control systems for electric wheelchairs - Requirements and test methods
EN 1021-2	Requirements for resistance to ignition of postural support devices

11.2. Specifications operating force

	Min.	Max.	Unit
Joystick	2,5	3,5	N
Swinging away the controller	20	50	N
Electronic switches	2,1	3,5	N
Parking brake	34,77	44,27	N
Attaching the charger plug	7,8	13,9	N

11.3. Specifications product

Manufacturer	DIETZ GmbH - Reutäckerstraße 12 - 76307 Karlsbad
User weight	max. 136 kg
Class	B

Specifications*	Model / type		Unit
	min.	max.	
Overall length incl. leg rest	820	1070	mm
Overall width	610	700	mm
Overall height excl. headrest	965	1015	mm
Transport length excl. leg rest	820		mm
Transport width	610		mm
Transport height	600		mm
Total mass incl. batteries**	93,5		kg
Mass of the heaviest part	63,3		kg
Static stability downhill***	10 / 17,5		° / %
Static stability uphill***	10 / 17,5		° / %
Static stability sideways***	10 / 17,5		° / %
Theoretical distance range****	28		km
Dynamic stability uphill	6 / 10,5		° / %
Obstacle climbing*****	50		mm
Forward speed	6		km/h
Braking distance at maximum speed	1	2,9	m
Seat plane angle	-7	14	°
Effective seat depth	410	515	mm
Effective seat width	360	560	mm
Seat surface height at front	430	480	mm
Backrest angle	80 / 90 / 100 / 110		°
Backrest angle electrical	90	120	°
Backrest height	500		mm
Footrest to seat distance	380	550	mm
Leg rest to seat surface angle	87,5		°
Armrest to seat distance	200	300	mm
Turning radius*****	815		mm
Safe slope	6 / 10,5		° / %
Ground clearance*****	60		mm
Seat cushion weight	0,4	0,5	kg
Backrest cushion weight	0,47	0,54	kg
Leg rest weight	0,6	0,82	kg
Headrest weight	1,16		kg
Measured sound level	63,2		dB

11 Technical specifications

- * Specifications were measured with 9» and 14» wheels, standard legrests and in most extreme positions (for »min.» standard configuration with seat width 41 and and «max.» most extended version)
- ** Minko std configuration seat with 41 measured with 45 Ah batteries.
Minko with electric seat and electric backrest measures plus additional 6 kg.
- *** Measured with the powered adjustments in the neutral position. With the powered adjustments in the most extreme positions the specifications will be 8.6° / 15.2%.
- **** The following will have a negative impact on the operating range: obstacles, rugged terrain, driving up or down slopes, temperatures below freezing point and frequent use of powered options.
- ***** Specifications mentioned are measured with the max user weight (136 kg).
- ***** Measured without legrest.

11.4. Specifications batteries

Battery capacity	45 Ah	50 Ah	60 Ah	Unit
Battery dimensions (w x d x h)	199 x 166 x 171	198 x 166 x 171	259 x 169 x 179	mm
Battery weight, set	29	28,6	38	kg
Max. charging current	13,5	15	15	A
Max. charging voltage	15	15	14,6	VDC
Connector type	📖 CONTROLLER			
Insulation	Class 2 double insulated			

11.5. Electrical diagrams

- 📖 CONTROLLER for the battery diagram
- 📖 SERVICE for the electrical wiring diagram (see 5).

12 Warranty conditions

Warranty services refer to all product defects which are verifiably attributable to material or manufacturing flaws.


The warranty period is 24 months as of receipt of notification of readiness for shipping, but following delivery at the latest.

Damage which has occurred due to natural wear, intent, and negligent or improper operation or usage is excluded from the warranty obligation. This also applies to the use of unsuitable care products, lubricating oils or greases.

In the case of complaints, the delivery note or a copy of the delivery note and the serial number of the product (to be read off the identification plate) must be provided as proof.

12.1. Record of product identification data

We recommend that you write down your product identification data below (found on product label), so that you have these on hand should you require any further information about your product. (see 2.4)*

TYP Typ / Modell:	
REF Item No. / REF:	
UDI Serial number (21):	
 Date of manufacture:	
Other information/notes:	

*The identification data on your product label may differ on custom-made devices.

NOTES

NOTES

If you have any questions, please contact your local dealer:



MINKO is a product manufactured by:

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Reutäckerstraße 12
76307 Karlsbad
Deutschland
+49 7248 9186-0
info@dietz-reha.de
www.DIETZ-group.de
www.DIETZ-power.de

If there is no authorised dealer near you, please contact DIETZ.