



Ideen bewegen mehr

www.aat-online.de

SOLO

T1601

SOLO⁺

T2001

BLACK EDITION

Translation of the original user manual



CE

2021-11 (5.1)

EN

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Information on the device types:

This user manual is an all-purpose manual for the devices SOLO and SOLO*. These transport devices only differ in the technical data and colour scheme. You can see which device type you have by checking the serial number (chapter type plate incl. serial number). All chapters listed apply to both device types. Please pay attention to whether a lithium-ion battery pack (ALPHA BOX / built-in battery display) or lead-gel battery pack (BETA BOX / no battery display) is available.

SOLO has been successfully tested by TÜV Süd Product Service GmbH in Hanover according to DIN EN 12182, DIN EN 12184 and the relevant parts of ISO 7176.

People with visual and reading impairments or intellectual disabilities should print out the user manual available on the website in enlarged letters or have this manual read to them, if necessary. You will also find all safety-relevant changes that have been made to the user manual on our homepage. All versions with details of the production period of the product are obtainable at: www.aat-online.de/de/bda/SOLO

All serious incidents occurring in relation to the device must be reported to the manufacturer and to the competent authority of the Member State where the user and/or occupant is established.

**WARNING**

Failure to observe this user manual, in particular the safety instructions, can lead to defects in the SOLO and endanger the user and persons in the immediate vicinity of the device. There is an increased risk of injury! In the event of an infringement, claims for warranty and liability are excluded!

The product is state of the art and complies with the associated technical safety requirements. Nevertheless, a low level of residual risks cannot be ruled out. Please observe the safety instructions to this end.



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1 Symbols and safety instructions



DANGER – Immediately imminent danger

If not avoided, this will result in death or severe bodily injuries!



WARNING – Possible imminent danger

If not avoided, this may result in death or severe bodily injuries!



CAUTION – Possible imminent danger or harmful situation

If not avoided, this may result in minor bodily injuries or damage to property!



NOTE – Manufacturer's information

General safety instructions



NOTE

If you have visual impairment, this user manual can be downloaded at:
www.aat-online.de/de/bda/SOLO

Read the user manual prior to start-up and observe the warning notices and safety instructions.

In the event of reading difficulties, training contents must be broadened verbally.

The user manual must be kept in a safe place after reading through it.

Contains some flammable materials. Keep SOLO away from sources of ignition.

SOLO can interfere with highly sensitive electromagnetic fields of other electronic devices (e.g. anti-theft devices).

Stability tests were performed under laboratory conditions. SOLO can behave differently under real conditions compared to laboratory tests.

Training may only be carried out by the manufacturer, the AAT field staff or the qualified specialist shop.



CAUTION

External heat sources may cause the surface temperature to rise (e.g. sunlight)!
Do not touch the affected surfaces in this case to avoid burns!



WARNING

To avoid being crushed, never reach into rotating/moving parts!



DANGER

SOLO must not be operated in the case of severe visual impairment and/or blindness!

Do not exceed the total permissible weight and the maximum person weight, as this may lead to defects or an overloading of SOLO!

Avoid driving in heavy rain, ice, snow and on unsurfaced ground (sand, mud, loose crushed rock) to prevent slipping!

Do not use on escalators or travellers to avoid injuries caused by a crash or the falling out of the occupant and the occurrence of damage to property!














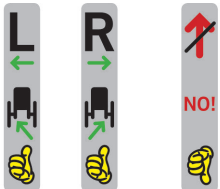
The operational capability of SOLO can be influenced by electromagnetic fields (e.g. by mobile phones, electric generators or high-voltage sources)!

Do not store near medical devices, for example with a life support function, and diagnostic devices, as these may malfunction!

2 Explanation of the symbols on the packaging

Symbol	Explanation
	Handle with care The packaging including the product must be handled with special care.
	Protect from moisture Protect the packaging including the product from overly high air humidity. Cover during storage. Carefully cover with a tarpaulin, if necessary.
	Caution fragile Handle the packaging including the product carefully and never allow it to fall.
	This way up The packaging must be stored and transported in such a way that the arrows point upwards at all times. Any failure to comply with this rule, such as rolling or tilting the package, must be avoided.
	Temperature limitation 0 to 40 °C Do not store the packaging incl. product and battery pack below or above the specified temperature limitations.

3 Explanation of the symbols on the device

Symbol	Erklärung
	CE marking Location: type plate The product complies with the relevant provisions of the EC Regulation EC 2017/745 (MDR)
	Date of manufacture Location: type plate Indicates the year the medical device was manufactured.
	Manufacturer Location: type plate Shows the manufacturer of the medical device (AAT Alber Antriebstechnik GmbH)
	SN Location: type plate Serial number of the product e.g. T1601XXXXXX / T2001XXXXXX
	Medical Device Location: type plate
	Observe the user manual! Location: type plate The user manual must be observed! (www.aat-online.de)
	Attention! Location: type plate Refers to the need for the user to review the user manual and important safety-related information.
	Barcode Location: type plate Contains the AAT serial number
	Technical safety test badge (refer to chapter Technical safety test) Location: inside of the drive wheel Informs about the due date of the next technical safety test
	TÜV-Süd marking Location: inside of the drive wheel Indicates that the product has been successfully tested at TÜV Süd Product Service GmbH according to the standards DIN EN 12182, DIN EN 12184 and the applicable parts of ISO 7176.
	Open and closed lock Location: drive wheels, coupling disk (see chapter: engaging drive wheels) Informs about the status of the respective drive wheel.  + ● = engaged  + ● = disengaged
	Information arrow on wheel mounting bolt Location: Below the mounting bolts on both wheels (see chapter „Assembly - Drive wheels“) Informs about correct hooking-in process of the wheels.
	Note: Positioning of the anti-tip supports (see chapter 5.5) Placement location: Anti-tip supports Informs about the correct positioning of the anti-tip supports. Observe marking: „R“ (right) + „L“ (left)! Incorrectly inserted anti-tip supports are identified by the „thumbs down“ symbol and a red „NO!“.

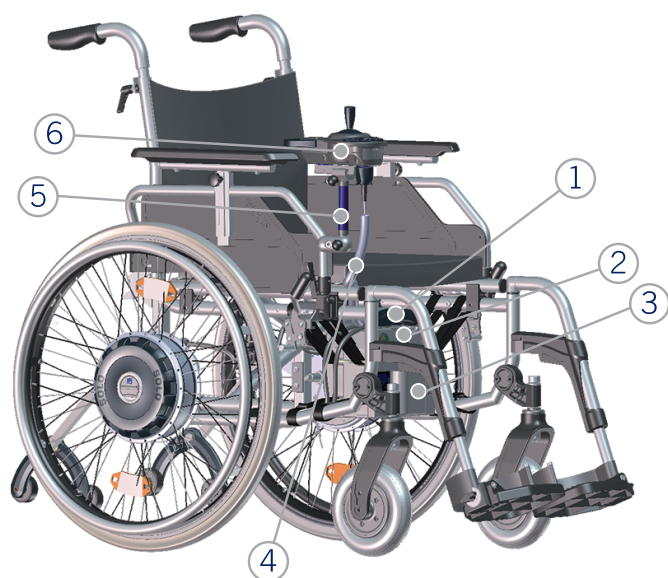
4 Product description

4.1 Device overview SOLO / SOLO⁺

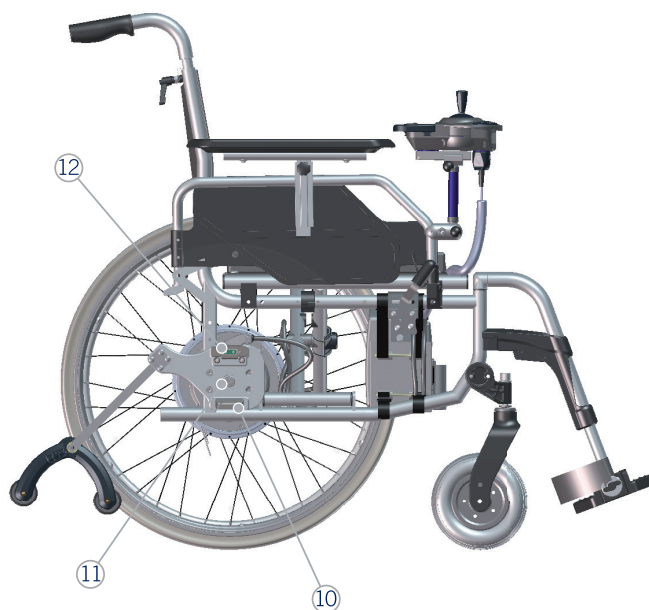


Manufacturer's information:

For a simplified assignment of the individual components, the numbers listed here are cited in full for the first time in the following chapters.

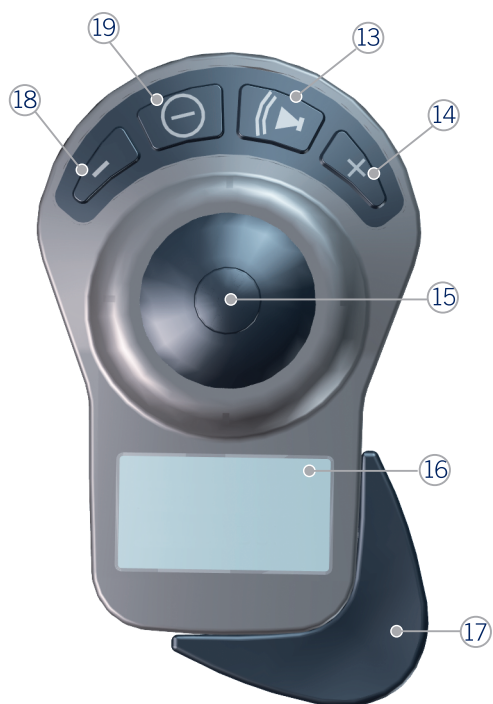


- ① Interface
- ② Battery pack
(Lithium-ion or lead-gel)
- ③ Battery bag
- ④ Spiral cable
- ⑤ Operating unit holder
- ⑥ Operating unit
- ⑦ Drive wheels
- ⑧ Anti-tip supports
- ⑨ Bracket
- ⑩ Holding fixture
- ⑪ Adapter sleeve for quick-release wheels
- ⑫ Plug-in contact



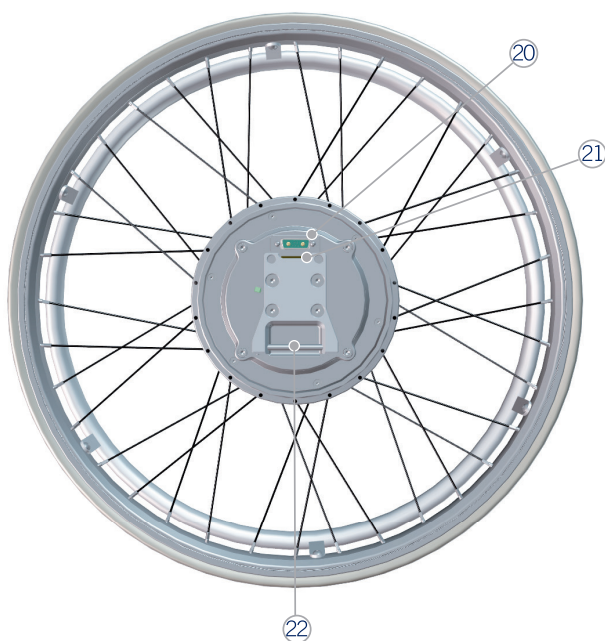
Type label incl. serial number (without figure)
on the back of the interface

Operating unit



- ⑬ Horn
- ⑭ Speed selection fast
- ⑮ Joystick
- ⑯ Display
- ⑰ Hand rest
- ⑱ Speed selection slow
- ⑲ ON/OFF

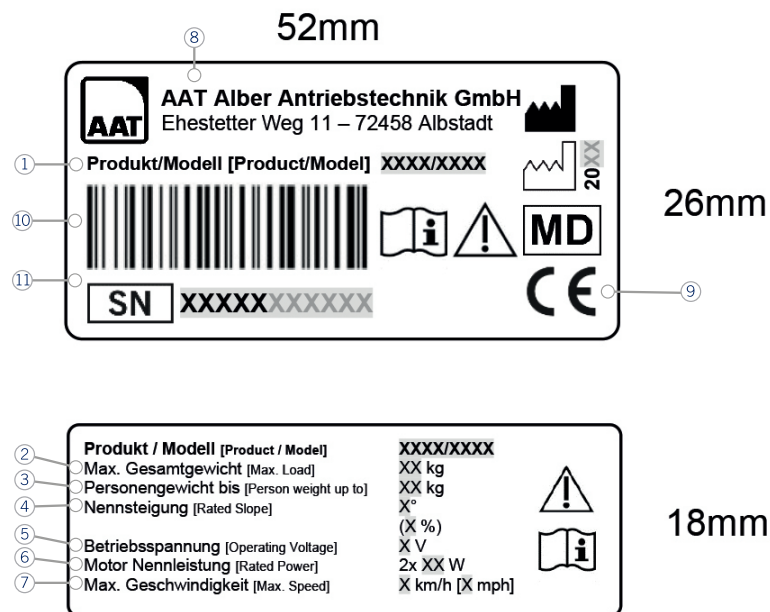
Drive wheels



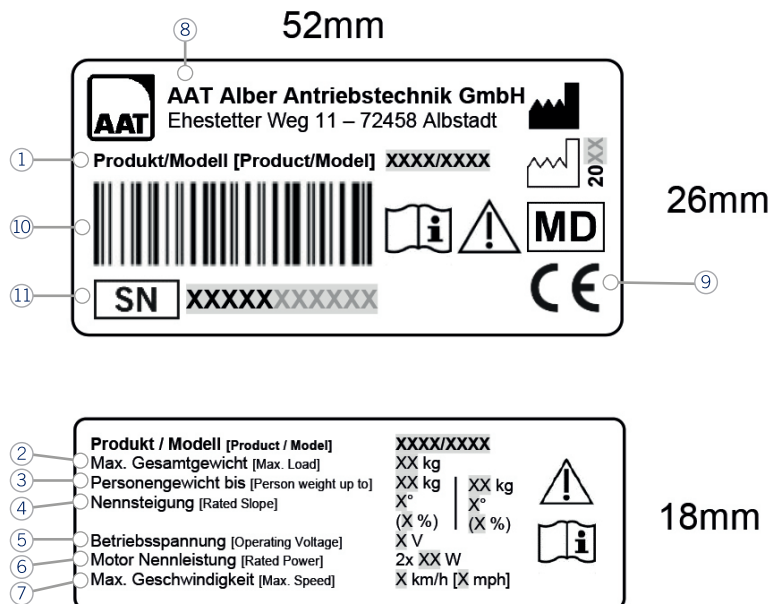
- ⑳ Plug-in contact
- ㉑ Latch
- ㉒ Mounting bolt
- ㉓ Coupling disk
- ㉔ Release

4.2 Type plate incl. serial number

Type plate SOLO



Type plate SOLO⁺



- | | |
|-----------------------|---------------------------------|
| ① Product / Model | ⑦ Max. Speed |
| ② Max. Load | ⑧ Manufacturer's address |
| ③ Person weight up to | ⑨ Symbols (see chapter 3) |
| ④ Rated Slope | ⑩ Barcode (see chapter 3) |
| ⑤ Operating Voltage | ⑪ Serial number (see chapter 3) |
| ⑥ Rated Power | |

4.3 Intended purpose

An electric drive is an electrical add-on device and is attached to a manual wheelchair. The objective of the electrical add-on device is to make movement with a manual wheelchair easier for a self-propelled person and to increase or fully take over the force generation for the movement of the wheelchair. This shall maintain autonomous movement and increase mobility and flexibility for the patient.

The electric drive can be used indoors and outdoors on level surfaces and upward and downward slopes. The device is controlled by the patients themselves or by an operator.

4.4 Intended patient population

The intended patient population includes all persons who are able to sit independently.

Users of the SOLO may have a maximum passenger weight of 165 kg (lithium-ion battery) or 160 kg (lead gel battery). Users of the SOLO⁺ may have a maximum passenger weight of 205 kg.

4.5 Medical requirements and indication

The operator must be physically and mentally able to operate the product.

The SOLO / SOLO⁺ add-on device replaces the physical generation of force by the patient on a manual wheelchair. The use of the transport device is intended for patients who own a manual wheelchair but do no longer have sufficient physical endurance and strength to move by themselves.

The optional control unit is used when the wheelchair user does no longer have the motor ability to move the wheelchair by himself/herself by operating the joystick control, and the strength of the accompanying person is not enough to steer and/or push and brake a person sitting in the wheelchair.

4.6 Contraindications and restrictions

The electric drives must not be used if:

- the operator has obtained no training/instruction for the product!
- the operator is not physically and mentally able to operate the travel drive safely!
- more than one person shall be transported simultaneously!
- the operator does not have adequate eyesight!
- the braking effect is lost due to rain, wet conditions, snow or black ice!
- the braking effect of the travel drive does not set in!
- escalators or travelators shall be overcome!
- medical devices with e.g. a life support function, and diagnostic devices are in the proximity!
- it is not used according to the intended use!
- objects shall be transported!

4.7 User group

The electric drives are intended for their use by patients and lay operators.

Users are trained in the use of the device by means of a training course.

4.8 Technical data SOLO



WARNING - Do not exceed the total permissible weight and the maximum person weight, as this may lead to defects or an overloading of SOLO!



NOTE - Observe the technical data.

Technology	SOLO	
	Lithium ion (ALPHA Box)	Lead gel (BETA Box)
Battery pack measurements	See chapter "Dimensional drawing"	
Own weight	Both drive wheels = 18.6 kg; battery bag = 0.2 kg; Operating unit = 0.5 kg; interface with cables = 0.7 kg	
	Battery pack = 4.2 kg	Battery pack = 9.4 kg
	Total weight (without wheelchair) = 24.2 kg	Total weight (without wheelchair) = 29.4 kg
Total permissible weight	210 kg (person, wheelchair, SOLO) ^{(1), (4)}	
Max. weight of the person	165 kg ⁽⁴⁾	160 kg ⁽⁴⁾
Widening of the wheelchair via extension	approx. 60 mm ⁽⁶⁾	
Possible wheel sizes	24"	
Speed forward backward	6 km/h 3 km/h	
Range with one charge of the batteries	up to 35 km ⁽²⁾	up to 25 km ⁽²⁾
Braking/climbing ability with a person weight of 160 kg / 165 kg	up to 20 % (11.3°) ^{(3), (4)}	up to 20 % (11.3°) ^{(3), (4)}
Batteries	28.8 V / 16 Ah	24 V / 16 Ah
Direct current motor	2 x 28.8 V / 150 W	
Noise information	The A-weighted sound pressure level is typically below 62 dB (A)	
Switching/actuating forces	Joystick: 3.5 N; Buttons (ON/OFF, horn, speed selection): 0.74 N	
Static stability downhill/sideways	Observe the wheelchair manufacturer's information	
Maximum surmountable obstacle height	Observe the wheelchair manufacturer's information and chapter 6.5	
Turning circle diameter	Observe the wheelchair manufacturer's information	
Tire pressure	7 Bar	
Handrim tube diameter	19 mm	
Handrim outer diameter	540 mm	
Storing/operating temperature: Device	-40° C to +65° C / -25° C to +50° C	
Storing/operating temperature: Battery pack	-20° C to +65° C ⁽⁵⁾ / -25° C to +50° C ⁽⁵⁾	
Charging temperature: Battery pack	0° C to +40° C	
Vibration information	The weighted RMS value of acceleration, to which the upper body is subjected, is typically below 2.5 m/s².	
IP protection class	IPX4	
Type label with serial number	Interface	

(1) Observe the maximum load according to the wheelchair manufacturer's information.

(2) According to ISO 7176-4, the distance range depends on the weight of the transported person, the ground, the terrain profile, the ambient temperature, etc.

(3) Climbing and braking ability also depend on the surface, terrain profile, ambient temperature etc.

(4) Person weight on the type plate and in the technical data was calculated using an assumed wheelchair weight of 20 kg.

(5) Temperatures below 0°C will reduce the performance of the battery pack, therefore we recommend a storage temperature of at least 0°C.

(6) The width can vary even more depending on the wheelchair model.

4.9 Technical data SOLO⁺



WARNING - Do not exceed the total permissible weight and the maximum person weight, as this may lead to defects or an overloading of SOLO⁺!



NOTE - Observe the technical data.

Technology	SOLO ⁺ incl. lithium-ion battery pack (ALPHA Box)
Battery pack measurements	See chapter "dimensional drawing"
Own weight	Both drive wheels = 18.6 kg; battery bag = 0.2 kg; Operating unit = 0.5 kg; interface with cables = 0.7 kg
	Battery pack = 4.2 kg
	Total weight (without wheelchair) = 24.2 kg
Total permissible weight	250 kg (person, wheelchair, SOLO ⁺) ^{(1), (4)}
Max. weight of the person	205 kg ⁽⁴⁾
Widening of the wheelchair via extension	approx. 60 mm ⁽⁶⁾
Possible wheel sizes	24"
Speed forward backward	6 km/h 3 km/h
Range with one charge of the batteries	up to 15 km ⁽²⁾
Brakingability / Rated slope (weight of the person up to 160 kg 161 - 205 kg)	max. 20 % (11,3°) ^{(3), (4)} max 15 % (9°) ^{(3), (4)}
Batteries	28.8 V / 16 Ah
Direct current motor	2 x 28.8 V / 150 W
Noise information	The A-weighted sound pressure level is typically below 60 dB (A)
Switching/actuating forces	Joystick: 3.5 N; Buttons (ON/OFF, horn, speed selection): 0.74 N
Static stability downhill/sideways	Observe the wheelchair manufacturer's information
Turning circle diameter	Observe the wheelchair manufacturer's information
Tire pressure	7 Bar
Handrim tube diameter	19 mm
Handrim outer diameter	540 mm
Maximum surmountable obstacle height	Observe the wheelchair manufacturer's information and chapter 6.5
Storing/operating temperature: Device	-40° C to +65° C / -25° C to +50° C
Storing/operating temperature: Battery pack	-20° C to +65° C ⁽⁵⁾ / -25° C to +50° C ⁽⁵⁾
Charging temperature: Battery pack	0° C to +40° C
IP protection class	IPX4
Vibration information	The weighted RMS value of acceleration, to which the upper body is subjected, is typically below 2.5 m/s ² .
Type plate with serial number	Interface

(1) Observe the maximum load according to the wheelchair manufacturer's information.

(2) According to ISO 7176-4, the distance range depends on the weight of the transported person, the ground, the terrain profile, the ambient temperature, etc.

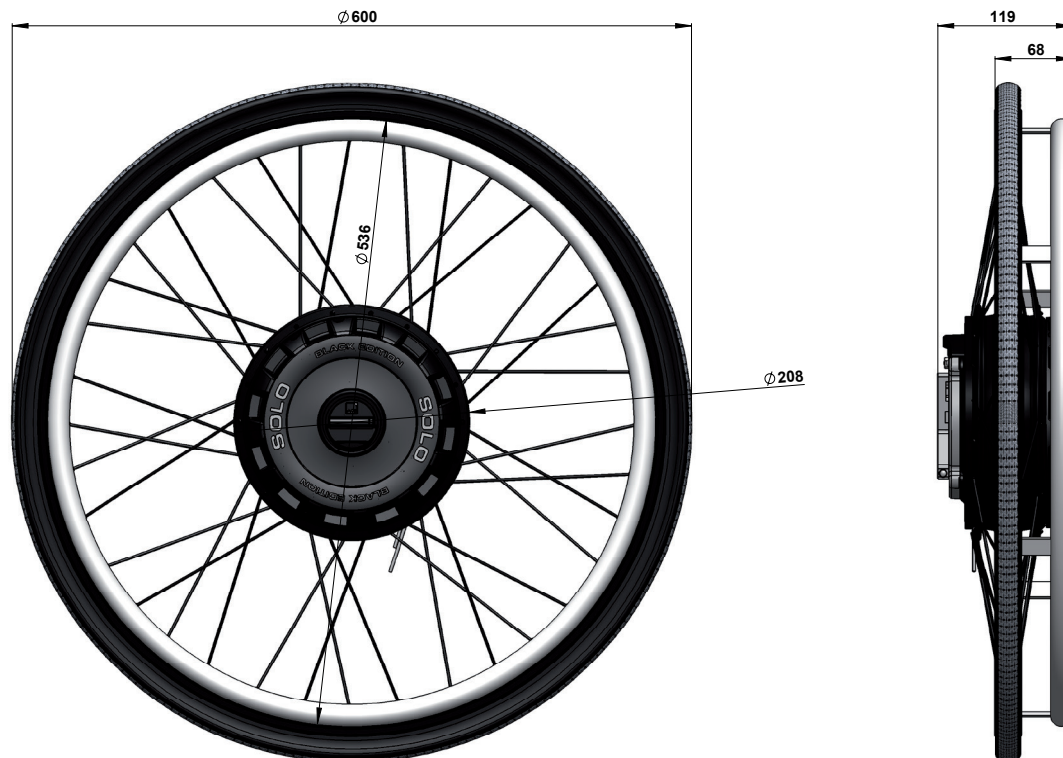
(3) Climbing and braking ability also depend on the surface, terrain profile, ambient temperature etc.

(4) Person weight on the type plate and in the technical data was calculated using an assumed wheelchair weight of 20 kg.

(5) Temperatures below 0°C will reduce the performance of the battery pack, therefore we recommend a storage temperature of at least 0°C.

(6) The width can vary even more depending on the wheelchair model.

4.10 Dimensional drawing



4.11 Scope of delivery



- | | |
|---|--|
| ① Drive wheels | ③ Battery pack (lithium-ion or lead-gel) |
| ② Operating unit with operating unit holder | ④ Battery bag incl. Velcro tapes |
| | ⑤ Charger |

4.12 Accessories



NOTE - Only use AAT Alber Antriebstechnik GmbH accessories.



- | | |
|-----------------------------|--|
| ① Bracket | ④ Anti-tip supports |
| ② Spoke protector | ⑤ Vehicle voltage converter 12 V / 230 V |
| ③ Battery pack (additional) | ⑥ Attendant control SmartControl |

Accessories for the operating unit



- | | |
|-------------------------------------|--------------------|
| ① Therapy tray installation | ⑤ Soft ball |
| ② Bracket for the attendant control | ⑥ Tetraplegic fork |
| ③ Dotter operator | ⑦ Swivel arm |
| ④ 40 or 50 mm ball | |

5 Assembly and start-up

5.1 Drive wheels



CAUTION – Plug-in contacts must be dry!

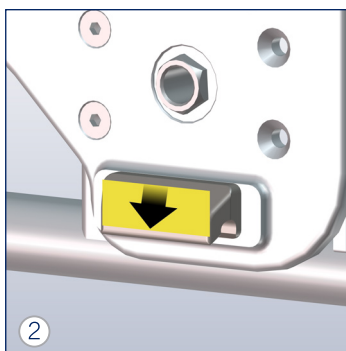


CAUTION – Drive wheels must be disengaged for assembly and start-up! (see chapter 6.6)

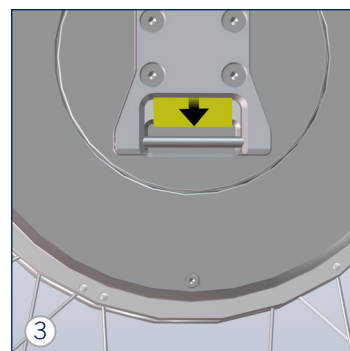
If the wheelchair still has the original wheels on, then remove them first.



Lift the wheelchair and position the drive wheel ⑦.



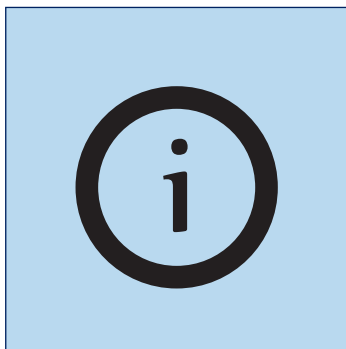
Hook the holding fixture ⑩ of the bracket following the direction of the arrow into the holder on the wheel.



Detail view: ②②
Mounting bolt on the wheel.



Lock the drive wheel.
» Must lock into place!



Repeat pictures 1 - 4 on the other side.

5.2 Battery pack

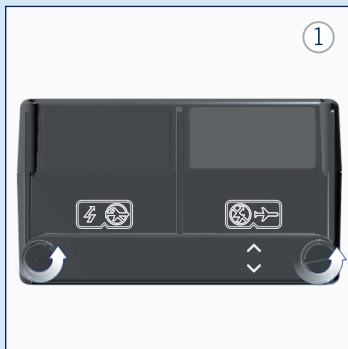


WARNING - Never short-circuit or connect the poles of the battery pack to avoid electric shocks!



CAUTION - Plug-in contacts must be dry!

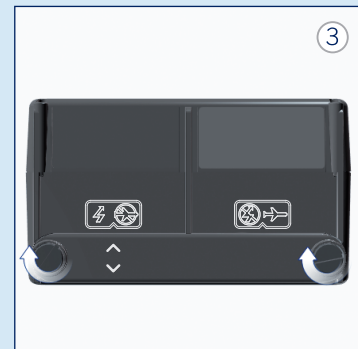
Setting the driving mode (pictures 1 - 3, only for lithium-ion battery pack)



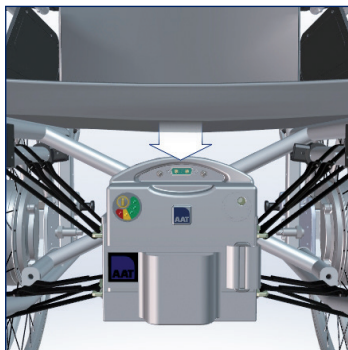
Setting the driving mode – Lithium-ion battery pack
Loosen the screws.



Turn and insert the safety edge. Note arrows – plane crossed out!



Tighten the screws.



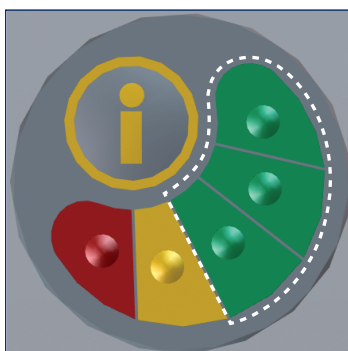
Place the battery pack ② in the battery bag ③ and fix with Velcro.



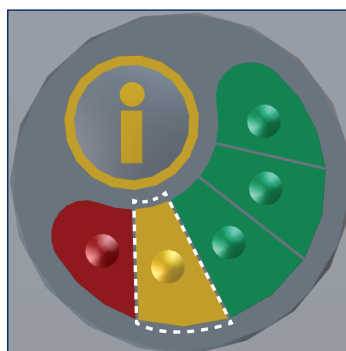
Insert the interface ①.



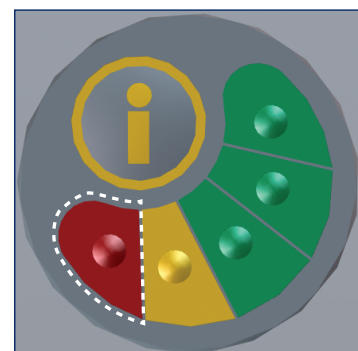
Check the battery pack.
Press the info button.
(Lithium-ion battery only)



Green = battery full



Yellow = battery low
» Charge if necessary!



Red = battery empty
» Charge it!

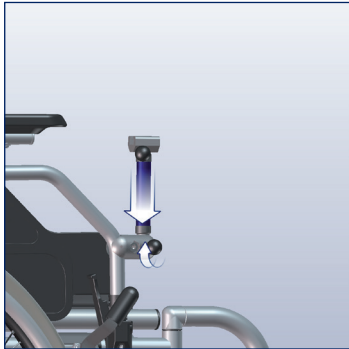
5.3 Operating unit



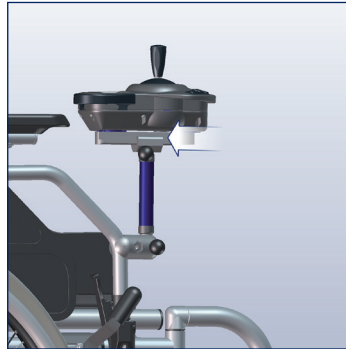
CAUTION – Plug-in contacts must be dry!



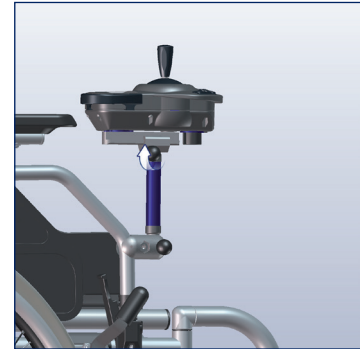
CAUTION – Never pull on the cable, but on the plug to avoid defects!



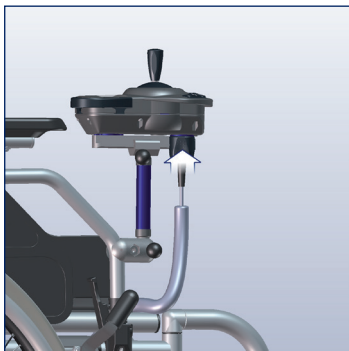
Attach the operating unit holder (5).



Slide operating unit (6) into holder.



Secure using the ball knob.



Plug in the helix cable (4).



Detail view.

5.4 Anti-tip supports

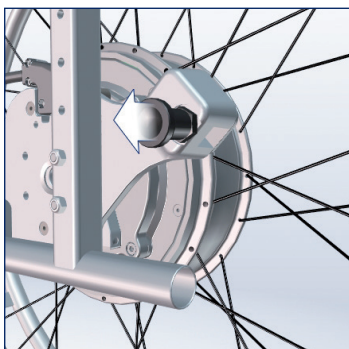


WARNING - Never use without both anti-tip supports to prevent the wheelchair from tipping backwards!

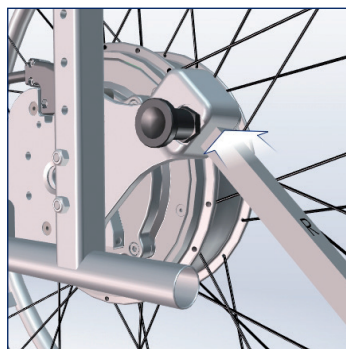


WARNING - Check the anti-tip supports before initial operation to ensure safety!

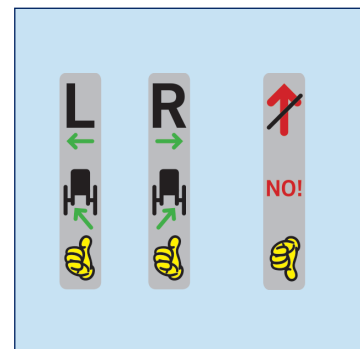
If anti-tip supports are not available on your wheelchair, use AAT anti-tip supports in pairs!



Remove the locking bolts of the bracket (9).



Push the anti-tip support (8) into the bracket and secure with the locking pin.



Observe the 'R' + 'L' markings! Repeat process on the other side.

6 Start-up



DANGER - Operation only by a single, trained person. This person must be physically and mentally able to safely operate SOLO and may not suffer from cognitive impairments!



DANGER – Never use without both anti-tip supports to prevent the wheelchair from tipping backwards!



DANGER – Avoid parallel journeys on steep hillsides or rails, to prevent the wheelchair from overturning!



DANGER – Cross over roads, crossroads and railway crossings with increased caution!



DANGER - Avoid driving on slopes with SOLO disabled, as there is no braking effect when doing so!



DANGER - Do not use on escalators or travellers to avoid injuries caused by a crash or the falling out of the occupant and the occurrence of damage to property!



WARNING – Do not drive up stairs or steps to prevent the wheelchair from overturning!



WARNING – Avoid driving in heavy rain, ice, snow and on unsurfaced ground (sand, mud, loose crushed rock) to prevent slipping!



WARNING – During driving brakes, when using local transport (busses, trams, etc.) and when transferring, switch SOLO off and apply the parking brakes to prevent the wheelchair from rolling away!



WARNING – Drive down slopes at the lowest speed to avoid dangerous situations!



WARNING – When driving on public roads, observe the road traffic regulations!



WARNING – Practise outdoors on a level surface and at low speed!



WARNING – Never reach into rotating/moving parts to avoid being crushed!



WARNING – If the drive elements become blocked or when the driving behaviour has been altered, switch off SOLO immediately and do not use it!



WARNING - Observe the maximum permissible weight (see chapter 4.4 / 4.5)!



CAUTION – Always overcome kerbs/obstacles backwards (see chapter 6.5)!



CAUTION – Maintain sufficient distance to the edge of the kerb to avoid damage!



CAUTION - When using seat supports (cushions, etc.), ensure that the occupant is securely seated to prevent the occupant from falling out or slipping!



NOTE - Never drive backwards on walls with the anti-tip supports mounted so as not to damage the anti-tip supports.

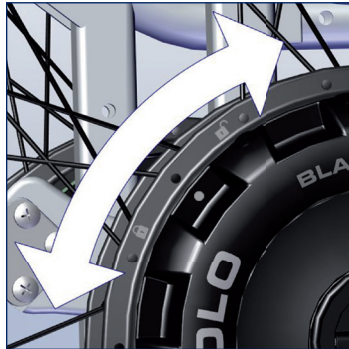



NOTE - The battery pack must be fully charged before first initial operation!

6.1 Engaging drive wheels



Turn the coupling disk (23).
Note the symbols!



 + ● = Engaged.
 + ● = Disengaged.



Turn the drive wheel on the grip wheels until it clicks into place.
Repeat on the other side.

6.2 Switching on



SOLO switches on. (19)



Warning: Please only turn on the SOLO once the passenger is seated.

6.3 Display indicators



Start display. (16)



Standard display.
» Battery pack capacity
» Speed level



Immobliser.



Warning notice
Wheel lock
Both wheels



Warning notice
Wheel lock
Left wheel



Warning notice
Wheel lock
Right wheel



Warning notice
Coupling disk
Both wheels



Warning notice
Coupling disk
Left wheel



Warning notice
Coupling disk
Right wheel



Warning notice
Undervoltage
Battery pack



Warning notice
Overvoltage
Battery pack



Warning notice
Overloaded



Warning notice
Temperature
 Battery pack



Warning notice
Temperature
 Drive wheels



Stand-up function



Download parameters



Battery pack is charging

Error messages (see chapter 10.2)



Battery pack



Drive wheels



Operating unit

6.4 Driving with SOLO



DANGER – When going up a slope, reduce the speed in order to prevent the wheelchair from tilting backwards!



NOTE - Please refer to the chapter on warning notices, error messages and troubleshooting!



NOTE - Display lighting switches off if the operating unit has not been used for 20 seconds.



NOTE – Automatic switch-off switches off the SOLO after 10 minutes when paused for longer periods.



- » 5 bars = full battery
- » 3 bars = battery is half-full
- » 1 bars = empty battery > please charge!
(see chapter 9.1)

After turning on the device, please check the battery capacity.



Select speed.

- » Practise at the lowest ⑮ speed.
- » Cannot be set when moving - only when device is stopped.



Move the joystick ⑮ in the desired direction of travel.

- » Can be moved 360° in one go!



Horn. ⑬



Activate the immobiliser.

Press and hold the plus and minus buttons simultaneously for 2 seconds.

» SOLO switches off.



Deactivate the immobiliser.

Switch on SOLO.



Press and hold the plus and minus buttons simultaneously for 2 seconds.

Emergency stop function

When you let go of the joystick the SOLO stops automatically on the flat surface within 1 meter¹⁾.

¹⁾ depending on the weight of the transported person, the ground, the terrain profile, etc.

If the ON/OFF button is pressed and held down while driving, the SOLO switches off completely (without displaying a warning message beforehand).

6.5 Overcoming obstacles



NOTE - Observe the wheelchair manufacturer's information on the maximum obstacle height in the user manual without fail!



Note - Be mindful of the anti-tip supports if you need to climb edges or obstacles as they can otherwise be damaged.

6.6 Manual driving with drive wheels



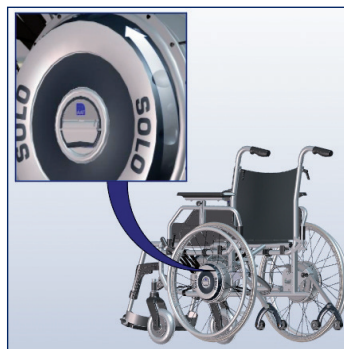
WARNING – Avoid driving on slopes with drive wheels in manual operation!



CAUTION – Risk of crushing between tyre and side panel/armrest!



Switch off SOLO.



Disengage the drive wheel.
Repeat on the other side.



Move manually.

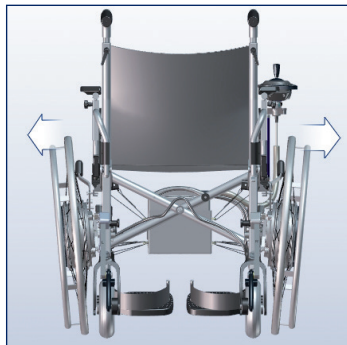
6.7 Manual driving with quick-release wheels



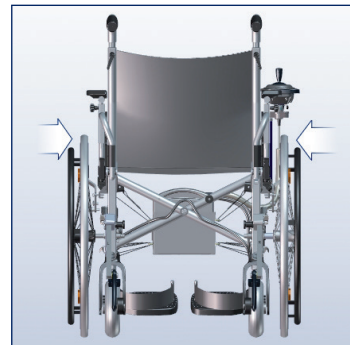
CAUTION – Risk of crushing between tyre and side panel/armrest!



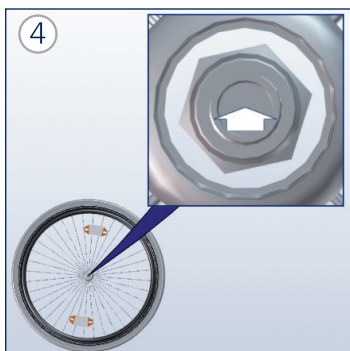
Switch off SOLO.



Disassemble drive wheels.
(see chapter 7)



Assemble quick-release
wheels. Observe pictures 4 - 6!



Press the release button for
quick-release.



Adapt wheel.



Disengage release button.
Repeat on the other side.

6.8 Deactivating the drive



Switch off SOLO.
Press the ON/OFF switch.



Disconnect the drive wheels
(see chapter 6.7)

7 Disassembly

Remove drive wheels



Flip the release ②4.



Turn the release.



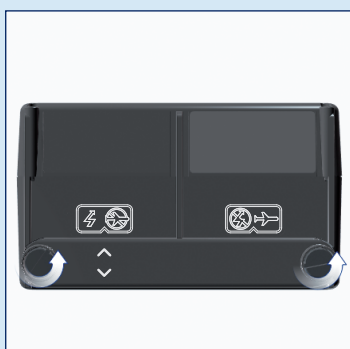
Remove the drive wheel.
Repeat process on the other side.

Remove the operating unit

Carry out the steps listed in chapter 5.4 in reverse order.

Remove the battery pack

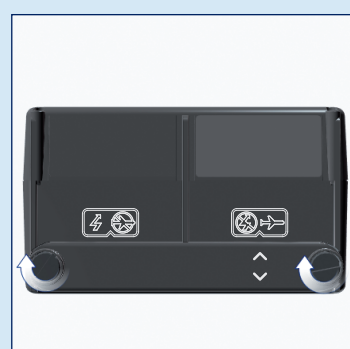
Carry out the steps listed in chapter 5.2 in reverse order. Please note that the flight mode (crossed-out flash) is set for the lithium-ion battery pack.



Loosen the screws.

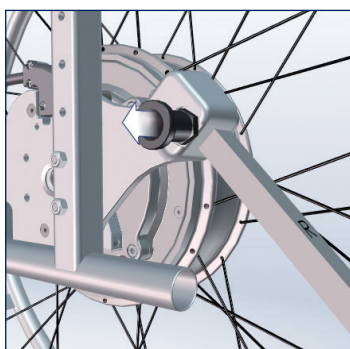


Turn and insert the safety edge. Note the arrow!

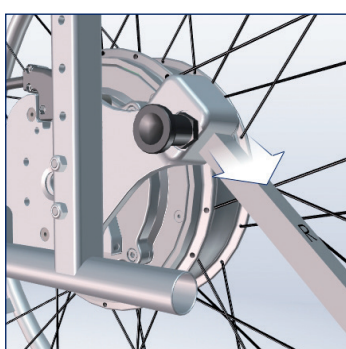


Tighten screws.

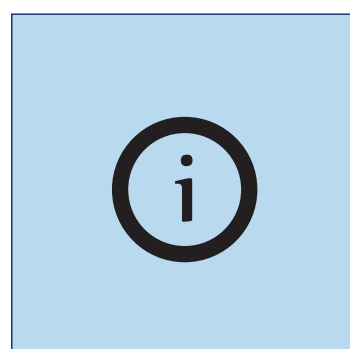
Remove the anti-tip supports



Pull out the locking bolts.



Remove the anti-tip supports.



Repeat process on the other side.

8 Transport



WARNING – Do not use SOLO with wheelchair as a seat in a vehicle!



WARNING – Secure according to valid statutory provisions during transport in vehicles/aeroplanes!



CAUTION – Switch off during transport!



CAUTION – Observe the vehicle's weight specifications!



NOTE – Store in a frost-free environment at least one hour prior to start-up to avoid malfunctions!



Manufacturer's information:

Lead-gel batteries are not considered dangerous goods according to IATA special provisions A67, GGV-SEB (Goods Transportation Regulations) and GGVSee (Goods Transportation Regulations over Sea)! Batteries are permitted for air travel in accordance with DOT and IATA! Lithium-ion batteries are considered dangerous goods, but are approved for air freight transport according to DOT + IATA (flight mode must be activated).

In both cases, however, make sure you contact the airline company in advance before boarding a flight.

Deactivate and disassemble SOLO (see chapter 6.8 and chapter 7).

If not already done (chapter 7), set the lithium-ion battery pack to flight mode.

Stow securely in the vehicle boot.

9 Care and maintenance



WARNING – Repairs and technical safety tests are performed by the manufacturer, the AAT field staff or the authorised specialist shop!



NOTE – Perform a visual inspection prior to each start-up! If parts are visibly defective or missing, contact the authorised specialist shop or the manufacturer!



NOTE – It is recommended to perform a technical safety test every two years. The inspection plate provides information about the latest date. Tip: After a change in operator/reuse.

9.1 Battery pack and charger



DANGER – Before sending in your lithium-ion batteries (for repair, disposal, etc.), always notify your authorised dealer or manufacturer as there is an increased danger! Special dispatch conditions make special packaging necessary! Your authorised dealer will receive approved transport containers on request – dispatch may only take place via authorised dealers! (regulation only for the lithium-ion battery pack)



WARNING – Never short-circuit or connect the poles of the battery pack to avoid electric shocks!



CAUTION – During the charging procedure, ensure that cables are laid safely to avoid tripping over them!



CAUTION – Do not attempt to repair or bypass defective fuses to avoid electric shocks!



CAUTION – Protect against moisture to avoid electric shocks!



NOTE – Never carry the charger by the charging cable/charging line.



NOTE – Charge the battery pack after each use! Exhaustive discharge results in a loss in capacity and shortens the service life.



NOTE – Protect the charger and the motor vehicle voltage converter against oils, greases, aggressive cleaning agents, thinning agents or damage.



NOTE – Observe the user manual for the charger/voltage converter.



NOTE – Store the battery pack in a frost-free environment at least one hour prior to start-up to avoid malfunctions.



NOTE - Do not charge the battery pack near heat-sensitive or flammable materials.

Recommendation: In case of long-term storage (or non-use), remove the battery pack from the charger. Charge the battery regularly at an interval of 1 month, then remove the battery from the charger again.



Manufacturer's information:

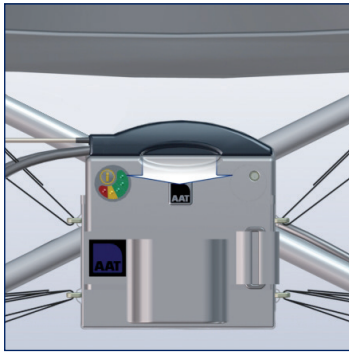
The battery pack is maintenance-free and rechargeable. New batteries only reach their full capacity after several charging cycles. During the charging process, SOLO cannot be operated.



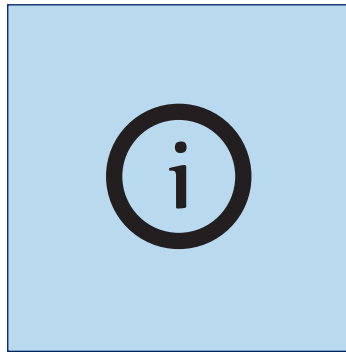
Charge battery pack

Disable SOLO (see chapter 6.8).

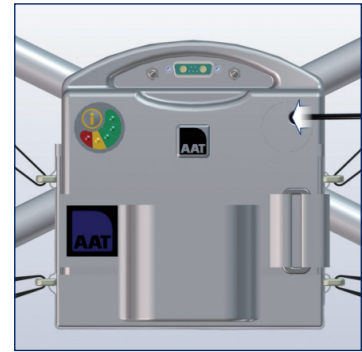
Charging the lithium-ion battery pack



If required, unplug the interface.



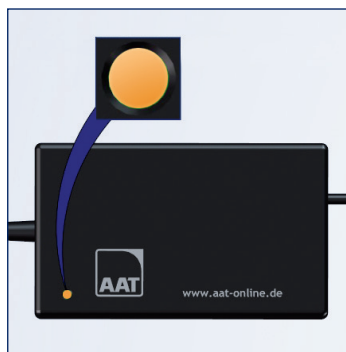
The battery pack can stay in the battery bag when being charged.



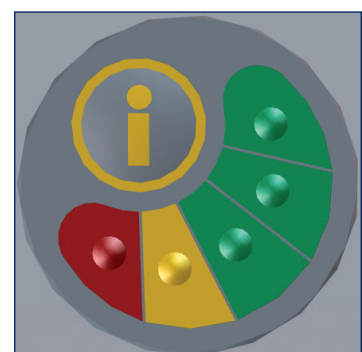
Connect the charger.
» Plug the charger connector into the charging port of the battery pack.



LED green = battery full
approx. 8 hours

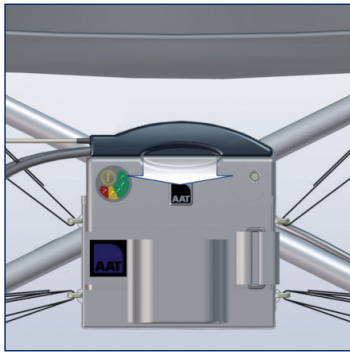


LED orange = battery is
charging

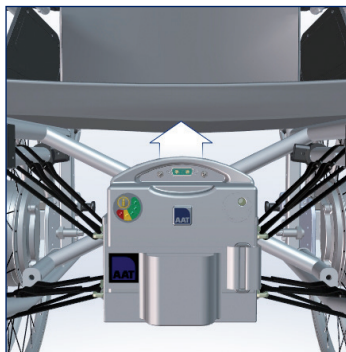


Check the capacity of the
battery pack (see chapter 5.2)

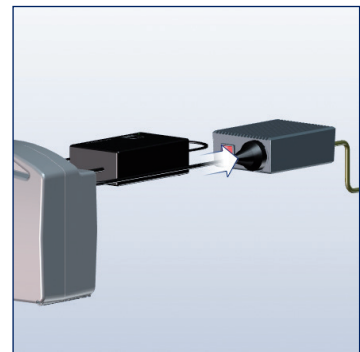
Charging the lithium ion battery pack in a motor vehicle



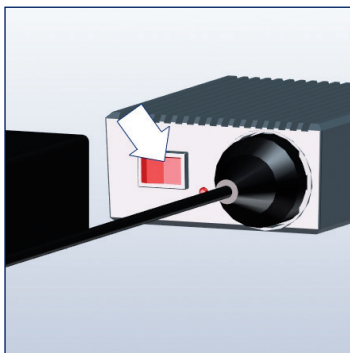
Unplug the interface.



Remove the battery pack.
» Open Velcro and remote battery pack.
» Connect charger to battery pack.



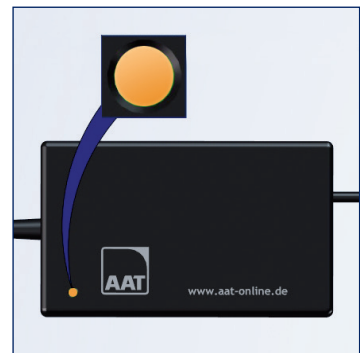
Connect voltage transformer and charger.



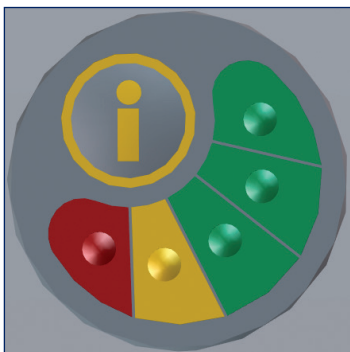
Switch on the voltage converter.
Warning tone = low voltage!



LED green = battery full
approx. 8 hours

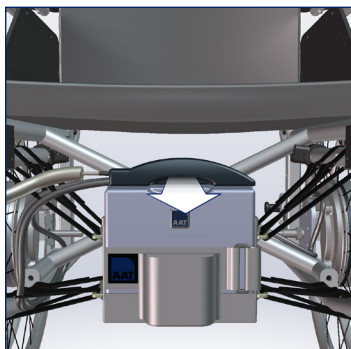


LED orange = battery is
charging.

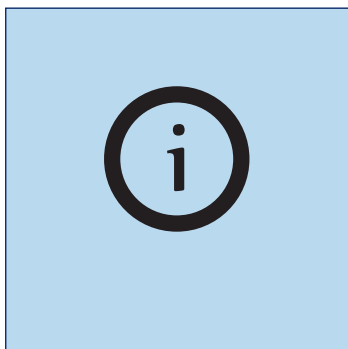


Check the capacity of the
battery pack (see chapter 5.2)

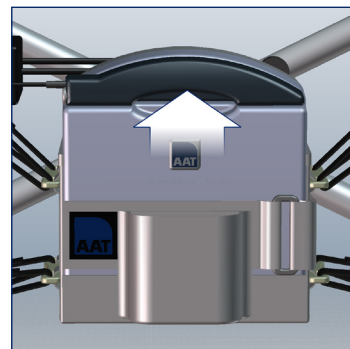
Charging the lead gel battery pack



If required, unplug the interface.



The battery pack can stay in the battery bag when being charged.



Connect the charger.
» Fully insert the charger connector into the battery pack jack.

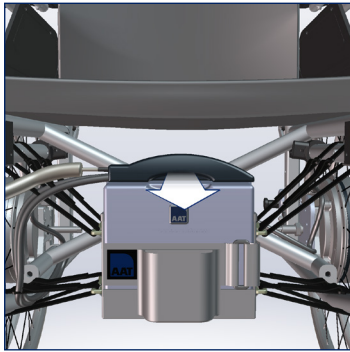


LED green = battery full
approx. 8 hours

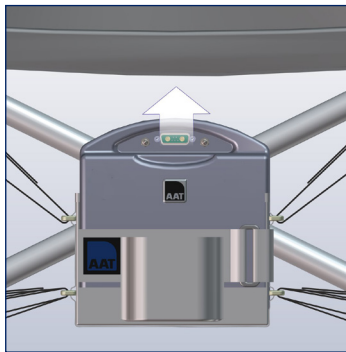


LED orange = battery is
charging

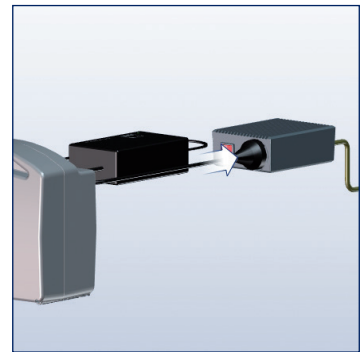
Charging the lead gel battery pack in a motor vehicle



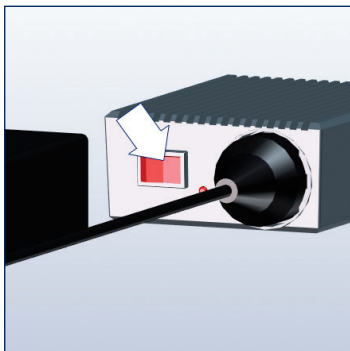
Unplug the interface.



Remove the battery pack.
» Open Velcro and remote battery pack.
» Connect charger to battery pack.



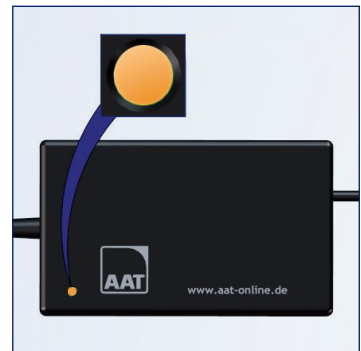
Connect voltage transformer and charger.



Switch on the voltage converter.
Warning tone = low voltage!



LED green = battery full
approx. 8 hours



LED orange = battery is charging.

Information on the charger

 Note - Observe the manufacturer's information in the charger's user manual!



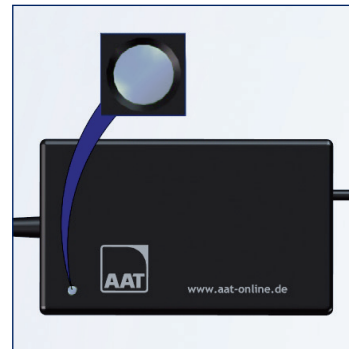
SOLO L charger

- » Lithium-ion battery pack
- » Battery capacity 16 Ah.



SOLO B charger

- » Lead gel battery pack
- » Battery capacity 9.5 Ah.
- » Incl. plug attachment



Possible error

LED does not light up.
Contact the manufacturer!

9.2 Cleaning and disinfection



WARNING – No moisture must be allowed to enter the interior of the device!
This may result in electric shocks! Use only damp cloths for cleaning the device's surface!
Never use wet cloths!



WARNING – Test all safety-relevant functions after cleaning!



WARNING – Do not smoke during cleaning!



NOTE - Keep the SOLO away from sources of ignition!



NOTE - Clean the drive wheels in the event of dirt/deposits!



NOTE - Clean the wheelchair according to the manufacturer's information!



NOTE - Do not use a high-pressure cleaner!



NOTE - Do not use substances containing alcohol!



NOTE - Do not use acidic substances such as orange cleaner!



NOTE - Do not use abrasive or aggressive agents
(if necessary, test on an inconspicuous area in advance)!

Clean the SOLO's surfaces with common household cleaning agents.

» Observe the manufacturer's information.

If you want to disinfect the SOLO, carry out a wipe disinfection.

Please only use disinfectants
» Observe the manufacturer's information.

Possible disinfectants:

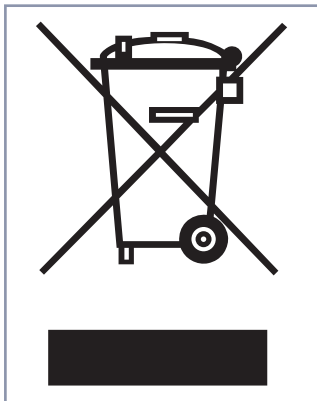
- Ecolab Oxy Wipe disinfectant wipes
- B15 disinfectant wipes or chemie
- Schülke mikrozid sensitive wipes
- Sagrotan disinfection cleaner

9.3 Disposal



DANGER – Before sending in your lithium-ion batteries (for repair, disposal, etc.), always notify your authorised dealer or manufacturer as there is an increased danger! Special dispatch conditions make special packaging necessary! Your authorised dealer will receive approved transport containers on request – dispatch may only take place via authorised dealers! (regulation only for the lithium-ion battery pack)

Your SOLO and its batteries are durable products. After expiry of the natural service life, you can return these components to AAT Alber Antriebstechnik GmbH or their specialist dealers for disposal.



SOLO and its batteries must not be disposed of in places that are not intended for this purpose (e.g. landfills) according to the current legislation in force in each respective country. Substances may be present that could prove to be harmful to the environment.

The product marked with a crossed wheeled bin cannot be disposed of with household waste (WEEE Directive). Inform yourself about the valid statutory provision in your country as the WEEE Directive is not applicable in all European countries.

9.4 Long-term storage

If SOLO is not used for an extended period of time (e.g. over several months), observe the following information:

- Observe the wheelchair manufacturer's information if the wheelchair is to be stored!
- No moisture must be allowed to enter the interior of the device!
- Store in dry rooms and avoid excessive air humidity. Cover with film, if necessary!
- Protect against permanent exposure to sunlight!
- Unauthorised persons, particularly children, should not have unsupervised access to the storage location of SOLO!
- Remove the battery back before placing in storage!
- Observe the safety instructions in chapter 9.1 for placing the battery pack in storage!

If the SOLO is to be put into operation again, clean the wheelchair and the product (chapter 9.2).

Check whether a technical safety test must be performed. (see chapter 9.5.)

If a technical safety test is not necessary, electrical function, anti-tip supports, brackets and, if necessary, the air pressure of the castors must be checked prior to start-up!

9.5 Technical safety testing

i NOTE – Technical safety tests may only be performed by the manufacturer, the AAT field staff or the authorised specialist shop.

i NOTE – It is recommended to perform a technical safety test every two years. The inspection plate provides information about the latest date. Tip: After a change in operator/reuse.



The test badge shows when the test is to be carried out at the latest!

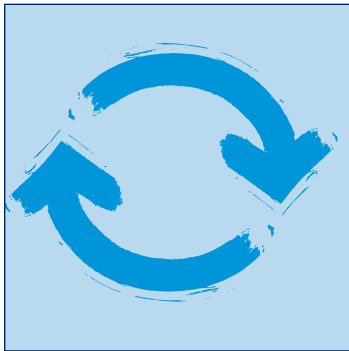
To ensure flawless device function, we recommend carrying out a safety check every 2 years. We also recommend the technical safety test before each reuse.

Training is required in order to be able to perform the technical safety testing. For more information, please visit: **www.aat-online.de** under Company / Training.

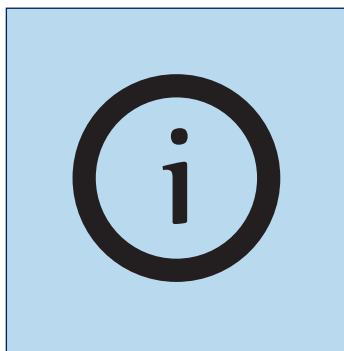
9.6 Reuse (change in operator)

The term reuse is used when the AAT product of patient X is to be used for another patient Y. In addition, there is a reuse when a patient receives a different wheelchair and therefore requires new add-on parts.

Please contact the manufacturer, the AAT field staff or the authorised specialist shop.



SOLO is suitable for reuse.



A technical safety test and cleaning/disinfection work should be performed prior to each reuse. (see chapters 9.5 and 9.2)

9.7 Corrective action/recall

If new important safety information regarding the handling of your product is available, we will inform you about this. As already stated at the beginning, you will always find the latest version of this user manual on our homepage.

Should any subsequent changes be made to the product or corrective action be taken, we will inform our authorised dealers in writing about all the affected serial numbers. If your product is affected by a recall, you will subsequently be informed about all further steps to be taken.

10 Warning notices, error messages and troubleshooting

10.1 Warning notices



Wheel lock

Both drive wheels

- » Wheel and both arrows flash!
- » Adapt the wheels correctly (see chapter 5.1)



Left drive wheel

- » Wheel and left arrow flash!
- » Adapt the wheel correctly (see chapter 5.1)



Right drive wheel

- » Wheel and right arrow flash!
- » Adapt the wheel correctly (see chapter 5.1)



Coupling disk

Both drive wheels

- » Hub and both arrows flash!
- » Engage the wheels correctly (see chapter 6.1)



Left drive wheel

- » Hub and left arrow flash!
- » Engage the right wheel correctly (see chapter 6.1)



Right drive wheel

- » Hub and right arrow flash!
- » Engage the right wheel correctly (see chapter 6.1)



Undervoltage

- » Battery flashes!
- » Charge the battery pack (see chapter 5.2)



Overvoltage

- » Battery flashes!
- » Reduce speed (see chapter 6.4)



Overloaded

- » Weight flashes – Signal tone!
- » Release the joystick and continue driving, taking into account the cause (remove or bypass obstacles if necessary).



Temperature battery pack

- » Battery flashes!
- » Stop driving with SOLO and let it cool down.



Temperature drive wheels

- » Wheel flashes!
- » Stop driving with SOLO and let it cool down.



Stand-up wheelchair function

- » Arrow flashes!
- » Change the wheelchair to normal/seated position.

10.2 Error messages

See chapter 6.3 Display indications – Error messages.

The display symbol indicates which component is affected by a fault (battery pack, drive wheels or operating unit)

Battery pack error

Code	Error message	Error resolution
01	No connection to the battery	Notify the manufacturer!
02	Cell errors	Notify the manufacturer!
03	I ² C error	Notify the manufacturer!
04	Parameter data	Set to flight mode, wait 10 seconds, set to driving mode! Does the error still exist? Yes: Notify the manufacturer!
05	Software expiration	Set to flight mode, wait 10 seconds, set to driving mode! Does the error still exist? Yes: Notify the manufacturer!
06	Wrong command	Set to flight mode, wait 10 seconds, set to driving mode! Does the error still exist? Yes: Notify the manufacturer!




Drive wheel error

Code	Error message	Error resolution
01	Brake	Notify the manufacturer!
02	Motor controller	Notify the manufacturer!
03	Electronics	Notify the manufacturer!
04	Parameter data	Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
05	Software expiration	Switch off SOLO, wait 10 seconds, switch on SOLO! Does the error still exist? Yes: Notify the manufacturer!
06	Wrong command	Switch off SOLO, wait 10 seconds, switch on SOLO! Does the error still exist? Yes: Notify the manufacturer!

Operating unit error

Code	Error message	Error resolution
01	Keyboard	Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
02	Joystick	Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
03	Serial number	Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
04	Parameter data	Switch off SOLO, wait 10 seconds, switch on SOLO! Does the error still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
05	Software expiration	Switch off SOLO, wait 10 seconds, switch on SOLO! Does the error still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
06	Wrong command	Switch off SOLO, wait 10 seconds, switch on SOLO! Does the error still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
07	No connection to stand-up wheelchair control	Notify the manufacturer, the AAT field staff and the authorised specialist dealer!

10.3 Troubleshooting

Problem	Testing and troubleshooting
SOLO cannot be switched on	Interface plugged in? No: Plug it in!
	Spiral cable plugged in? No: Plug it in!
	Battery pack empty? Yes: Charge it!
	Battery pack in driving mode? No: Set to driving mode!
	Does the problem still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
SOLO cannot be driven	Charger still plugged in? Yes: Unplug it!
	SOLO switched on? No: Switch it on!
	Immobiliser activated? Yes: Deactivate the immobiliser!
	Drive wheel locked? No: Lock it!
	Drive wheels engaged? No: Engage them!
	Does the problem still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
Unable to charge the battery pack	Is the charger connected? No: Connect properly!
	Does the problem still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
Impaired handling characteristics (e.g. increased rolling resistance)	Air pressure checked? No: Check and refill with air if necessary.
	Does the problem still exist? Yes: Notify the manufacturer, the AAT field staff and the authorised specialist dealer!
Damage to the wheelchair tyres	<p> WARNING – no persons may be seated in the wheelchair whilst a wheel is being replaced!</p> <p> NOTE – always replace tyres in pairs!</p> <p>1. The wheelchair must be on level and firm ground. Before disassembling a wheel, ensure that the chassis is supported to prevent it from tipping and secure the wheelchair to prevent it from tipping over or rolling away.</p> <p>2. Before repairing a tyre, open the compressed air valve to release any compressed air still in the tyre.</p> <p>Changing a tyre: The tyre should always be removed and raised using the correct tyre lever (bicycle accessory). Do not use a screwdriver or any other sharp object as a lever!</p> <p> NOTE – the air pressure for the tyres is displayed on both sides of the tyre.</p> <p>If you have any questions, contact the manufacturer, the AAT field team or the authorised specialist dealer!</p>

11 Guarantee and liability

Guarantee

AAT Alber Antriebstechnik GmbH assumes the guarantee for SOLO (except the battery pack) and all accessories, for a period of two years from the date of receipt, that these are free of material and processing defects.

AAT Alber Antriebstechnik GmbH assumes the guarantee for the lithium-ion battery pack, provided it is properly maintained, for a period of twelve months from the date of receipt. The guarantee period for the lead-gel battery pack is six months from the date of receipt.

The SOLO guarantee does not cover defects that are attributable to:

- damage as a result of excessive use.
- damage as a result of careless handling.
- violent damage.
- natural wear parts (driving wheels, wheelchair tyres).
- improper or inadequate maintenance by the customer.
- unauthorised structural alterations or improper use of SOLO or the accessories.
- use of SOLO beyond the total permissible weight.
- improper charging of the battery pack.

Liability

As the manufacturer of SOLO, AAT Alber Antriebstechnik GmbH is not responsible for any damages that may result if:

- SOLO was improperly handled.
- repairs, assembly or other work were performed by unauthorised personnel.
- SOLO was not used in accordance with the user manual.
- non-original AAT spare parts or accessories have been fitted or connected to the SOLO.
- parts of SOLO were dismantled.
- loads were applied to SOLO beyond the total permissible weight.
- SOLO was not serviced periodically (in a regular 2-year cycle) by the manufacturer, the AAT field staff or an authorised specialist dealer.
- SOLO was operated with inadequate battery charge.

[illegible]

[illegible]



Original EU-Konformitätserklärung

Hiermit erklären wir in alleiniger Verantwortung

AAT Alber Antriebstechnik GmbH

Ehestetter Weg 11

72458 Albstadt

SRN: DE-MF-000007581

dass die im folgenden benannten Radnabenantriebe für manuelle Rollstühle

ab Seriennummer: T1601220037

Risikoklasse: Klasse I (nach Anhang VIII, Regel 1 und 13)

Artikel-Nr. 335400

(Basis-UDI-DI) 4054959T1601PA

**Radnabenantrieb SOLO L
BLACK EDITION T1601**

Artikel-Nr. 335450

(Basis-UDI-DI) 4054959T1601PA

**Radnabenantrieb SOLO B
BLACK EDITION T1601**

den grundlegenden Sicherheits- und Leistungsanforderungen und anwendbaren Teilen folgender Verordnungen und Normen entspricht.

2017/745/EU (Medical Device Regulation)	ISO 7176-21; ISO 7176-14; EN 12184; EN 12182; EN ISO 10993-1 IEC 60335-2-29 + A1 & A2 in Verbindung mit IEC 60335-1
2011/65/EU (Restriction of Hazardous Substances)	EN IEC 63000

Die Produkte werden verordnungskonform mit  gekennzeichnet.

Diese Erklärung ist nur gültig für die Produkte mit den oben angegebenen Artikelnummern.

Diese Erklärung wird bei jeder signifikanten Änderung am Produkt, Produktfamilie, Normen und Gesetzen erneuert.

14.02.2022, Albstadt

Datum, Ort

Daniel Mohr
PRRC (MDR 2017/745 Art.15)



Original EU-Konformitätserklärung

Hiermit erklären wir in alleiniger Verantwortung

AAT Alber Antriebstechnik GmbH

Ehestetter Weg 11

72458 Albstadt

SRN: DE-MF-000007581

dass die im folgenden benannten Radnabenantriebe für manuelle Rollstühle

ab Seriennummer: T2001220007

(Basis-UDI-DI) 4054959T2001NK

Risikoklasse: Klasse I (nach Anhang VIII, Regel 1 und 13)

Artikel-Nr. 335350

**Radnabenantrieb SOLO+
BLACK EDITION T2001**

den grundlegenden Sicherheits- und Leistungsanforderungen und anwendbaren Teilen folgender Verordnungen und Normen entspricht.

2017/745/EU (Medical Device Regulation)	ISO 7176-21; ISO 7176-14; EN 12184; EN 12182; EN ISO 10993-1 IEC 60335-2-29 + A1 & A2 in Verbindung mit IEC 60335-1
2011/65/EU (Restriction of Hazardous Substances)	EN IEC 63000

Die Produkte werden verordnungskonform mit  gekennzeichnet.

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14.02.2022, Albstadt

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