INVACARE®

Yes, You Can.®

Invacare® **TDX SP**

Electric wheelchair
Operating manual

CE

How can you get in touch with Invacare®?

If you have any questions or need support, please contact your authorised Invacare® Dealer, who has the necessary know-how and equipment plus the special knowledge concerning your Invacare® product, and can offer you all-round satisfactory service. Should you wish to contact Invacare® directly, you can reach us in Europe at the following addresses and phone numbers.

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Table of Contents

1 Introduction

Dear user,

First we would like to thank you for purchasing our product! We hope that you will have a great deal of pleasure with your new power chair

This operating manual contains important information and notes about:

- **Safety**
- **Operation**
- **Care and maintenance.**

Please take care to read the operating manual thoroughly before starting out on your first journey.

This wheelchair has been constructed for a large circle of users with different requirements.

The decision whether the model is suitable for the user may only be taken by medical specialists with appropriate expertise.

Invacare® or their statutory representatives can accept no liability in cases in which the wheelchair has not been adapted to suit the users' handicaps.

Some maintenance and settings can be carried out by the user or his attendants. Certain adjustments do however require technical training and may only be carried out by your Invacare® specialist dealer. Damages and errors caused by nonobservance of the operating manual or as a result of incorrect maintenance are excluded from all guarantees.

1.1 Important symbols in this manual

WARNING!

This symbol warns you of danger!

- *Always follow these instructions to avoid injury to the user or damage to the product!*

EXPLOSION HAZARD!

This symbol warns you of an explosion hazard, an example of which can be caused by excessive tyre pressure in a pneumatic tyre!

- *Always follow the instructions to avoid injury to the user or damage to the product!*

BURN HAZARD!

This symbol warns you of burns due, for example, to leaking battery acid!

- *Always follow the instructions to avoid injury to the user or damage to the product!*

NOTE:
This symbol identifies general information which is intended to simplify working with your product and which refers to special functions.

Requirements:

- This symbol identifies a list of various tools, components and items which you will need in order to carry out certain work.

1.2 Important symbols found on the vehicle

This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE. This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

- *The 'crossed out wheelie bin' symbol is placed on this product to encourage you to recycle wherever possible.*
- *Please be environmentally responsible and recycle this product through your recycling facility at its end of life.*

1.3 Type classification and permissible use

This vehicle was designed for persons whose ability to walk is impaired, but who are still physically and mentally able to operate an electric vehicle. It has been classified according to EN 12184 as a **class B mobility product** (for indoor and outdoor areas). It is therefore compact and agile enough for indoor areas, but also able to overcome many obstacles in outdoor areas.

You can find exact information on speed, turning radius, range, safe climbing ability, maximum obstacle height and permissible operating conditions in chapter **"Technical Specifications"** on page **119**.

Please also pay attention to all safety information in chapter **"Safety Notes"** starting from page **16**.

The vehicle was successfully tested according to German and international standards as to its safety. It was also tested successfully according to EN60529 IPX4 as to its resistance to spray water, and is therefore well suited for typical middle European weather conditions. When equipped with an appropriate lighting system, the vehicle is suitable for use on public roads.

1.4 Guarantee

The terms and conditions of the guarantee are part of the general terms and conditions particular to the individual countries in which this product is sold.

1.5 Indications

The use of this mobility product is recommended for the following indications:

The inability or a greatly restricted ability to walk within the scope of the basic requirement to be able to move within one's own four walls. The need to leave the dwelling place in order to get some fresh air during a short walk or to reach those places generally to be found at close distance to the dwelling and where everyday business is carried out.

Provision of electric wheelchairs for interior and exterior areas is advisable if the use of hand-operated wheelchairs is no longer possible on account of the disability, yet proper operation of an electromotive drive unit is still practicable.

1.6 Life expectancy

We estimate a life expectancy of five years for this product, provided it is used in strict accordance with the intended use as set out in this document and all maintenance and service requirements are met. The estimated life expectancy can be exceeded if the product is carefully used and properly maintained, and provided technical and scientific advances do not result in technical limitations. The life expectancy can also be considerably reduced by extreme or incorrect usage. The fact that we estimate a life expectancy for this product does not constitute an additional warranty.

2 Safety Notes

- READ WELL BEFORE OPERATION!

2.1 General Safety Notes

Danger of injury if wheelchair is used in any other way than the purpose described in this manual!

- *Only ever use the wheelchair in accordance with the instructions in this User's Manual!*
- *Pay strict attention to the safety information!*

Danger of injury if the wheelchair is driven when ability to operate a vehicle is impaired by medication or alcohol!

- *Never drive the wheelchair under the influence of medication or alcohol! If necessary, the wheelchair must be operated by an attendant, who is physically and mentally able!*

Danger of damage or injury if wheelchair is accidentally set into motion!

- *Switch the wheelchair off before you get in, get out or handle unwieldy objects!*
- *When the drive is disengaged, the brake inside the drive is deactivated. For this reason, pushing the wheelchair by an attendant is only recommended on flat surfaces, never on gradients. Never leave your wheelchair on a gradient with its motors disengaged. Always re-engage the motors immediately after pushing the wheelchair.*

Danger of injury if the wheelchair is switched off while driving, for example by pressing the On/Off Button or disconnecting a cable, due to it coming to an abrupt, sharp stop!

- *If you have to brake in an emergency, simply release the joystick which will bring you to a halt!*

Danger of injury when transferring wheelchair to a vehicle for transport with the occupant seated in it!

- *It is always better to transfer the wheelchair to a vehicle without the occupant seated in it!*
- *In case the wheelchair does need to be transferred to a vehicle using a ramp with the occupant seated in it, always have an attendant stand behind the wheelchair during transfer to ensure it does not tip over backwards!*

Danger of injury if maximum permissible load is exceeded!

- *Do not exceed the maximum permissible load (see technical specifications)!*

Danger of injury due to wrong lifting or dropping of heavy components!

- *When maintaining, servicing or lifting any part of your wheelchair, take into account the weight of the individual components especially the batteries! Be sure at all times to adopt the correct lifting posture and ask for assistance if necessary!*

Danger of falling out of the wheelchair.

- *Do not slide forward on the seat, do not lean forward between your knees, do not lean backwards out over the top of the backrest, for example to reach an object.*
- *If a posture belt is installed, it should be correctly adjusted and used them each time you drive the wheelchair.*
- *When changing over to a new seat, position the wheelchair as close as possible to the new seat.*

Danger of injury by moving parts!

- *Make sure that no injury is incurred by moving parts of the wheelchair, like wheels or one of the Lifter Modules (if fitted), especially when children are around!*

Danger of fire or breaking down due to electric devices being connected!

- *Do not connect any electric devices to your wheelchair that are not expressly certified by Invacare® for this purpose! Have all electrical installations done by your authorised Invacare® Dealer!*

2.2 Safety information with regard to care and maintenance

Danger of accident and loss of guarantee if maintenance is insufficient!

- *For reasons of safety and in order to avoid accidents which result from unnoticed wear, it is important that this electric vehicle undergoes an inspection once every year under normal operating conditions (see inspection plan contained in service instructions)!*
- *Under difficult operating conditions such as daily travel on steep slopes, or in the case of use in medical care cases with frequently changing wheelchair users, it would be expedient to carry out intermediate checks on the brakes, accessories and running gear!*
- *If the vehicle is to be operated on public roads, the vehicle driver is responsible for ensuring that the vehicle is in an operationally reliable condition! Inadequate or neglected care and maintenance of the vehicle will result in a limitation of the manufacturer's liability!*

2.3 Safety Information on Electromagnetic Interference

This electric vehicle was successfully tested in accordance with International standards as to its compliance with Electromagnetic Interference (EMI) Regulations. However, electromagnetic fields, such as those generated by radio and television transmitters, and cellular phones, can influence the functions of electric vehicles. Also, the electronics used in our vehicles can generate a low level of electromagnetic interference, which however will remain within the tolerance permitted by law. For these reasons we ask you to please observe the following precautions:

WARNING: Danger of malfunction due to electromagnetic interference!

- *Do not switch on or operate portable transceivers or communication devices (such as radio transceivers or cellular phones) when the vehicle is switched on!*
- *Avoid getting near strong radio and television transmitters!*
- *In case the vehicle should be set in motion unintentionally or the brakes are released, switch it off immediately!*
- *Adding electrical accessories and other components or modifying the vehicle in any way can make it susceptible to electromagnetic interference. Keep in mind that there is no sure way to determine the effect such modifications will have on the overall immunity of the electronic system!*
- *Report all occurrences of unintentional movement of the vehicle, or release of the electric brakes to the manufacturer!*

2.4 Safety Information on Driving and Freewheel Mode

Danger of injury if the wheelchair tips over!

- *Only ever negotiate gradients up to the maximum safe slope (see chapter **"Technical Specifications"** starting on page **119**) and only with the backrest and seat tilt (if fitted) in an upright position!*
- *Only ever drive downhill at a maximum of 2/3 of the top speed! Avoid abrupt braking or accelerating on gradients!*
- *If at all possible, avoid driving on slippery surfaces (such as snow, gravel, ice etc.) where there is a danger of you losing control over the vehicle, especially on a gradient! If driving on such a surface is inevitable, then always drive slowly and with the utmost caution!*
- *Never attempt to overcome an obstacle when on an uphill or downhill gradient!*
- *Never attempt to drive up or down a flight of steps with your wheelchair!*
- *Always approach obstacles straight on! Ensure that the front wheels and rear wheels move over the obstacle in one stroke, do not stop halfway! Do not exceed the maximum obstacle height (see Technical Specifications)!*
- *Avoid shifting your centre of gravity as well as abrupt joystick movements and changes of direction when the wheelchair is in motion!*
- *Never use the wheelchair to transport more than one person!*
- *Do not exceed the overall maximum permissible load or the maximum load per axle (please see chapter **"Technical Specifications"** on page **119**.).*
- *Note that the wheelchair will brake or accelerate if you change the Driving Mode whilst the wheelchair is in motion!*

Danger of breaking down in adverse weather conditions, i.e. extreme cold, in an isolated area!

- *If you are a user with severely limited mobility, we advise that in the case of adverse weather conditions DO NOT attempt a journey without an accompanying attendant!*

Danger of injury if your foot slides off the footrest and gets caught underneath the wheelchair when it is in motion!

- *Make sure each time before you drive the wheelchair that your feet are squarely and securely in place on the footplates, and that both legrests are properly locked into place!*

Danger of injury if you collide with an obstacle when driving through narrow passages such as doorways and entrances!

- *Drive through narrow passages in the lowest Driving Mode and with due caution!*

If your electric wheelchair has been fitted with angle-adjustable legrests, there is a danger of personal injury and damage to the wheelchair if you drive the wheelchair with the legrests raised!

- *To avoid unwanted displacement of the wheelchair centre of gravity to the front (especially when travelling downhill) and in order to avoid damage to the wheelchair, angle-adjustable legrests should always be lowered during normal travelling.*

Information on models with electric seat angle adjuster

If your wheelchair is fitted with an electric seat angle adjuster, it is also fitted with a safety mechanism which automatically switches the drive off as soon as the seat area angle exceeds around 20°. This can be triggered by adjustment of the seat angle, by travelling up an incline, or a combination of both factors. To reactivate the drive, please readjust the seat angle to bring it into an almost vertical position.

2.5 Safety information on maintenance work and alterations to the wheelchair

WARNING: Danger of injuries and damage to the wheelchair, in case the suspension is adjusted without the immobilisation mechanism of the front anti-tippers being re-adjusted!

- *When the hardness of the suspension is adjusted, the immobilisation mechanism of the front anti-tippers must without fail be checked and, if necessary, also re-adjusted!*

3 Key features

1) Push handle

2) Armrest

3) Lever for disengaging a motor (only visible on right-hand side of picture)

4) Drive wheel

5) Remote

6) Legrests

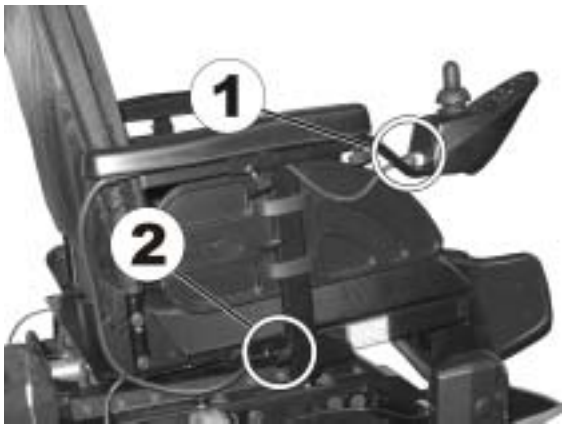
4 Getting in and out of the wheelchair

Important information when side transferring in and out of the wheelchair
In order to side transfer it is necessary for the armrest to either be raised or removed completely depending on the model. A skirtguard can be installed as an option in connection with the parallel sliding armrest. This is attached in the same way as the standard armrest and must also be removed when transferring.

4.1 Remove the standard armrest in order to side transfer

Removing the armrest:

- Loosen remote cable (1) from remote.
- Loosen clamping lever (2)
- Remove the side panel from the receptacle



4.2 Raise the parallel sliding armrest / remove the skirtguard (optional)

Swivelling the armrest up

- Swivel the armrest up to access from the side.

Removing the skirtguard (optional) to get on:

- Release wing nut (1) .
- Remove the skirtguard from the receptacle.

Getting into the wheelchair:

- Position your wheelchair as close as possible to your seat. This might have to be done by an attendant.
- Switch your wheelchair off.
- Apply the hand brake of your wheelchair (if existing).
- Detach the side part of your wheelchair or swivel it up.
- Now slide into the wheelchair.

Getting out of the wheelchair:

- Drive your wheelchair as close as possible to your seat.
- Switch your wheelchair off.
- Apply the hand brake of your wheelchair (if existing).
- Detach the side part of your wheelchair or swivel it up.
- Now slide onto your new seat.

NOTE:
If you do not have sufficient muscle strength, you should ask other persons for help. Use a sliding board, if possible.

5 Driving

5.1 Before driving for the first time...

Before you take your first trip, you should familiarise yourself well with the operation of the vehicle and with all operating elements. Take your time to test all functions and driving modes.

NOTE:
If installed, make sure to properly adjust and use the posture belt each time you use the wheelchair.

Sitting Comfortably = Driving Safely

Before each trip, make sure that:

- **You are within easy reach of all operating controls.**
- **The battery charge is sufficient for the distance intended to be covered.**
- **The posture belt (if installed) is in perfect order.**

5.2 Parking and stationary

When parking your vehicle or if your vehicle is stationary for a prolonged period:

- Switch the vehicle's power system off (ON-/OFF key).
- Activate your anti-theft lock, if existing.

5.3 Taking Obstacles

5.3.1 The ”SureStep“ System

This electric wheelchair is fitted with "SureStep" technology. When climbing over obstacles, the front steering wheels are raised using the torque generated by the drive wheels.

5.3.2 Maximum obstacle height

You can find information about maximum obstacle heights in the chapter entitled **"Technical Specifications"** from page **119**.

5.3.3 Safety information when ascending obstacles

CAUTION: Danger of Tipping Over!

- *Never approach obstacles at an angle!*
- *Put your backrest into an upright position before climbing an obstacle!*

CAUTION: The wheelchair can be damaged if an obstacle is approached at excessive speed.

- *Always approach obstacles at low speed! As soon as the front wheels come into contact with the obstacle, stop for a short period before driving over the obstacle! Wheelchairs fitted with centre drive have a special mechanism (Walking Beam) for overcoming obstacles. Approaching at speed can actually lead to mechanical damage.*

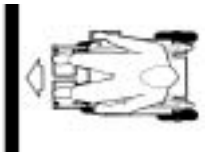
5.3.4 The correct way to overcome obstacles

Ascending and descending

The same approach applies to both ascending and descending obstacles:

- Approach the obstacle or the kerb slowly and at a right angle.
- Stop shortly before the front wheels come into contact with the obstacle.
- Check the position of the front wheels. They must be in driving direction and vertical to the obstacle!
- Approach slowly and keep at a consistent speed until the rear wheels have also passed over the obstacle.

Right



Wrong

5.4 Driving up and down gradients

For information concerning the maximum safe slope, please see chapter **"Technical Specifications"** starting on page **119**.

WARNING: Danger of tipping over!

- *Only ever drive downhill at a maximum of 2/3 of the top speed! Avoid sudden changes of direction or abrupt braking when driving on slopes!*
- *Always return the backrest of your seat or the seat tilt (if adjustable seat tilt is available) to an upright position before ascending slopes! We recommend that you position the seat backrest or the seat tilt slightly to the rear before descending slopes!*
- *If the lifter (if installed) is raised drive mode is only used for positioning and not for regular drive operation! Lower the lifter before ascending a slope!*
- *Never attempt to ascend or descend a slope on slippery surfaces or where there is a danger of skidding (such as wet pavement, ice etc)!*
- *Avoid trying to get out of the vehicle on an incline or a gradient!*
- *Always drive straight in the direction the road or path you are on goes, rather than attempting to zigzag!*
- *Never attempt to turn around on an incline or a slope!*

Braking distance is much longer on a downhill slope than on even terrain!

- *Never drive down a slope that exceeds the maximum tilt-resistant climbing ability!*

6 Pushing the wheelchair by hand

The motors of the wheelchair are equipped with automatic brakes, preventing that the wheelchair starts rolling out of control when the joystick box is switched off. When pushing the wheelchair, the magnetic brakes must be disengaged.

6.1 Disengaging motors

Danger of the vehicle running away!

- *When the motors are disengaged (for push operation), the electromagnetic motor brakes are deactivated! When the vehicle is parked, the levers for engaging and disengaging the motors must without fail be locked firmly into the "DRIVE" position (electromagnetic motor brakes activated)!*

The lever for disengaging the motors is located behind the motors.

Disengaging motors:

- Switch off remote.
- Push the engaging lever down (1). The motors are now disengaged.

Re-engaging motors

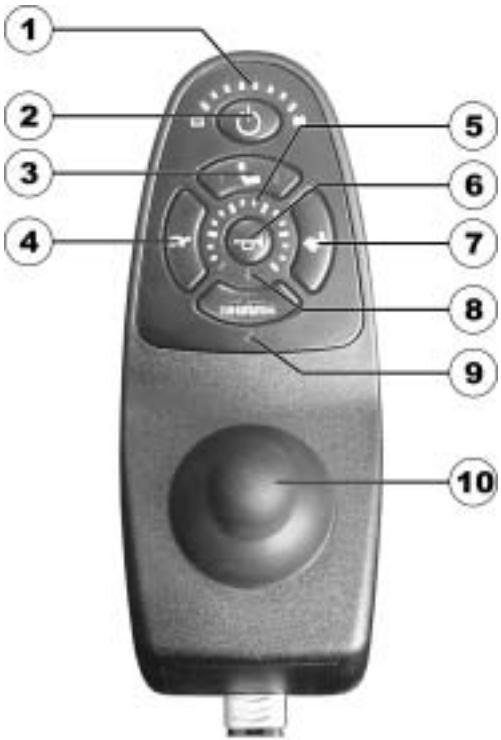
- Pull the engaging lever (1) upwards. The motors are now re-engaged.

7 The Shark II Remote

7.1 Assembly of the remote

Top side (standard)

1) Battery charging display
2) ON/OFF button
3) Activate / connect through / deactivate adjusting mode
4) Reduce travel speed
5) Travel speed display
6) Horn
7) Increase travel speed
8) LED for “control unit activated for accompanying person“
9) Status display
10) Joystick



Top side (including light option)

11) Warning indicator
12) Left hand indicator
13) Light
14) Right hand indicator
15) LED for “light activated“

Lower side

1) Combined charging socket / programming socket

7.2 Battery charging display

- All diodes illuminated: **full range!**
- Only the yellow and red diodes are illuminated:
  Reduced range! Charge batteries before a longer trip!
- Only the red diodes are illuminated:
  Very low range! Charge batteries as soon as possible!
- Only one red diode flashing:
  Battery on reserve = Charge batteries immediately!

Battery charging display

INFORMATION
Protection against total discharge: after a certain journey time with the battery on reserve the electronic system will automatically shut down actuation and the wheelchair will come to a stop. Total discharge reduces the service life of the batteries considerably.

PLEASE NOTE: Danger of battery destruction! After a certain journey time with the battery on reserve the electronic system will automatically shut down actuation and the wheelchair will come to a stop. By waiting a few minutes the batteries can 'recover' to such a degree that the electronic system can be switched on again. Short continuation of the journey is possible until the wheelchair comes to a stop again. If this procedure is repeated several times the batteries will be destroyed!

- *Please always ensure that the batteries are charged sufficiently for the planned journey.*
- *If possible, do not drive until the batteries are empty.*

7.3 Adjusting speed

The user can adjust the chair's top speed to suit their preferences and environment. The currently selected top speed is shown on the Speedometer and can be adjusted using the "Increase Speed" (2) and "Reduce Speed" (1) buttons.

7.4 Using the speedometer

Each of the speedometer's 6 large LEDs typically represent 0%, 20%, 40%, 60%, 80% and 100% of the chair's maximum speed.

The Speedometer is used to gauge the relative speed of the chair in comparison to the maximum speed possible. The right-most LED indicates current maximum speed, which can be adjusted using the Increase (Decrease) Speed button.

If the bottom, left-most GREEN LED is flashing SHARK is in SPEED LIMIT mode, which limits the drive speed to a pre-programmed value, typically when a seat is raised or tilted and driving too fast may be dangerous.

7.5 “5 Speed” and “VSP” modes

Shark II supports 2 modes of top speed adjustment – “5 Speed” and “VSP” modes.

In the “5 Speed” mode pressing the Increase Speed and Decrease Speed buttons steps between one of the 5 top speeds 20% to 100%.

In the “VSP” mode a quick single press of the Increase Speed and Decrease Speed buttons also steps between one of the 5 speeds 20% to 100%. However, pressing and holding the Increase Speed (Decrease Speed) Button ramps the top Speed up (down) in fine steps, allowing practically any top speed to be selected. This can be particularly useful for matching the chair speed to the walking speed of an accompanying pedestrian.

VSP is an extremely powerful feature, allowing both fast stepping between fixed top speeds by using quick presses or finer control using long presses. The VSP feature can be enabled or disabled. Users can toggle between the “VSP” and “5 Speed” Modes by holding down both the Increase Speed and Decrease Speed Buttons for approximately 2 seconds while the unit is powered up. The control unit will beep when the mode has been changed.

7.6 Status display

The status display serves to display error messages. For error codes see chapter "**Error Codes and Diagnostic Codes**" on page **46**.

7.7 Activate/de-activate the immobiliser

Activate the immobiliser

- Whilst the remote is switched on, press and hold the ON/OFF button (1) for 4 seconds. The remote will switch off immediately. After 4 seconds the battery charging display will illuminate briefly and the horn will be heard twice. The immobiliser is activated.

Activate

De-activate the immobiliser

- Whilst the immobiliser is activated, switch on the remote using the ON/OFF button (1). The diodes of the battery charging display will illuminate briefly once from left to right. A slow countdown will then be displayed from right to left.
- Press the horn button (2) twice before the countdown is completed. You have about 10 seconds to do this. The immobiliser is de-activated.

Deactivate

7.8 Using the remote to control the wheelchair

- Switch on the remote (ON/OFF button). The displays on the remote will illuminate. The wheelchair is ready to start.
- Set the travel speed (buttons for adjusting travel speed - see section on **"Assembly of the remote"** on page **34**).

Can the electronic system programming be adapted?
The electronic controller is programmed with standard values during manufacture. Your Invacare® dealer can carry out programming tailored to fit your requirements.

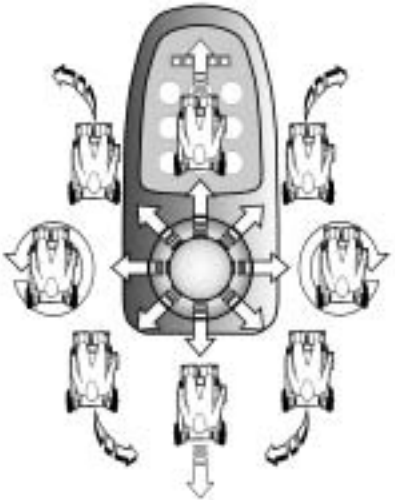
WARNING: Any alteration to the drive programme can influence vehicle handling and the tipping stability of the electric vehicle!

- *Alterations to the drive programme may only be carried out by trained Invacare® dealers!*
- *Invacare® supplies all electric vehicles from the factory with a standard drive programme. Invacare® can only assume a warranty for the safe vehicle handling of the electric vehicle – in particular tipping stability - for this standard drive programme!*

Will the wheelchair not drive after switching on?
Check the drive-away lock (see chapter **"Activate/de-activate the immobiliser "** on page **39**) and the status bar indicator (see chapter **"Battery charging display"** on page **36**.).

7.8.1 How a wheelchair with "Indirect Steering" reacts to joystick movements.

"Indirect Steering" occurs by individually applying power to the drive wheels, and is found on wheelchairs with front, rear and middle wheel drive.



Travel direction

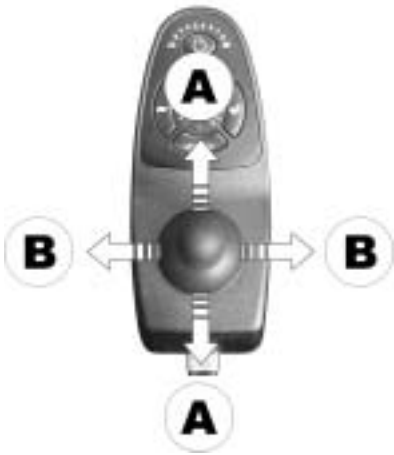
The further the joystick is moved in a particular direction, the more dynamically the wheelchair reacts.

Note:
To brake quickly, simply let go of the joystick. It will then automatically return to the middle position. The wheelchair will brake.

7.8.2 Operating the electric adjustment options

Electric adjustment options are operated using the joystick.

- Press the adjustment mode button once in order to activate the first adjustment option. Press the adjustment mode button twice in order to activate the second adjustment option.
- Move the joystick to the left or right = change adjustment option (B).
- Move the joystick forward or backward = operate selected adjustment option (A). How far the joystick is moved in any direction determines the motion speed of the actuator.
- Press the adjustment mode button in order to return to drive mode.



7.9 Control unit for an accompanying person (option)

The control unit for an accompanying person enables the control of the wheelchair to be handled by an accompanying person.

7.9.1 Layout of the remote

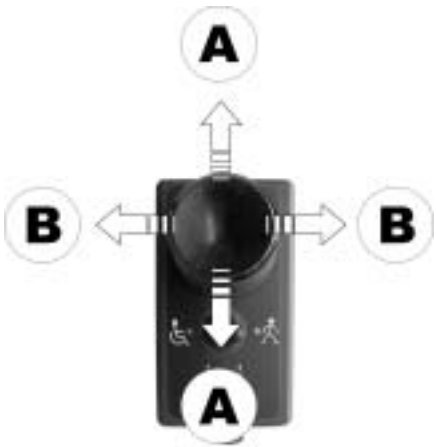
1) Joystick
2) Change over control unit to accompanying person/occupant
3) Activate/connect through/deactive adjustment mode
4) Set travel speed

7.9.2 Operating the electric adjustment options

Electric adjustment options are operated by means of the joystick.

The control unit must be switched over to ’accompanying person’ for the adjustment options to be operated via the control unit for the accompanying person.

- Press the adjustment mode button. Adjustment mode is activated.
- Move the joystick forward or backward = Operate adjustment option (A).
- Move the joystick to the left or right = Change adjustment option (B).
- Press the adjustment mode button again to return to drive mode.



7.10 Error diagnosis

If the electronic system shows a failure, please use the following guide to locate the fault.

NOTE:
Ensure that the drive electronics system is switched on before starting any diagnosis.

If the status display is OFF:
Check whether the drive electronics system is SWITCHED ON.
Check whether all cables are correctly connected.
Ensure that the batteries are not discharged.

If the battery charge display diodes are FLASHING:
Count the number of flashes and then proceed to the next section.

7.11 Error Codes and Diagnostic Codes

FLASH CODE	FAULT	EFFECT	Comments
1	User error or drive motors overloaded	Stops driving	• Ensure that the joystick is in the neutral central position (simply release the joystick) and switch on again. • Drive motors overloaded. Shut electronics down and then switch on again. If the driving power is still reduced, wait a few minutes.
2	Battery error	Stops driving	• Check battery and supply cable. • Charge batteries. If you switch the wheelchair off for a few minutes, the batteries can often recharge to such an extent that a short run is still possible. However, you should only do this in an emergency, as this causes the batteries to discharge excessively. • Replace batteries
3	Fault on left-hand motor (M2)	Stops driving	• Check motor cable and connecting plugs. • Check motor.
4	Fault on right-hand motor (M1)	Stops driving	• Check motor cable and connecting plugs. • Check motor.
5	Error on left-hand (M2) wheel lock	Stops driving	• Check cable and connecting plugs. • Check brake.
6	Error on right-hand (M1) wheel lock	Stops driving	• Check cable and connecting plugs. • Check brake.

FLASH CODE	FAULT	EFFECT	Comments
7	Error in Shark remote	Stops driving	• Check remote bus cable and all connecting plugs. • Replace remote.
8	Error in Shark power module	Stops driving	• Check all cables and connecting plugs in the Shark system. • Replace power module
9	Communication error in Shark system	Stops driving	• Check all cables and connecting plugs in the Shark system. • Replace remote.
10	Unknown error	Varying	• Check all cables and connecting plugs. • Talk to your dealer.
11	Incompatible remote	Stops driving	• The wrong remote type is connected. Ensure that the power module type code matches the remote type code.

8 Adjusting the wheelchair to the user's seating posture

WARNING: Danger of damage to the wheelchair and of accidents! With some combinations of adjustment options, collisions can occur between the legrest and the chassis or between the foot plates and the ground!This occurs in particular on wheelchairs with a lifter!

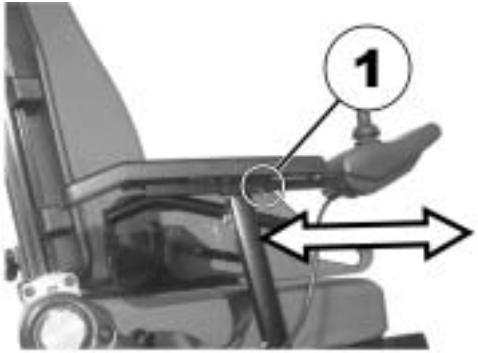
- *When adjusting seat angle, lifter and legrest please ensure that the legrest does not collide with the wheelchair chassis or the foot plates with the ground!*

8.1 Adjusting the armrests and the joystick box

8.1.1 Adapting the remote to the length of the user's arm

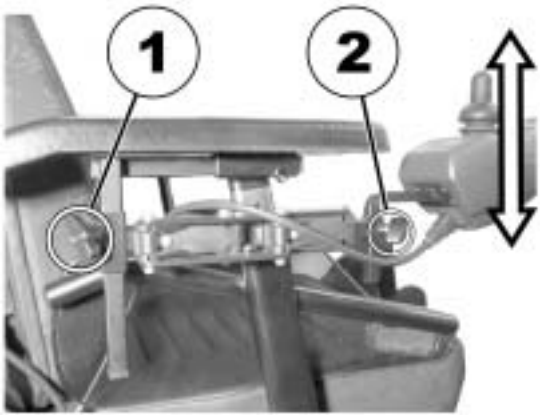
Requirements:
- Allen key 3 mm

- Loosen the socket head screw (1).
- Set remote to the desired length by pushing forward or backward.
- Tighten screw.



8.1.2 Setting the height of the remote

- Loosen one or both of the wing screws (1 and 2) that allow height adjustment of the joystick box.
- Adjust the joystick box to the desired height.
- Re-tighten the screw(s).



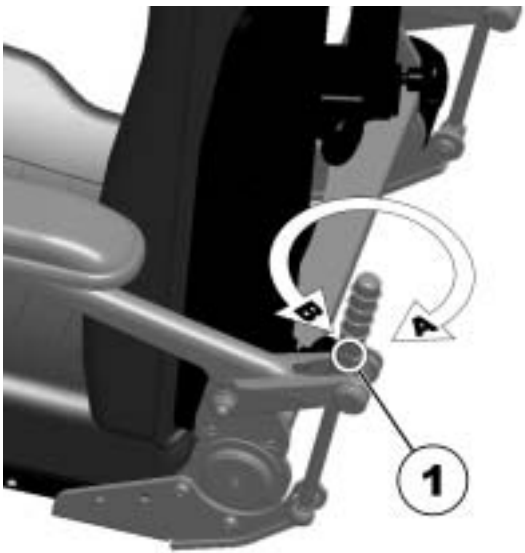
8.1.3 Setting the height of the armrests

- Loosen the bolt (1).
- Set the armrest at the desired height.
- Retighten the bolt.

8.1.4 Setting the height of the parallel sliding armrests

Requirements:
- Allen key 2 mm

- Loosen the screws (1) with the 2 mm Allen key on both sides of the spindle.
- Turn the spindle clockwise (A). The armrest is raised.
- Turn the spindle anticlockwise (B). The armrest is lowered.
- Retighten the wing nuts.

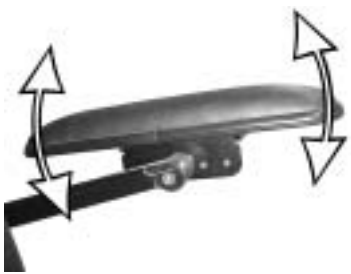


8.1.5 Adjusting the angle of the armpad on the parallel sliding armrests

Requirements:
- Allen key 4 mm
- Open-end spanner 10 mm

- Loosen the screw (1, on the inner side of the armrest), which allows adjustment of the angle of the armpad, while countering the nut (2, outer side of the armrest) with the open-end spanner, if necessary.

- Adjust the angle of the armpad.
- Re-tighten the screw (1), while countering the nut (2).



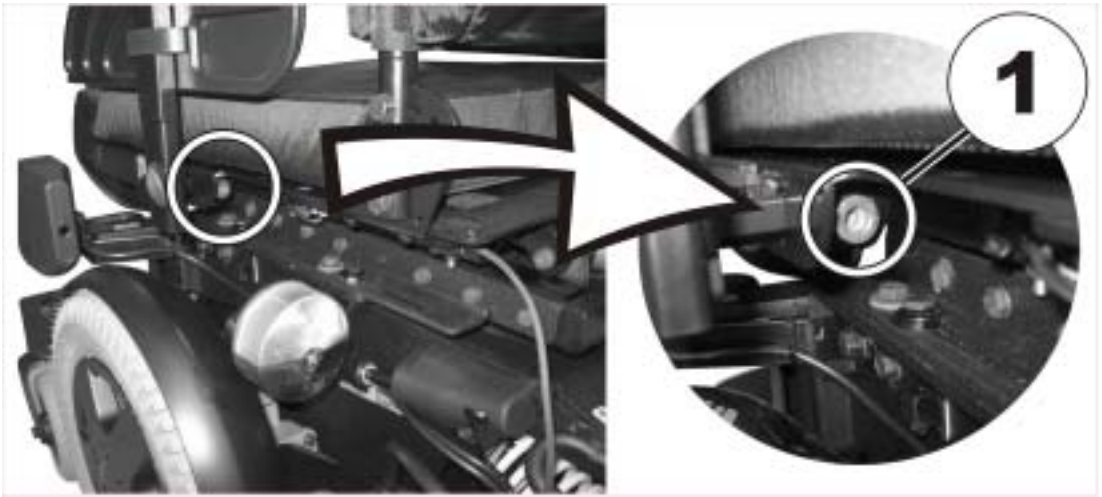
8.1.6 Setting the width of the side sections

The distance between the side sections can be adjusted by 5.5 cm on both sides (11 cm in total).

Requirements:
- Allen key 8 mm

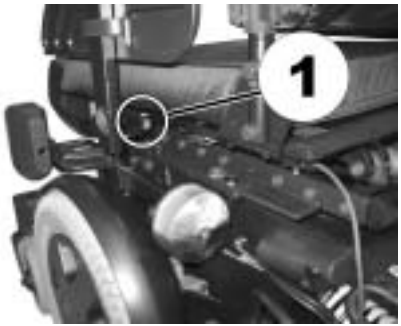
Where to find the adjustment screws

The figure below shows the position of the screws (1) which allow armrest width adjustment (only the left side is shown in the illustration).



Doing the adjustment

- Loosen screw (1)
- Adjust armrest to required position.
- Retighten the screw.
- Repeat this procedure for the second armrest.



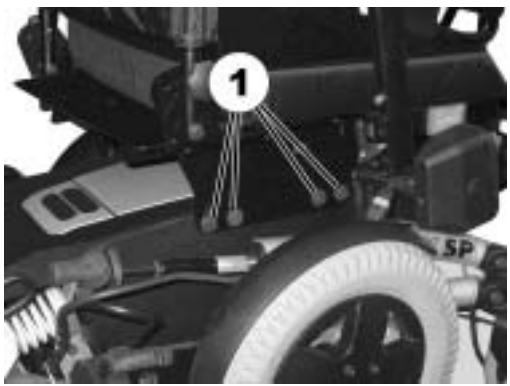
8.2 Manually adjusting the seat tilt

The seat angle is adjusted using two perforated plates which are located right and left under the seat frames.

Requirements:
- 1x jaw spanner 1/2 inch

The figure to the right shows the position of the bolts (1) for manual seat angle adjustment.

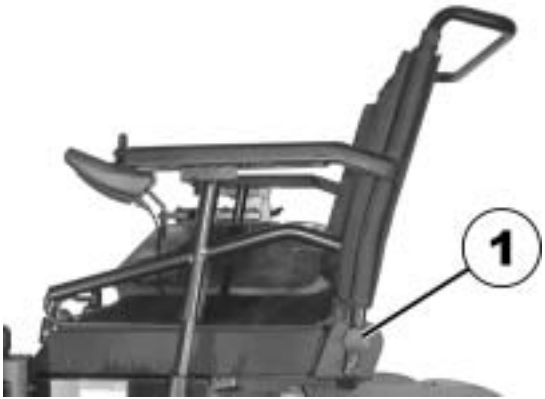
- Loosen all bolts on both sides.
- Set the required angle.
- Retighten the bolts.



8.3 Manually adjusting the backrest

8.3.1 Adjusting backrest using perforated plate

- Unscrew the hand screws (1) on both sides.
- The backrest is adjusted by choosing a combination of one of the two bore holes in the backrest frame and one of the six bore holes in the fixing plate.
- Re-position the screws and tighten.



8.3.2 Flex and Contour Seats

- Set the angle by turning the hand wheel (1).

9 Adjusting footrests and legrests

9.1 Centre-mounted legrests

9.1.1 Electric legrest

The electric legrest is operated via the remote. Please see chapter **"Operating the electric adjustment options"** on page **42**.

The electric legrest can be lowered completely to assist getting out of the wheelchair. To do so, move your seat into the correct position by lowering the lifter or by means of a negative seat angle (tilted slightly to the front).

9.1.1.1 Lowering the electric legrest completely to assist getting out of the wheelchair

Warning! Misuse may destroy the legrest.

- *Please read and carefully follow the instructions below.*

Getting in/out of the wheelchair

- Set the lifter and tilt to a comfortable position.
- Put your feet on the footplate and pull the lever (1). The footplates will move smoothly down to the floor.
- Now you can get in/out of the wheelchair.

Lifting up the footplates

- You are sitting in the wheelchair.
- Put your feet beside the footplates.

- Pull the lever (1). The footplates rise up automatically.
- Let go the lever (1) and put your feet on the footplates.

Warning! Danger of damage to the legrest!

- *Always make sure that the footplates are fully raised to the uppermost position before adjusting the angle of the legrest!*
- *Disregarding this advice will cause damage to your legrest.*

Adjusting the legrest

- Now you can adjust the angle of the legrest.

9.1.2 Adjustable legrest

9.1.2.1 Adjusting the angle

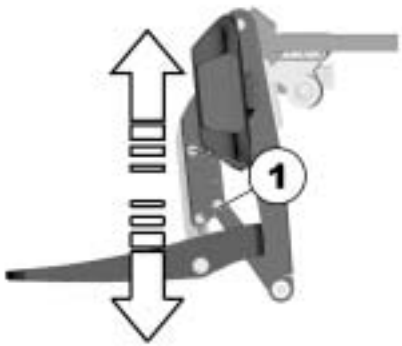
Prerequisites:
- 1x 10 mm open-ended spanner

- Use the open-ended spanner to loosen the counternut (1).
- Move the legrest to the desired position by turning the spindle (2).
- Tighten the counternut.

9.1.2.2 Adjusting the length of the legrest

Prerequisites:
- 1x 5 mm socket head spanner

- Use the socket head spanner to loosen the fastening screws (1).
- Slide the foot support to the desired height.
- Tighten the fastening screws.



9.1.2.3 Adjusting the calf plate to the calf width of the user

The calf plate of the legrest can be adapted to the user's calf width by bending apart or together.

- Bending the calf plate to the desired width.

9.1.2.4 Adjusting the angle of the foot plate

Prerequisites:
- 1x 5 mm socket head spanner

- Fold up the foot plates in order to access the adjusting screws.
- Use the socket head spanner to adjust the adjusting screws (1).
- Fold the foot plate down again.

9.2 Laterally mounted legrests

9.2.1 Standard footrest with pre-set angle

9.2.1.1 Swivelling the footrest outward and/or removing

The small unlocking button is located on the upper section of the footrest. When the footrest is unlocked, it can be swivelled inward or outward when getting into the wheelchair as well as being removed completely.

- Press the unlocking button (1) and swivel the footrest outward.
- Remove the footrest in an upward direction.

9.2.1.2 Setting the angle

PLEASE NOTE: Danger of injury due to incorrect adjustment of the footrests and legrests.

- *Before and during every journey it is imperative to ensure that there is an adequate distance between the legrests and the steering wheels or the ground!*

Pre-requisites:

- 1x 6 mm Allen key

- Loosen the screw (1) using the Allen key.
- If the footrest cannot be moved after loosening the screw, position a metal pin in the designated borehole (2) and use a hammer to knock on this lightly. The clamping mechanism in the interior of the footrest will be released by this. Repeat the procedure from the other side of the footrest if necessary.

- Loosen the screw (1) using the Allen key.
- Set the desired angle.
- Re-tighten the screw.

9.2.1.3 Setting the end stop of the footrest

Pre-requisites:

- 1x 6 mm Allen key
- 1x 10 mm open-ended spanner

The end position of the footrest is determined by means of a rubber stop (1).

The rubber stop can be screwed in or out (A) or pushed up or down (B).

- Use the Allen key to loosen the screw (1) and swivel the footrest upward in order to access the rubber stop.

- Use the open-ended spanner to loosen the counternut (1).

- Move the rubber stop to the desired position
- Re-tighten the counternut

- Move the footrest to the desired position.
- Re-tighten the screw.

9.2.1.4 Adjusting the length of the footrest

PLEASE NOTE: Danger of injury due to incorrect adjustment of the footrests and legrests.

- *Before and during every journey it is imperative to ensure that there is an adequate distance between the legrests and the steering wheels or the ground!*

Pre-requisites:

- 1x 5 mm Allen key

- Use the spanner to loosen the screw (1).
- Adjust to the desired length.
- Re-tighten the screw.

9.2.2 Manually height adjustable legrest 90° - 0°

9.2.2.1 Swivelling the legrest outward and/or removing

The small unlocking button is located on the upper section of the legrest. When the legrest is unlocked, it can be swivelled inward or outward when getting into wheelchair as well as being removed completely.

- Press the unlocking button (1) and swivel the legrest outward.
- Remove the legrest in an upward direction.

9.2.2.2 Setting the angle

PLEASE NOTE: Danger of injury due to incorrect adjustment of the footrests and legrests.

- *Before and during every journey it is imperative to ensure that there is an adequate distance between the legrests and the steering wheels or the ground!*

- Disengage the release handle (1).
- Adjust to the desired angle.
- Re-tighten the release handle.

9.2.2.3 Setting the end stop of the legrest

Pre-requisites:
- 1x 10 mm open-ended spanner

The end position of the legrest is determined by means of a rubber stop (A).

The rubber stop can be screwed in or out (A) or pushed up or down (B).

- Disengage the release handle (1) and swivel the legrest upward in order to access the rubber stop.

- Use the open-ended spanner to loosen the counternut (1).

- Move the rubber stop to the desired position
- Re-tighten the counternut

- Move the footrest to the desired position.
- Re-tighten the release handle.

9.2.2.4 Adjusting the length of the legrest

PLEASE NOTE: Danger of injury due to incorrect adjustment of the footrests and legrests.

- *Before and during every journey it is imperative to ensure that there is an adequate distance between the legrests and the steering wheels or the ground!*

Pre-requisites:

- 1x 6 mm Allen key

- Use the spanner to loosen the screw (1).
- Adjust to the desired length.
- Re-tighten the screw.

9.2.2.5 Adjusting the depth of the calf plate

The depth of the calf plate can be adjusted via the holding plate. The holding plate hole combinations allow 5 different depth settings.

Pre-requisites:
- 1x 10 mm open-ended spanner

- Use the open-ended wrench to loosen the nut (1) and remove.
- Adjust to the desired depth. Please observe that the round holes are intended for the calf plate retaining screw and the oblong holes for the aglet without thread.
- Screw the nut back on and tighten.

9.2.2.6 Adjusting the height of the calf plate

Pre-requisites:
- 1x 4 mm Allen key

- Use the Allen key to loosen the screws (1).
- Adjust to the desired position.
- Re-tighten the screws.

9.2.2.7 Unlocking and swivelling the calf plate backward when alighting

- Press the calf plate straight down.

- Unlock the legrest and swivel outward. The calf plate swivels backward on its own.

- Lift leg over the heel strap and place on the ground.

9.2.2.8 Adjusting the angle adjustable foot plate

Pre-requisites:
- 1x 5 mm Allen key

- Use the Allen key to loosen both set screws on the foot plate.
- Adjust to the desired angle.
- Re-tighten the screws.

9.2.2.9 Adjusting the angle and depth adjustable foot plate

Pre-requisites:
- 1x 5 mm Allen key

- Use the Allen key to loosen the set screw on the foot plate (1).
- Adjust the foot plate to the desired angle or depth.
- Re-tighten the screw.

9.2.3 Manually height adjustable legrest 80° - 0° with ergonomic length adjustment

9.2.3.1 Swivelling the legrest outward and/or removing

The small unlocking button is located on the upper section of the legrest. When the legrest is unlocked, it can be swivelled inward or outward when getting into wheelchair as well as being removed completely.

- Press the unlocking button(1) and swivel the legrest outward.
- Remove the legrest in an upward direction.

9.2.3.2 Setting the angle

PLEASE NOTE: Danger of crushing!

- *Do not reach inside the swivelling range of the legrest!*

PLEASE NOTE: Danger of injury due to incorrect adjustment of the footrests and legrests.

- *Before and during every journey it is imperative to ensure that there is an adequate distance between the legrests and the steering wheels or the ground!*

- Raising: Pull the legrest upward until the desired angle has been achieved.

- Lowering: Keep the legrest in the foot plate area, pull the lateral adjusting lever (1) and lower the legrest slowly.

9.2.3.3 Adjusting the length of the legrest

PLEASE NOTE: Danger of injury due to incorrect adjustment of the footrests and legrests.

- *Before and during every journey it is imperative to ensure that there is an adequate distance between the legrests and the steering wheels or the ground!*

Pre-requisites:

- 1x 5 mm Allen key

- Use the spanner to loosen the screw (1).
- Adjust to the desired length.
- Re-tighten the screw.

9.2.3.4 Adjusting the depth of the calf plate

The depth of the calf plate can be adjusted via the holding plate. The holding plate hole combinations allow 5 different depth settings.

Pre-requisites:
- 1x 10 mm open-ended spanner

- Use the open-ended wrench to loosen the nut (1) and remove.
- Adjust to the desired depth. Please observe that the round holes are intended for the calf plate retaining screw and the oblong holes for the aglet without thread.
- Screw the nut back on and tighten.

9.2.3.5 Adjusting the height of the calf plate

Pre-requisites:
- 1x 4 mm Allen key

- Use the Allen key to loosen the screws (1).
- Adjust to the desired position.
- Re-tighten the screws.

9.2.3.6 Unlocking and swivelling the calf plate backward when alighting

- Press the calf plate straight down.

- Unlock the legrest and swivel outward. The calf plate swivels backward on its own.

- Lift leg over the heel strap and place on the ground.

9.2.3.7 Adjusting the angle adjustable foot plate

Pre-requisites:
- 1x 5 mm Allen key

- Use the Allen key to loosen both set screws on the foot plate.
- Adjust to the desired angle.
- Re-tighten the screws.

9.2.3.8 Adjusting the angle and depth adjustable foot plate

Pre-requisites:
- 1x 5 mm Allen key

- Use the Allen key to loosen the set screw on the foot plate (1).
- Adjust the foot plate to the desired angle or depth.
- Re-tighten the screw.

10 Electrical System

10.1 Electronics Protection System

The vehicle's electronics are equipped with an overload-protection system.

If the motors are put under considerable strain for a longer period of time (for example, when driving up a steep hill) and especially when the ambient temperature is high, then the electronic system could overheat. In this case the vehicle's power is reduced gradually until it finally comes to a halt. The Status Display shows a corresponding error code (see chapter **"Error Codes and Diagnostic Codes"** on page **46**). By switching the power supply off and back on again, the error code is cancelled and the electronics are switched back on. It will take approximately five minutes until the electronics have cooled down enough for the motors to restore full power again.

When the motors are stalled by an insurmountable obstacle, such as a high kerb, and the vehicle driver allows the motors to strain against this hindrance for more than 20 seconds without moving, then the electronics will automatically switch off to prevent the motors from being damaged. The Status Display shows a corresponding error code (see chapter **"Error Codes and Diagnostic Codes"** on page **46**). By switching off and back on again, the error code is cancelled and the electronics are switched back on.

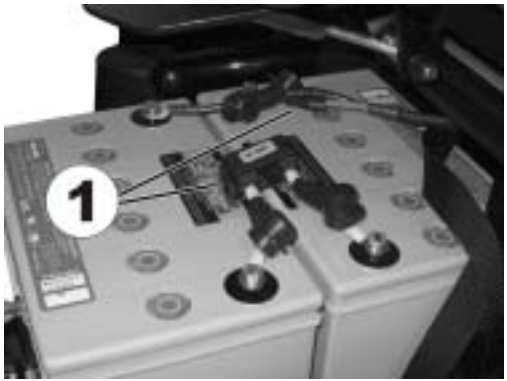
10.1.1 The main fuse

NOTE
A defective main fuse may be replaced only after checking the entire electric system. An Invacare® specialised dealer must perform the replacement. You can find information on the fuse type in chapter **"Technical Specifications"** starting on page **119**.

All electrical equipment fitted to the wheelchair is protected against overload by the main fuse.

The main fuse is located beneath the rear central panel to the left of the power module.

In order to access the main fuse, you must first remove the rear panel.



10.2 Batteries

10.2.1 What you need to know about batteries

Power is supplied by two 12V gel batteries. The batteries are maintenance-free and only need regular charging.

New batteries should always be fully charged once before their first use. New batteries will be at their full capacity after having run through approx. 10 - 20 charging cycles. How fast the batteries will be discharged will depend on many circumstances, such as ambient temperature, condition of the surface of the road, tyre pressure, weight of the driver, way of driving and utilisation of lighting, etc.

NOTE

Gel batteries are not hazardous goods. This classification is based on the German *GGVS Hazardous Goods Road Transport Ordinances*, and the *IATA/DGR Hazardous Goods Rail Transport / Air Transport Ordinances.* Gel batteries may be transported without restrictions, whether by road, rail or by air. Individual transport companies have, however, guidelines which can possibly restrict or forbid certain transport procedures. Please ask the transport company regarding each individual case.
Pay attention to the Battery Charge Indicator! Make sure to charge the batteries when the Battery Charge Indicator shows that battery charge is low. We recommend charging the batteries after each trip, as well as each night over night. Depending on the level of discharge, it can take up to 12 hours until the batteries are fully charged again.
Protect your charger from sources of heat such as heaters and direct sunlight. If the battery charger overheats, charging current will be reduced and the charging process delayed.
To avoid damaging the batteries, never allow them to be fully discharged. Do not drive on heavily discharged batteries if it is not absolutely necessary, as this will strain the batteries unduly and shorten their life expectancy.
In case your vehicle is not used for a longer period of time, then the batteries must be charged at least once a month to maintain a full charge. Alternatively, the vehicle can stay connected to the charger. The batteries cannot be overcharged with the specified charger.
Please use only charging devices in Class 2. This class of chargers may be left unattended during charging. All charging devices which are supplied by Invacare® comply with these requirements.

10.2.2 Charging the batteries

- Make sure you read and understand the battery charger's User's Manual, if supplied, as well as the safety notes on the front and rear panels of the charger!

WARNING:

Danger of explosion and destruction of batteries if the wrong battery charger is used!

- *Only ever use the battery charger supplied with your vehicle, or a charger that has been approved by Invacare®!*

Danger of electric shock and damage to the battery charger if it is allowed to get wet!

- *Protect the battery charger from water!*
- *Always charge in a dry environment!*

Danger of short circuit and electric shock if the battery charger has been damaged!

- *Do not use the battery charger if it has been dropped or damaged!*

Danger of fire and electric shock if a damaged extension cable is used!

- *Only ever use an extension cable if it is absolutely necessary! In case you must use one, make sure it is in good condition!*

Charging the batteries

- Switch off the wheelchair at the Joystick Box.
- Connect the battery charger to the Joystick Box - the charging socket is located on the bottom of the Joystick Box (1).
- Connect battery charger to the mains outlet and switch on if necessary.
- After charging is complete, first disconnect the battery charger from the mains supply, then disconnect from the Joystick Box.

10.2.3 Removing and fitting batteries

WARNING:

Danger of injury if the batteries are not handled correctly during assembly and maintenance work!

- *New batteries should be installed by authorised technicians!*
- *Observe the warnings on the batteries!*
- *Take into account the heavy weight of the batteries!*
- *Only ever use the battery type defined in the technical specifications!*

Danger of fire and burns if battery terminals are short-circuited!

- *DO NOT short-circuit battery terminals with a tool!*

WARNING:

Corrosion and burns from acid leakage if batteries are damaged!

- *Remove clothes that have been soiled by acid immediately!*

After contact with skin:

- *Immediately wash affected area with lots of water!*

After contact with eyes:

- *Immediately rinse eyes under running water for several minutes; consult a physician!*

10.2.3.1 Removing the batteries

CAUTION: Risk of fire and burns if battery poles are bridged!

- *When replacing the batteries the battery poles MUST NOT come into contact with metal parts of the wheelchair causing bridging.*
- *Be sure to replace the battery pole caps after the batteries have been replaced.*

WARNING: Risk of fire and burns due to damage to the battery cables!

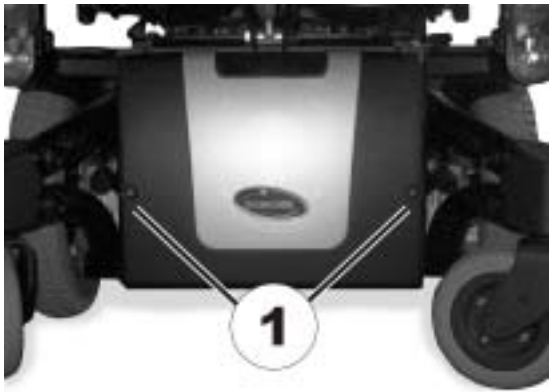
- *The battery cables and other cables are positioned in a cable duct above the batteries. The cable duct protects the cables against crushing and other damage. It may not be removed.*

Requirements:

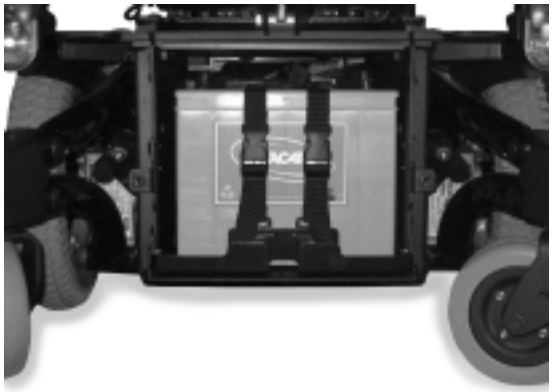
- Allen key 1/4 inch
- jaw spanner 11 mm

- Remove the side-mounted legrests if fitted. A centrally-fitted, manually adjustable legrest should be put in its top position by turning the spindle (1).

- Remove the screws on the panelling (1) using the 1/4" Allen key.



- Remove the panelling.



- Pull the batteries forwards out of the slide.

- Remove the terminal cover from the battery terminals (1).
- First undo the bolt on the negative terminal (black cable) with the 11 mm jaw spanner.
- After this, undo the bolt on the positive terminal (red cable).

CAUTION! Danger of crushing!

- *The batteries are extremely heavy. Please ensure that they do not fall to the ground when they are removed from the chassis.*

- Installation takes place in reverse order.
  ?

- Check all vehicle functions.
- Check the new battery status and charge completely.

10.2.3.2 How to handle damaged batteries correctly

WARNING:

Corrosion and burns from acid leakage if batteries are damaged!

- *Remove clothes that have been soiled by acid immediately!*

After contact with skin:

- *Immediately wash affected area with lots of water!*

After contact with eyes:

- *Immediately rinse eyes under running water for several minutes; consult a physician!*

Requirements:

- Safety goggles
- Acid-resistant gloves
- Acid-resistant receptacle for transportation

- Always wear appropriate safety clothing when handling damaged batteries.
- Place damaged batteries in an acid-resistant receptacle immediately after removing them.
- Only ever transport damaged batteries in an appropriate acid-resistant receptacle.
- Wash all objects that have come into contact with acid with lots of water.

Disposing of dead or damaged batteries correctly

Dead or damaged batteries can be given back to your dealer or directly to Invacare®.

11 Care and maintenance

NOTE:
Have your vehicle checked once a year by an authorised Invacare® dealer in order to maintain it's driving safety and roadworthiness.

Cleaning the vehicle

When cleaning the vehicle, pay attention to the following points:

- Only use a damp cloth and gentle detergent.
- Do not use any abrasive or scouring liquids.
- Do not subject the electronic components to any direct contact with water.
- Do not use high-pressure cleaning devices.

Disinfection

Spray or wipe disinfection using a tested and recognised product is permitted. A list of the current permitted disinfectants is available from the Robert Koch Institute at http://www.rki.de.

Maintenance Jobs	When Delivered	Weekly	Monthly
Seat and backrest padding:			
- Check for perfect condition.			✓
Side part and armrest:			
- Are all fastening elements installed?	✓	✓	
- Can armrests / side parts be removed and installed without too much physical effort?		✓	
- Are armrests secured in their positions?		✓	
Legrests:			
- Do legrests lock into place without any problem (only applies to detachable legrests)?			✓
- Do the different adjustment functions work without any problem?			✓
Tyres:			
- Have tyres checked for specified air pressure (see Technical Specifications).	✓	✓	
Anti-tippers			
- Check the anti-tippers for smoothness of operation.		✓	
Immobilisation mechanism of the anti-tippers			
- Check the immobilisation mechanism of the anti-tippers for correct function.		✓	
Front wheel forks / Front wheels			
- Front wheels must be running smoothly.		✓	
- Check fork bearing for firm seat.			✓
Rear wheels:			

- Test wheel for firm seat on the axle drive shaft.			✓
- Rear wheels must turn without wobbling			✓
Electronics / Electrical System:			
- Check all plug connections for condition and firm seat.			✓
- Have all batteries been fully charged before the daily operation?	Before every trip		
- Are all electric bulbs of the lighting system (if applicable) in working order?	Before every trip		
Cleaning:			
- Clean all parts carefully.	When necessary		

Once a year you should have your wheelchair inspected and serviced by your authorised dealer. A complete checklist of necessary maintenance work can be found in the Service Manual, which can be obtained from Invacare®.

12 Transport

12.1 Transferring the wheelchair to a vehicle

WARNING: Danger of tipping over, if the wheelchair is transferred to a vehicle using a ramp that exceeds the maximum safe slope, or if the backrest is not in an upright position during transfer!

- *If the wheelchair has to be transferred to a vehicle using a ramp that exceeds the maximum safe slope (see Chapter **"Technical Specifications"** starting on page **119**), then a winch must be used! An attendant can then safely oversee and assist the transfer process!*
- *If no winch is installed, then the wheelchair must not be transferred to a vehicle using a ramp that exceeds the maximum safe slope!*
- *Alternatively, a tail lift installed in the vehicle may be used!*
- *Only ever transfer the wheelchair to a vehicle with the backrest in an upright position!*

- Drive or push your wheelchair into the transport vehicle using a suitable ramp.

12.2 Use of the wheelchair as a seat in a vehicle

Please note
In order to use a wheelchair as a motor vehicle seat, it needs to be equipped with attachment points to enable anchoring in the motor vehicle. These accessories are not included in the standard scope of wheelchair order and delivery, but can be obtained from Invacare as an option.

This electric wheelchair complies with the requirements of ISO 7176/19-2001 and may be used as a vehicle seat in connection with an anchoring system that has been checked and approved in accordance with ISO 10542. The wheelchair has undergone a crash test in which it was anchored in the transporting vehicle's direction of travel. Other configurations were not tested. The crash test dummy was secured using pelvic and upper body seatbelts. Both types of seatbelt should be used in order to minimise the risk of injuries to head or upper body. It is imperative that the wheelchair is inspected by an authorised dealer before being used again after being involved in a crash. Alterations to the wheelchair anchoring points may not be carried out without the manufacturer's permission.

Caution: There is a danger of injury if the wheelchair is not properly secured during use as a vehicle seat!

- *If possible, the user should always leave the wheelchair to use a vehicle seat and the seatbelts provided with the vehicle!*
- *The wheelchair should always be anchored facing in the transport vehicle's direction of travel if possible!*
- *The wheelchair must always be secured in the anchoring system in accordance with the manufacturer's operating manual!*
- *Always remove and secure any accessory parts fixed to the wheelchair such as chin controls or tables!*
- *If your wheelchair is equipped with an angle adjustable backrest, then it must be placed in an upright position!*
- *Fully lower elevating legrests, if fitted!*
- *A seat lifter must be fully lowered!*

WARNING: Danger of injury exists if a powerchair that is not equipped spill-proof batteries is transported in a vehicle!

- *Only ever use spill-proof gel batteries!*

12.2.1 How the wheelchair is anchored in a vehicle for use as a vehicle seat

The electric wheelchair is fitted with four anchoring points, which are labelled with the symbol shown on the right. Snap hooks or belt loops can be used for fixation.

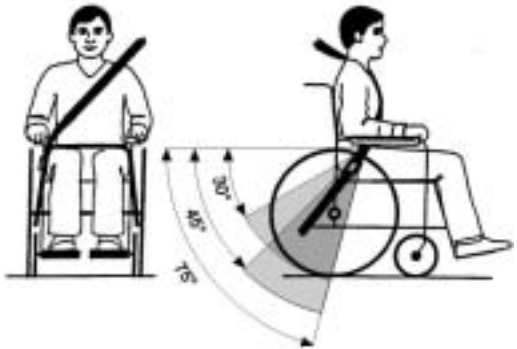
- Secure the wheelchair at the front (1) and at the rear (2) with the anchoring system belts.
- Secure the wheelchair by tensioning the belts in accordance with the anchoring system manufacturer's operating manual.

12.2.2 How the user is secured within the wheelchair

Caution: there is a danger of injury if the user is not properly secured within the wheelchair!

- *Even if the wheelchair is fitted with a securing belt, this is no substitute for a proper seatbelt in a travelling vehicle! Always use the transport vehicle seatbelt!*
- *Seatbelts must be in contact with the user's body! They must not be held at a distance from the user's body using parts of the wheelchair such as armrests or wheels!*
- *Seatbelts must be pulled as tightly as possible without causing the user discomfort!*
- *Seatbelts must not be positioned while twisted!*

Seat belts may not be held at a distance from the user's body using parts of the wheelchair such as armrests or wheels.

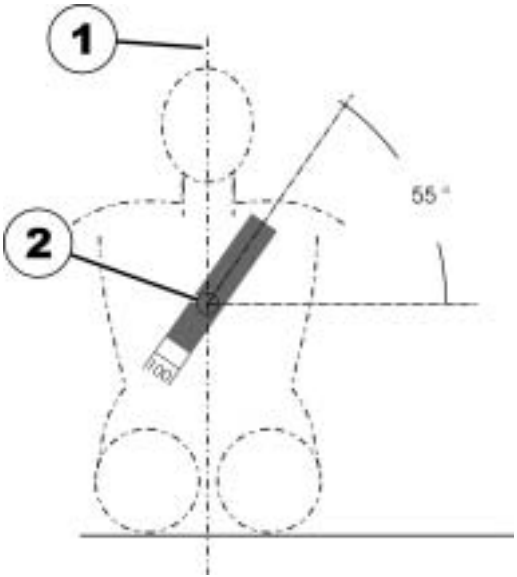


The pelvic belt should be positioned in the area between the user's pelvis and thighs so that it is unobstructed and not too loose. The ideal angle of the pelvic belt to the horizontal is between 45° and 75°. The maximum permissible angle is between 30° and 75°. The angle should never be less than 30°!

The safety belt of the transporting vehicle should be applied as shown in the illustration at right.

1) Centre line of the body

2) Centre of the sternum



12.3 Securing the wheelchair for transport without passengers

CAUTION: Injury hazard!

- *If you are unable to fasten your electric wheelchair securely in a transport vehicle, we recommend that you do not transport it!*

- Before transporting your wheelchair, make sure the motors are engaged and that the Joystick Box is switched off.
- We urgently recommend securing the wheelchair to the floor of the transporting vehicle.

13 Refurbishment

The product is suitable for refurbishment. Actions to be carried out:

- Cleaning and disinfection. Please see chapter **"Care and maintenance"** on page **106**.
- Inspection according to service plan. Please consult service instructions, available from Invacare®.
- Adaptation to the user. Please see chapter **"Adjusting the wheelchair to the user's seating posture"** on page **48**.

14 Disposal

- The equipment wrapping is potentially recyclable.
- The metal parts are used for scrap metal recycling.
- The plastic parts are used for plastic recycling.
- Electric components and printed circuit boards are disposed of as electronic scrap.
- Disposal must be carried out in accordance with the respective national legal provisions.
- Ask your city or district council for details of the local waste management companies.

15 Technical Specifications

Permissible Operating and Storage Conditions	
Temperature range for operation according to ISO 7176-9:	• -25 … +50 °C
Temperature range for storage according to ISO 7176-9:	• -40 … +65 °C

Electrical system	
Motors	• 2 x 340 W
Batteries	• 2 x 12V / 73.6 Ah (C20) leakproof/gel
Main fuse	• 80 A

Charging device	
Output current	• 8A ± 8%
Output voltage	• 24V nominal (12 cells)
Input voltage	• 200 – 250V nominal
Operating temperature (surroundings)	• -25° ... +50°C
Storage temperature	• -40° ... +65°C

Drive wheel tyres	
Tyre type	• 3.00 - 8 puncture-proof

Driving characteristics	
Speed	• 8 km/h
Max. safe slope	• 15.8% (9°)

Driving characteristics	
Max. climbable obstacle height	• 7.5 cm
Turning radius	• 56 cm
Drive range in accordance with ISO 7176 ***	• 58 km

Dimensions	Standard	Contour	Flex
Total height	• 94 cm	• 105 cm	• 98 cm
Drive unit width	• 64 cm	• 64 cm	• 64 cm
Total seat width (with standard armrests)	-	-	-
Seat width 39 cm	• 60 cm	• 60 cm	• 60 cm
Seat width 43 cm	• 64 cm	• 64 cm	• 64 cm
Seat width 48 cm	• 69 cm	• 69 cm	• 69 cm
Total seat width (with travelling armrests)	-	-	-
Seat width 39 cm	• 64 cm	• 64 cm	• 64 cm
Seat width 43 cm	• 68 cm	• 68 cm	• 68 cm
Seat width 48 cm	• 73 cm	• 73 cm	• 73 cm
Total length (incl. standard legrests)	• 116 cm	• 116 cm	• 116 cm
Seat height ****	• 45 cm	• 45 cm	• 45 cm
Seat width (armrest adjustment range in brackets)	• 43 cm (44 - 48 cm**)	• 48 cm (49 - 53 cm**) • 43 cm (44 - 48 cm**)	• 38 cm (39) • 43 (44 - 48 cm**) • 48 (49 - 53 cm**)
Seat depth	• 41 / 46 / 51cm	• 41 / 46 / 51cm	• 41 / 46 / 51cm
Backrest height ****	• 48 / 54 cm	• 64 cm	• 55 cm
Seat cushion thickness	• 5 cm	• 7 cm	• 7 cm

Dimensions	Standard	Contour	Flex
Backrest angle	• -10°, 0°, +7.5°, +15°, +22.5°, +30°	• -10°...+45° (electr.)	• -10°...+45°
Armrest height	• 25-35 / 29-39 cm	• 25-35 / 29-39 cm	• 25-35 / 29-39 cm
Legrest lengths			
• Short (for leg length 32-38 cm)	• 29.5 - 35.5 cm	• 29.5 - 35.5 cm	• 29.5 - 35.5 cm
• Medium (for leg length 38-44 cm)	• 35.5 - 41.5 cm	• 35.5 - 41.5 cm	• 35.5 - 41.5 cm
• Long (for leg length 44-50 cm)	• 41.5 - 47.5 cm	• 41.5 - 47.5 cm	• 41.5 - 47.5 cm
Seat angle, electronic adjustment	• 0° ... +52°	• 0° ... +52°	• 0° ... +52°
Seat angle, manual adjustment	• 0° ... +8°	• 0° ... +8°	• 0° ... +8°

Weight	
Empty weight with fixed seat angle	• 138 kg
Empty weight with electric seat angle adjuster	• 165 kg

Loading	
Max. load	• 180 kg

Axle loads	
Max. front axle load	• 106 kg
Max. rear axle load	• 97 kg
Max. centre axle load	• 217 kg

* Approximate.

** Width adjustable for side panel adjustment.

*** Note: The drive range of an electric wheelchair is strongly influenced by external factors, such as the charging state of the batteries, surrounding temperature, local topography, road surface characteristics, tyre pressure, weight of driver, drive style and use of batteries for lighting, servos etc.

**** Measured without seat cushion

16 Inspections Performed

It is confirmed by stamp and signature that all jobs listed in the inspection schedule of the Service and Repair Instructions have been properly performed. The list of the inspection jobs to be performed can be found in the Service Manual which is available through Invacare®.

Delivery Inspection	1st Annual Inspection
Stamp of authorised Dealer / Date / Signature	Stamp of authorised Dealer / Date / Signature
2nd Annual Inspection	3rd Annual Inspection
Stamp of authorised Dealer / Date / Signature	Stamp of authorised Dealer / Date / Signature
4th Annual Inspection	5th Annual Inspection
Stamp of authorised Dealer / Date / Signature	Stamp of authorised Dealer / Date / Signature

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