Yes, you can.®

Invacare® **Spectra Plus**

Power wheelchair
User 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 wheelchair.

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 performed by the user or his/hers 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 user manual or as a result of incorrect maintenance are excluded from all guarantees.

1.1 Important symbols in this manual

General risks

This symbol warns you of general hazards!

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

EXPLOSION HAZARD!

This symbol warns you of an explosion hazard, 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 the danger of chemical burns, for example due to the discharge of battery acids!

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

BURN Risk!

This symbol warns of the risk of burns, for example, as a result of hot motor surfaces.

- *Follow the instructions in order to avoid injury or damage to the product.*

RISK OF CRUSHING!

This symbol warns of a risk of crushing caused by being careless with heavy components.

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

Wear eye protection

This symbol refers to the requirement for wearing eye protection, for example when working with batteries.

- *You must wear safety goggles when this symbol is displayed.*

Wear protective gloves

This symbol indicates the requirement to wear protective gloves, for example when working with batteries.

You must wear protective gloves when this symbol is displayed.

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. Please do not attempt to carry out the work if you do not have the listed tools available.

READ WELL BEFORE OPERATION!

This symbol advises you to read information carefully.

1.2 Important symbols found on the vehicle

This product has been supplied from an environmentally aware manufacturer. 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.*

This symbol indicates the "Drive" position of the coupling lever. In this position the motor is engaged and the motor brakes are operational. You can drive the wheelchair.

- *Please note that for driving purposes both motors must always be engaged.*

This symbol indicates the "Push" position of the coupling lever. In this position the motor is disengaged and the motor brakes are not operational. The wheelchair can be pushed by an attendant and the wheels turn freely.

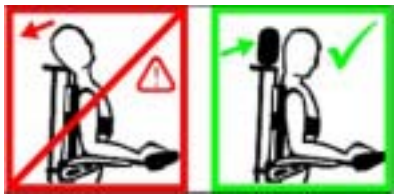
- *Please note that the control panel must be switched off.*
- *Please also note the information provided in section "Pushing **the mobility device in freewheel** mode**"** on page 36.*

This symbol indicates the position of an anchor point when using a lashing system during transport.

If the symbol appears on a bright yellow sticker, the anchoring point is suitable for fixation of the wheelchair in a vehicle for use as a vehicle seat.

This wheelchair may not be used as a vehicle seat!

- *This wheelchair does not satisfy the requirements of ISO 7176-19:2001 and may not under any circumstances be used as a vehicle seat or to transport the user in a vehicle.*
- *Using a wheelchair that does not fulfill these criteria as a vehicle seat can lead to the most severe injuries and even death in the event of a traffic accident.*



This wheelchair may be used as a vehicle seat, but only if it is equipped with a headrest that has been approved by Invacare for this purpose!

- *Please always make sure that the wheelchair is equipped with a headrest approved by Invacare before using it as a vehicle seat!*

This symbol indicates the maximum width to which an armrest may be adjusted. Pulling the armrest out further can cause it to fall out of it's fixation. For further information, see chapter "Adjusting the width of the armrests" on page 43.

If the power wheelchair is fitted with a table, it is imperative that it is removed and safely stowed when transporting the wheelchair in a vehicle!

1.3 Type classification and permissible use

This vehicle was designed for persons whose ability to walk is impaired, but who are still in terms of their eyesight and 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 precise information about speed, turning radius, driving range, maximum safe slope, maximum obstacle height and permissible operating conditions in chapter **"**Technical specifications**"** starting from page 96.

Please also pay attention to all safety information in chapter **"**Safety notes**"** starting from page 19.

The vehicle was successfully tested according to German and international standards as to its safety. It satisfies the requirements according to DIN EN 12184 including EN 1021-1/-2. 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 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 power 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.

1.5 Usability

Only use a power wheelchair when it is in perfect working order. Otherwise, you might put yourself and others at risk.

The following list does not claim to be exhaustive. It is only intended to show some of the situations that could affect the usability of your power wheelchair.

In certain situations, you should immediately stop using your wheelchair. Other situations allow you to use the wheelchair to get to your dealer.

- You should immediately stop using your power wheelchair if its usability is restricted due to:

  - brake failure

- You should immediately contact an authorised Invacare® dealer if the usability of your power wheelchair is restricted due to:

  - the lighting system failing or being defective

- reflectors falling off
- worn thread or insufficient tyre pressure
- damage to the armrests (e.g. torn armrest padding)
- damage to the legrest hangers (e.g. missing or torn heel loops)
- damage to the postural belt
- damage to the joystick (joystick cannot be moved into the neutral position)
- cables that are damaged, kinked, pinched or have come loose from the holder
- the wheelchair drifting when braking
- the wheelchair pulling to one side when moving
- unusual sounds developing or occurring

Or if you have the feeling that something is wrong with your wheelchair.

1.6 Warranty

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

1.7 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 mobility device is used in any other way than the purpose described in this manual!

- *Only ever use the mobility device in accordance with the instructions in this User's Manual (see chapter "Type classification and permissible use" on page 15).*
- *Pay strict attention to the safety information.*

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

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

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

- *Switch the mobility device 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 mobility device by an attendant is only recommended on flat surfaces, never on gradients. Never leave your mobility device on a gradient with its motors disengaged. Always re-engage the motors immediately after pushing the mobility device (see chapter "Pushing the mobility device in freewheel mode" on page 36).*

Danger of injury if the mobility device 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. (refer to the joystick operating manual for more information).*

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

- *It is always better to transfer the mobility device to a vehicle without the occupant seated in it.*
- *If the mobility device needs to be loaded up a ramp together with its driver, ensure that the ramp does not exceed the maximum safe slope (see chapter "Technical specifications" from page 96).*
- *If the mobility device does need to be loaded using a ramp which exceeds the maximum safe slope (see chapter "Technical specifications" from page 96), then you must use a winch. An attendant can safely monitor and assist the loading process.*
- *As an alternative you can use a platform lift. Ensure that the total weight of the mobility device including the user does not exceed the maximum permissible weight for the platform lift or winch if you are using.*

Danger of injury if maximum permissible load is exceeded!

- *Do not exceed the maximum permissible load (see chapter "Technical specifications" from page 96).*
- *The mobility device is only designed for use by a single occupant whose maximum weight does not exceed the maximum permissible load of the device. Never use the mobility device to transport more than one person.*

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

- *When maintaining, servicing or lifting any part of your mobility device, 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 mobility device.

- *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 each time you use the mobility device.*
- *When transferring to a different seat, position the mobility device 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 mobility device, like wheels or one of the Lifter Modules (if fitted), especially when children are around.*

Risk of injury from hot surfaces!

- *Do not leave the wheelchair in direct sunlight for prolonged periods. Metal parts and surfaces such as the seat and armrests can become very hot.*

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

- *Do not connect any electric devices to your mobility device 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 mobility product 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 mobility product is to be operated on public roads, the vehicle driver is responsible for ensuring that it is in an operationally reliable condition. Inadequate or neglected care and maintenance of the mobility product 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!

- *Inclines and declines can only be travelled up to the maximum safe slope (see chapter "Technical specifications" from page 96).*
- *Always return the backrest of your seat or the seat tilt to an upright position before ascending slopes. We recommend that you position the seat backrest and the seat tilt (if fitted) slightly to the rear before descending slopes.*
- *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.*
- *When overcoming obstacles, always observe the maximum obstacle height (see chapter "Technical specifications" from page 96 and information about overcoming obstacles in chapter "Taking Obstacles" from page 33).*
- *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 (see chapter "Technical specifications" on page 96).*
- *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 power 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 must always be lowered during normal travelling.*

CAUTION: Tipping hazard if anti-tip wheels (1) are removed, damaged or changed to a position different to the factory settings!

- *Anti-tip wheels should only ever be removed for dismantling the wheelchair for transport in a vehicle or for storage.*
- *The anti-tip wheels must always be fitted if the wheelchair is being used.*

Note the position of the anti-tip wheels when you remove them so you can refit them in the correct position.

2.5 Safety information regarding changes and modifications to the mobility device

CE marking of the wheelchair

The conformity assessment/ CE marking was carried out in accordance with Directive 93/42 EEC / MPG (Medical Devices Act) and only applies to the complete product.

The CE marking is invalidated if components or accessories are replaced or added that have not been approved for this product by Invacare.

In this case, the company that adds or replaces the components or accessories is responsible for the conformity assessment/ CE marking or for registering the wheelchair as a special design and for the relevant documentation.

CAUTION: Danger of injuries and damage to mobility aid due to unapproved components and accessory parts!

Seating systems, additions and accessory parts which have not been approved by Invacare® for use with this mobility aid can affect the tipping stability and increase tipping hazards!

- *Only ever use seating systems, additions and accessory parts which have been approved by Invacare® for this mobility aid!*

Seating systems which are not approved by Invacare® for use with this power wheelchair do not, under certain circumstances, comply with the valid standards and could increase the flammability and the risk of skin irritation.

- *Only use seating systems that have been approved by Invacare® for this power wheelchair.*

Electrical and electronic components which have not been approved by Invacare® for use with this mobility aid can cause fire hazards and lead to electromagnetic damage!

- *Only ever use electrical and electronic components which have been approved by Invacare® for this mobility aid!*

Batteries which have not been approved by Invacare® for use with this mobility aid can cause chemical burns!

- *Only ever use batteries which have been approved by Invacare® for this mobility aid!*

CAUTION: Risk of injuries, and damage to the wheelchair, if unapproved backrests are used!

A retrofitted backrest which is not approved by Invacare® for use with this power wheelchair may overload the backrest tube and thus increase the risk of injuries and of damage to the wheelchair.

- *Please contact your Invacare® specialist dealer who will perform risk analyses, calculations, stability checks etc. to ensure that the backrest can be used safely.*

3 Features

Motor speed and direction are regulated by the joystick control unit. With practice, control of acceleration, braking and change of direction will ensure a smooth, jerk-free ride. The variable speed selector gives you total control in any environment.
The power chair cannot be driven when the batteries are being charged. Controller circuits are designed to prevent operation during the charging process.

CHARGING	The battery gauge will indicate that your batteries are low. Charging is straightforward, (Refer to enclosed booklet).
BATTERIES	The batteries fitted as standard are completely sealed and therefore cannot be spilled like conventional 'wet' cells. Total performance and reliable operation is dependent on the care and understanding of batteries and battery charging. Please refer to the appropriate section and separate booklet supplied. Sealed Gel batteries are classed as non hazardous by all air transport and travel authorities. Mobility vehicles fitted with these batteries can be safely taken onto aeroplanes, ships, buses, ambulances or trains without having to remove the batteries from the equipment.
TYRES	Pneumatic drive wheels and castors are fitted as standard. Puncture proof wheels will alleviate the need to maintain pressures and give a smooth but slightly harder ride. These are available as options
UPHOLSTERY	The upholstery complies with the requirements for resistance to cigarette and match ignition ISO7176:16. Refer to section on cleaning and care of upholstery materials. Prolonged exposure to ultra-violet light will reduce the life of the upholstery, protect against sunlight.
OPTIONAL JOYSTICK CONTROL KNOBS	The knob fitted to your joystick is supplied as standard and is suitable for most applications. If you find this unsuitable for your operation there is a range of alternatives available. Please contact your wheelchair distributor for advice. Do not replace the joystick knob with any unauthorised device - it may cause hazardous operation.


STANDARD
S30
STICK
S80
MUSHROOM
M48
CHIN
C38
SOFT BALL
S870
T-BAR
T80
BALL
B38

4 Getting in and out of the wheelchair

Learning how to get in and out of a wheelchair safely and without injury is most important. Transferring to and from your powerchair may require practice and a good sense of balance. It is recommended that whenever possible you have assistance when transferring to and from your powerchair. It is recognised, however, that situations may occur when assistance is not available. It is desirable to learn and practice different techniques to accomplish a safe transfer.

Many experienced wheelchair users have developed and mastered their own method of transferring to and from the chair, resulting in great independence and self-care. Such ability depends largely on the strength of the individual, their capabilities and the type of chair. No single technique would be practical, or possible, for all wheelchair users. Safety is the primary consideration in all techniques.

To carry out the transfer confidently and to eliminate the possibility of personal injury, check the following:

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 manual wheel lock of your wheelchair (if existing).
- Detach the skirt guard 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 manual wheel lock of your wheelchair (if existing).
- Detach the skirt guard 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

NOTE
The maximum load capacity that is stated in the technical data only states that the system is designed for this mass in total. However, this does not mean that one can sit a person with this body weight in the wheelchair without restrictions. Attention must be paid to the body proportions, such as height, weight distribution, abdominal girth, leg and calf girth and seat depth. These factors have a strong influence on driving features such as tilt stability and traction. The permissible axle loads in particular must be adhered to (see chapter **"Technical specifications"** as from page **96**)! It may possibly be necessary to carry out adaptations to the seat system.

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 postural 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 postural belt (if installed) is in perfect order.**

- **The rear mirror (if installed) is adjusted so you can look behind at all times without having to bend forward or shift your seating position.**

5.2 Taking Obstacles

5.2.1 Maximum obstacle height

You can find information about maximum obstacle heights in the chapter entitled **"Technical specifications"** from page **96**.

5.2.2 Safety information when ascending obstacles

CAUTION: Danger of Tipping Over!

- *Never approach obstacles at an angle but at 90 degrees as shown below.*
- *Put your backrest into an upright position before climbing an obstacle.*

ATTENTION: Risk of falling out of the chair and damage to the power wheelchair such as broken castors!

- *Never approach obstacles that are higher than the maximum climbable obstacle height. For the maximum climbable obstacle height, see **"**Technical specifications**"** on page **96.***
- *If unsure whether the kerb climb is possible or not, move away from the obstacle and if possible find another location.*

5.2.3 The correct way to overcome obstacles

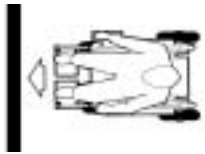
Ascending

- Approach the obstacle or the kerb slowly, head-on and at a right angle.
- Depending on the wheel drive type, stop in one of the following positions:

  - In the case of centrally driven wheelchairs: 5 - 10 cm before the obstacle.

  - For all other drives: approx. 30 - 50 cm in front of the obstacle.
- Check the position of the front wheels. They must be in driving direction and at right angles to the obstacle.
- Approach slowly and keep at a consistent speed until the rear wheels have also passed over the obstacle.

Right



Wrong

Descending

The approach to descend an obstacle is the same as to ascend it with the difference that you need not stop before descending.

- Descend the obstacle very slowly.

5.3 Driving up and down gradients

For information concerning the maximum safe slope, please see chapter **"Technical specifications"** starting on page **96**.

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.*
- *Always lower the lifter (if fitted) to its lowest position before ascending or descending 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 safe slope (see chapter **"Technical specifications" on page 96**).*

5.4 Use on public roads

If you wish to use your wheelchair on public roads and lighting is required by national legislation, then your wheelchair needs to be equipped with an appropriate lighting system.

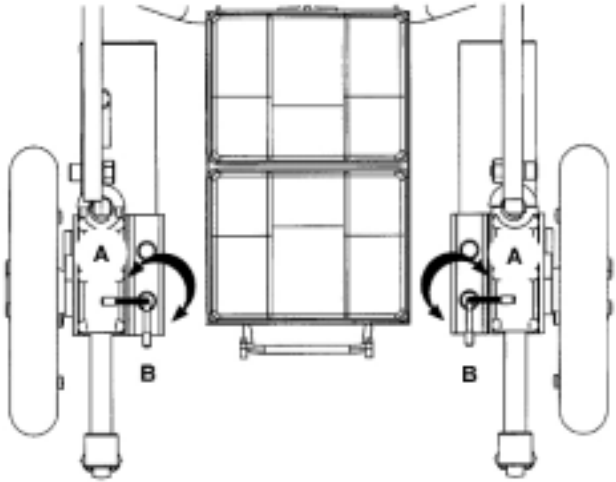
Please contact your Invacare ® dealer if you have any questions.

6 Pushing the mobility device in freewheel mode

The power wheelchair supplied is fitted with the lever dis-engage type motors. To dis-engage the drive to allow the chair to be pushed the following instructions should be followed carefully.

- To dis-engage the drive, operate the levers to the position A shown in the illustration below. LEVERS POINTING OUTWARDS.
- To re-engage the drive, operate the levers to position B shown in the illustration below. LEVERS POINTING REARWARDS.
- Push the chair slightly forwards to ensure that both motors are fully locked in the drive position.

CAUTION!
When the drive is dis-engaged there are no brakes, unless the wheel-locks are applied. Before entering or leaving the chair always re-engage the drive on both sides. On no account dis-engage the drive when the chair is occupied, unless being pushed by an attendant.



WARNING!

Freewheel device

- *Always re-engage the freewheel device after use (position B in the illustration above). Failure to do so may result in injury.*

NOTE:

The motors may only be disengaged by an attendant, not by the user!

This ensures that the motors are only disengaged if an attendant is available to secure the wheelchair and prevent unintended rolling.

7 Remotes

Your wheelchair may be equipped with one of several different remotes. For information on the different functions and how to operate a particular remote, please see its corresponding User Manual (enclosed).

8 Adjusting the wheelchair to the user's seating posture

CAUTION: Damage to wheelchair and accident hazard! It is possible that collisions can occur between wheelchair components due to various combinations of adjustment options and their individual settings!

- *The wheelchair is fitted with an individual, multiply adjustable seating system including adjustable legrests, armrests, a headrest or other options. These adjustment options are described in the following chapters. They are used to adapt the seat to the physical requirements and the condition of the user. When adapting the seating system and the seat functions to the user, ensure that no wheelchair components collide.*

Note
Initial setup should always be done by a healthcare professional. Adjustment by the user is only recommended after they have been given appropriate guidance by the healthcare professional.

WARNING!
It should be noted that under certain conditions, and configurations of the wheelchair, ie. for users with limited / no lateral body control, and with the backrest in the reclined position, there is the potential to create a body trap between the armrest / sidepanel and the backrest.
Suitable accessories are available from Invacare (lateral trunk supports) to eliminate this risk.

Before sitting in the chair, make sure it is NOT switched ON. If it is ON, the battery condition indicator (10-bar display) will be illuminated.

8.1 Seat Depth Adjustment - 35 mm depth adjustment

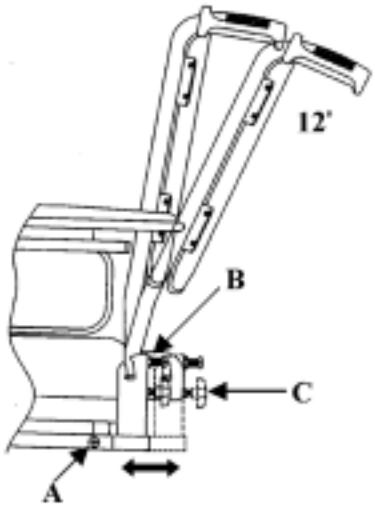
The individual fitting of the seating allows the seat depth to be adjusted by 35 mm (1“). The adjustment, which is usually only done once, is carried out as follows. You will need a large cross-headed screwdriver and a 13 mm spanner.

- Prise off plastic cap at point A, unscrew and remove the screw and nut, repeat each side.
- Move the backrest mounting bracket backwards to the extended position. Replace the nut and screw into the selected hole and firmly fasten, replace plastic cap, repeat each side.

8.2 Adjusting the backrest

The backrest angle can be adjusted from 90° rearwards through 12° The adjustment, which is normally only required to be done once, is carried out in the following sequence (see diagram) with the aid of the 13 mm spanner and the cross-headed screwdriver. Do the same adjustment for both sides.

- Release the lock nut B located on the cross-headed screw.
- Screw the locking hand-wheel C partially out.
- Screw the cross-headed screw in or out to give the desired position. Adjust position of hand-wheel as necessary.
- Position the lock nut B up to the mounting bracket and fully tighten.
- Re-tighten the hand-wheel C fully; ensure backrest assembly is secure.



Please note: Each backrest tube must be positioned in the same plane or the backrest will be twisted.

The backrest can be either folded down or detached from the chair base. Follow these additional instructions:

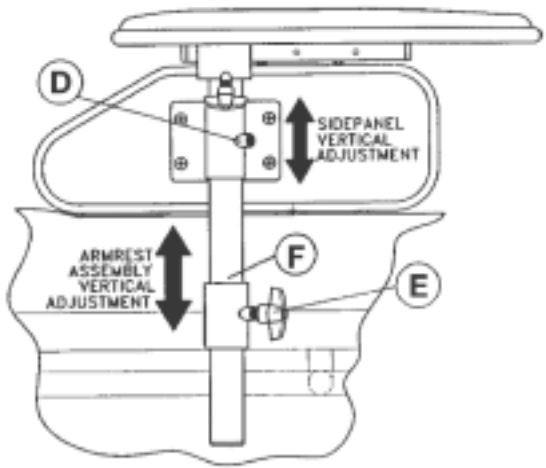
- Unscrew the hand-wheel C approximately five full turns. Lift the backrest upwards and then fold forwards onto the seat. Adjust armrest width to accommodate if required.
- To detach, unscrew the hand-wheel an additional three to four turns. Do not loosen the cross-headed screw.
- Push the backrest slightly forward and lift upwards.

- To re-locate the backrest assembly, ensure the pins are correctly aligned into the slots of the mounting bracket, fully re-tighten the hand-wheel on both sides.

8.3 Armrest Adjustment

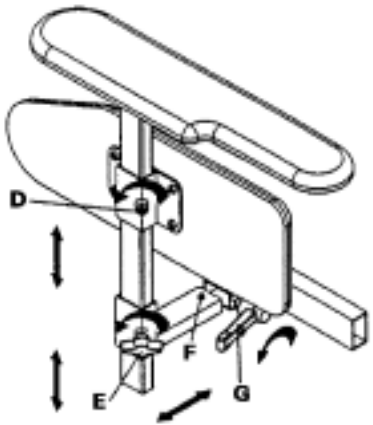
8.3.1 Setting the height of the armrests

- The armrest can be pre-set for height by positioning the self-tapping screw (F) in one of the holes in the armrest tube.
- To adjust the height of each armrest, first release the locking lever (E) which clamps the arm tube, while holding onto the armrest.
- Move the armrest to the desired height position, re-tighten the locking wing screw (E). The locking lever (if fitted) can be re-positioned without losing the clamping pressure, pull the lever slightly outwards and turn to a more suitable locating angle.
- The padded side panel can also be set to a desired height. Loosen the slotted screw (D) located in the fixing bracket, re-tighten when desired position is achieved.



8.3.2 Adjusting the width of the armrests

- The transverse width adjustment is achieved by releasing locking lever (G) and positioning the armrest tube to width required and re-tightening locking lever (G).
- To remove the transverse width adjustment armrest assembly complete to allow removal of the front battery box/controller assembly: remove seat, release locking lever (G), depress spring button lock (F) and withdraw complete armrest unit sideways.



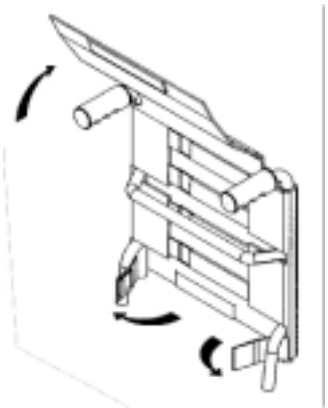
NOTE:
When re-assembling to chair always ensure the spring button lock (F) is on the inside of the horizontal mounting tube of the sideframe to prevent accidental dismantling of armrest unit.

CAUTION: The armrests are not intended for carrying the wheelchair!

8.4 Tension-Adjustable Backrest

The backrest upholstery tension can be adjusted to achieve the desired comfort for individual user requirements.

- To achieve this, lift the backrest upholstery cover by peeling the Velcro fastening and fold clear.
- Adjust the individual tension straps to the occupant's comfort.
- Ensure the straps are correctly positioned and replace the backrest cover, attaching securely by the Velcro fastening.



8.5 Adjusting the headrest

CAUTION: Danger of injury if the power wheelchair is used as a vehicle seat without a headrest! This can lead to hyperextension of the neck if a collision occurs!

- *It is recommended to use a headrest during transport. The Invacare® headrest for this wheelchair (available as an option) is the perfect solution for use during transport.*
- *The headrest must be adjusted to the ear height of the user.*

- Loosen the clamping lever (1, 2 or 3).
- Adjust the headrest to the required position.
- Retighten clamping lever.

8.6 Postural belts

A postural belt is an option which can either be fixed to the wheelchair ex-works or can be retrofitted by your specialist dealer. If your wheelchair is fitted with a postural belt, your specialist dealer will have informed you about fitting and usage.

The postural belt is used to help the wheelchair user keep an optimum sitting position. Correct use of the belt assists the user in sitting securely, comfortably and well-positioned in the wheelchair, especially for such users who do not have such a good sense of balance while sitting.

NOTE:
We recommend using the postural belt whenever the wheelchair is used. The belt should be tight enough to ensure that you are sitting comfortably and that your body is in the correct sitting position.

8.6.1 Types of postural belts

Your wheelchair can be fitted with the following postural belt types ex-works. If your wheelchair has been fitted with a different belt to those listed below, please ensure that you have received the manufacturer's documentation with regard to correct fitting and use.

Belt with metal buckle, adjustable one side

Belt can only be adjusted on one side which can result in the buckle not sitting centrally.

Belt with metal buckle, adjustable both sides

Belt can be adjusted on both sides. This means that the buckle can be centrally positioned.

8.6.2 Adjusting the postural belt correctly

- Ensure that you are sitting correctly, which means that you are sitting right at the back of the seat, your pelvis is positioned erect and as symmetrically as possible, not to the front, to the side or at one edge of the seat.
- Position the postural belt so that your hipbones can be easily felt above the belt.
- Adjust the belt length using one of the adjustment aids described above. The belt should be adjusted so that you can fit a flat hand between the belt and your body.
- The buckle should be positioned as centrally as possible. In doing so, please carry out adjustments on both sides as much as possible.
- Please check your belt every week to ensure that it is still in good working condition; to ensure it has no damage or wear, and that it is fixed properly to the wheelchair. If the belt is only fastened with a bolted connection, ensure that the connection has not loosened or undone. You can find more information about maintenance work on belts in the service manual, which is available from Invacare®.

8.7 Adjusting the trunk supports

THE TRUNK SUPPORTS CAN ONLY BE FITTED TO THE FIRM UPHOLSTERED BACKREST ASSEMBLY (VISCOUNT SEATING).

To attach the trunk supports to the back of the backrest assembly follow these instructions.

- Remove the existing pan-head screws from the top of each flange shown in Fig 1. Marked (A). The lower screws of each flange remain in place.

Fig. 1

- Line up the support rail with the holes in the backrest as shown in Fig. 2.

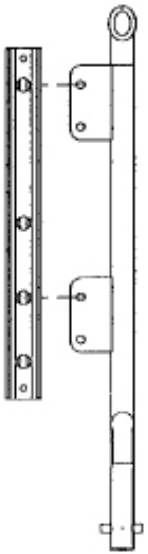
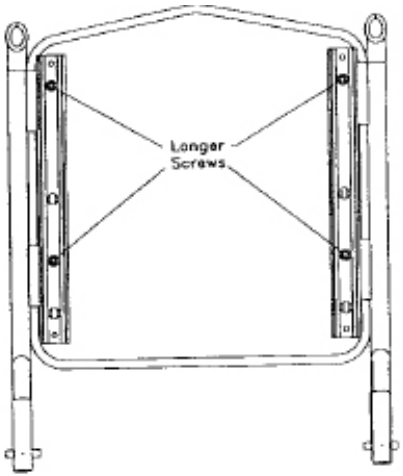
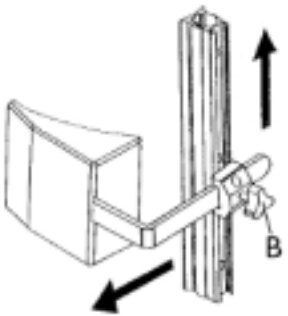


Fig. 2

- With the longer screws provided attach the support rail to the backrest through the flanges into the screw inserts. Do not screw into the backboard. Tighten securely, but do not overtighten as this may damage the screw threaded inserts.

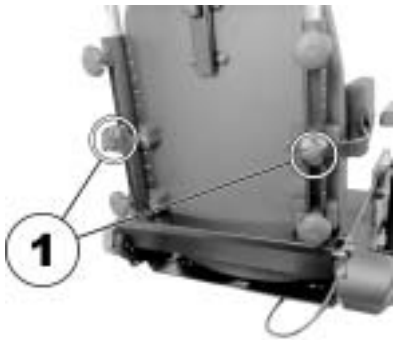


- With the support rails secured, slide the trunk support into the support rail from the bottom. Adjust to the occupant's requirements and firmly tighten the hand wheel (B).



8.7.1 Adjusting the width

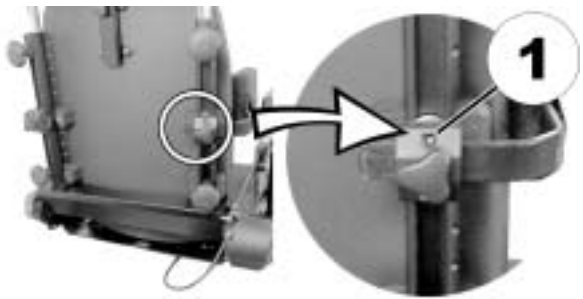
- Loosen the knobs (1) that hold the lateral supports.
- Adjust the supports to the desired width.
- Re-tighten the knobs.



8.7.2 Adjusting the height

Requirements:
- Allen key 5 mm

- Loosen the screws (1) that allow height adjustment of the lateral supports.
- Adjust the supports to the desired height.
- Re-tighten the screws.



8.7.3 Adjusting the depth

Requirements:
- Allen key 5 mm

- Loosen the screws (1) that allows the support pads to slide forwards and backwards.
- Adjust the supports to the desired position.
- Re-tighten the screws.

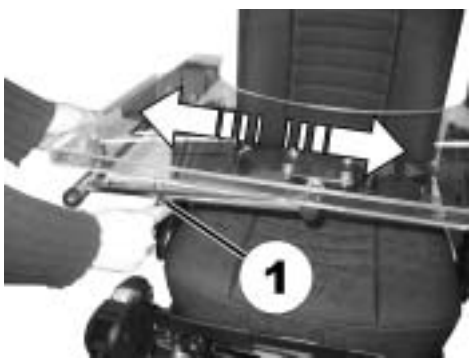
8.8 Adjusting and removing the tray

CAUTION: Injury hazard or material damage if a power wheelchair which is fitted with a table is transported in a vehicle!

- *If a table is fitted, always remove it before transporting the wheelchair.*

8.8.1 Laterally adjusting the tray

- Loosen the wing-screw (1).
- Adjust the tray towards the left or right.
- Re-tighten wing-screw.



8.8.2 Adjusting the depth of the tray / removing the tray

- Loosen the wing-screw (1).
- Adjust the table to the desired depth (or remove it entirely).
- Re-tighten the screw.

8.8.3 Swinging the tray away to the side

The tray can be swivelled up and away to the side to allow the user to get in and out of the mobility device

CAUTION! Risk of injury! When the tray is raised it does not lock in place in this position!

- *Do not tilt the tray up and leave it leaning in this position.*
- *Never attempt to drive with the tray tilted up.*
- *Always lower the tray in a controlled manner.*

The tray can be swivelled upwards and pushed to the side as illustrated to enable getting on and off.

9 Adjusting footrests and legrests

9.1 Removal - Standard

Release winged screw A and slide the complete assembly from the seat frame. Ensure the winged screw is fully tightened when the footrest assembly is replaced.

9.2 Removal - Swing - Away

Release the locking lever, swing footrest to the side, or lift up and off. Do this before sitting in the chair.

CAUTION!

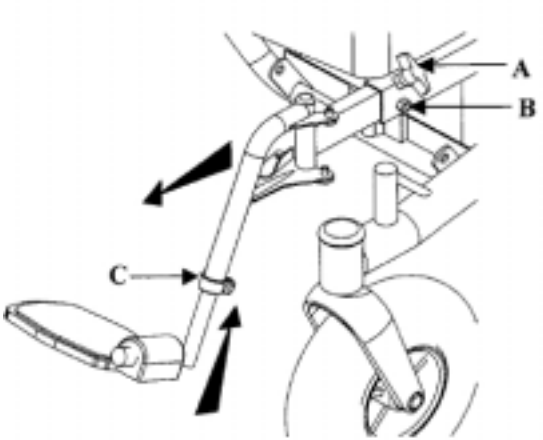
- *It is recommended that both footrests are firmly locked in place when seated in the chair (particularly when driving the chair).*
- *NEVER stand on the footplates. If the weight of the body is placed on the footplates, damage may occur and the chair may tip forward.*

9.3 Adjustment

- To extend the footrest laterally, release the winged screw A, pull the footrest forward, re-tighten when the desired position is achieved.

  It is not necessary to release the grub screw B. This should remain permanently in position.

- To adjust the footrest length, loosen the hex nut C on the extension tube, use a twisting motion when sliding the telescopic tube in and out. Be sure to re-tighten the nuts securely when the desired height is achieved.

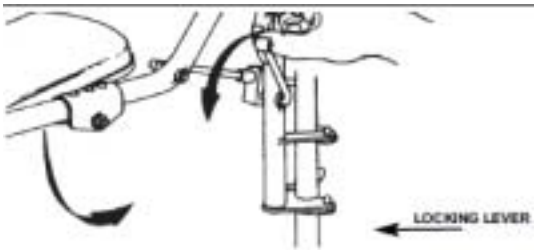


Caution!

- *The lowest part of the footrest must be at least 60 mm (2") from the ground for clearance!*

9.3.1 Elevating Legrests

- To raise or lower the legrest, release the lock by moving the lever forward as shown.
- When lowering the legrest, support the weight of user's leg then release the lock, keep it from dropping too quickly. Keep in mind that the lowest part of the footplate must be 60 mm (2") from the ground.

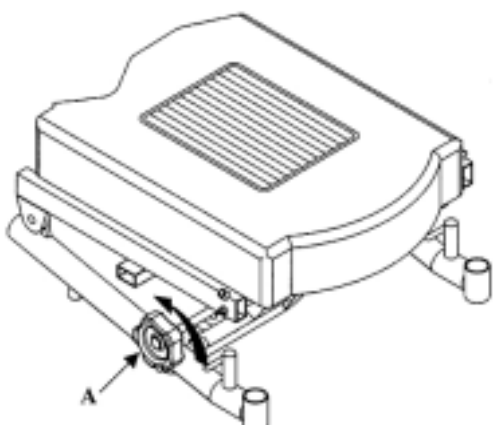


10 Manual Tilt-In-Space

To operate the manual tilt-in-space to allow the complete seat/backrest to tilt backwards, turn the large hand-wheel A until the desired sitting position is achieved. Rotating the hand-wheel in the opposite direction will lower the seat/backrest section.

CAUTION!

- *WHEN DRIVING THE POWER CHAIR WITH THE TILT-IN-SPACE OUTDOORS, THE SEAT TILT MUST BE RETURNED TO THE NORMAL LOWERED POSITION BEFORE ATTEMPTING KERB CLIMBING OR ASCENDING AND DESCENDING SLOPES. THIS ALSO APPLIES TO THE OPTIONAL POWERED TILT-IN-SPACE OR POWERED RECLINING BACKREST.*



11 Safety Cutout

The circuit breakers are located at the front of the front battery box and at the front of the rear battery box between the two battery boxes. They are designed to operate should a stall condition occur. This happens when a chair is unable to negotiate an obstacle such as a narrow doorway or a kerb of excessive height. If one of the breakers operates, it will ‘pop’ out. To re-set after a circuit breaker operation, pause for a few minutes then push both battery buttons in. If the circuit breaker continually fails, consult your authorised INVACARE dealer.

Under certain circumstances, particularly indoor use, care must be taken to ensure safe continual operation of the motor units. If an obstacle is encountered or, with slow manoeuvring of the castor wheels from the forward to rear position, continual full operation of the joystick control will result in motor overload and eventual failure.

To prevent this occurrence, increase the speed to maximum, control the manoeuvre by the joystick control, always move away from the obstacle, do not continue to drive against it.

12 Operating the Chair Outdoors - Kerb Climbing

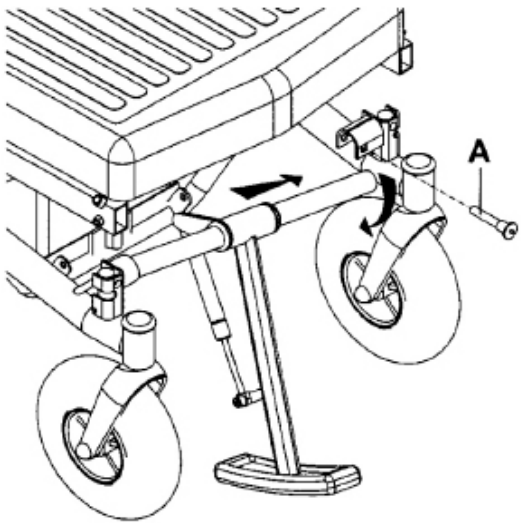
NOTE:
Always remember to use the safety belt when operating the chair outdoors.
Ensure the footrests are locked in position.

12.1 Removal

(Please note that left or right hand are identified as though being seated in the chair).

To detach the kerb climber for transportation follow these simple instructions:

- Remove the locking pin A, while holding the assembly. Push the assembly down to release from the locating bracket.
- Pull the assembly towards you away from the right hand retaining socket. The kerb climber is now detached. Stow carefully.

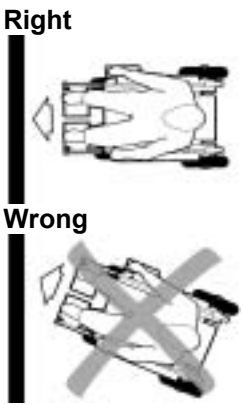


12.2 Re-Assembly

Locate the assembly into the right hand retaining bracket. Push the assembly up into the left hand bracket and refit the locking pin A. Ensure the pin is correctly fitted firmly into place.

12.3 Going up a Kerb

- Adjust the speed control to the maximum position to allow full power to the motors.
- Approach the kerb head-on (90º), do not charge at the kerb.
- With the front of the kerb climber at about 25 mm (1“) from the edge of the kerb, push the joystick fully forward and continue to climb in one movement. Do not pause or attempt to steer during this movement.



If the kerb climb is un-achievable do not continue the manoeuvre, move away from the obstacle and if possible find an alternative location.

12.4 Going Down a Kerb

Approach the edge of the kerb square on. Drive forward down the kerb at a moderate speed. Kerbs of 75 mm (3“) or more may tip the chair onto the foot plates. It is advisable to go down the kerb backwards to overcome this problem.

The kerb climbing device will return to the climbing position after each manoeuvre.

NOTE:
Climbing kerbs in excess of 100 mm (4“) will be restricted if the foot plates are in the fully extended position. Refer to **"Adjustment"** on page **58** for correct footplate adjustment.

13 Dis-Assembly

To enable the chair to be carried in the boot of most cars, follow these instructions:
Step 1: Disconnect the Motor/Battery connector from the control box and remove the armrests. Release the locking lever.

Step 2: Remove the calf strap from the footrests. This is simply attached by Velcro fastening. Remove the footrests completely by releasing the cam latch situated on the inside of the footrest frame hanger.

CAUTION:
- *Do not drive the chair with the footrests in the unlatched position.*

Step 3: Remove the kerb climber assembly (if fitted) as described.

Step 4: Detach the seat and backrest assembly as previously shown. When replacing the seat assembly, ensure the brackets are located correctly on the seat frame tube.

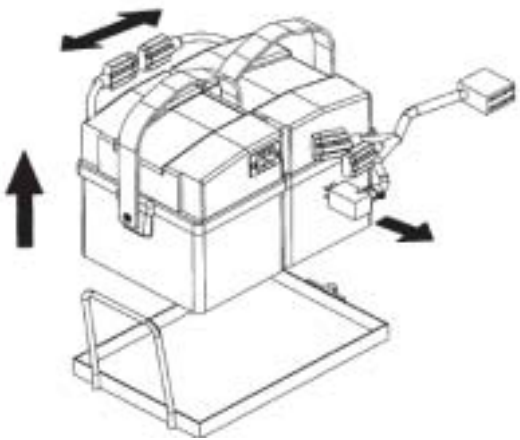
If the backrest has an electrical recliner, refasten the motor to the backpost.

CAUTION: Injury hazard if the clevis pin of the motor of the electrical recliner is not correctly secured! An incorrectly secured pin can come off and the backrest can unexpectedly fold back, which can lead to injuries.

- *Make absolutely sure that you insert the R-clip to secure the clevis pin correctly. The clip must fit snugly around the pin! See the illustrations below:*

Step 5: Disconnect the motor leads and the connecting cables from the battery boxes. Carefully lift the battery boxes clear of the frame by the straps provided. Remove the battery tray. When refitting the battery tray it is important that it is correctly located on the support pins.

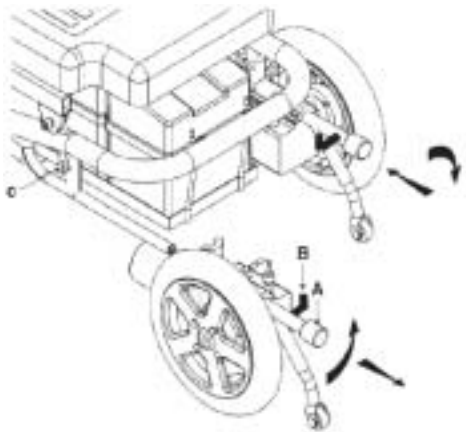
Step 6: Remove the detachable motors as described.
The disassembled chair is now ready to be loaded safely in a suitable vehicle. Reversing the procedure will allow the chair to be reassembled at your destination.



SPECIAL NOTE: Care must be taken when stowing the detached parts for transportation to ensure that no damage occurs, particularly to the motor assemblies and controller units.
Due to the weight of the battery boxes, consideration must be given to their secure positioning in the event of emergency braking.
EXTREME CARE MUST BE TAKEN WHEN LIFTING THE HEAVIEST COMPONENTS I.E. BATTERY BOXES, FRAME AND MOTOR UNITS. ASSUME THE CORRECT LIFTING POSITION. SEEK ASSISTANCE IF IN DOUBT.

14 Detachable Motors

For practical purposes and ease of operation, it is advisable to detach the motors as the last component of the chair to be dismantled and to re-attach first.
NOTE: Assistance may be required while this operation is carried out.
Step 1: Unscrew the knurled locking knob A. This can be unscrewed completely and still be retained in position.
Step 2: Release the side retaining pin B by turning it 180°.
Step 3: Unbolt clamp C on the vertical frame member.
Step 4: Support the weight of the chair on the side the motor is being detached. Pull the motor assembly towards the back of the chair, take care to hold the motor assembly when it becomes detached. Repeat operation for both sides.



SPECIAL NOTE: Care must be taken when stowing the detached parts for transportation to ensure that no damage occurs, particularly to the brake housing and gearbox unit.

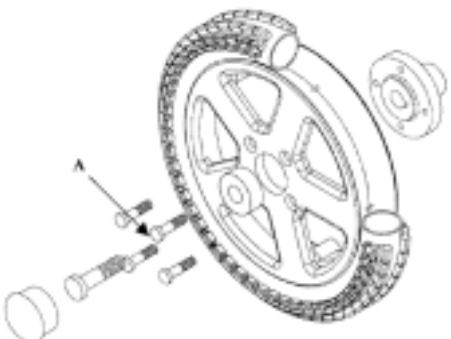
To re-attach the motor assemblies, align the bottom tube rail with the tube of the motor assembly and push firmly home. Re-tighten fully the knurled locking knob A. Do the same for both sides.
For ease of operation, it is advisable to re-attach the motor assemblies as the first operation in the reassembly of the wheelchair after transportation.
NOTE: The disassembly and reassembly of the motor assemblies can be handled and attached easier if the chair is carefully tipped onto the front, taking into account that the leg rests are not attached.
The chair can be transported disassembled safely in a suitable vehicle. Reversing the above procedures will make your chair ready at your destination.

15 Drive Wheel Removal

To remove the rear drive wheels for puncture repairs carefully follow these instructions.

Release the four bolts shown as A in the diagram. Check the tyres for wear, if excessive, replacement is recommended.

The wheel is a split rim. It is important that the bolts securing the rims together are NOT released if the tyre is pneumatic and INFLATED.



Upon reassembly tighten the fixing bolts securely. The wheel is alloy, do not over-tighten as this may damage the wheel rim.

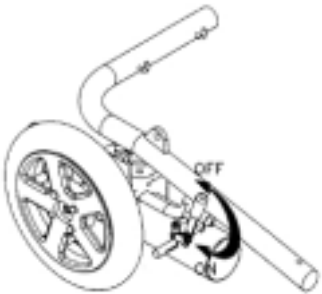
If the tyre is being inflated with the wheel on the chair, ensure the wheel is off the ground during inflation.

Inflate the tyre slowly to recommended pressure, ensuring an even fit around the rim.

15.1 Drive Wheel Locks - Manual Brakes

When transferring to and from the chair ensure the wheel locks are firmly ON and the motor drive is in the engaged position.

When transporting the complete chair in a vehicle, it is important that motor drive is engaged and the wheel locks are firmly ON. This will aid the use of the chair restraints and protect the motor/gearbox from possible damage.



16 Transport

CAUTION: Injury hazard or material damage if a power wheelchair which is fitted with a table is transported in a vehicle!

- *If a table is fitted, always remove it before transporting the wheelchair.*

CAUTION: Danger of death or serious injury to the mobility device user and potentially any other nearby occupant of the vehicle, if a mobility device is secured using a 4-point tie-down system available from a third party supplier and the unladen weight of the mobility device exceeds the maximum weight for which the tie-down system is certified!

- *Make sure the weight of the mobility device does not exceed the weight for which the tie-down system is certified. Consult the tie-down manufacturer's documentation.*
- *If you are unsure how much your mobility device weighs, then you must have it weighed using calibrated scales.*

16.1 Transferring the wheelchair to a vehicle

WARNING: The wheelchair is in danger of tipping over if it is transferred to a vehicle while the driver is still seated in the wheelchair!

- *Transfer the wheelchair without the driver whenever possible!*
- *If the wheelchair with the driver has to be transferred to a vehicle using a ramp, ensure that the ramp does not exceed the maximum safe slope (see chapter **"Technical specifications"** starting on page **96)!***
- *If the wheelchair has to be transferred to a vehicle using a ramp that does exceed the maximum safe slope (see chapter **"Technical specifications"** starting on page **96),** a winch must then be used! An attendant can then safely monitor and assist the transfer process!*
- *Alternatively, a platform lift may be used!*
- *Ensure that the total weight of the power wheelchair including the user does not exceed the maximum permitted total weight for the ramp or platform lift!*
- *The wheelchair should always be transferred to a vehicle with the backrest in an upright position, the seat lifter lowered and the seat tilt in the upright position (see chapter **"Driving up and down gradients**" on page **34)!***

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

16.2 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 may be included in the standard scope of wheelchair order and delivery in some countries (UK for example), but may also be obtained from Invacare® as an option in other countries.

This power 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 safety belts. Both types of safety belt 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 safety belts provided with the vehicle.*
- *The wheelchair should always be anchored facing in the transport vehicle's intended direction of travel.*
- *The wheelchair must always be secured in accordance with the wheelchair and anchoring system manufacturers' 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 elevated legrests, if fitted.*
- *Fully lower the seat lifter, if fitted.*

WARNING: Danger of injury exists if a power wheelchair that is not equipped with leak-proof batteries is transported in a vehicle!

- *Only ever use leak-proof batteries!*

WARNING: Danger of injury or damage to the wheelchair or to the transporting vehicle, if the legrests are in a raised position while the wheelchair is used as a vehicle seat!

- *Always completely lower height-adjustable legrests, if fitted.*

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

The power 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 instruction manual.

Front (only left-hand side visible in picture)

Rear (only left-hand side visible in picture)

16.2.2 How the user is secured within the wheelchair

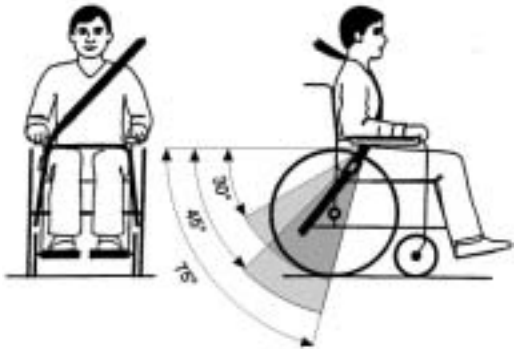
CAUTION: There is a danger of injury if the user is not properly secured within the wheelchair!

- *Even if the wheelchair is fitted with a postural belt, this is no substitute for a proper safety belt which complies with ISO 10542 in the transport vehicle. Always use the safety belt installed in the transport vehicle.*
- *Safety belts 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. Refer to the illustration on page 78.*
- *Safety belts must be pulled as tightly as possible without causing the user discomfort. Refer to the illustration on page 78.*
- *Safety belts must not be positioned while twisted.*
- *Ensure that the third seatbelt anchorage point is not fixed directly to the vehicle floor, but to one of the vehicle uprights.*

CAUTION: Danger of injury if the power wheelchair is used as a vehicle seat without a headrest! This can lead to hyperextension of the neck if a collision occurs!

- *It is recommended to use a headrest during transport. The Invacare® headrest for this wheelchair (available as an option) is the perfect solution for use during transport.*
- *The headrest must be adjusted to the ear height of the user.*

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

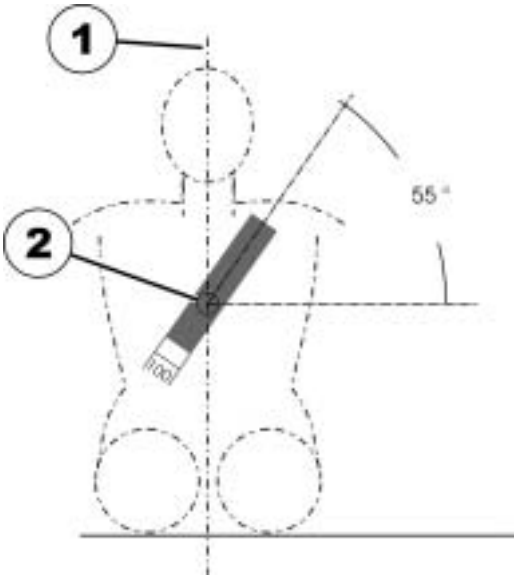


The pelvic belt should be positioned in the area between the user's pelvis and thighs so that it is unobstructed and not too loose. The ideal angle of the pelvic belt to the horizontal is between 45° and 75°. The maximum permissible angle is between 30° and 75°. The angle should never be less than 30°!

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

1) Centre line of the body

2) Centre of the sternum



16.3 Transporting the wheelchair without occupants

CAUTION: Injury hazard!

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

- Before transporting your wheelchair, make sure the motors are engaged and that the Joystick Box is switched off.

  Invacare® strongly recommends that you additionally disconnect or remove the batteries. See **"**Dis-Assembly**"** on page **64**.

- Invacare® strongly recommends securing the wheelchair to the floor of the transporting vehicle.

17 Electrical system

17.1 Electronics protection system

The vehicle drive electronics is fitted with an overload protection.

If the drive is severely overloaded over a long period (e.g. during steep climbs) and, above all, at simultaneous high external temperatures, the electronic system can overheat. In this case, the vehicle performance is gradually reduced until it comes to a standstill. The status display shows a corresponding blink code (please refer to the user manual for your remote). If you switch the drive electronics off and then on again, the error message is deleted and the electronics can be switched on again. It can however take up to five minutes until the electronics has cooled down enough for the drives to apply their full performance.

If the drive is blocked due to an insurmountable obstacle, for example a kerb or similar which is too high, and the driver attempts to run the drive for more than 20 seconds against this obstacle, the electronic system switches the drives off to avoid damage. The status display shows a corresponding flash code (please refer to the user manual for your remote). If you switch the drive electronics off and then on again, the error message is deleted and the electronics can be switched on again.

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 **96**.

17.2 Batteries

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

In the following, you find information on how to charge, handle, transport, store, maintain, and use batteries.

17.2.1 Charging the batteries

17.2.1.1 General information on 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 (break-in period). This break-in period is necessary to fully activate the battery for maximum performance and longevity. Thus, range and running time of your mobility device could initially increase with use.

Gel/AGM lead acid batteries do not have a memory effect as NiCd batteries.

17.2.1.2 General instructions on charging

Follow the instructions listed below to ensure safe use and longevity of the batteries:

- Charge 12 hours prior to initial usage.
- We recommend charging the batteries daily after every discharge even after partly discharge, 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.
- When the battery indicator reached the red LED range, charge the batteries for 16 hours minimum, neglecting the charge complete display!
- Try to provide a 24 hour charge once a week to make sure that both batteries are fully charged.

- Do not cycle your batteries at a low state of charge without regularly recharging them fully.
- Do not charge your batteries under extreme temperatures. High temperatures above 30 °C are not recommended for charging as well as low temperatures below 10 °C.
- 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.
- You cannot overcharge the batteries when using the charger supplied with your vehicle, or a charger that has been approved by Invacare®.
- 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.

17.2.1.3 How to charge the batteries

Please see the instruction manuals for your remote and battery charger for the position of the charging socket and further information about charging the batteries.

WARNING!

Risk 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®.*

Risk of electric shock and damage to the battery charger if it gets wet!

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

Risk 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.*

Risk of electric shock and damage to the batteries!

- *NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.*

Risk 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.*

Risk of injury if using the wheelchair during charging!

- *DO NOT attempt to recharge the batteries and operate the wheelchair at the same time.*
- *DO NOT sit in the wheelchair while charging the batteries.*

- Switch off the mobility device.
- Connect the battery charger to the charger socket.
- Connect the battery charger to the power supply.

17.2.1.4 How to disconnect the batteries after charging

- Once charging is complete, first disconnect the battery charger from the power supply, then disconnect the plug from the remote.

17.2.2 Storage and Maintenance

Follow the instructions listed below to ensure safe use and longevity of the batteries:

- Always store the batteries fully charged.
- Do not leave the batteries in a low state of charge for an extended length of time. Charge a discharged battery as soon as possible.
- In case your mobility device is not used for a longer period of time (that is more than two weeks), the batteries must be charged at least once a month to maintain a full charge and always be charged before use.
- Avoid hot and cold extremes when storing. We recommend to store batteries at a temperature of 15 °C.
- Gel and AGM batteries are maintenance-free. Any performance issues should be handled by a properly trained mobility device technician.

17.2.3 Instructions on using the batteries

CAUTION! Risk of damaging the batteries.

- *Avoid ultra-deep discharges and never drain your batteries completely.*

- Pay attention to the Battery Charge Indicator! Charge the batteries when the Battery Charge Indicator shows that battery charge is low.

  How fast the batteries discharge depends 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.

- Try to charge the batteries always before you reach the red LED range.

The last 3 LED (two red and one orange) mean a remaining capacity of about 15 %.

- Driving with blinking red LED's means an extreme stress for the battery and should be avoided under normal circumstances.
- When only one red LED is blinking, the Battery Safe feature is enabled. From this time, speed and acceleration is reduced drastically. It will allow you to move the mobility device slowly out of a dangerous situation before the electronic finally cuts off. This is deep discharging and should be avoided.
- Be aware that for temperatures below 20 °C, the nominal battery capacity starts to decline. For example, at -10 °C the capacity is reduced to about 50 % of the nominal battery capacity.
- 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.
- The earlier you recharge the batteries, the longer they live.
- The depth of discharge affects the cycle life. The harder a battery has to work, the shorter is its life expectancy.

  Examples:

  - One deep discharge stresses the same as 6 normal cycles (green /orange display off).

  - The battery life is about 300 cycles at 80% discharge (first 7 LED off), or about 3000 cycles at 10% discharge (one LED off).

NOTE:
The number of LED can vary depending on the remote type.

- Under normal operation, once a month the battery should be discharged until all green and orange LED are off. This should be done within one day. A 16 hour charge afterwards is necessary as reconditioning.

17.2.4 Transporting batteries

The batteries supplied with your electric vehicle 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. 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.

17.2.5 Handling batteries

17.2.5.1 General instructions on handling the batteries

- Never mix and match different battery manufactures or technologies, or use batteries that do not have similar date codes.
- Never mix gel with AGM batteries.
- Always have your batteries installed by a properly trained mobility device technician. They have the necessary training and tools to do the job safely and correctly.

17.2.5.2 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.*

- Always wear safety goggles and 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®.

18 Maintenance

The term „Maintenance“ means any task performed to ensure that a medical device is in good working order and ready for use as intended. Maintenance encompasses different areas, such as everyday care and cleaning, inspection checks, repair tasks and refurbishment.

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

18.1 Cleaning the mobility device

When cleaning the mobility device, pay attention to the following points:

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

18.2 Inspection checks

The following table lists inspection checks that should be performed by the user and their intervals. If the mobility device fails to pass one of the inspection checks, please refer to the chapter indicated or contact your authorised Invacare® dealer. A more comprehensive list of inspection checks and instructions for maintenance work can be found in the Service Manual for this device, which can be obtained from Invacare®. That Manual, however, is intended to be used by trained and authorised service technicians, and describes tasks which are not intended to be performed by the user.

18.2.1 Before each use of the mobility device

Item	Inspection check	Action
Signal horn	• Check for correction function.	• Contact your dealer.
Lighting system	• Check that all lights, such as turn indicators, headlamps and tail lights, are functioning correctly.	• Contact your dealer.
Battery case locking system	• Check to ensure that the battery case locking system is functioning correctly. Locking pins must be completely engaged in the holes provided for them (see chapter**"**Transporting the wheelchair without occupants**"** on page **80)!**	• Contact your dealer.
Batteries	• Make sure the batteries are charged. See the User Manual provided with your remote for a description of the Battery Charge Indicator.	• Charge the batteries (see chapter **"**Charging the batteries**"** on page **82).**

18.2.2 Weekly

Item	Inspection check	Action
Armrests/side parts	• Check that armrests are firmly attached in their holders and do not wobble.	• Tighten the screw or clamping lever that holds the armrest (see chapter **"**Armrest Adjustment**"** on page 42). • Contact your dealer.
Tyres (pneumatic)	• Check that the tyres are undamaged.	• Contact your dealer.
	• Check that the tyres are inflated to the correct pressure.	• Inflate the tyre to the correct pressure (see chapter **"**Technical specifications**"** on page 96). • Repair the inner tube if you have a flat tyre (see chapter **"**Drive Wheel Removal**"** on page 69) or contact your dealer to have it repaired.
Tyres (puncture-proof)	• Check that the tyres are undamaged.	• Contact your dealer.
Anti-Tippers	• Check that anti-tippers are firmly attached and do not wobble. • Check that the spring clips of the anti-tippers are in good order and secure the anti-tippers correctly.	• Contact your dealer.

18.2.3 Monthly

Item	Inspection check	Action
All upholstered parts	• Check for damage and wear.	• Contact your dealer.
Removable legrests	• Check whether the legrests can be fixed securely and whether the loosening mechanism is properly operable (see chapter **"Adjusting footrests and legrests"** on page 57).	• Contact your dealer.
	• Check that all adjustment options function properly (see chapter **"Adjusting footrests and legrests"** on page 57).	• Contact your dealer.
Castors	• Check that castors rotate and swivel freely.	• Contact your dealer.
Drive wheels	• Check that the drive wheels rotate without wobbling. It is easiest to have someone stand behind the mobility device and observe the drive wheels as you drive away from them to do this.	• Contact your dealer.
Electronics and connectors	• Check all cables for damage and all connecting plugs for snug fit.	• Contact your dealer.

19 Refurbishment

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

- Cleaning and disinfection. Please see chapter **"**Maintenance**"** on page **89**.
- 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 **39**.

20 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.
- Exhausted or damaged batteries can be returned to your medical equipment supplier or Invacare®.
- 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.

21 Fault Finding

Remember that most power drive problems are battery related. Sometimes expensive components are unnecessarily replaced when in fact the problem was batteries.

If an electrical problem exists, always check the batteries first, also check cable connections for good contact. The electronics involved in the controller and lift and recline modules are quite sophisticated:- electronic repairs should be carried out by trained personnel.

IF YOUR CHAIR WILL NOT START

- Check that the control box is switched ‘on’, the display will be illuminated and remain stationary.
- Check that both motors are engaged.
- Check that the main controller cable is firmly pushed ‘home’.
- Do not move the joystick until the display is illuminated.

IF THE WHEELCHAIR PULLS TO ONE SIDE

- Check that the motors are fully engaged.
- Check that pneumatic tyres are inflated to correct pressure.
- Check that the castors move freely, and there is no free play at castor stem.
- Check joystick drive function is in line with the left and right response. One motor may be unplugged.

If your chair still has a problem after making these checks, please contact your authorised INVACARE dealer.

22 Technical specifications

The technical information provided hereafter applies to a standard configuration or represents maximum achievable values. These can change if accessories are added. The precise changes to these values are detailed in the sections for the respective accessories.

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 180 W
Batteries	• 2 x 12 V/30 Ah (C20) leakproof/gel • 2 x 12 V/40 Ah (C20) leakproof/gel
Main fuse	• 35 A for each battery box

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

Drive wheel tyres	
Tyre type	• 317 (12½" x 2¼") pneumatic, puncture-protected or puncture-proof
Tyre pressure	The recommended maximum tyre pressure in bar or kpa is marked on the side wall of the tyre or the rim. If more than one value is listed, the lower one in the corresponding units applies. (Tolerance = -0.3 bar,1 bar = 100 kpa)

Castor wheel tyres	
Tyre type	• 200x45 puncture-proof

Driving characteristics	
Speed	• 6 km/h
Min. braking distance	• 1000 mm
Max. safe slope ******	• 11° (20 %) according to manufacturer's specifications with 114 kg payload, minimal seat angle, backrest in vertical position
Max. climbable obstacle height	• 100 mm (with kerb climber) • 60 mm (without kerb climber)
Turning diameter	• 1860 mm (Spectra Plus) • 1920 mm (Spectra Plus Comfort)
Turning width	• 1210 mm
Drive range in accordance with ISO 7176-4:2008 ***	• 21 km (30 Ah batteries) • 32 km (40 Ah batteries)

Dimensions	Spectra Plus	Spectra Plus Comfort
Total height (without lifter)	• 890 mm	
Max. total width	• 580 mm	
Total length (incl. standard legrests)	• 1000 mm	• 1100 mm
Total length (without standard legrests)	• 730 mm	
Seat height ****	• 450/490/520/570 mm	
Seat width	• 430 mm • 380 mm • 330 mm	

Dimensions	Spectra Plus	Spectra Plus Comfort
Seat depth	• 300/330/350/380/440/480 mm	• 440/480 mm
Backrest height ****	• 430/570 mm	
Backrest angle	• 0° ... +30° (electrical) • +12° ... +29° (manual)	
Armrest height	• 260 - 390 mm	
Footrest length	• 230 - 480 mm	
Seat angle, electrical adjustment	• 0° … +16°	

Weight	
Kerb weight *****	• 70 kg

Component weights	
Batteries 30 Ah	• approx. 12 kg per battery
Batteries 40 Ah	• approx. 15 kg per battery

Payload	
Max. payload	• 114 kg

* Approximate.

*** 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 user, drive style and use of batteries for lighting, servos etc.
The specified values are theoretical maximum achievable values measured according to ISO 7176-4:2008.

**** Measured without seat cushion

***** The actual kerb weight depends on the fittings your mobility aid has been supplied with. Every Invacare® mobility aid is weighed when leaving the works. Please refer to the nameplate for the kerb weight (including batteries) measured.

****** Static stability according to ISO 7176-1 = 9° (15.8 %)
Dynamic stability according to ISO 7176-2 = 6° (10.5 %)

23 Approved Accessories Available

- Puncture-proof tyres
- Tray
- Detachable, powered reclining backrest
- Elevating legrests
- Joystick knob options.

PLEASE KEEP A NOTE OF THE DATE OF PURCHASE AND SERIAL NUMBER OF YOUR POWER CHAIR.
PLEASE QUOTE THIS NUMBER IN ALL CORRESPONDENCE AND SERVICE REQUESTS.

SERIAL NO.	DATE OF PURCHASE:

As with all powered motor vehicles we recommend that you take out maintenance insurance cover for out of warranty service requirements. Contact your authorised INVACARE dealer for advice and suitable options available.
The power chairs shown and described in this user manual may not be exactly the same in every detail as your own model. However, all instructions are still entirely relevant, irrespective of detail differences.
The manufacturers reserve the right to alter without notice any weights, measurements, or other technical data shown in this publication.
All figures, measurements and capacities shown in this user manual are approximate and do not constitute specifications.

WARRANTY STATEMENT
GENERAL CONDITIONS OF LIMITED WARRANTY
POWERED PRODUCTS

MODELS COVERED: SPECTRA PLUS
Invacare will repair or replace, at our option, to the original purchaser, free of charge, any part found upon receipt and examination by an authorised representative of Invacare to be defective in material and/or workmanship.

36 MONTHS WARRANTY - Items covered for thirty six months from the date of purchase.
Structural steel frame components including, side-frame, cross brace, footrest, back post and frame joints. (Excluding hand grips).

18 MONTHS WARRANTY - Items covered for eighteen months from the date of purchase.

MOTORS - including Motor Brake for electrical function.
Eighteen months warranty with the exception of damage occurring to the commutator of the motor as a result of not replacing motor brushes after heavy wear. Motor brushes and motor brake pads are wear items and will not be warranted.

CONTROLLERS/CHARGERS:
Eighteen months warranty for electrical function with the exclusion of rubber gaiters and related wiring looms.

BATTERIES:
Warranty is covered by the battery manufacturer for a period of twelve months. Only batteries which have been tested, using approved battery manufacturer test equipment e.g. Battest 12202 or Astratec, and confirmed to be defective will be replaced. Reduced performance will be assessed as to the possible cause and the feasibility of a warranty claim.
Only batteries supplied by Invacare are covered by the above conditions.

This warranty also excludes the following:

1. Upholstery materials are wear and tear items and are only warranted against genuine manufacturing and material defects.
2. Tyres, including in-filled types, and tubes are wear and tear items and are not warranted.
3. Damage caused by battery fluid spillage or leakage.
4. Damage caused by:
   a. Abuse, misuse, accident or negligence.
   b. Improper operation, maintenance or storage.
   c. Commercial use or use other than normal.
   d. Repairs and/or modifications made to any part without specific consent from Invacare.
   e. Circumstances beyond the control of Invacare.
5. Labour, service calls and other charges incurred in the repair of the product unless specifically authorised by Invacare.

The foregoing warranty is exclusive and in lieu of all other express warranties, implied warranties, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, and shall not extend beyond the duration of the express warranty provided herein. Invacare shall not be liable for any consequential or incidental damages whatsoever.

This warranty does not detract from but is in addition to your legal rights.

Warranty service can only be performed by an Invacare Authorised Dealer/Approved repairer.

Order No. of this Manual: 1526092.DOC
Release Date: 2012-07-04

English