



Invacare® Storm

*Powerchair
User's Manual*



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.

Invacare® Deutschland GmbH

Dehmer Str. 66
D-32549 Bad Oeynhausen

Deutschland

☎ (Kundendienst): +49 - (0) 5731 - 754 580
☎ (Technische Hotline): +49 - (0) 5731 - 754 570
Fax (Kundendienst): +49 - (0) 5731 - 754 216
Fax (Technische Hotline): +49 - (0) 5731 - 754 208

Invacare®, SA

c/ Areny, s/n
Poligon Industrial de Celrà
17460 Celrà (Girona)

ESPAÑA

☎ : +34 - (0) 972 - 49 32 00
Fax: +34 - (0) 972 - 49 32 20

Invacare® Ltd

South Road
Bridgend
Mid Glamorgan - CF31-3PY

United Kingdom

☎ (Customer Service): +44 - (0) 1656 - 647 327
Fax (Customer Service): +44 - (0) 1656 - 649 016

Invacare® A/S

Sdr. Ringvej 39
2605 Brøndby

Danmark

☎ (Kundeservice): +45 - (0) 3690 0000
Fax (Kundeservice): +45 - (0) 3690 0001

Invacare® POIRIER

Les Roches
F-37230 Fondettes

France

☎ (Service Après-Vente): +33 - (0) 2 47 - 62 64 66
Fax (Service Après-Vente): +33 - (0) 2 47 - 42 12 24

Mecc San S.R.L.

Via Dei Pini, 35
I - 36016 Thiene (VI)

ITALIA

☎: +39 - (0) 445-380059
Fax: +39 - (0) 445-380034

Invacare® AS

Grensesvingen 9
0603 Oslo

Norge

☎ (Kundeservice): +47 - 22 57 95 10
Fax (Kundeservice): +47 - 22 57 95 01

Invacare® PORTUGAL Lda

Rua Senhora de Campanhã, 105
4369-001 Porto

PORTUGAL

☎ : +352-225105946
Fax: +352-225105739

Invacare® n.v.

Autobaan 14
8210 Loppem (Brugge)

BELGIUM

☎: +32 (50) 831010
Fax: +32 (50) 831011

Invacare® B.V.

Celsiusstraat 46
NL-6716 BZ Ede
The Netherlands

☎ : +31 - (0) 318 - 69 57 57
Fax: +31 - (0) 318 - 69 57 58

Invacare® AB

Fagerstagatan 9
163 91 Spånga

Sverige

☎ (Kundtjänst): +46 - (0) 8 761 70 90
Fax (Kundtjänst): +46 - (0) 8 761 81 08
sweden@invacare.com

Service**Invacare****JÄRFÄLLA**

☎: +46 - (0) 8 – 621 08 44
Fax: +46 - (0) 8 – 621 08 45
Invacare.jarfalla@.swipnet.se

MÖLNDAL

☎: +46 - (0) 31 – 86 36 00
Fax: +46 - (0) 31 – 86 36 06
invacare.goteborg@swipnet.se

LANDSKRONA

☎: +46 - (0) 418 – 285 40
Fax: +46 - (0) 418 – 180 89
invacare.la@swipnet.se

OSKARSHAMN

☎: +46 - (0) 491 – 101 40
Fax: +46 - (0) 491 – 101 80
invacare.O-hamn@swipnet.se

Table of Contents

Chapter		Page
1	Introduction	9
	1.1 Important symbols in this manual	11
	1.2 Type Classification and Area of Use	11
2	Safety Notes.....	12
	2.1 General Safety Notes	12
	2.2 Safety information with regard to care and maintenance	15
	2.3 Safety Information on Electromagnetic Interference	16
	2.4 Safety Information on Driving and Freewheel Mode	17
	2.5 Safety Information on Wheelchairs with a Lifter	19
	2.6 Safety Information on Wheelchairs with Recaro Seats	20
3	The most important components.....	21
4	Getting In and Out	22
5	Driving	23
	5.1 Before driving for the first time.....	23
	5.2 Taking Obstacles	24
	5.3 Driving up and down gradients	25
	5.4 Parking and stationary	25
	5.5 Hand brake	26
6	Pushing the wheelchair by hand.....	27
	6.1 Disengaging Motors.....	27
7	The Advanced Control System (ACS)	28
	7.1 The main parts of the Joystick Box.....	28
	7.2 Main components of the Joystick Box	30
	7.2.1 Battery Charge Display.....	30

7.2.2	Status Display	31
7.2.3	Multi-Purpose Display	31
7.2.4	Symbols shown on the Multi-Purpose Display and their meanings.....	32
7.2.5	Joystick	33
7.2.6	Socket for Programmer.....	33
7.2.7	Charging Socket	34
7.2.8	Connection Socket for Supply Cable (Bus Cable).....	34
7.3	Operating the Joystick Box.....	35
7.3.1	Switching the Joystick Box ON/OFF.....	35
7.3.2	Drive Away Interlock	36
7.3.3	Lighting / Flashers	37
7.3.4	Horn38	
7.3.5	Hazard Flashers	38
7.3.6	Selecting a Driving Mode.....	39
7.3.7	Driving and Steering	41
7.4	Adjusting electric options using the Joystick	43
7.4.1	Select Adjustment Mode.....	44
7.4.2	Symbols of the Adjustment Options	45
7.4.3	Select the option that needs to be adjusted	46
7.4.4	Adjust option	47
7.4.5	Deselect Adjustment Mode.....	47
7.5	Troubleshooting on the ACS Control System.....	48
7.5.1	Error Codes	49
8	Adjustment Options of the Joystick Box	51
8.1.1	Adjusting the Joystick Box to length of the arm:.....	51
8.1.2	Swinging the Joystick Box out to the side (option):.....	51
8.1.3	Adjusting the height of the Joystick Box (option):.....	52
8.1.4	Adjusting the height of the armrests	52
9	Seating systems	53
9.1	Standard and Kontur Seats	53
9.1.1	Adjusting the seat tilt.....	53

9.1.2	Backrest adjustment	55
9.1.3	Adjusting the headrest	58
9.1.4	Adjusting the height of the armrests	59
9.1.5	Adjusting the height of the sideframes	59
9.1.6	Seat width adjustment:	59
9.1.7	Adjusting the pommel:	60
9.2	Recaro Seats	61
9.2.1	Recaro "N-Joy" and "Miles" (mechanically adjustable)	61
9.2.2	Recaro Ergomed DS (electrically adjustable):.....	62
9.3	Invacare® Ultimate and Personal Special Seating Systems	63
9.3.1	Adjusting the seat tilt.....	63
9.3.2	Seat version: Personal.....	64
9.3.2.1	Adjusting the height of the back	64
9.3.2.2	Adjusting the backrest angle	65
9.3.3	Seat version: Ultimate.....	67
9.3.3.1	Adjusting the height of the back	67
9.3.3.2	Adjusting the backrest angle	68
9.3.3.3	Adjusting the inflatable cushions	69
9.3.3.4	Removing the backrest.....	70
10	Footrests and Legrests.....	72
10.1	Footrests	72
10.1.1	Footrest (standard)	72
10.1.1.1	Removing the Footrest	73
10.1.1.2	Footrest: Adjusting the Angle	74
10.1.1.3	Footrest: Adjusting the Length.....	75
10.1.1.4	Footrest: Adjusting the Angle of the Footplate (Option)	75
10.2	Legrests	76
10.2.1	Settable Legrest (Option).....	76
10.2.1.1	Removing the Legrest.....	77
10.2.1.2	Settable legrest: Adjusting the Angle.....	78
10.2.1.3	Settable legrest: Adjusting the Length.....	79
10.2.1.4	Settable legrest: Adjusting the Angle of the Footplate	79

10.2.2	Manually Adjustable Legrest	80
10.2.2.1	Removing the Legrest.....	81
10.2.2.2	Height Adjustment for Ergonomic Length Compensation	82
10.2.2.3	Manually adjustable legrest: Angle Adjustment.....	83
10.2.2.4	Manually adjustable legrest: Adjusting the Length	84
10.2.2.5	Manually adjustable legrest: Adjusting the Angle of the Footplate.....	84
10.2.3	Electrically Adjustable Legrest.....	85
10.2.3.1	Removing the Legrest.....	86
10.2.3.2	Height Adjustment for Ergonomic Length Compensation	87
10.2.3.3	Electrically adjustable legrest: Angle Adjustment.....	88
10.2.3.4	Legrest: Adjusting the Length.....	89
10.2.3.5	Legrest: Adjusting the Angle of the Footplate	89
10.3	Width Adjustment of the Legrests (Option):.....	90
11	Lifter (option)	91
11.1	Adjusting the seat tilt on a STORM with a Lifter Module	92
11.2	Adjustment of the electric Lifter Module:	93
11.3	Automatic speed reduction:	94
11.4	Technical Specifications of the Lifter Module:	94
12	Electrical System.....	95
12.1	Electronics Protection System.....	95
12.2	Batteries.....	96
12.2.1	What you need to know about batteries	96
12.2.2	Charging the batteries	98
12.2.3	Removing and fitting batteries	100
12.2.3.1	Removing and refitting the 70 Ah batteries	101
12.2.3.2	Removing and fitting the 55 Ah batteries (old STORM model)	104
12.2.3.3	How to handle damaged batteries correctly	105
12.3	Lighting	106
13	Repair Instructions.....	107
13.1	Replacing light bulbs.....	107
13.2	Repairing a flat tyre.....	109

	13.2.1	Repairing a flat tyre (pneumatic tyres type 200 x 50).....	109
	13.2.2	Repairing a flat tyre (pneumatic tyres type 3.00x4").....	111
	13.2.3	Repairing a flat tyre (pneumatic tyres type 3.00-8")	113
14		Care and maintenance	115
15		Transport.....	118
	15.1	Transferring the wheelchair to another vehicle.....	118
	15.2	Securing the wheelchair for transport.....	118
	15.2.1	The Taxi Bar	119
	15.2.2	Anchor ring, lateral (Option):	119
	15.2.3	"Crash Kit" (Option):	120
16		Technical Specifications.....	121
17		Inspections Performed.....	126

1 Introduction

Dear Customer,

First we would like to thank you for choosing an Invacare® product. We hope you will be satisfied with your new Powerchair and that it will bring you much enjoyment.

This wheelchair combines attractive design with a new dimension in mobility and driving pleasure. Thanks to its unique modular construction, the STORM can be easily adapted to almost any personal need:

- Our different seating systems (like the Invacare® Kontur Seat, Invacare® Ultimate and Personal Seating Systems or the Recaro Seat) are designed to fit your personal needs and wishes.
- An optional Lifter Module provides the capability to increase the height of the seat by up to approximately 30 cm!
- Powerful 6 and 10 km/h motors make driving a pleasure in both indoor and outdoor environments.
- By adjusting the wheelbase and the seat depth, the driving characteristics of the Powerchair can be optimised for you.

- The individually programmable Invacare® **Advanced Control System (ACS)** allows fine-tuning of all driving characteristics.
- The compact design guarantees excellent manoeuvrability and easy transport.
- Thanks to a well thought-through concept, most special design requirements can be easily taken care of at the time of prescription. Later retro-fitting is possible, however this requires more work and should be performed by trained personnel.
- The orderly construction of the wheelchair make service and maintenance easy.

This User's Manual contains important information and instructions on the following subjects:

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

Please familiarise yourself with these instructions before going for your first drive. We cannot be held responsible for any damage or faults that result from failure to comply with the instructions put forth in this manual.

1.1 Important symbols in this manual



WARNING: This symbol warns you of danger!

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



NOTE:

This symbol indicates hints and suggestions which should help make operating the product easier and point out special functions.



REQUIREMENTS:

- This symbol indicates a list of the different tools and other requirements you will need to do certain maintenance work.
-
-

1.2 Type Classification and Area of Use

This wheelchair has been classified as class B (for indoor and outdoor areas). It has been successfully tested for its safety according to German and international standards. When equipped with an appropriate lighting system, the wheelchair is suitable to be driven on public roads.



WARNING: Danger of injury to occupant and damage to wheelchair if driver is not mentally and physically able to keep full control of the vehicle at all times!

- *If necessary, operation of the Powerchair must be performed by an attendant!*
-
-

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!

- *Adhere strictly to the instructions in this User's Manual!*

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!*

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!*
 - *Be aware that there are only the motor brakes to stop your wheelchair. When the motors are disengaged, these brakes are automatically 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 On/Off Button is pressed while the wheelchair is in motion, 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 another vehicle for transport with the occupant seated in it!

- *It is always better to transfer the wheelchair to another vehicle without the occupant seated in it!*
- *In case the wheelchair does need to be transferred to another vehicle over 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 the wheelchair is used as a vehicle seat without a special restraining system!

- *Only ever use the wheelchair as a vehicle seat in connection with a Wheelchair Restraint System and with the safety belts of the transporting vehicle! Make sure to follow the instructions and recommendations issued by the Restraint System's manufacturer!*

Danger of injury if maximum permissible load is exceeded!

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

Danger of injury if legrests break due to use as a stepping board!

- *Do not use the legrests as a stepping board when getting in and out of the wheelchair!*
-



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 restraining systems are installed (such as seat belts), use 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 of up to the maximum defined in the Technical Specifications and only with the backrest and seat tilt 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 maximum permissible load!*
 - *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!*
-

2.5 Safety Information on Wheelchairs with a Lifter



IMPORTANT - IF YOUR WHEELCHAIR IS EQUIPPED WITH A LIFTER:

Danger of injury if the wheelchair tips over!

- *Never exceed the maximum permissible load (see Technical Specifications)!*
- *Avoid dangerous driving situations when the lifter is in a raised position, such as trying to overcome obstacles like kerbs or driving up or down steep gradients!*
- *Never lean out of the seat when the lifter is raised!*
- *Inspect the lifter module at least once a month to make sure the automatic speed reduction function, which reduces the speed of the wheelchair when the lifter is raised, is working properly (see chapter on lifter)! Notify your authorised dealership immediately if it is not working properly!*

Danger of injury by moving parts!

- *Never let objects get caught in the space underneath a raised lifter!*
- *Make sure that neither you nor anyone else is injured by placing hands, feet or other body extremities under the raised seat!*

Danger of malfunction of the Lifter Module!

- *Inspect the lifter module at regular intervals to make sure there are no foreign objects or visible damage, and to make sure the electric plugs are firmly inserted into their sockets!*
-

2.6 Safety Information on Wheelchairs with Recaro Seats



Danger of injury if the wheelchair tips over!

The centre of gravity of a Recaro seat is higher than that of other seats. The Recaro seat is also heavier than other seating systems. The backrests of RECARO seats can be leaned back 90°. For these reasons there is an increased risk of tipping over!

- *Never lean the backrest backward more than 30° degrees, and never exceed 15° when driving the wheelchair!*

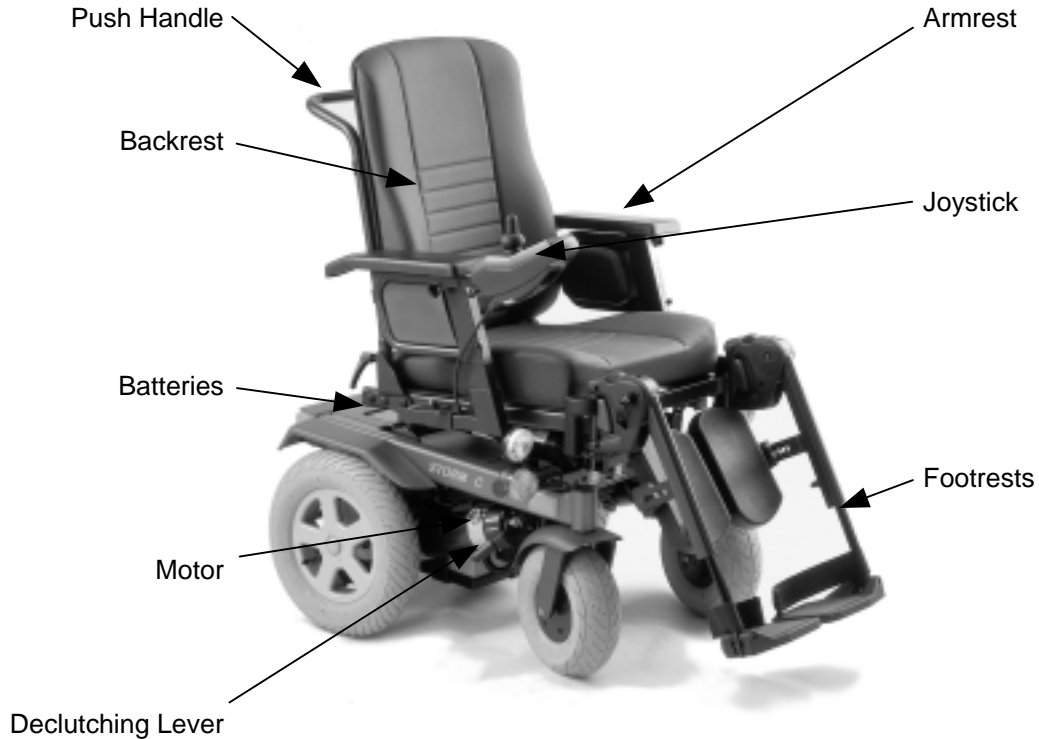


**More than 30°
NEVER!!**

**15°-30°
Standstill!**

**0°-15°
Driving**

3 The most important components



4 Getting In and Out

Getting in:

- Position the wheelchair as near to your seat as possible. If necessary, this can be done by an attendant.
- Switch your wheelchair off.
- Activate the hand brake (if your wheelchair has one).
- Remove the armrest or flip it upwards.
- Now slide over onto the wheelchair.



Getting out:

- Position the wheelchair as near to the new seat as possible.
- Switch your wheelchair off.
- Remove the armrest or flip it upwards.
- Now slide over onto the new seat.



NOTE

If you do not have sufficient muscle strength to change over by yourself, then do not hesitate to ask someone for assistance. Use a board to slide over on, if one is available.

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, use the restraining systems (seat belts) each time you use the vehicle.

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 seatbelt is in perfect order.**

5.2 Taking Obstacles

Your wheelchair can overcome obstacles and kerbs with the following heights.

- STORM with front wheel type 200x50: 4 cm
- STORM with front wheel type 3.00x4": 6 cm
- STORM with kerb climber: 10 cm



CAUTION: Danger of Tipping Over!

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

Driving up over an obstacle

- Approach the kerb or obstacle slowly head-on. Shortly before the front wheels or kerb-lifter touch the obstacle, increase the speed and reduce only after also the rear wheels have climbed the obstacle.

Driving down off of an obstacle

- Approach the kerb or obstacle slowly head-on. Before the front wheels touch the obstacle, reduce the speed and keep it until also the rear wheels have climbed the obstacle.

Correct



Incorrect



5.3 Driving up and down gradients

The STORM can safely climb gradients of up to 18%.

When driving up or down gradients you should always observe the following precautions:



WARNING: Danger of tipping over!

- *Only ever drive downhill at a maximum of 2/3 of the top speed!*
 - *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 or the seat tilt slightly to the rear before descending slopes!*
 - *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!*
-

5.4 Parking and stationary

When you leave your wheelchair standing still for a longer period of time:

- Switch the Joystick Box OFF (ON/OFF Button).

When parking your vehicle:

- Activate the Drive Away Interlock, if available.

5.5 Hand brake

The 10 Km/h version of the STORM is equipped with an additional hand brake. The brake lever is normally mounted on the opposite side from the Joystick Box. Alternatively, the brake lever can be mounted on the same side as the Joystick Box with a special holder.

- To activate the brakes push the brake lever forward, to release pull the lever backwards.



6 Pushing the wheelchair by hand

6.1 Disengaging Motors

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.



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)!*

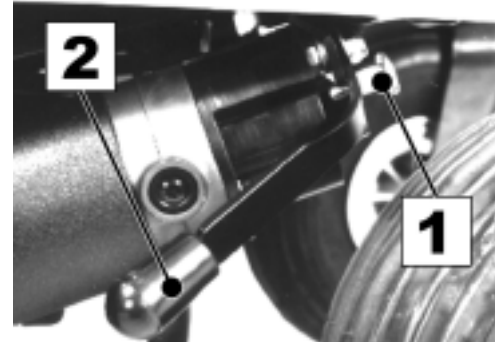
The lever, with which the motors are disengaged, is located on the right motor.

Disengaging the motors:

- Switch off the remote.
- Pull the safety bolt (1) forward.
- Pull the declutching lever (2) upwards.

Re-engaging the motors:

- Push the declutching lever down. The safety bolt locks automatically back in place.



7 The Advanced Control System (ACS)

7.1 The main parts of the Joystick Box

- 1) Battery Charge Display
- 2) Driving and Adjustment Mode Display
- 3) Shift Up Driving Mode
- 4) Hazard Flasher Button
- 5) Left Flasher
- 6) Joystick



- 7) Status Display
- 8) Drive Away Interlock
- 9) Shift Down Driving Mode
- 10) ON/OFF
- 11) Light
- 12) Right Flasher
- 13) Horn

The Pilot Lights on the Joystick Box:

- Left and Right Flashers (14+17)
- Hazard Flashers (15)
- Vehicle Lighting (16)

Pilot lights



On the bottom of the joystick box you will find:

- Socket for Programmer (18)
- the Charging Socket (19)
- Connection Socket for Supply Cable (20)



7.2 Main components of the Joystick Box

7.2.1 Battery Charge Display

The battery charge display (1) shows you the current charge status of the batteries.

It is subdivided into 10 different-coloured LEDs:
2 x red, 4 x yellow and 4 x green.

The decreasing battery charge, and thus the Powerchair's decreasing travelling range, is indicated by the individual diodes going out.

Meaning of the Display:

- All diodes illuminated: full travelling range = batteries fully charged
- Only the red diodes illuminated: Diminished travelling range = charge batteries at end of trip
- Both of the red diodes flash: very low travelling range = charge batteries as soon as possible
- Only one red diode flashes: Battery reserve = charge batteries immediately!

The travelling range on battery reserve is very low. After a certain travelling time, the electronics will switch off the drive automatically and bring the Powerchair to a standstill = full discharge protection.

Battery Charge Display



7.2.2 Status Display

The ON/OFF LED (7) also functions as a Status Display or Error Display. Flashing of the display indicates a malfunction of the electrical equipment.

The cause of the malfunction is indicated by a flash code.
(Error codes see Chap. "Error Codes" on page 49.)

The ACS Joystick Box monitors the following functions:

- Monitoring the electronics
- Monitoring the electrical components
- Monitoring the power supply

Status Display



7.2.3 Multi-Purpose Display

Using the Joystick Box, you can select a range of different electrical adjustment options.

The symbols shown on the Multi-Purpose Display (2) indicate which adjustment option (mode) is active at the moment.

Multi-Purpose Display



7.2.4 Symbols shown on the Multi-Purpose Display and their meanings



= Driving Mode (select Driving Modes 1 - 5)



= Adjustment of Electric Options*



= Reduces driving speed when Lifter is raised or when the seat is not in an upright position

* **These symbols only appear if your wheelchair is equipped with the corresponding electrical adjustment options.**



NOTE

For more information on the individual symbols see chapter 7.4.2 on page 45.

7.2.5 Joystick

With the Joystick (6) you can:

- Drive and steer
- Select and adjust electric actuators (like powered legrests).

Driving speed and steering movement depend on the movement of the joystick. The regulation of speed and steering direction is continuous.

- Move Joystick to its furthest position in any direction = Maximum of selected top forward and cornering speed.

Joystick



7.2.6 Socket for Programmer

This socket (18) is located on the bottom of the joystick box and serves to connect the programmer.18
The ACS programming can be modified using a programmer.

Socket for Programmer



7.2.7 Charging Socket

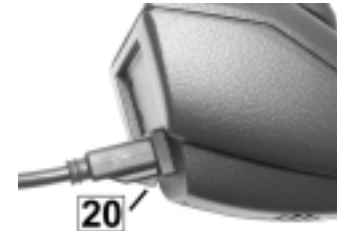
This socket (19) is also located on the bottom of the joystick box and serves to connect the battery charger.



Charging Socket

7.2.8 Connection Socket for Supply Cable (Bus Cable)

The connection cable serves the power supply of the joystick box and the data transfer from the joystick box to the main module. The plug of the connection cable is secured against detachment of the plug connection by a safety catch (20).



Bus Cable

7.3 Operating the Joystick Box

7.3.1 Switching the Joystick Box ON/OFF

Switching ON:

- Press the ON/OFF Button (10) once.

Displays:

- The Status Display in the Key-Symbol lights up.
- The battery charge display showing the current charge status.
- The Driving Mode Display shows the selected Driving Mode.

Switching OFF:

- Press the ON/OFF Button (10) once again.

All displays will be extinguished.

Switching ON/OFF



NOTE

If the wheelchair is not ready to go when switched on, please check:

- the drive-away lock. 7.3.2).
- the Status Display (Chap. 7.2.2); Error codes (Chap. 7.5.1).



NOTE

A separate, independent switch for switching on the Joystick Box is also available as an option.

7.3.2 Drive Away Interlock

The ACS is protected against unauthorised use by an electronic drive-away interlock. A sensor is located under the Key-Symbol. The Drive Away Interlock is activated and deactivated by touching the sensor area (8) with the magnetic key.

Activating the drive-away lock:

- Switch the Joystick ON.
- Touch the sensor area (8) with the end of the magnetic key (A). The signal horn will sound once briefly. The drive-away lock is activated.

Deactivating the Drive Away Interlock:

- Switch the Joystick ON.
- Touch the sensor area (8) with the end of the magnetic key (A).

Drive Away Interlock



Magnetic Key



7.3.3 Lighting / Flashers

Switching the lights on:

- Press the Lights Button (11) on the remote once. The Lighting-LED (16) on the display lights up.

Switching the lights off:

- Press the Lights Button on the remote once again. The Lighting-LED (16) on the display goes out.

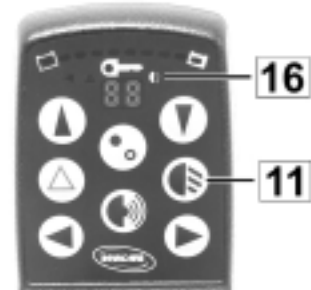
Activating the flashers:

- Press either the right or left Flasher Button (5 / 12) once briefly. The Flasher-LED (14 / 17) on the display lights up for the selected direction.

Deactivating the flashers:

- Press the Flasher Button (5 / 12) briefly once again. The Flasher-LED (14 / 17) on the display goes out.

Switching the lights ON and OFF



Activating and deactivating the flashers



7.3.4 Horn

- Press the Horn Button (13). the horn sounds for as long as the button is pressed.

Horn



7.3.5 Hazard Flashers

Activating the Hazard Warning Flasher:

- Press the Hazard Warning Flasher Button (4) once briefly. The Hazard Flasher is activated. The Hazard Flasher-LED (15) on the display lights up.

Deactivating the flashers:

- Press the Hazard Warning Flasher Button once again. The Hazard Flasher is deactivated. The Hazard Flasher-LED (15) on the display goes out.

Activating and deactivating the Hazard Flasher



7.3.6 Selecting a Driving Mode

"Driving Mode" means more than just "how fast". The Driving Mode encompasses:

- Acceleration
- Forward speed
- Backward speed
- Cornering speed

The Multi-Purpose Display (2) indicates which mode the wheelchair is currently in.

Different Driving Modes can be selected using the buttons (3 + 9) to the right and left of the display.

The Driving Mode has 5 levels:

Level 1 = very slow driving characteristics, reduced end-velocity



to



Level 5 = dynamic driving characteristics, highest end-velocity

Driving Mode Buttons



Shifting up from Driving Mode 1 - 5:

- Press the left button (3) as many times as necessary, until the desired Driving Mode is reached. The display (2) shows the selected Driving Mode.

Switching down from Driving Mode 5 - 1:

- Press the right button as many times as necessary, until the desired Driving Mode is reached. The display (9) shows the selected Driving Mode.

Switching Driving Modes



NOTE

The electronics of the ACS has been programmed at the factory with default values. Individual programming, tailored to your specific requirements, can be performed by your authorised Invacare® Dealer.

7.3.7 Driving and Steering

Driving forwards

- Move joystick forward. The movement of the joystick determines the driving speed.

Driving backwards

- Move joystick backwards. The movement of the joystick determines the driving speed.

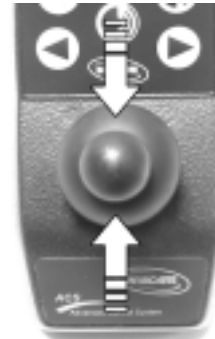
Braking

- Move joystick back to centre position.

Forward and Backwards



Braking



NOTE

In dangerous situations it is sufficient to release the joystick. It will automatically return to its centre position. The wheelchair will brake.



Cornering

- Move the joystick in the desired direction whilst driving forward or backwards. The movement of the joystick determines the cornering speed.

Cornering



Turning on the spot

- Move the joystick in the desired direction (left/right) WITHOUT forward or reverse speed.

Turning on the spot



7.4 Adjusting electric options using the Joystick

Electric seat tilt, backrest angle, lifter and legrests can be adjusted using the Joystick (6).

To be able to adjust the individual electric options, the Joystick Box must be switched from driving mode to adjustment mode.

The Adjustment Symbols are displayed on the Multi-Purpose Display (2) of the Joystick Box.

Joystick and Multi-Purpose Display



NOTE

Electric adjustment options can also be controlled independently from the Joystick Box using a separately available control device.

7.4.1 Select Adjustment Mode

- Press the right or left buttons (3+9) repeatedly until the symbol shown at right appears on the display (L).
- Push Joystick (6) to the right or left (1+2) until the Adjustment Mode Symbol appears on the left display (L).
- By pushing the Joystick forward (3) the adjustment is activated.

Symbol



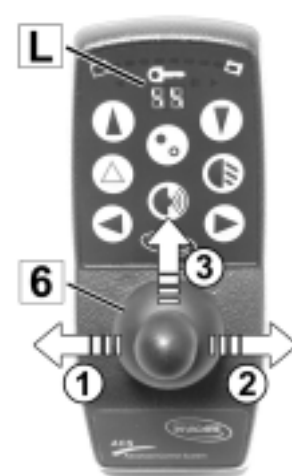
Select symbols



Symbol



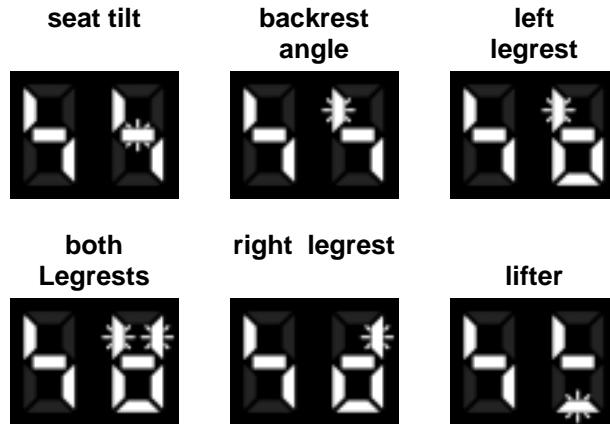
Select Adjustment Mode



7.4.2 Symbols of the Adjustment Options

The symbol depicted on the right display (R) shows which option be can adjusted.

The individual options are designated by the following symbols:



7.4.3 Select the option that needs to be adjusted

Select:

- Push Joystick (6) once to the right or left. The flashing bar (*) in the symbol on the right display (R) shows which option can be adjusted.

By pushing the Joystick once again in the same direction, the next symbol can be selected. Repeat the procedure until the symbol of the option that you would like to adjust appears on the display.

Select option that needs be adjusted



7.4.4 Adjust option

- Raise option (H) by pushing the Joystick forward.
- Lower option (S) by pulling the Joystick backward.

Adjust option



7.4.5 Deselect Adjustment Mode

- Press the right or left buttons (3+9) repeatedly until the Driving Mode Symbol appears on the left display (L).

Symbol



Symbol on the Multi-Purpose Display



7.5 Troubleshooting on the ACS Control System

Wheelchair slows down or doesn't move

Check:	Possible cause:	Direct remedy:	Further action (s):
Status display on joystick box extinguished?	<ul style="list-style-type: none"> Power supply interrupted. 	<ul style="list-style-type: none"> Check plug connection at joystick box. 	<ul style="list-style-type: none"> Contact authorised dealer.
	<ul style="list-style-type: none"> Battery fully discharged. 	<ul style="list-style-type: none"> Charge battery. 	<ul style="list-style-type: none"> See operating instructions of charger.
	<ul style="list-style-type: none"> Battery defective. 	<ul style="list-style-type: none"> Replace battery. 	<ul style="list-style-type: none"> Contact authorised dealer.
Status display on joystick box flashing?	<ul style="list-style-type: none"> Various causes. 	<ul style="list-style-type: none"> Check error code. 	<ul style="list-style-type: none"> See Chapter 7.5.1

Red LED in battery charge display and status display flashing, driving mode display showing a horizontal bar.

Check:	Possible cause:	Direct remedy:	Further action (s):
	<ul style="list-style-type: none"> Battery discharged. 	<ul style="list-style-type: none"> Charge battery. 	<ul style="list-style-type: none"> See operating instructions of charger.

7.5.1 Error Codes

The ACS electronics are capable to clear some faults automatically. In this case, the flashing of the status display will extinguish. To achieve this, switch the joystick box off and on again several times. Wait each time for about 5 seconds before switching the joystick box on again. If that does not eliminate the fault, identify the error by means of the flash codes listed below.

Flash codes of status display on joystick box:

Flash code:	Meaning:	Direct remedy:	Further action (s):
1 x flash	Module defective.	-	<ul style="list-style-type: none">• Contact authorised dealer.
2 x flashes	Error in accessories.	-	<ul style="list-style-type: none">• Contact authorised dealer.
	Lifter is elevated.	<ul style="list-style-type: none">• Lower lifter completely.	-
3 x flashes	Right motor error. Connection loose/defective.	<ul style="list-style-type: none">• Check plug-and-socket connections.	<ul style="list-style-type: none">• Contact authorised dealer.
4 x flashes	Left motor error. Connection loose/defective.	<ul style="list-style-type: none">• Check plug-and-socket connections.	<ul style="list-style-type: none">• Contact authorised dealer.

Flash code:	Meaning:	Direct remedy:	Further action (s):
5 x flashes	Error/brake error in right motor. Connection loose/defective or motor defective.	<ul style="list-style-type: none"> • Check plug-and-socket connections. 	<ul style="list-style-type: none"> • Contact authorised dealer.
	Motors disengaged.	<ul style="list-style-type: none"> • Engage motors. Switch joystick box off and on again. 	-
6 x flashes	Error/brake error in left motor. Connection loose/defective or motor defective.	<ul style="list-style-type: none"> • Check plug-and-socket connections. 	<ul style="list-style-type: none"> • Contact authorised dealer.
7 x flashes	Battery fully discharged.	<ul style="list-style-type: none"> • Re-charge battery. 	<ul style="list-style-type: none"> • Contact authorised dealer.
8 x flashes	Battery potential too high.	-	<ul style="list-style-type: none"> • Contact authorised dealer.
9 or 10 x flashes	Error in data transfer between modules.	-	<ul style="list-style-type: none"> • Contact authorised dealer.
11 x flashes	Motors overloaded.	<ul style="list-style-type: none"> • Switch joystick box off and on again. 	-
12 x flashes	Compatibility problems between modules.	-	<ul style="list-style-type: none"> • Contact authorised dealer.

8 Adjustment Options of the Joystick Box

Below, some of the more important adjustment options of the Joystick Box are described. For a detailed description of the **functions** of the Joystick Box please see the Joystick Box User's Manual.

8.1.1 Adjusting the Joystick Box to length of the arm:

- Loosen the thumb screw that holds the Joystick Box by turning it counterclockwise.
- Adjust the Joystick Box to the length of the arm by sliding it forwards or backwards.
- Re-tighten the thumb screw that holds the Joystick Box by turning it clockwise.



8.1.2 Swinging the Joystick Box out to the side (option):

- Swing the Joystick Box out to the side.
- Swing the Joystick Box back. It is held in it's normal position by a spring catch.



8.1.3 Adjusting the height of the Joystick Box (option):

- Loosen the thumb screw that holds the Joystick Box by turning it counterclockwise.
- Adjust the height of the Joystick Box by sliding it upwards or downwards.
- Re-tighten the thumb screw that holds the Joystick Box by turning it clockwise.



8.1.4 Adjusting the height of the armrests

- Loosen the clamping lever.
- Pull the armrest upwards until the desired height is reached.
- Re-tighten clamping lever again.



9 Seating systems

9.1 Standard and Kontur Seats

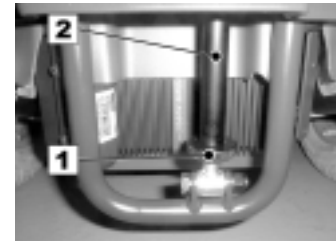
Kontur Seat



9.1.1 Adjusting the seat tilt

Manual adjustment:

- Manual adjustment:
- Loosen the knurled nut (1) and screw downwards.
- Turn the threaded adjustment sleeve (2) counterclockwise = lift the front edge of the seat.
- Turn the threaded adjustment sleeve (2) clockwise = lower the front edge of the seat.
- Re-tighten the knurled nut (1).



Electric adjustment:

The seat tilt of the wheelchair with electric actuator is adjusted using the ACS-Joystick Box. The adjustment is infinitely variable, and can be selected in the range between -1° and $+18^{\circ}$. If your wheelchair is equipped with an electric lifter, then the adjustment range is between 0° and 9° .

- Switch the Joystick Box to Driving Mode "0" using the "Driving Mode Down" Button (see the description of the Joystick Box). The Driving Mode Display automatically switches to a symbol of the seat.
- By moving the Joystick to the right or left, the different options are displayed one after the other as symbols. Scroll through options until you the symbol depicted at right.
- You can now individually adjust the seat tilt by moving the Joystick forwards or backwards.



- Finally, switch the Joystick Box back to Driving Mode by pressing the "Driving Mode Up" Button.

9.1.2 Backrest adjustment

Manual adjustment:

- The lever for adjusting the backrest can be located either on the right or left side behind one of the clamping levers for adjusting the armrest height.
- Pull lever upwards.
- Press backrest backwards using your own weight.
- When the backrest is in the desired position, release the lever.



Adjustment by metal plate with holes (available as an option for Standard Seats)

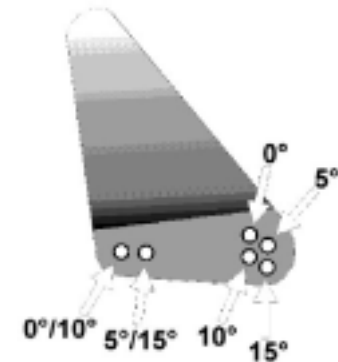
- The angle of the backrest is determined by the metal plate with screw-holes, which attaches the backrest to the frame.
- The angle can be changed by selecting different combinations of holes between 0°, 5°, 10° or 15° (see drawing).

Position of the metal plate



- Remove the screws that hold the backrest frame on both sides using a 13 mm open-end spanner.
- Select the correct holes for the desired angle using the drawing at right.
- Re-fasten the backrest frame using the hole combination selected.

Metal plate with holes



NOTE:

To make it easier to re-position the screws that hold the backrest, it may be held in place by a second person.

Backrest with electric adjustment (option):

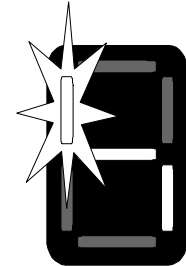


WARNING: Danger of tipping over!

- *When driving, the backrest angle must never exceed 15°!*

The backrest angle of the wheelchair with electric actuator is adjusted using the ACS-Joystick Box. The adjustment is infinitely variable, and can be selected in the range between 0° and 45°.

- Switch the Joystick Box to Driving Mode "0" using the "Driving Mode Down" Button. The Driving Mode Display automatically switches to a symbol of the seat.
- By moving the Joystick to the right or left, the different options are displayed one after the other as symbols. Scroll through options until you the symbol depicted at right.
- You can now individually adjust the angle of the backrest by moving the Joystick forwards or backwards.
- Finally, switch the Joystick Box back to Driving Mode by pressing the "Driving Mode Up" Button.



9.1.3 Adjusting the headrest

Height adjustment:

- Loosen the clamping lever (1).
- Slide the headrest to the desired height.
- Re-tighten clamping lever (1).

Positioning the headrest:

- Loosen the clamping lever (2).
- Adjust the headrest to the desired angle.
- Re-tighten clamping lever (2).



9.1.4 Adjusting the height of the armrests

- Loosen the clamping lever.
- Pull the armrest upwards until the desired height is reached.
- Re-tighten clamping lever again.



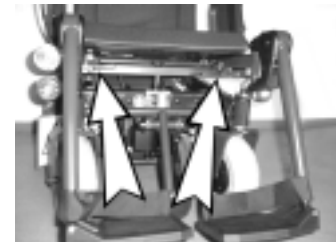
9.1.5 Adjusting the height of the sideframes

- Loosen the screws using a 4 mm Allen Key.
- Adjust the sideframes to the desired position.
- Tighten the screw again.



9.1.6 Seat width adjustment:

- The clamping levers which allow adjustment of the seat width are located under the seat.



Position of the clamping levers

- Loosen the clamping lever.
- Pull the armrest frames outwards until the desired width is reached.
- Re-tighten clamping lever again.



9.1.7 Adjusting the pommel:

To position the pommel:

- Loosen the thumb screws (1 to 3)
- Adjust the pommel to the desired position.
- Re-tighten the thumb screws (1 to 3)



9.2 Recaro Seats

9.2.1 Recaro "N-Joy" and "Miles" (mechanically adjustable)

Backrest adjustment:

- When the hand wheel is turned forwards, the backrest is raised.
- When the hand wheel is turned backwards, the backrest is lowered.



Adjusting the height of the armrests

- Loosen one of the thumb screws depicted at right.
- Pull the armrest upwards until the desired height is reached.
- Re-tighten the thumb screw again.



9.2.2 Recaro Ergomed DS (electrically adjustable):

For a detailed description of the functions of the **Recaro Ergomed DS**, please see the **Recaro** User's Manual.

By pressing the buttons, the Recaro Seat can be individually adjusted.

1. Backrest cushion 1
2. Backrest cushion 2
3. Seat height / seat tilt rear
4. Seat height / seat tilt front
5. Backrest Adjustment



9.3 Invacare® Ultimate and Personal Special Seating Systems

There are two different Invacare® Special Seating Systems, the Personal and the Ultimate versions. Both systems have ergonomically formed back and seat elements. In addition, the Ultimate back is equipped with inflatable side and lumbar cushions.

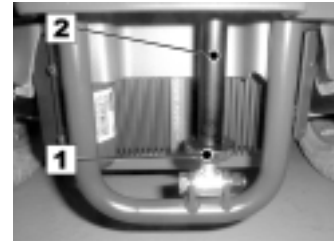
Invacare® Special Seating System



9.3.1 Adjusting the seat tilt

Manual adjustment:

- Manual adjustment:
- Loosen the knurled nut (1) and screw downwards.
- Turn the threaded adjustment sleeve (2) counterclockwise = lift the front edge of the seat.
- Turn the threaded adjustment sleeve (2) clockwise = lower the front edge of the seat.
- Re-tighten the knurled nut (1).



Electric adjustment:

- Adjustment of the seat tilt by means of an electric actuator is described in the ACS User's Manual.

9.3.2 Seat version: Personal

9.3.2.1 Adjusting the height of the back

- Loosen the screws that hold both (1) retainer plates with a Phillips Screwdriver.
- Determine which holes in the backrest frame (2) and on the plates correspond to the desired height.
- Re-fasten the plates using the hole combination selected.

Retainer plate



9.3.2.2 Adjusting the backrest angle

The angle of the backrest is determined by the pins and the slots in the plates on the backrest frame.

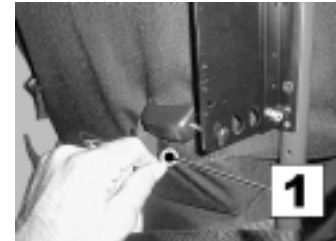
Plate - pins



lower slot

- Release the securing belts (1) for the lower backrest holder (Velcro).

Lower
backrest
holder



- Turn the levers (1) of both holders until the cams (2) can be pulled out of the slots on the plates.

Lower backrest holder



- Unhook the upper backrest support and reposition it in the desired slots.
- Bring the lower backrest support into the desired position.
- Turn the levers (1) of both holders until the cams (2) can be slid into the slots on the plates.
- Slide the holder in and turn until it reaches the securing belts.
- Secure the lever using the securing belts.

Retainer plate
Upper backrest support



Lower backrest holder

9.3.3 Seat version: Ultimate

9.3.3.1 Adjusting the height of the back

Position of the backrest holder



- Loosen the retainer screws (1) of both upper backrest holders with a 4mm Allen Key.
- Adjust to the desired height.
- Tighten the screws again.

Backrest holder



9.3.3.2 Adjusting the backrest angle

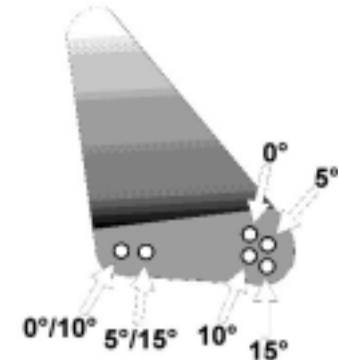
The angle of the backrest is determined by the metal plate with screw-holes, which attaches the backrest to the frame. The angle can be changed by selecting different combinations of holes between 0°, 5°, 10° or 15° (see drawing).

- Remove the screws that hold the backrest frame on both sides using a 13 mm open-end spanner.
- Select the correct holes for the desired angle using the drawing at right.
- Re-fasten the backrest frame using the hole combination selected.

Position of the metal plate



Metal plate with holes



NOTE:

To make it easier to re-position the screws that hold the backrest, it may be held in place by a second person.

Fine adjustment of the backrest angle:

By turning the hand wheel, the backrest angle can be finely adjusted.

- Turn the hand wheel to the right = increase the angle
- Turn the hand wheel to the left = decrease the angle

Hand wheel



9.3.3.3 Adjusting the inflatable cushions

- Inflate the inflatable cushions to the required size using the rubber hand pumps.
Right and left rubber hand pumps = lateral inflatable cushions
Middle rubber hand pump = lumbar cushion.

Position of the rubber hand pumps



- Let air out of the lateral cushions using the release valves (1).
- Let air out of the lumbar cushion by using the release valve screw (2).

Letting air out



9.3.3.4 Removing the backrest

- Loosen the clamps on both upper backrest holders by turning them.

Upper backrest holders



**Lower
latching
mechanism**



- Pull both lower latching mechanisms and remove backrest in an upward direction.



Pull the levers

Refitting the backrest:

- Fit the backrest into the upper backrest holders and tighten the clamps.
- Pull the lower release mechanisms and snap the backrest into the backrest frame.

Refitting the backrest



10 Footrests and Legrests

The Powerchair can be equipped with various different footrests and legrests. The individual types and their functions will be explained in this chapter.

10.1 Footrests

10.1.1 Footrest (standard)

- **With Pre-Adjusted Angle**

General Information

The footrest can easily be adapted to the individual needs of the user. The angle of the footrest in relation to the seat and its length are adjustable. This way the footrest can be individually adjusted to the angle of the seat the user's needs.

Adjustment of the footrest can be done with corresponding tools. We recommend that this adjustment be done by a trained Invacare® Dealer.



10.1.1.1 Removing the Footrest

- Release footrest by pressing button.



- Swing footrest out approximately 90°.



- Pull footrest up out of its holder.



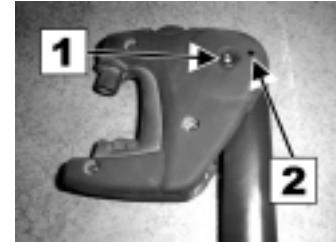
10.1.1.2 Footrest: Adjusting the Angle



Warning: Danger of Injury if footrest or legrest is incorrectly adjusted!

- *Before and during each drive, always make sure there is sufficient clearance between the legrest (or footrest) and the ground, as well as the castors!*

- Loosen the screw that allows the angle to be adjusted (1).
- If the footrest still cannot be moved after loosening the screw, position a metal pin in the hole on the side (2) and tap it lightly with a hammer. This releases the clamping mechanism inside the footrest. If necessary, repeat this procedure from the other side of the footrest.
- Adjust to the desired angle.
- Tighten the screw again.



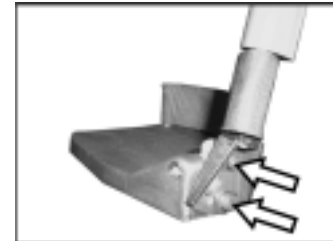
10.1.1.3 Footrest: Adjusting the Length

- Loosen the screw which allows the length to be adjusted using a 5mm Allen Key.
- Adjust to the desired length.
- Tighten the screw again.



10.1.1.4 Footrest: Adjusting the Angle of the Footplate (Option)

- Loosen both screws of the footplate using a 5mm Allen Key.
- Adjust to the desired angle.
- Tighten the screws again.



10.2 Legrests

10.2.1 Settable Legrest (Option)

- **Manual Height Adjustment**
- **Angle Adjustment of the Legrest = 90° - 0°**
- **Footplate Angle Adjustable**

General Information

The settable legrest can easily be adapted to the individual needs of the user. The angle of the footrest in relation to the seat and its length are adjustable. This way the footrest can be individually adjusted to the angle of the seat the user's needs.

The angle and length adjustments of the settable legrest are equipped with a quick-release mechanism.



10.2.1.1 Removing the Legrest

- Release footrest by pressing button.



- Swing footrest out approximately 90°.



- Pull footrest up out of its holder.



10.2.1.2 Settable legrest: Adjusting the Angle



Warning: Danger of Injury if footrest or legrest is incorrectly adjusted!

- *Before and during each drive, always make sure there is sufficient clearance between the legrest (or footrest) and the ground, as well as the castors!*

- Release the quick-release (1) of the angle adjustment by pulling the lever up.
- Adjust to the desired angle (2).
- Press the lever back down and secure the quick-release (1) by turning it clockwise.



10.2.1.3 Settable legrest: Adjusting the Length

- Loosen the screw that allows the length to be adjusted.
- Adjust to the desired length.
- Tighten the screw again.



10.2.1.4 Settable legrest: Adjusting the Angle of the Footplate

- Loosen both screws of the footplate using a 5mm Allen Key.
- Adjust to the desired angle.
- Tighten the screws again.



10.2.2 Manually Adjustable Legrest

- **Manual Height Adjustment**
- **Angle Adjustment of the Legrest = 80° - 0°**
- **Ergonomic Length Compensation**
- **Footplate Angle Adjustable**

General Information

The manually height-adjustable legrest provides quick mechanical adjustment of the angle of the legrest.

Adjustment of the length of the legrest and of the angle of the footplate can be done with corresponding tools. We recommend that this adjustment be done by a trained Invacare® Dealer.



10.2.2.1 Removing the Legrest

- Release footrest by pressing button.



- Swing footrest out approximately 90°.



- Pull footrest up out of its holder.



10.2.2.2 Height Adjustment for Ergonomic Length Compensation



Warning: Danger of Injury if footrest or legrest is incorrectly adjusted!

- Before and during each drive, always make sure there is sufficient clearance between the legrest (or footrest) and the ground, as well as the castors!

Ergonomic Length Compensation of the legrest is only given if the pivot point of the legrest (1) corresponds with that of the user's knee.

To insure this, the height of the pivot point of the legrest must be adjusted to suit the user.

- Loosen and remove the screws (2) using a 5mm Allen Key.
- Adjust the height of the legrest, align it with the holes (3) and reposition the screws.
- Tighten the screws (2) and test the clearance of the legrest.



NOTE:

Adjustment of the height should only be done by authorised technicians.

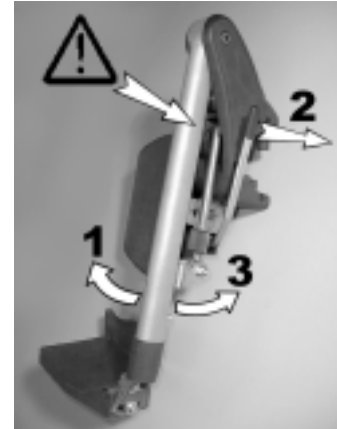
10.2.2.3 Manually adjustable legrest: Angle Adjustment



Warning: Danger of injury by moving parts!

- *Do not place fingers in the area between the upper and lower parts of the legrest!*

- Adjust the legrest upward by pulling it up to the desired angle (1).
- To lower the legrest, hold it by the footplate, pull the adjustment lever on the side (2) and slowly lower the legrest (3).



NOTE:

After letting the adjustment lever go, the legrest is locked at the desired angle.

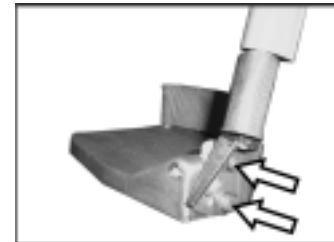
10.2.2.4 Manually adjustable legrest: Adjusting the Length

- Loosen the screw which allows the length to be adjusted using a 5mm Allen Key.
- Adjust to the desired length.
- Tighten the screw again.



10.2.2.5 Manually adjustable legrest: Adjusting the Angle of the Footplate

- Loosen both screws of the footplate using a 5mm Allen Key.
- Adjust to the desired angle.
- Tighten the screws again.



10.2.3 Electrically Adjustable Legrest

- **Electric Height Adjustment**
- **Angle Adjustment of the Legrest = 80° - 0°**
- **Ergonomic Length Compensation**
- **Footplate Angle Adjustable**

General Information

The angle of the electrically elevatable legrest can be adjusted electrically. Adjustment of the length of the legrest and of the angle of the footplate can be done with corresponding tools. We recommend that this adjustment be done by a trained Invacare® Dealer.



10.2.3.1 Removing the Legrest

- Release footrest by pressing button.



- Swing footrest out approximately 90°.



- Pull footrest up out of its holder.



10.2.3.2 Height Adjustment for Ergonomic Length Compensation



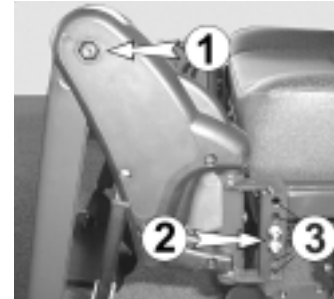
Warning: Danger of Injury if footrest or legrest is incorrectly adjusted!

- Before and during each drive, always make sure there is sufficient clearance between the legrest (or footrest) and the ground, as well as the castors!

Ergonomic Length Compensation of the legrest is only given if the pivot point of the legrest (1) corresponds with that of the user's knee.

To insure this, the height of the pivot point of the legrest must be adjusted to suit the user.

- Loosen and remove the screws (2) using a 5mm Allen Key.
- Adjust the height of the legrest, align it with the holes (3) and reposition the screws.
- Tighten the screws (2) and test the clearance of the legrest.



NOTE:

Adjustment of the height should only be done by authorised technicians.

10.2.3.3 Electrically adjustable legrest: Angle Adjustment



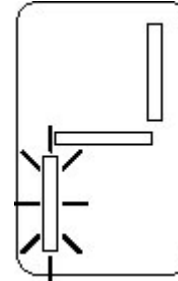
Warning: Danger of injury by moving parts!

- *Do not place fingers in the area between the upper and lower parts of the legrest!*

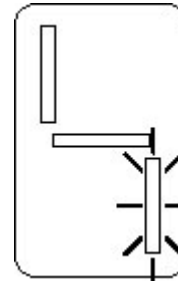
The electric actuator, which adjusts the angle, is controlled using the remote.

- Select Menu Point "0" using the "Driving Mode Shift Down" Button on the remote.
- The symbol changes automatically from "0" to a symbol of the seat.
- By moving the joystick to the left or to the right, scroll through options of the menu until you see one of the symbols shown at the right flashing on the display.
- **The flashing symbol shows which legrest can be adjusted.**
- By pushing the joystick forward you move the selected legrest upwards.
- By pulling the joystick back you move the selected legrest downwards.

Adjust left legrest



Adjust right legrest



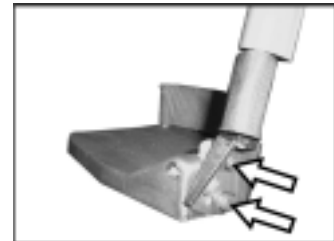
10.2.3.4 Legrest: Adjusting the Length

- Loosen the screw which allows the length to be adjusted using a 10 mm open-end spanner.
- Adjust to the desired length.
- Tighten the screw again.



10.2.3.5 Legrest: Adjusting the Angle of the Footplate

- Loosen both screws of the footplate using a 5mm Allen Key.
- Adjust to the desired angle.
- Tighten the screws again.



10.3 Width Adjustment of the Legrests (Option):

- The screws that allow adjustment of the width are located under the seat.

Position of the clamping lever



NOTE:

The lights must not be obscured by the legrests.
If necessary, they must be positioned farther toward the outside.
To do this, use the different holes of the mounting plates.

- Loosen the screws (1) using a 4 mm Allen Key.
- Pull the legrest mounting brackets (2) outwards until the desired width is reached.
- Tighten the screws again.



11 Lifter (option)

The seat-lifting system for the STORM, called the STORM Lifter, is a useful option that provides the active user with more flexibility by lifting the seat up to 30 cm. It is available in two versions: the one allows a permanent adjustment of the seat tilt by means of adjustment screws, the other is equipped with an electric actuator for this purpose.



NOTE:

As soon as the lifter is raised, the STORM moves at a reduced speed. To increase your speed again, lower the lifter completely. For a detailed description, see the part on ***automatic speed reduction*** below.

In all other respects the STORM Lifter model is the same as other models of the STORM Series.



11.1 Adjusting the seat tilt on a STORM with a Lifter Module

Manual adjustment of the seat tilt of the Standard Seat or the Kontur Seat:

- During adjustment no one may be seated in the chair.
- Remove the screws that allow adjustment of the seat tilt, which are in the front under the seat.
- Adjust to the desired seat tilt.
- Reposition the screws and make sure that they are tightened sufficiently.

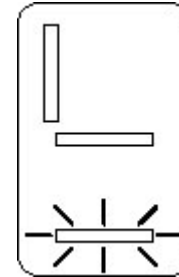
To adjust a Recaro Seat see Chap. 11.2 of this manual.



11.2 Adjustment of the electric Lifter Module:

The electric actuator which adjusts the height is controlled using the remote.

- Select Menu Point "0" using the "Driving Mode Shift Down" Button on the remote. The symbol changes automatically from "0" to a symbol of the seat.
- By moving the joystick to the left or to the right, scroll through the options of the menu until you see the symbol shown at the right flashing on the display:
- The lifter is activated.
- By pushing the joystick forward you move the lifter upwards.
- By pulling the joystick backward you move the lifter back down.



11.3 Automatic speed reduction:

The STORM Lifter has a safety function, which automatically reduces the speed of the wheelchair as soon as the lifter is raised. In this mode the Status Display on the Joystick Box flashes two times repeatedly.

The speed of the STORM is reduced as follows:

- Lifter down = 100% of wheelchair's maximum power.
- Lifter up = 30% of wheelchair's maximum power.
- To increase your speed again, lower the lifter completely.

11.4 Technical Specifications of the Lifter Module:

- Seat can lifted up to approx. 30 cm.
- Maximum load (payload) 100 kg.
- Adjustment of seat tilt (manual or electric) between -2° and +9° in relation to horizontal.
- Weight of the Lifter Module including electric actuator = approx. 14.5kg
- The Lifter Module can be retrofitted.
Retrofitting can be done at the factory or by a qualified dealer.

12 Electrical System

12.1 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. 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. By switching off and back on again, the error code is cancelled and the electronics are switched back on.

12.2 Batteries

12.2.1 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® and comply with these requirements.

12.2.2 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.
- 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.

Charging Socket of the Joystick Box



12.2.3 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!*
-

12.2.3.1 Removing and refitting the 70 Ah batteries



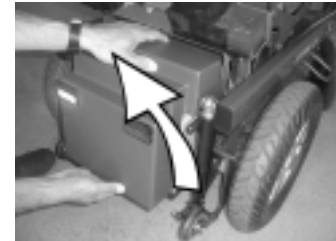
Requirements:

- Spanner; 11 mm
-

- Flip the battery cradle flap / lighting panel upwards.



- Remove the battery cover by pulling it backwards and upwards (it is held by two Velcro strips).



- Remove the belt that holds the batteries.



- Loosen the battery-cable terminal of the blue cable (minus pole) on the first battery using the spanner (11 mm) and remove cable.
- Remove the insulator cap of the red cable (plus pole) from the battery; loosen battery-cable terminal and remove.



- Remove first battery by pulling it backwards out of the wheelchair.



- Loosen the battery-cable terminal of the blue cable (minus pole) on the second battery using the spanner (11 mm) and remove cable.
- Remove the insulator cap of the red cable (plus pole) from the battery; loosen battery-cable terminal and remove.

- Remove second battery by pulling it backwards out of the wheelchair.



NOTE

To refit the batteries, proceed in reverse order.

12.2.3.2 Removing and fitting the 55 Ah batteries (old STORM model)

- Flip the battery cradle flap / lighting panel upwards.
- Pull first battery backwards and remove.

- Pull second battery backwards and remove also.



NOTE

To refit the batteries, proceed in reverse order.

12.2.3.3 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®.

12.3 Lighting

The lighting system on the STORM is controlled using the Joystick Box. Please see the chapter on the Joystick Box.



NOTE

To reduce the risk of the headlamps and flashers being damaged, they are mounted on flexible rubber fittings. For this reason they may get turned slightly off centre during normal use of the wheelchair. If this should occur then you may re-align them by hand so that they point straight forward again.

After being realigned several times in this manner, the screws that hold the headlamps/flashers may loosen up. In this case the screws must be retightened.

13 Repair Instructions

The following are instructions on repairs that can be performed by the user. For the specifications of spare parts please see "**Technical Specifications**" on page **121**, or consult the Service Manual, available from Invacare®. In case you require assistance, please contact your Invacare® Dealer.

13.1 Replacing light bulbs

(For information on which type of light bulb to use please see the Technical Specifications of the wheelchair)

Headlights

- Remove the Phillips screw (1).
- Remove the lens of the headlight by pulling it out forwards.
- Replace the light bulb with a new one.
- Reposition the lens of the headlight.
- Reposition the Phillips screw (1) and tighten.



Front flasher

- Remove the screws that hold it together (2).
- Swing the lens out to the side and remove.
- Replace the light bulb with a new one.
- Fit the lens back into the flasher.
- Reposition the screws (2) and tighten.



Tail lights and rear flashers

- Remove the screws (1) that hold the tail light and flasher bar in place.
- Remove the cover.
- Replace the light bulb with a new one.
- Refit the cover.
- Reposition the screws and tighten.



13.2 Repairing a flat tyre

13.2.1 Repairing a flat tyre (pneumatic tyres type 200 x 50)



Requirements:

- Allen key 5 mm
 - 2 x Open-end spanners 13 mm
 - Repair kit for inner tubes **or** an new inner tube.
 - Talcum powder
-

Remove the wheel

- Jack the vehicle up and place a block of wood underneath it to prop it up.
- Remove the black end-caps from the bolt and the nut (if applicable).
- Remove the nut from the bolt using the open-end spanners (1).
- Remove the axle and the wheel from the fork.



NOTE

Re-assembly is done in reverse order. Make sure that the wheel is put back on the same side it was on, and that it runs in the same direction it did before it was removed.

Repair the flat tyre.

- Remove the valve cap.
- Let the air out of the tyre by pressing the pin in the centre of the valve in.
- Remove the 5 Allen screws (3)
- Take the tyre and the inner tube off of the rim halves.
- Repair the inner tube and re-fit, or replace it with a new one.



NOTE

In case the old inner tube is to be repaired and used again, and it happens to get wet during repair, then it is easier to re-fit it if you powder it lightly with talcum powder.

- Place the rim halves in the tyre from the outside.
- Pump up the tyre a little.
- Re-position the Allen screws in the rim and tighten them firmly.
- Check to make sure that the tyre is squarely in place on the rim.
- Pump up the tyre to the recommended tyre pressure.
- Check to make sure that the tyre is still squarely and snugly in place on the rim.
- Screw the valve cap back on.
- Refit the wheel.

13.2.2 Repairing a flat tyre (pneumatic tyres type 3.00x4")



Requirements:

- Allen key 5 mm
 - Open-end spanner 17 mm
 - Repair kit for inner tubes **or** an new inner tube.
 - Talcum powder
-

Remove the front wheel

- Jack the vehicle up and place a block of wood underneath it to prop it up.
- Use the Allen key to remove the fillister head screws (1, inner and outer), using the open-end spanner at the same time to immobilise the axle counter nut (2, on the inside, between fork and wheel).
- Remove the axle and the wheel from the fork.

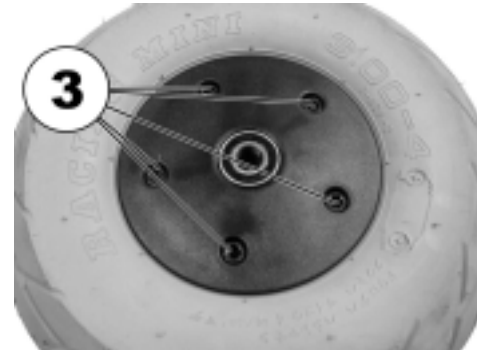


NOTE

Re-assembly is done in reverse order. Make sure that the wheel is put back on the same side it was on, and that it runs in the same direction it did before it was removed.

Repair the flat tyre.

- Remove the valve cap.
- Let the air out of the tyre by pressing the pin in the centre of the valve in.
- Remove the 5 Allen screws (3)
- Take the tyre and the inner tube off of the rim halves.
- Repair the inner tube and re-fit, or replace it with a new one.



NOTE

In case the old inner tube is to be repaired and used again, and it happens to get wet during repair, then it is easier to re-fit it if you powder it lightly with talcum powder.

- Place the rim halves in the tyre from the outside.
- Pump up the tyre a little.
- Re-position the Allen screws in the rim and tighten them firmly.
- Check to make sure that the tyre is squarely in place on the rim.
- Pump up the tyre to the recommended tyre pressure.
- Check to make sure that the tyre is still squarely and snugly in place on the rim.
- Screw the valve cap back on.
- Refit the wheel.



13.2.3 Repairing a flat tyre (pneumatic tyres type 3.00-8")



Requirements:

- Allen key 5 mm
 - Repair kit for inner tubes **or** an new inner tube.
 - Talcum powder
-

Remove the wheel

- Jack the vehicle up and place a block of wood underneath it to prop it up.
- Remove the 4 countersunk screws (1).
- Remove the wheel from the hub.



NOTE

Re-assembly is done in reverse order. Make sure that the wheel is put back on the same side it was on, and that it runs in the same direction it did before it was removed.

Repair the flat tyre.

- Remove the valve cap.
- Let the air out of the tyre by pressing the pin in the centre of the valve in.
- Remove the 5 cylinder head screws (back of the wheel, 2).
- Remove the rim halves from the tyre.
- Remove the inner tube from the tyre.
- Repair the inner tube and re-fit, or replace it with a new one.



NOTE

In case the old inner tube is to be repaired and used again, and it happens to get wet during repair, then it is easier to re-fit it if you powder it lightly with talcum powder.

- Re-fit the rim halves back into the tyre.
- Pump up the tyre a little.
- Re-position the cylinder head screws in the rim and tighten them firmly.
- Check to make sure that the tyre is squarely in place on the rim.
- Pump up the tyre to the recommended tyre pressure.
- Check to make sure that the tyre is still squarely and snugly in place on the rim.
- Screw the valve cap back on.
- Refit the wheel.

14 Care and maintenance



NOTE: Have your wheelchair checked at least once a year by an authorised Invacare® Dealer, to ensure that vehicle safety and roadworthiness of the wheelchair are maintained.

Cleaning the wheelchair

When cleaning the wheelchair, please observe the following points:

- Only ever clean the Joystick Box, seat upholstery and armrests with a damp cloth and a gentle cleaning agent.
- Never use abrasive cleaners.
- Never expose electronic components to water.
- Never use a high pressure cleaner.

Care for seat cushions(Invacare® Ultimate Special Seating System)

The seat cushion has a two-layer cover.

The upper cover can easily be removed and cleaned after opening the zipper.

The lower cover is water-resistant (incontinence cover) and can be cleaned by wiping it off.



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?			✓
- Do the different adjustment functions work without any problem?			✓
Tyres:			
- Have tyres checked for specified air pressure (2,5 bar).	✓	✓	
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			✓

Maintenance Jobs	When Delivered	Weekly	Monthly
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 holders, screws firmly fixed, tight and safe?			✓
- Are all electric bulbs of the lighting system (if applicable) in working order?	Before each trip		
Cleaning:			
- Clean all parts carefully.	When necessary		

Once a year you should have your wheelchair inspected and serviced by your authorised dealer. If the wheelchair is serviced at regular intervals, damaged or worn parts can be located and replaced in time, thus preserving it in good working order. A complete checklist of necessary maintenance work can be found in the Service Manual, which can be obtained from Invacare®.

15 Transport

15.1 Transferring the wheelchair to another vehicle



WARNING: Danger of tipping over, if the wheelchair is transferred to another vehicle with the user seated in it!

- *If the wheelchair has to be transferred to another vehicle over a ramp, then it must be secured against tipping over by an attendant standing behind it during the transfer process!*
-

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

15.2 Securing the wheelchair for transport



CAUTION: Injury hazard!

- *If you are unable to fasten your electric wheelchair rigidly 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.

15.2.1 The Taxi Bar

- The illustration at right shows the optional Taxi Bar for Holland. The Taxi Bar can be used to secure the STORM by means of the latching mechanism used in Holland, or also to secure the STORM using belts.



15.2.2 Anchor ring, lateral (Option):

- The illustration at right shows the optional securing bar. The bar is used to secure the STORM with belts in the transport vehicle.



15.2.3 "Crash Kit" (Option):

For the highest level of security when transporting the STORM in another vehicle, we recommend the optional "Crash Kit", which was developed specially for this purpose. The "Crash Kit" comprises the following:

- a traverse bar, which is bolted to the frame, and which provides the front securing points (traverse bar of the kerb climber)...
- ... two bars, which are also bolted to the frame, as rear securing points...
- ... and an belt system for the batteries (only necessary for the 55 Ah batteries).

Please ask your dealer if you would like to receive more information on this securing system.



16 Technical Specifications

Wheelchair Classification		<ul style="list-style-type: none"> Type B (for indoor and outdoor use)
Dimensions		
Armrest Height		<ul style="list-style-type: none"> approx. 25-32 cm or 30-37 cm
Armrest Depth		<ul style="list-style-type: none"> adjustable, 10 cm (in 2.5 cm increments)
Footrest Length (adjustable range of the standard footrest)		<ul style="list-style-type: none"> approx. 18 cm
Total Width		<ul style="list-style-type: none"> approx. 63 cm
Total Height (without headrest)	<ul style="list-style-type: none"> Standard 	<ul style="list-style-type: none"> approx. 97 cm / 102 cm
	<ul style="list-style-type: none"> Kontur 	<ul style="list-style-type: none"> approx. 107 cm / 112 cm
Total Height (with headrest)	<ul style="list-style-type: none"> Standard/Comfort 	<ul style="list-style-type: none"> approx. 118 cm
	<ul style="list-style-type: none"> Recaro 	<ul style="list-style-type: none"> approx. 124 cm
Total Height (wheelchair folded together)	<ul style="list-style-type: none"> Standard/ (Recaro not possible) 	<ul style="list-style-type: none"> approx. 52 cm
Total Length	<ul style="list-style-type: none"> without legrests 	<ul style="list-style-type: none"> approx. 85 cm
	<ul style="list-style-type: none"> with legrests 	<ul style="list-style-type: none"> approx. 112 cm

Seats		
Seat Width	• Standard/Kontur	• approx. 36 - 52 cm
	• Recaro	• approx. 42 cm
	• Arne Jensen	• approx. 45/50 cm
	• Invacare® Ultimate Special Seating System	• approx. 41/46 cm
	• Invacare® Personal Special Seating System	• approx. 41/46/51 cm
Seat Height	• Standard/ Kontur (with seat cushion)	• approx. 49/54 cm
	• Recaro (front edge of seat)	• approx. 57 cm
	• Arne Jensen (4° tilt) (front edge of seat)	• approx. 50 cm without lifter / 54 cm with lifter
Seat Depth	• Standard	• 36/41/46 cm
	• Kontur	• 41/46 cm
	• Invacare® Special Seating Systems	• 41/46 cm
	• Recaro	• 50-55 cm
	• Arne Jensen	• 50-55 cm
Seat tilt adjustment	• Arne Jensen (without lifter)	• approx. -1° to +10° (mechanical) / approx. -8° to +8° (electric)
	• Arne Jensen (with lifter)	• approx. -4° to +6° (mechanical) / approx. -3° to +7° (electric)
	• All other seat systems	• approx. -1° to +18° (mechanical) / approx. -1° to +18° (electric)
Seat Adjustment	• mechanical	• 0°, 5°, 10°, 15°
	• electric	• approx. 0° to 45°

Electrical System		
Batteries		<ul style="list-style-type: none"> • Standard: 2 x 12 V 70Ah, maintenance-free, sealed, gel • Optional: 2 x 12 V 55Ah, maintenance-free, sealed, gel
Electrical System		<ul style="list-style-type: none"> • 24V
Electronics		<ul style="list-style-type: none"> • ACS (Advanced Control System)
Light bulbs (6 km/h)	• Headlights	<ul style="list-style-type: none"> • 24V / 3 W
	• Flasher, front	<ul style="list-style-type: none"> • 24V / 10 W
	• Tail light	<ul style="list-style-type: none"> • 24V / 5 W
	• Flasher, rear	<ul style="list-style-type: none"> • 24V / 21 W
Light bulbs (10 km/h)	• Headlights	<ul style="list-style-type: none"> • 12V / 2.4 W
	• Flasher, front	<ul style="list-style-type: none"> • 12V / 10 W
	• Tail light	<ul style="list-style-type: none"> • 12V / 5 W
	• Flasher, rear	<ul style="list-style-type: none"> • 12V / 21 W
Battery Charger		<ul style="list-style-type: none"> • 240V/24V - 7A
Fuse	• Main Battery Fuse	<ul style="list-style-type: none"> • Fuse strip 50 A (located in the battery box)
	• Recaro Seat fuse	<ul style="list-style-type: none"> • 15 A (located on the power supply cable to the Recaro Seat)

Tyres		
Tyre Size	• front	• 200x50 mm or 3.00x4"
	• rear	• 3.00x8"
Tyre Pressure	• all wheels	• 250 kPa (corresponds to 2.5 bar)
Weight		
Empty Weight, (minimum configuration)	• Standard	• approx. 114 kg
	• Kontur	• approx. 116 kg
	• Invacare® Special Seating Systems	• approx. 118 kg
	• Recaro	• approx. 116 kg
	• Arne Jensen	• approx. 116 kg
Maximum load (payload)	• without lifter	• 100 or 150 kg (see data plate)
	• with lifter	• 100 kg

Driving attributes		
Range according to ISO 7176, approx.	• 70 Ah / 6 km/h version	• approx. 46 km
	• 70 Ah / 10 km/h version	• approx. 38 km
<p>Note: The wheelchair's range depends strongly on various factors, such as battery charge, ambient temperature, local topography, road conditions, tyre pressure, driver's weight, driving habits and the usage the batteries for lighting, actuators, and so on. Under optimum conditions the 6 km/h version of the STORM has attained up to 50 km.</p>		
Speed	• (S, C, R, P)	• up to 6 km/h
	• (XS, XC, XR, XP)	• up to 10 km/h
Smallest turning circle		• approx. 170 cm
Climbing capability		• up to 18% on solid ground
Maximum obstacle height	• Front wheel 200x50, without kerb climber	• 4 cm
	• Front wheel 3.00x4", without kerb climber	• 6 cm
	• Front wheel 3.00x4", with kerb climber	• 10 cm

17 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®.

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

Order No. of this Manual: F392034.DOC
Release Date: 20.02.03

English

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>