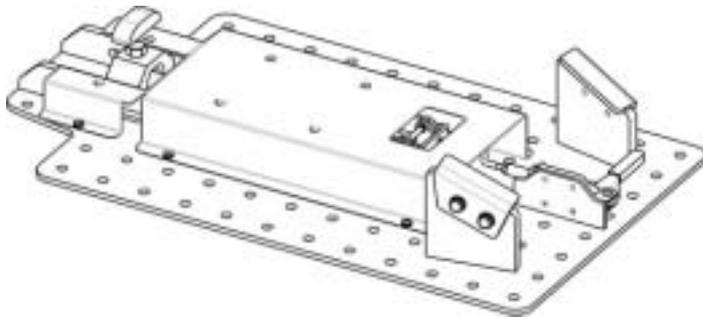




Yes, You Can.®



Invacare® **Docking Station**

Installation manual

A	Mobitec Mobilitätshilfen GmbH Herzog Odilostrasse 101 A-5310 Mondsee Austria	☎ Fax: @: @: WWW:	+43 - 6232 - 55 35 0 +43 - 6232 - 55 35 4 office@mobitec-austria.com austria@invacare.com www.mobitec-austria.com
B L	Invacare® n.v. Autobaan 22 B-8210 Loppem (Brugge) Belgium	☎ Fax: @: WWW:	+32 - (0)50 - 83 10 10 +32 - (0)50 - 83 10 11 belgium@invacare.com www.invacare.be
CH	Mobitec Rehab AG Benkenstraße 260 CH-4108 Witterswil Switzerland	☎ Fax: @: @: WWW:	+41 - (0)61 - 48 77 08 0 +41 - (0)61 - 48 77 08 1 office@mobitec-rehab.ch switzerland@invacare.com www.mobitec-rehab.ch
D	Invacare Aquatec Alemannenstraße 10 88316 Isny Deutschland	☎ Fax: @: WWW:	0 75 62 / 7 00 - 251 08 00 / 6 73 81 72 info@invacare-aquatec.de www.invacare-aquatec.de
DK	Invacare® A/S Sdr. Ringvej 39 DK-2605 Brøndby Danmark	☎ (Kundeservice): Fax (Kundeservice): @: WWW:	+45 - (0)36 - 90 00 00 +45 - (0)36 - 90 00 01 denmark@invacare.com www.invacare.dk
E	Invacare® SA c/ Areny, s/n Poligon Industrial de Celrà 17460 Celrà (Girona) ESPAÑA	☎ : Fax: @: WWW:	+34 - (0)972 - 49 32 00 +34 - (0)972 - 49 32 20 contactsp@invacare.com www.invacare.es
F	Invacare® Poirier SAS Route de St Roch F-37230 Fondettes France	☎ : Fax : @: WWW:	+33 - (0)247 - 62 64 66 +33 - (0)247 - 42 12 24 contactfr@invacare.com www.invacare.fr
GB	Invacare® Ltd South Road Bridgend Industrial Estate Mid Glamorgan - CF31-3PY United Kingdom	☎ (Customer Service): Fax (Customer Service): @: @: WWW:	+44 - (0)1656 - 664 321 +44 - (0)1656 - 667 532 uk@invacare.com eire@invacare.com www.invacare.co.uk
I	Invacare Mecc San s.r.l. Via Dei Pini, 62 I - 36016 Thiene (VI) ITALIA	☎ Fax: @: WWW:	+39 - 0445 - 38 00 59 +39 - 0445 - 38 00 34 italia@invacare.com www.invacare.it
IE	Invacare Ireland Unit 5 Seatown Business Campus Seatown Rd, Swords Dublin Ireland	☎ Fax: @:	+353 - 18 10 70 84 +353 - 18 10 70 85 eire@invacare.com
N	Invacare® AS Grensesvingen 9 Postboks 6230 N-0603 Oslo Norge	☎ (Kundeservice): Fax (Kundeservice): @: WWW:	+47 - (0)22 57 95 10 +47 - (0)22 57 95 01 norway@invacare.com www.invacare.no
NL	Invacare® B.V. Celsiusstraat 46 NL-6716 BZ Ede The Netherlands	☎ : Fax: @: WWW:	+31 - (0)318 - 69 57 57 +31 - (0)318 - 69 57 58 csede@invacare.com www.invacare.nl
P	Invacare® PORTUGAL Lda Rua Senhora de Campanhã 105 P-4369-001 Porto PORTUGAL	☎ : Fax: @: WWW:	+351-225105946 +351-225105739 portugal@invacare.com www.invacare.pt



Återförsäljare:
Invacare® AB
Fagerstagatan 9
S-163 91 Spånga
Sverige



Tillverkare:
Invacare® Deutschland GmbH
Kleiststraße 49
D-32457 Porta Westfalica
Deutschland

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

MÖLNDAL

☎ +46 - (0) 31 – 86 36 00
Fax: +46 - (0) 31 – 86 36 06
@: ginvacare@invacare.com

LANDSKRONA

☎ +46 - (0) 418 – 285 40
Fax: +46 - (0) 418 – 180 89
@: linvacare@invacare.com

OSKARSHAMN

☎ +46 - (0) 491 – 101 40
Fax: +46 - (0) 491 – 101 80
@: oinvacare@invacare.com

Table of Contents

Chapter		Page
1	Introduction	5
1.1	General information	5
1.2	Notes on transport	6
1.3	Important symbols in this manual	7
1.4	Important symbols on the docking station	7
2	Safety and fitting instructions	8
2.1	Before any inspection or repair work.....	8
2.2	General safety information and information about fitting / removal.....	8
3	Tightening torques	9
4	Fitting work	10
4.1	Installing the docking station in transport vehicles	10
4.1.1	Connecting the docking station to the transport vehicle electrical circuit (circuit diagram).....	15
4.2	Installing the docking station hardware in the Invacare® Storm3.....	17
4.2.1	Exploded drawing and parts list.....	17
4.2.2	Fitting work	19
4.3	Function check / adjusting the docking station.....	24
4.3.1	How the user is secured within the wheelchair	25

1 Introduction

1.1 General information

This installation manual contains information on:

- scope of delivery
- important safety information and warning information
- relevant standards
- exploded drawings and parts list for all parts required for installation
- correct installation
- minimum specifications for all retaining components
- minimum loading capacity for locations on the vehicle to which the docking station will be anchored

Use in accordance with regulations:

- The docking station is used for the fixing of an electric wheelchair for the transport of persons in a suitable handicapped person transport vehicle.
- The docking station is exclusively designed for anchoring a wheelchair in the direction of travel of the vehicle doing the transporting (wheelchair user is looking forwards).

Requirements which a wheelchair must fulfil in order to be used with an Invacare® Docking Station:

- The Invacare® Docking Station may only be used in connection with Invacare® electric wheelchair types intended for such use. Please contact Invacare for a list of usable wheelchairs.

it is imperative that you observe the following points:

- Observe all safety information!
- Please see the operating manual for information about operation.
- You can find information about ordering spare parts in the spare parts catalogue.
- Only use authentic Invacare® spare parts. The warranty ceases if spare parts from other manufacturers are used.
- Alterations to products which occur as a result of incorrectly or improperly executed installation, maintenance or overhaul work lead to the exclusion of all liability on the side of Invacare®.
- We reserve the right to make any alterations on the grounds of technical improvements.
- The Invacare Docking Station fulfils all requirements made by ISO 10542-1:2001 and ISO 10542-3:2005.
- If you have any problems or questions please contact Invacare Service.

The minimum requirements for installation technicians is:

- relevant training, e.g. as cycle, car or orthopaedics mechanic, **or**
- suitable long-standing professional experience.
- Special Invacare training is recommended.
- It is imperative that training is given by the manufacturer of the handicapped person transport vehicle.

Scope of delivery:

- The scope of delivery includes a carton for the docking station itself (for installation in a vehicle) and one carton for each hardware set to be fitted to the wheelchair.

1.2 Notes on transport

- If the docking station needs to be returned to the manufacturer, you should use the original packaging (or equivalent) for transport.
- You should also include as accurate a fault description as possible!

1.3 Important symbols in this manual



WARNING!

This symbol warns you of danger!

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



EXPLOSION HAZARD!

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

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



BURN HAZARD!

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

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



NOTE:

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



Requirements:

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

1.4 Important symbols on the docking station



Read the operating manual!

2 Safety and fitting instructions

These safety instructions are intended as prevention of accidents at work and it is imperative that they are observed.

2.1 Before any inspection or repair work

- Read and observe this installation manual and the associated operating manual.
- Observe the minimum requirements for carrying out the work (see chapter entitled "General information").

2.2 General safety information and information about fitting / removal



Danger of crushing!

- *Please note the high weight of some components!*
 - *Secure a raised or tilted wheelchair with suitable supports and underlays before commencing fitting work! If necessary, let a second person hold the wheelchair securely!*
-



Fire and burn hazard due to electrical short-circuit!

- *The wheelchair must be switched to voltage-free before commencing fitting work on voltage-carrying wheelchair components! Disconnect the wheelchair batteries to do this!*
 - *The vehicle must be switched to voltage-free before commencing fitting work on transport vehicle voltage-carrying components! Disconnect the vehicle battery/batteries to do this!*
 - *When working on voltage-carrying components, avoid short-circuiting the contacts. Fire and burn hazard!*
-



Injury hazard and danger of damage to vehicle due to improper or incomplete fitting work!

- *The docking station is exclusively designed for the anchoring of a wheelchair in the direction of travel of the vehicle doing the transporting (wheelchair user is looking forwards).*
 - *Use only undamaged tools in good condition.*
 - *Some moving parts are mounted in sockets with PTFE coating (Teflon™). These sockets must on no account be greased!*
 - *Never use "normal" nuts instead of self-locking nuts!*
 - *Always use correctly-dimensioned washers and spacers!*
 - *Cable ties which have been cut during removal must be replaced during refitting!*
 - *Docking station components may not be modified or replaced with other parts without previous consultation with Invacare!*
 - *Check all fixings for tight fit after completing work / before initial startup! Check all parts for correct interlocking!*
 - *Ensure that electrical components have the correct polarity! Incorrect polarity can lead to damage to the electronic system!*
 - *When fitting the docking station, you must ensure that the function of any airbags fitted to the vehicle is not restricted!*
 - *An airbag is only an additional safety system and is never intended to replace a seatbelt!*
 - *If you have any questions about correct installation, please contact Invacare or your vehicle manufacturer!*
 - *Always carry out a performance test when work is completed!*
-



Note

All plugs are fitted with mechanical safety devices which prevent release of the connecting plugs during operation. To release the connecting plugs the safety devices must be pressed in. When reassembling ensure that these safety devices are correctly engaged.

3 Tightening torques

The tightening torques stated in the following table are dependent on the thread diameters for the nuts and bolts for which no special values are determined. All values apply to dry and grease-free threads.

Thread	M4	M5	M6	M8	M10	M12	M14	M16
Tightening torque in Nm $\pm 10\%$	3 Nm	6 Nm	10 Nm	25 Nm	49 Nm	80 Nm	120 Nm	180 Nm

Caution: All other nuts or plastic connectors not noted here must be tightened FINGERTIGHT!

4 Fitting work

4.1 Installing the docking station in transport vehicles

When fitting the Invacare docking station, the qualifications possessed by the fitter are extremely important. It is imperative that training is provided by the vehicle manufacturer. Correct fitting is determined by many factors such as vehicle type, fitting situation and recommendations made by the vehicle manufacturer. For this reason, this instruction manual should not be understood as a step by step manual to be followed linearly. It does, however, contain important information about individual work stages, and gives benchmark data, technical specifications and minimum requirements.



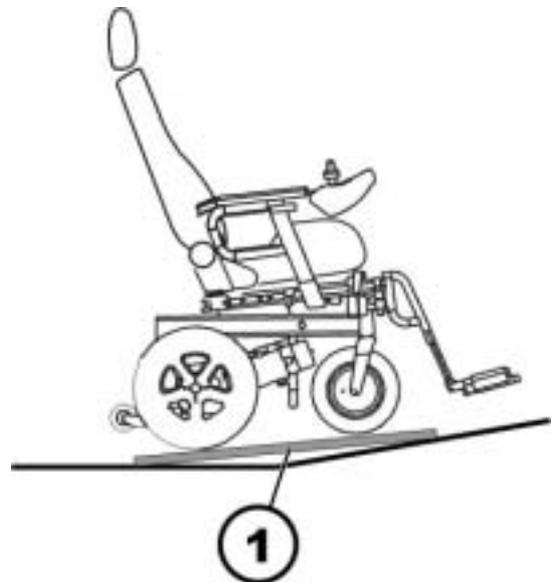
WARNING!

- *Drill holes for fixing bolts may only be drilled through the floor of the transport vehicle at locations which have been approved by the vehicle manufacturer for this purpose!*
 - *When fixing the docking station, please use **8 x M10 bolts, minimum strength 8.8***
 - *The floor panel must have a minimum shear strength of 100 kN! Use reinforcing plates!*
-

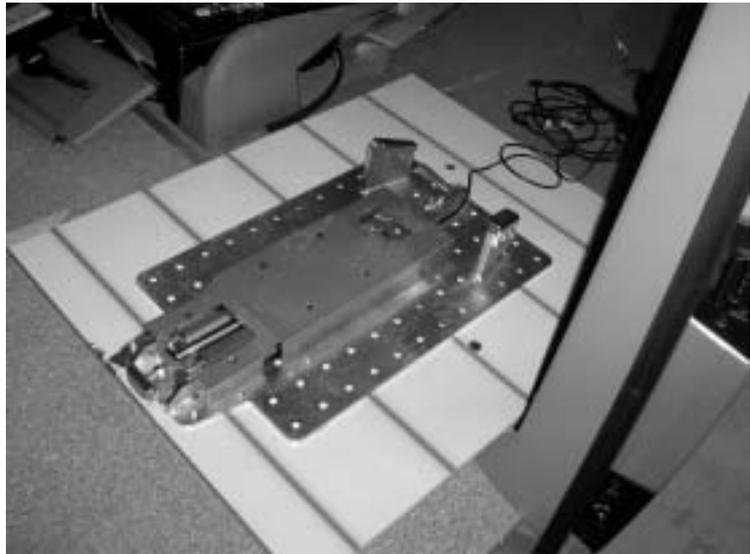
**Requirements:**

- electric drill
 - 11 mm drill bit
 - 8.5 mm drill bit
 - M10 thread cutter
 - Standard open spanner set
 - The facility to work underneath the transport vehicle, e.g. platform lift, pit or ramps.
 - Anticorrosive agents
-

If the transport vehicle floor is uneven, the docking station must be mounted on a compensating/mounting plate (1) with a minimum shear strength of 100 kN. This plate must be at least large enough to fit the wheelchair on top of it with all wheels on the plate.



- When using a compensation/mounting plate, position it in the vehicle but do not bolt it in place yet.
- Place the docking station loosely on top of it.



- Run the wheelchair onto the mounting plate/docking station as a positioning aid.



The anchorage point (1) of the transport vehicle seatbelt should be located behind and above the wheelchair user's shoulder. See chapter "**How the user is secured within the wheelchair**" on page 25.

In doing so, you must take into account that the movement range of the upper body in the case of a crash is dependent on the position of the top seat belt anchorage .amongst other things. The higher or further behind the wheelchair user's shoulder the anchorage point is located, the larger the movement range in a crash.

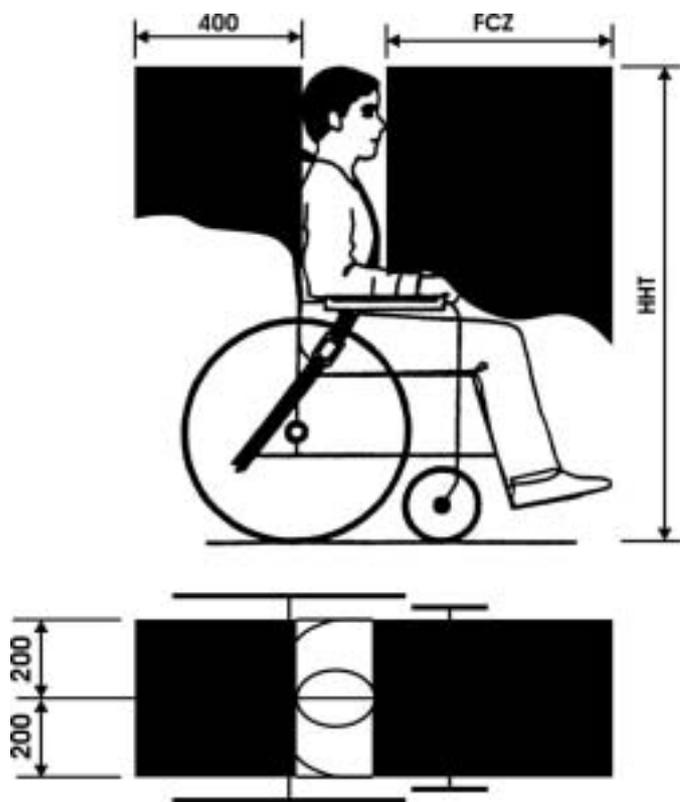


The wheelchair must be positioned so that the area in front and behind the wheelchair user is free of hard or sharp objects. The figure on the right shows these areas.

- HHT = Head Height (head height of user sitting in wheelchair)
- FCZ = Front Clear Zone (650 mm with breast belt, 950 mm without breast belt).
- The rear free zone 400 mm is measured from the back of the user's head. The front free zone is measured from the forehead.

Hard or sharp vehicle parts which may be located in the free zones should be commissioned with the material which complies with the requirements of FMVSS 201 or ECE 21.

Additional cushioning must be hardly inflammable in accordance with ISO 3795.



- Check correct position of wheelchair by sitting tests or measuring of distances.



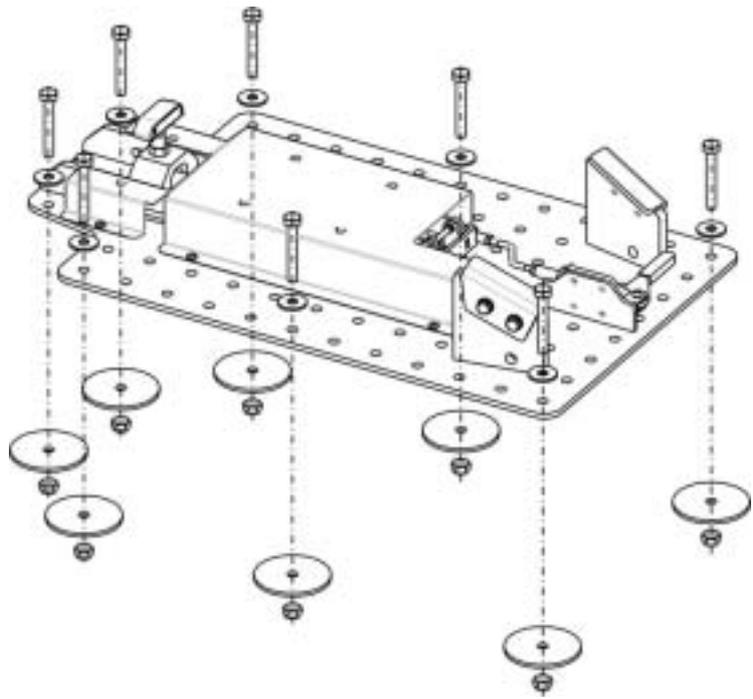
- Carefully remove the wheelchair from the mounting plate/docking station.
- Correct the position of the mountain plate or docking station if necessary.



The figure on the right shows optimum positions for the fixing bolts.

The position of the front and rear bolts should be retained. The position of the middle four bolts can be varied slightly depending on the condition of the vehicle floor.

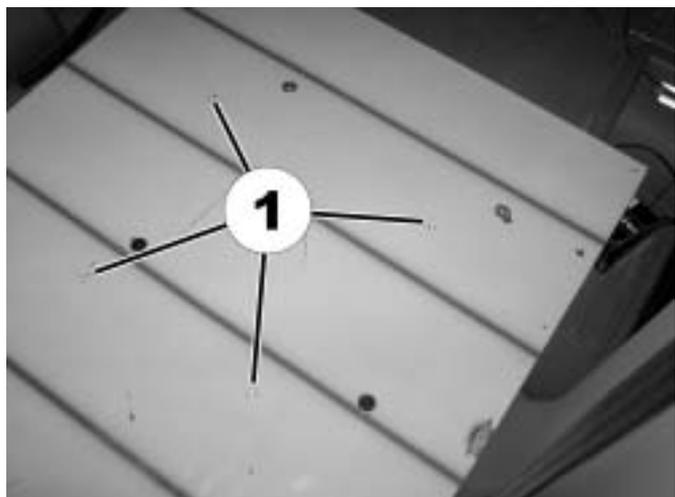
If a compensation/mounting plate is used, the position of the middle bolts should be retained.



- Mark the position of the holes for the fixing bolts by lightly drilling with the 11 mm drill bit.



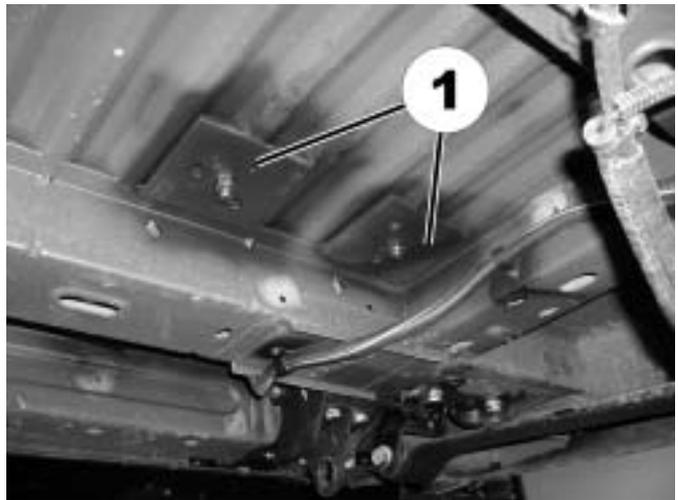
- The positions of the holes (1) for the fixing bolts are now marked (in the picture, 4 out of 8 drill markings are visible).
- Remove the mounting plate from the vehicle.
- Drill the drill holes with the 8.5 mm drill bit.
- Cut an M10 thread with the thread cutter in the mounting plate drill holes.



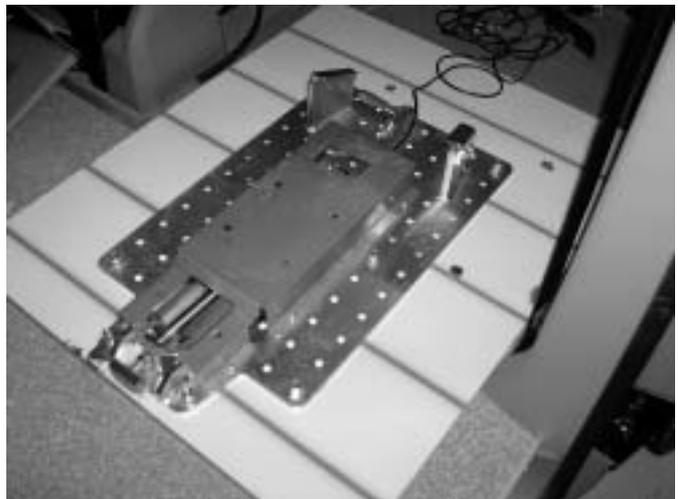
If you are using a mounting plate, fix the docking station to the mounting plate. Otherwise, the docking station is fixed directly to the vehicle floor. Counter the fixing bolts against turning through by using open-ended spanner.



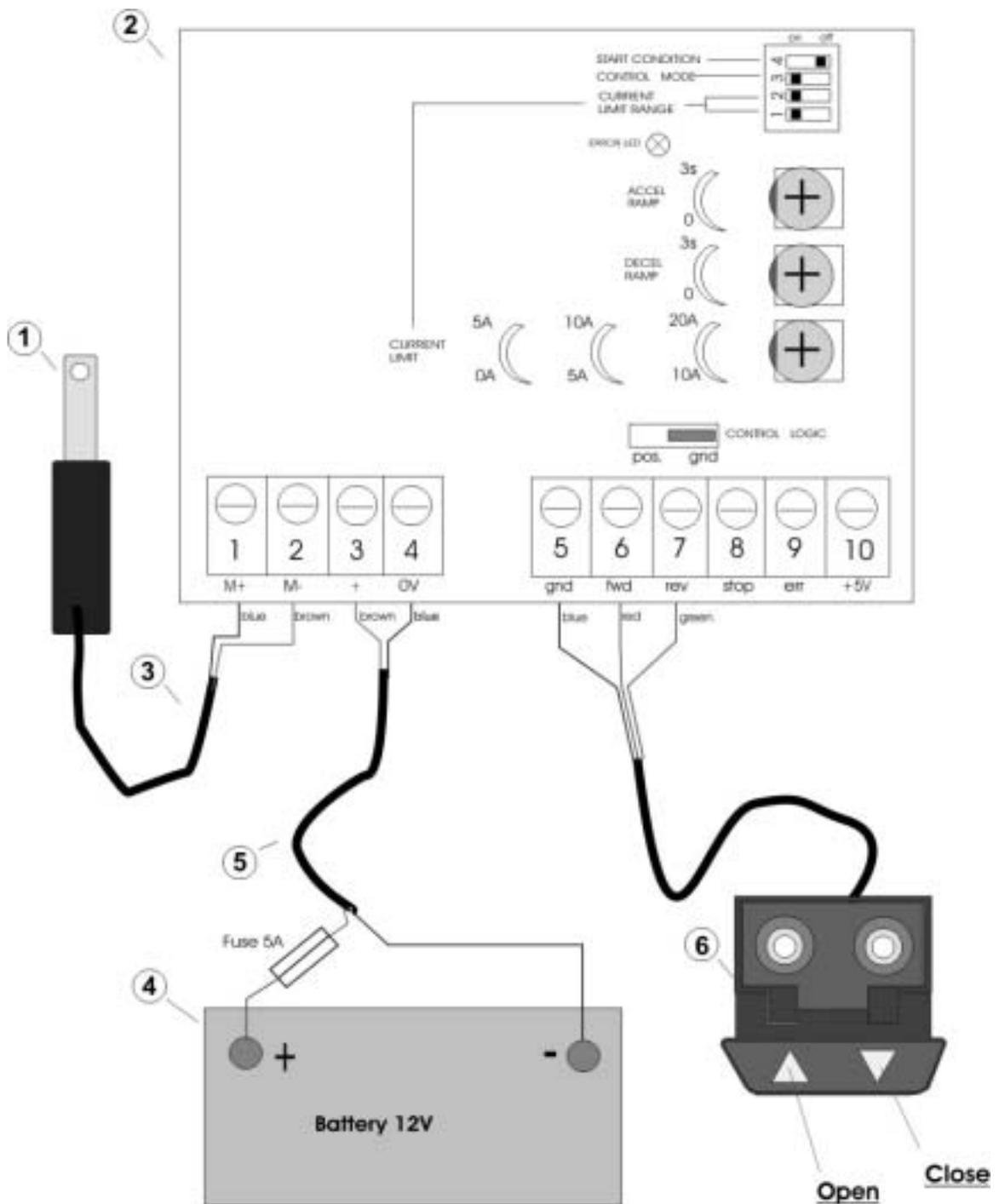
The picture on the right shows two of the fixing bolts viewed from underneath the vehicle. Attach reinforcing plates (1) as recommended by the vehicle manufacturer.



- Bolt the docking station to the transport vehicle or to the mounting plate. The mounting plate can also now be bolted in place.



4.1.1 Connecting the docking station to the transport vehicle electrical circuit (circuit diagram)

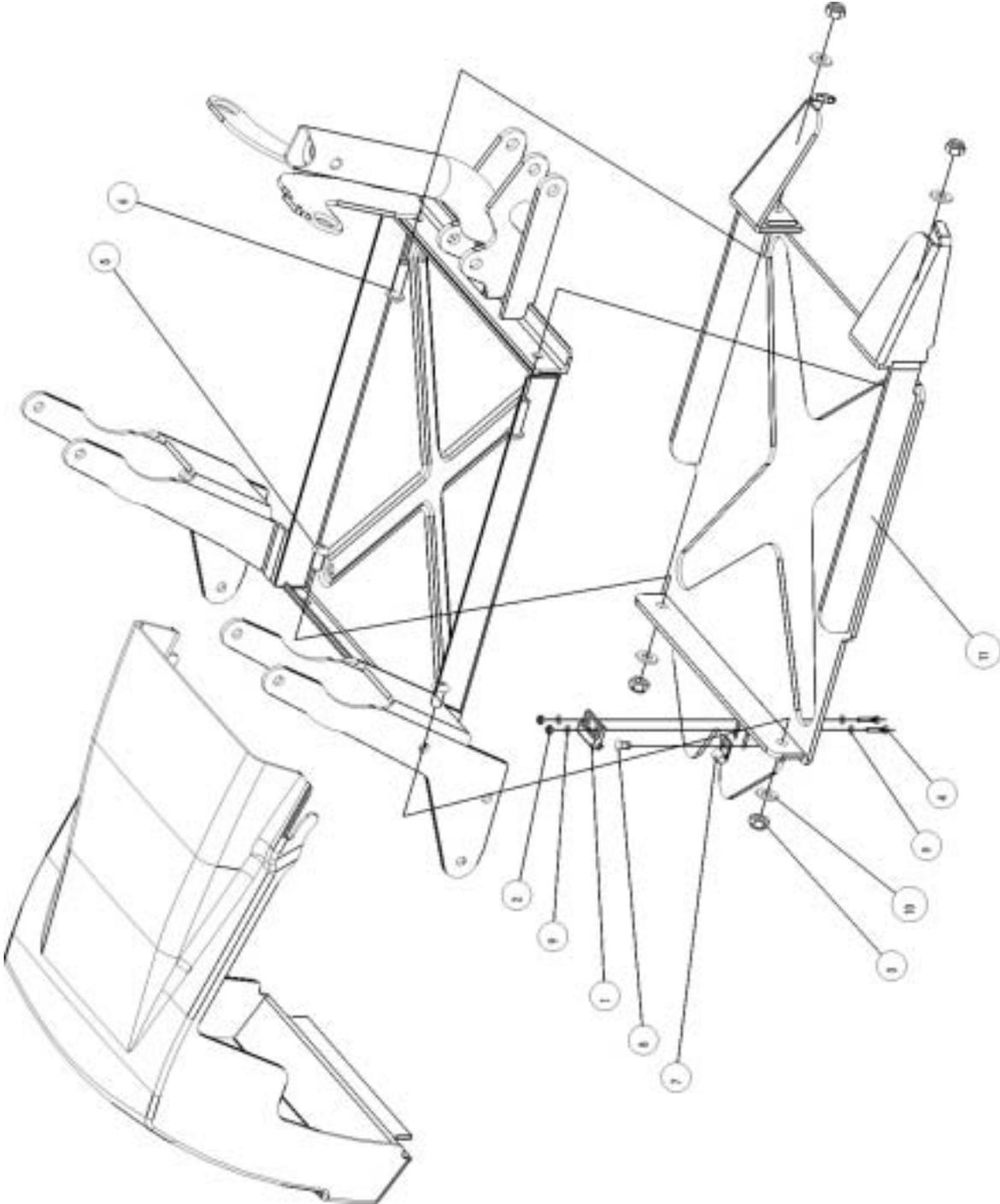


Item	Designation
1	Actuator MBL Type LL-1001
2	Linak TR-EM-208-H electronics box
3	Actuator cable
4	12 V car battery
5	12V battery cable
6	DPAK06 control panel

- Connect the docking station to the vehicle electrical circuit as shown in the circuit diagram.
- Install the control panel in the vehicle. We recommend installing the control panel on or near the dashboard. The control panel can be fixed with two screws.

4.2 Installing the docking station hardware in the Invacare® Storm3

4.2.1 Exploded drawing and parts list



Item	Designation	No.
1	Position sensor	1
2	DIN 985-M3-8/vz nut	2
3	DIN 985-M8-8/svz nut	4
4	DIN 7985-M3x16-8.8/vz bolt	2
5	M8x16 cheese head screw	2
6	M8x30 ISO 7380 cheese head screw	2
7	Cable clip small	1
8	Expanding rivet	1
9	DIN 125-3,2-St/svz washer	4
10	DIN 125-8,4-St/svz washer	4
11	Docking Station fixing	1
	Pos. 12 to 27 not represented in drawing	
12	Angle plate cpl.	1
13	CC tension relief clip	1
14	DIN 7982-2,9x13/vz bolt	2
15	12V green LED	1
16	Green button	1
17	Distance roll10/5	2
18	Battery cable	1
19	Battery cable	1
20	Circuit board	1
21	H03VV-F cable	3.1 m
22	Plug housing	1
23	AMP 180 908-0 contact	2
24	Ø 9 HSS drill bit, length	1
25	Ø18 plugs	1
26	ISO 7380-M5x12-10.9/svz 1 bolt	
27	Case	1
28	Velcro strap	1

4.2.2 Fitting work



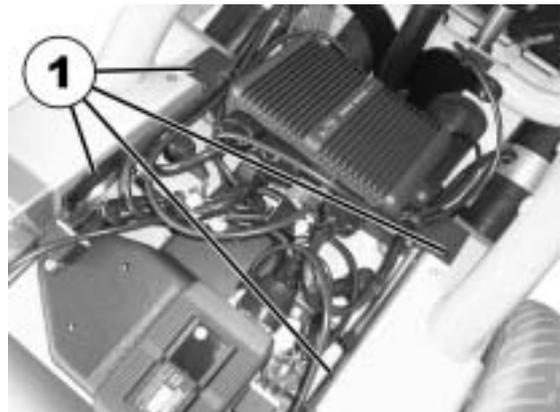
Requirements:

- All parts listed in the parts list under "**Exploded drawing and parts list**" on page 17.
- Soft mat such as blanket to put under wheelchair when it is on its side to prevent damage.
- Phillips screwdriver
- Open spanner, 11 mm.
- Clamp
- Wooden block approx. 15 x 7 x 4 cm
- Electric drill

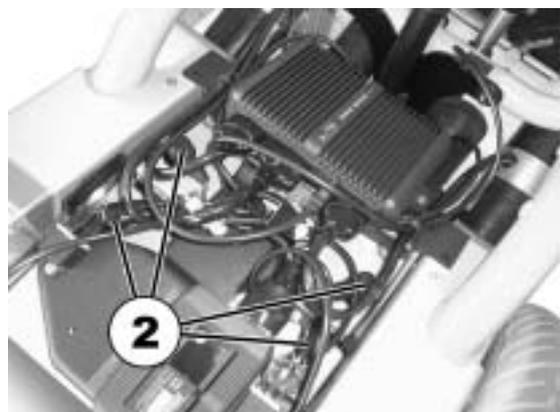
- Remove battery cover.



- Remove plastic clips (1) and remove the equipment rack upwards to the rear.



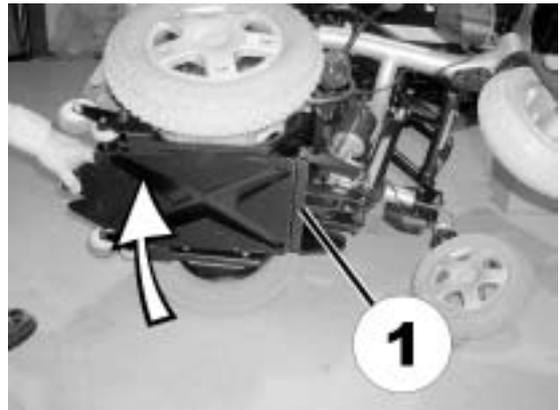
- Pull the battery terminal caps upwards and push them back to allow access to the battery terminals.
- Loosen all the battery terminal clamps (2) with the jaw spanner.
- Swivel the device support upwards (it may be necessary to loosen the additional connection plug).
- Withdraw the batteries



- Pull the Velcro strap (1) off the rear edge of the battery case.



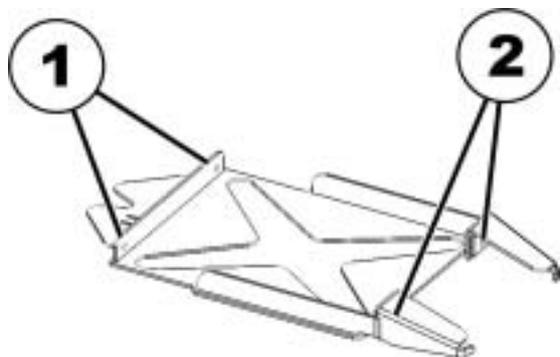
- Carefully turn the electric wheelchair onto its side on the soft mat.
- Hang the docking station fixing into place at the battery case (1) and press firmly from the rear.



- Fix the docking station fixing in the rear area using the collar and the wooden block at the battery case.



- The docking station fixing has four drill holes for fixing, two at the rear (1) and two at the front (2). You can use these holes as a drill template.



- Drill holes in the battery case for fixing the docking station fixing in the rear area.
- Bolt the docking station fixing at the rear with 2 x 2x M8 x 16 mm cheese head screws , 2x DIN 985 nuts and 2x DIN 125-8 washers (see exploded drawing).



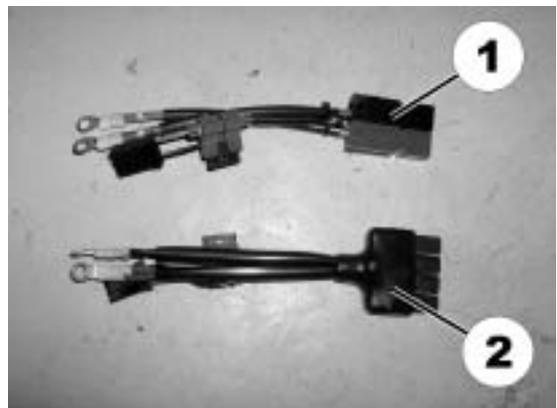
- Loosen the collar and apply it to the front.
- Drill holes in the battery case for fixing the docking station fixing at the front.
- Bolt the docking station fixing at the rear with 2 x 2x M8 x 30 mm cheese head screws , 2x DIN 985 nuts and 2x DIN 125-8 washers (see exploded drawing).



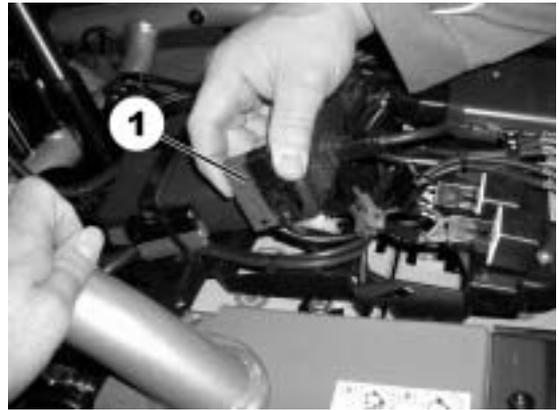
- Set the wheelchair carefully upright.
- Place the battery in the battery case.



- A new battery cable needs to be installed so that the remote extension (with control lamp and LED) can be connected to the wheelchair circuitry.
- Battery cable (1) is used for wheelchair with gearless motors (TrueTrack®) , battery cable (2) is used with standard ACS systems.
- Select a suitable battery cable and fit it.



- Now route the new battery cable plug through the opening in the equipment rack.



- Connect the battery cable connector plug with the power module and press it firmly together (the picture shows the TrueTrack® power module connector plug).



- The remote extension is fixed to the remote with two screws (1).
- Route the remote extension cable parallel to the bus cable and secure it with cable ties.



- Route the position sensor cable (1) as shown in the picture.
- Fix the position sensor (2) as shown in the exploded drawing.



- Connect the wiring harness plug for the position sensor/remote extension with the battery cable connecting plug (1) and press firmly together.

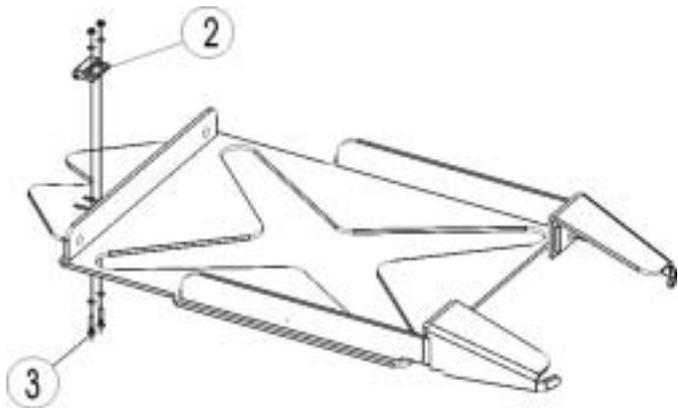


- Position the equipment rack again and fix using the plastic clips.
- Stick the Velcro strap to the rear edge of the docking station fixing.
- Reassemble the rear panelling.



4.3 Function check / adjusting the docking station

- Run the electric wheelchair onto the docking station.
- Operate the docking station. Ensure that the locking procedure is correct. The T-anchor (1) must fit into the rear recess of the anchor guide, and the acoustic check must beep once.
- If the T-anchor is too low or too high its height must be adjusted. To do this, loosen the T-anchor locknut, adjust the height and retighten the locknut afterwards.
- The clear space between the bottom of the T-anchor and the top of the anchor guide should be approx. 5 mm.
- Ensure that the T-anchor is correctly oriented! The magnetic strip must face the electric wheelchair!
- If the acoustic check does not beep, the space between the T-anchor magnetic strip and the reed sensor (2) is probably too large. To remedy this problem, loosen the reed sensor fixing bolt (3) and then reduce the distance to the T-anchor by moving the reed sensor within its elongated hole. Retighten the fixing bolts.
- Actuate the docking station again, and ensure that the acoustic signal is functioning correctly. Repeat the procedure until the reed sensor is correctly adjusted.
- When the docking station is locked, press the docking station check button (A) on the remote extension. The control LED (B) illuminates green.
- The check button can be pressed at any time to confirm that the docking station is in locked condition.



4.3.1 How the user is secured within the wheelchair

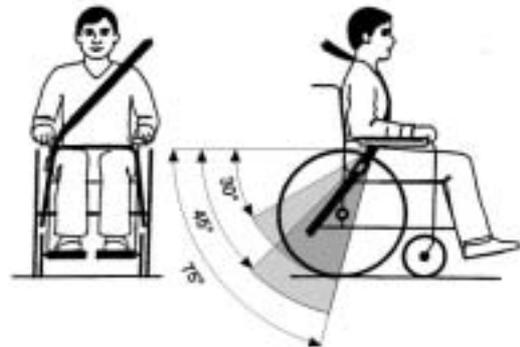


Caution: there is a danger of injury if the user is not properly secured within the wheelchair!

- *Even if the wheelchair is fitted with a securing belt, this is no substitute for a proper seatbelt in a travelling vehicle! It is imperative that a seatbelt tested to ISO 7176/19-2001 standards is used!*
- *Seatbelts must be in contact with the user's body! They must not be held at a distance from the user's body using parts of the wheelchair such as armrests or wheels!*
- *Seatbelts must be pulled as tightly as possible without causing the user discomfort!*
- *Seatbelts must not be positioned while twisted!*



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



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

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

- 1) Centre line of the body
- 2) Centre of the sternum

