



EN **Bed** User Manual

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I General

I.1 About this manual

Thank you for choosing an Invacare product.

This user manual contains important information about the handling of the product. In order to ensure safety when using the product, read the user manual carefully and follow the safety instructions.

All indications of right and left are based on a person lying on his back in the bed.

Please note that there may be sections in this user manual, which are not relevant to your product, since this manual applies to all existing modules (on the date of printing).

Symbols in this manual

In this user manual, warnings are indicated by symbols. The warning symbols are accompanied by a heading that indicates the severity of the danger.



WARNING

Indicates a hazardous situation that could result in serious injury or death if it is not avoided.



CAUTION

Indicates a hazardous situation that could result in minor or slight injury if it is not avoided.



IMPORTANT

Indicates a hazardous situation that could result in damage to property if it is not avoided.



Tips and Recommendations

Gives useful tips, recommendations and information for efficient, trouble-free use.



This product complies with Directive 93/42/EEC concerning medical devices. The launch date of this product is stated in the CE declaration of conformity.

I.2 Intended Use

- The bed has been developed for domestic care and features a comfortable sitting and lying position for the patient. Furthermore, ergonomical operation for the carer is ensured.
- The bed has been developed for users over 12 years of age weighing 45-200 kg, taller than 150 cm.
- Safe Working Load (SWL): 235 kg (patient/user + accessories).
- Max User Weight: 200 kg.
- The bed is not intended for psychiatric patients.
- The bed is not intended for transportation of users.

The bed is defined to be used according to:

- *Application environment 3*; Long-term care in a medical area where medical supervision is required and monitoring is provided if necessary and medical electrical equipment used in medical procedures may be provided to help maintain or improve the condition of the patient.

- *Application environment 4*; Care provided in a domestic area where medical electrical equipment is used to alleviate or compensate for an injury, disability or disease.



WARNING!

Any other or incorrect use could lead to hazardous situations.

Invacare® accepts no liability for any use, change or assembly of the product other than as stated in this User manual.

Throughout the entire production process our materials/products are quality controlled by the operators. Additionally, a final test is carried out prior to packaging and shipping.

The operator carrying out the final test, which includes a check of all moveable parts, motors and castors, issues a QA number on the product thereby confirming its quality. If the product does not correspond to the quality demands of Invacare®, it will be discarded.

If a problem should arise in connection with the delivered product, please contact your Invacare® supplier. An address list is shown on the back side at this manual.

I.3 Service life

The expected service life of this product is eight years when used daily and in accordance with the safety instructions, maintenance intervals and correct use, stated in this manual. The effective service life can vary according to frequency and intensity of use.

I.4 Warranty

The warranty covers all material and production defects for two years from the date of delivery, provided it can be demonstrated that such defects were present before delivery. All manufacturing faults or defects must be promptly reported.

Invacare® may repair the fault or replace the component. The warranty provided by Invacare® does not cover additional costs (transport, packaging, labour, sundry expenses, etc. are for the customer's account).

The warranty does not cover:

- Damage caused during transport that is not directly reported to the forwarder at the moment of delivery.
- Repairs performed by unauthorized centers and personnel.
- Parts subject to normal wear.
- Malicious damages or damages caused by improper use of the bed.

Invacare® reserves the right to alter product specifications without prior notice.

2 Safety

2.1 General warning


WARNING!
Risk of injury

There is a risk of entrapment of fingers in the bed moving parts.

- Pay attention to your fingers.


WARNING!
Risk of entrapment / suffocation

There's a risk of entrapment / suffocation between mattress support, side rail and bed end

- The bed must not be used by patients under 12 years of age, or by patients with body size equivalent to an average 12 years old or smaller.
- The bed, in combination with side rails must not be used for persons under 45 kg or under 150 cm height.
- The hand control must not be used by children.


WARNING!
Risk due to electromagnetic interference

Electromagnetic interference between the bed and other electrical products can occur.

- To reduce or eliminate such electromagnetic interference, increase the distance between the bed and the products or switch them off.

This medical bed can be used together with medical electrical equipment connected to the heart (intracardially) or blood vessels (intravascularly) provided that following points are respected:

- The bed should be equipped with means for potential equalization connection marked out by a symbol shown in the back of this manual.
- Medical electrical equipment should not be fixed on the bed's metallic accessories such as side rails, lifting pole, drip rod, bed ends, etc.
- The medical electrical equipment power supply cord should be kept clear of the accessories or any other moving parts of the bed.


WARNING!
Risk of patients slipping through the openings

The bed fulfils all requirements regarding maximum distances. However, it is possible that patients with small body dimensions slip through the openings between the side rails or through the opening between the side rail and the mattress support.

- Pay special attention, if the bed is used for the care of patients with small body dimensions.


CAUTION!

- Always lower the bed to the lowest position before leaving the patient in the bed unattended.
- When entering or exiting the bed, the height adjustment should be used. Furthermore, the backrest can be used as support (yellow button on the hand control). However, the thigh- and leg section must be horizontal, otherwise, there is risk of overloading of the mattress support.


IMPORTANT!

- Make sure that there is nothing under, over, or near the bed that can limit the movement of the bed or the mattress support, such as furniture, window frames and storage boxes.
- Do not roll over the mains cable.
- Do not bring mains cable into moving parts.
- Disconnect the plug from the mains before moving the bed.
- Make sure that no cables (mains or from other equipment) are jammed or damaged, when the bed is used.
- The bed must not be placed close to a direct heat source (dire place, radiator etc) and not in direct sunlight.

2.2 Labels and symbols on the product

The product label is placed on the frame of the bed:

Symbols on the label


(A)	Type number of the bed
(B)	Serial number
(C)	Date of production
(D)	Manufacturer; Name and Address
(E)	Electrical information see 9.5 Electrical system, page 26
(F)	IPX Degree
(G)	Symbols





Explanations to abbreviations on label

lin	Current in	Max	Maximum
Vin	Voltage in	min	minutes
Int.	Intermittens	kg	kilogram
AC	Alternating current	A	Ampere

Symbols on the product


All symbols might not be present on all products.

	Max. patient weight
	Max. safe working load
	Insulation class II
	Type B Applied Part. See also 9.5 Electrical system, page 26

	Potential equalization
	Refer to the user manual.
	Waste disposal and recycling information. See 7.1 Waste disposal, page 23.
	This product complies with Directive 93/42/EEC concerning medical devices. The launch date of this product is stated in the CE declaration of conformity.

3 Setup

3.1 Receiving the bed

When you receive the bed, check the packaging. If the bed shows any signs of damage upon delivery, please read: Warranty



WARNING!

Risk of personal damage

There is a risk of entrapment or squeezing, while assembling or disassembling of the bed.

- The assembly of the bed and mounting of accessories must be done by, for this task, authorized or trained personnel.
- Follow instructions carefully.



IMPORTANT!

- To avoid condensation the bed should not be used until it has reached a temperature of 10-40° C.



IMPORTANT!

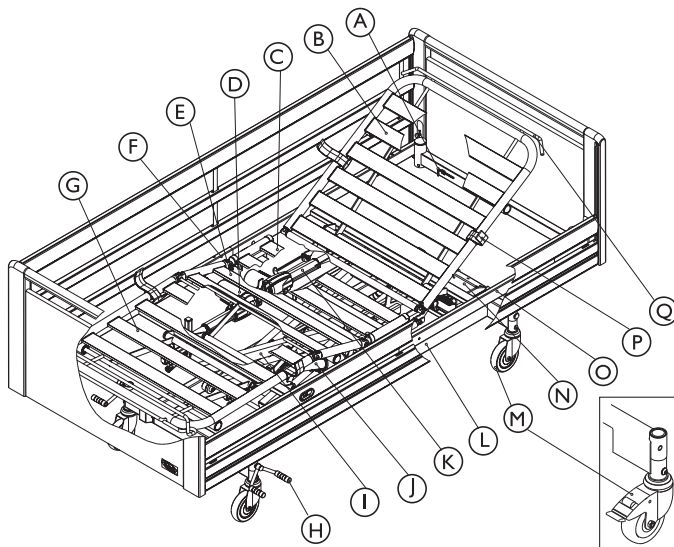
- After each assembly, check that all fittings are properly tightened and that all parts have the correct function.



WARNING!

- The electrical equipment of the bed must not be dismantled or combined with other electrical equipment.

3.2 Main parts of bed



Parts of standard bed:

- | | |
|---|-----------------------------------|
| Ⓐ Allen Key | Ⓜ Brake (beds with brake castors) |
| Ⓑ Backrest | Ⓚ Base Frame |
| Ⓒ Seat section | Ⓛ Backrest motor |
| Ⓓ Leg section motor | Ⓜ Shear arms |
| Ⓔ Thigh section | Ⓝ Top frame, head end |
| Ⓕ Thigh section motor | Ⓞ Control Unit |
| Ⓖ Leg section | Ⓟ Mattress retainer |
| Ⓗ Top frame, foot end | Ⓠ Mattress support extension |
| Ⓛ Brake pedal (beds with central brake) | |

Accessories:

- | | |
|------------------------------------|------------------------------|
| - Hand control | - Bed ends |
| - Bed end fittings | - Support handles |
| - Side rails | - Lifting pole |
| - Bumper wheels | - ACP-box (Lockable handset) |
| - Limitation crossbar, for leg end | - Backup battery |

3.3 Assembly of mattress support

1. Make sure the castors' brakes are activated.
2. Place the leg section close to the base. The snap locks must be unlocked.
3. Connect the plug to the mains socket.
- 4.



Bring the bed in level with the snap locks and guide the leg section in until the two locks find the pivots on the shear arm. Check that the connection between the mattress support and the base is locked correctly. The snap locks must be engaged. Leave the leg section down.

5.



Keep hold of the leg section and bring the bed up until the marks are opposite each other. (When the shear arm is up, the leg section can rest on the base, the brake pedal or the floor, unless the bed has central locking).

6.



Place the head end close to the base and tip it down so the square plastic guides connect with the guideway.

7.



Tilt the leg section up to a horizontal position and check that the inserts are located opposite the openings in the head section. Tilt the head end up to a horizontal position and then push it completely in over the inserts on the bed end. (See also 3.5 Adjusting misaligned platform tubes, page 8)

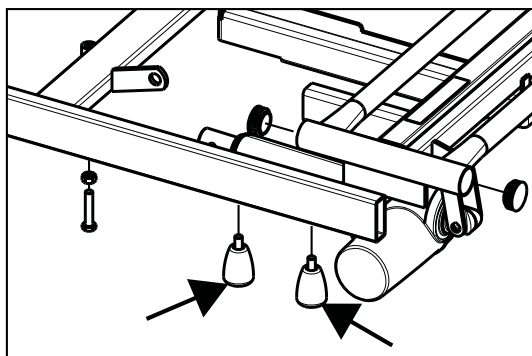
8.

a.



For 85 and 90 cm wide beds, push the seat section down to the horizontal position, after which the leg- and head end can be locked together.

b.



For 105 and 120 cm wide beds, fit and tighten the two finger screws under the side tubes on each side in order to lock the head- and the leg end together.

9. Connect the plugs from the backrest, thigh and leg section motors onto the control unit, then attach the locking cam into place.

! IMPORTANT!

- After assembly of the mattress support; check:
- that all plugs of the motors and hand control are correctly connected to the control unit according to the printed symbols.
 - that top frame head- and leg end are completely pushed together.
 - that the lock pin is engaged.
 - that the seat section is completely down
 - that bed ends are correctly attached.

Mounting Accessories; see 5 Accessories, page 18

3.4 Assembling bed with dismantlable base

1. Make sure the castors' brakes are activated.
- 2.



Lift the shear arm into the base so it rests on the floor.

3. Insert the shear arm into the guide rails on the base.
- 4.



Carefully lower the shear arm into place holding the handle.

5. Make sure the snap lock is engaged.

3.5 Adjusting misaligned platform tubes

This instruction only applies to beds 85–90 cm wide.

In the event that the side tubes are misaligned in the assembly, the inserts can be adjusted for better fit.

1.



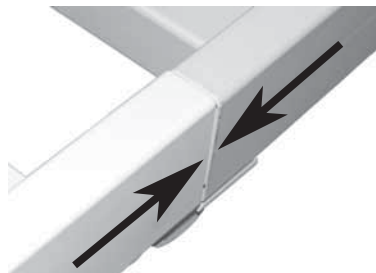
Slide the side tubes apart.

2.



Use a large screwdriver to flip the little tongue 1-2mm.

3.



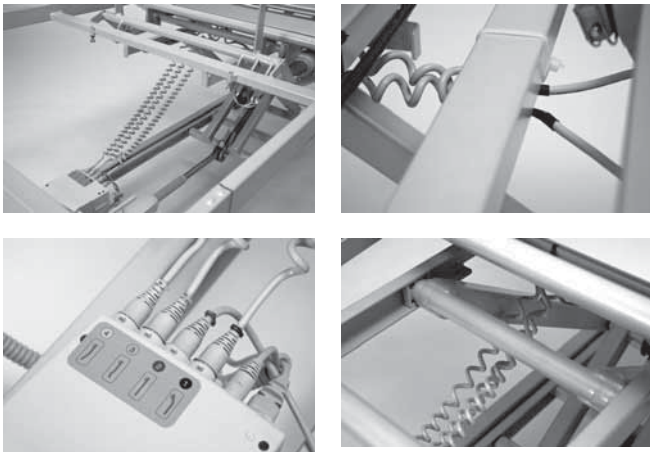
Slide the side tubes along. Verify that the side tubes are aligned

3.6 Wiring



IMPORTANT!

- The cables must be mounted in such a way that they are kept clear of the floor and do not block the castors.



- Check the cabling by operating the motors of the bed to their outer positions.
- When all wires have been correctly installed, there is no squeezing risk of the cables.
- It is normal for cables to loosen slightly after short usage.
- The cables are equipped with plugs at both sections, hence, they can be replaced independently (except for the height motor).
- The cables are attached to the top frame with cable clips.

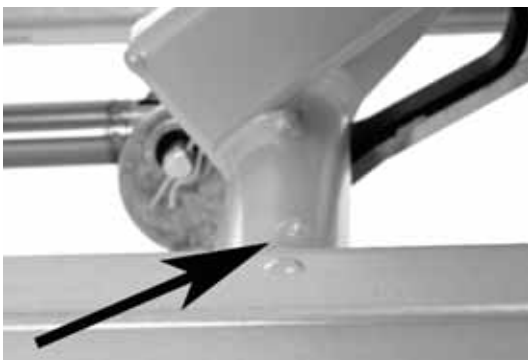


IP Protection

- The hand control, control unit and motors are protected according to IPX4 or IPX6.
 - A lock cam must be used on the control unit - if not, *Invacare®* cannot guarantee the IP protection.

3.7 Disassembly of mattress support

1. Make sure the castors' brakes are activated.
2. Adjust the bed to a suitable height.
3. Dismount all accessories.
- 4.



Run the bed to the marked height level, so that the markings on the base frame's guideway and the shear arms are opposite each other.

5. Disconnect the plug from the mains.
6. Remove the locking cam from the control unit and disconnect the plugs of backrest-, thigh- and leg motors and ensure that the cables are not caught in the base.

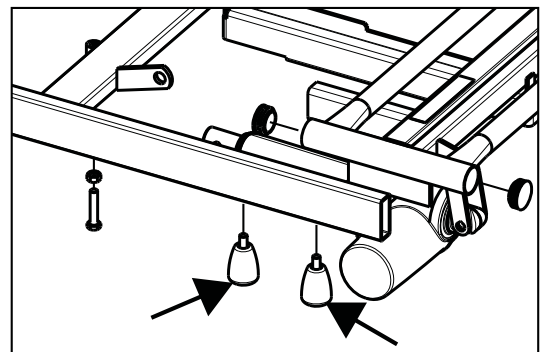
7.

a.



For 85 cm and 90 cm width beds; Tilt the bed section up.

b.



For 105 cm and 120 cm beds; Completely unscrew the finger-screws, under the side tubes on each side.

8.



Stand by the head end. Pull out the head section to stop, and tip it onto the floor.

9.



Lift the leg section so it rests on the base frame and release the 2 snap locks in the leg section by pulling out the locking pin and turning it clockwise.

10.



Tilt the leg section down and let it rest on the base frame.

11.



Tilt the head end away from the base and place it on the floor. Turn the backrest outwards so it acts as a support.

12. Plug the mains cable into the socket and gently lower the bed until the leg section rests on the floor.

13.



Pull the leg section free from the base and place it on the floor.



3.8 Disassembly of dismountable base



CAUTION!

Risk of personal injury

Personal injury can occur if the snap lock between the base and the shear arm is not correctly engaged.
– Secure the snap lock.



IMPORTANT!

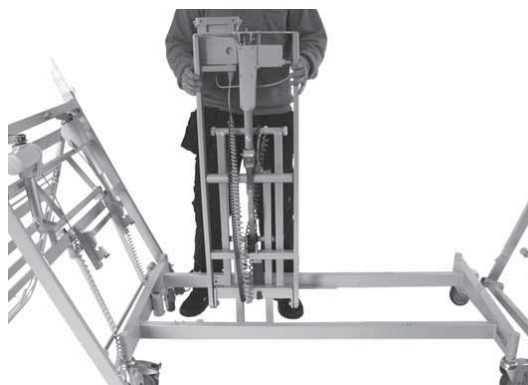
If the cables get trapped between the base and the shear arm they can get damaged.
– Make sure the cables run free.

1. Make sure the castors' brakes are activated.
2. Push the shear arm completely down.
- 3.



Take hold of the small handle located next to the controls with one hand.

4. Loosen the locking pin and lift the shear arm to the upright position.
5. Turn the shear arm completely in towards the body before lifting.
- 6.

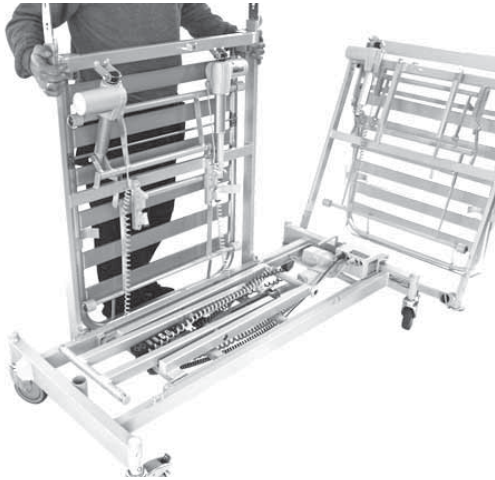


The shear arm can now be lifted.

3.9 Placement of the bed on trolley

1. Make sure that the castors' brakes are activated. (Follow the instructions for "Disassembly of mattress support").
2. Lower the base completely.
3. Disconnect the plug from the mains.

4.



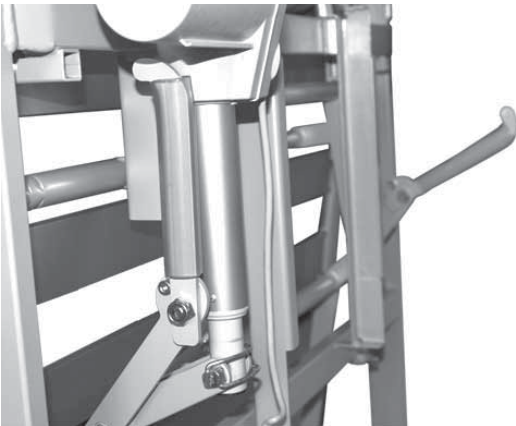
Hang the head and leg sections of the mattress support on the hooks on the base, one on each side. The easiest way to disassemble the mattress support sections is by turning them inwards so they can stand by themselves and then tilting the mattress support back to the upright position.

5.



The mattress supports are locked in place with the distance pin which also ensures that they cannot swing against each other.

6.



Turn the two hooks upwards for the accessories.

7. The bed ends and side rails are guided in over the hooks from one side. The lifting pole can be placed in the tube on the base.
- 8.



The mattress can be placed between the mattress supports.



CAUTION!

Risk of personal injury or damage to property.

Hanging anything on the hooks before the distance pin is in place may cause the bed parts to fall.

– Make sure the distance pin is correctly in place.

3.10 Getting the bed into operation from trolley

1. Make sure that the castors have their brakes activated.
2. The side rails and bed ends are removed from the transport hooks.
3. The transport hooks are folded up, and the distance pin is folded in.
4. Follow the instructions for "assembly of mattress support", steps 3-8.

3.11 Mattress retainers



WARNING!

Risk of injury

If the mattress retainers are removed the mattress will not follow the movement, when adjusting the head-/legsections. The mattress can slip sideways and cause the user to fall out of the bed or get trapped in the bed.

- Always use mattress retainers and be careful to put them back after any adjustments.
- Always use the right size of retainers depending on the bed width.



The mattress retainers come in different sizes depending on the width of the bed.

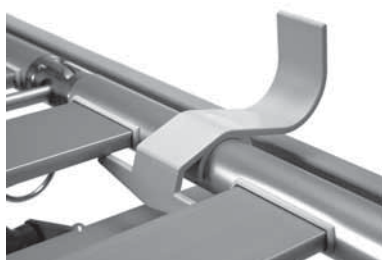
Mounting mattress retainers

1.



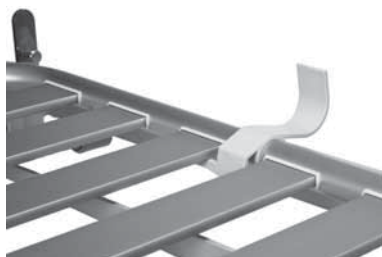
Clip the mattress retainer down, over the mattress frame.

2. **Foot end**



- *For 85–90 cm width bed.*
Place the mattress retainer between the third and fourth slat from the foot end.
- *For 105–120 width bed.*
Place the mattress retainer between the fifth slat and the cross tube.

3. **Head end**



- *For 85–90 cm bed width.*
Place the mattress retainer between the third and fourth slat from the head end.
- *For 105–120 width bed.*
Place the mattress retainer between the fourth and fifth slat from the head end.

3.12 Bed ends



CAUTION!

Risk of squeezing

If the bed end is not correctly locked it can fall down and cause injury to user.

- Make sure the locking pins are engaged.



Risks when using bed end with removable plate.

- If the user is restless, confused or has spasms; Victoria Bed ends (with removable plates) must NOT be used.



Make sure that the side rails are combined with the right type of bed ends.

- The Line or Britt V side rails shall be used in combination with Susanne, Sophie or Victoria bed ends. The steel side rails are optional and designed to be used with Emma bed ends.

Locking pin



Mounting the bed ends

1. Lift the bed end and place on the fittings at both sides.
2. Push down to click into place.
3. The locking pin must then be rotated and locked into position.

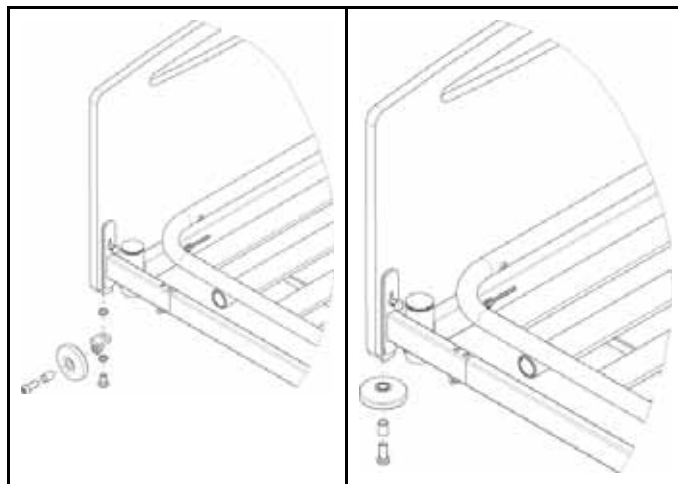
Dismounting the bed ends

1. Pull the locking pin out, and turn halfway to lock the pin.
2. Repeat on the other side.
3. Pull the bed end up and out.

3.13 Bumper wheels

Mounting the bumper wheels on Emma bed ends

The bumper wheels can be mounted in two different ways. See illustrations.



1. Mount the bushing in the bumper wheel
2. Fasten the bumper wheel with a screw into the bed end.



Bumper wheels can not be mounted onto other bed ends.

4 Operating the bed

4.1 Side rails



WARNING!

Risk of entrapment or suffocation

There's a risk of entrapment or suffocation between mattress support, side rail and bed end.

- Always ensure correct fitting of the side rails.

4.1.1 Steel side rails



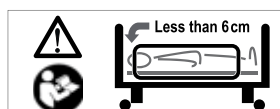
WARNING!

Risk of entrapment

There's a risk of entrapment or suffocation between mattress support, side rail and bed end.

- When using steel side rails, always make sure that the distance between the bed end and the side rail's handle upper edge is less than 6 cm in the head end and more than 32 cm in the foot end of the bed.

A sticker is placed on the side rail to indicate the minimum space between side rail and the head end of the bed:



CAUTION!

There's a risk of entrapment of fingers on assembly and operation of the side rail.

Mounting and dismounting

The side rail must be mounted with the release system at the head end of the bed.

1. **Mounting**

The fork links on the side rail must be mounted according to the instruction on the side rail.

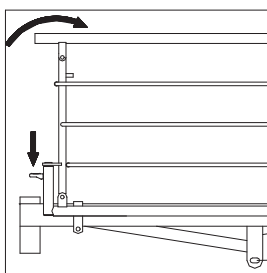
Tighten the side rail with the two finger screws.

2. **Dismounting**

Loosen the two finger screws and remove the steel side rail.

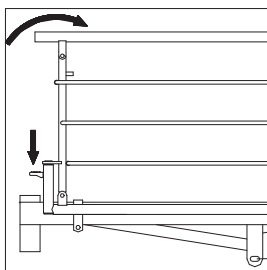
Operating

1.



Up: Lift and pull the top bar of the side rail towards the end with the locking mechanism. Ensure, it is locked in place.

2.



Down: Press the release button and push the top bar of the side rail away from the locking mechanism



CAUTION!

If the side rail is not locked properly it can fall down.

- Pull/push the top bar of the side rail to ensure that the locking system is properly engaged.

4.1.2 Line and Britt V side rails



WARNING!

Risk of entrapment / suffocation

- To avoid the patient from entrapping or accidentally falling from the mattress support, it is essential that the gliding shoes are correctly guided into the bed end rails. Adjust the side rail bars by hand, to ensure they are mounted correctly.



CAUTION!

- Make sure that the straps between the rails are not damaged or loose.

Mounting

1.



Mount one end at a time. Lift the upper bar (the release buttons must face up/outwards)

2.



All three gliding shoes at the end of the bars are guided into the bed end rail, until the lower bar has been locked, thereby preventing the side rail from falling down.

3. Press the locking pin at the end of the side rail with a finger.

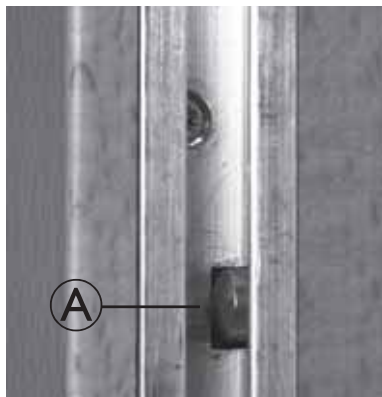
4. Repeat steps 2 and 3 when mounting the other end of the side rail.

Dismounting

1. Lower the side rail.

2. Dismount one end at a time. Lift the lower bar, so that the spring pawl is visible.

3.



Press the spring pawl (A) with a key or a screwdriver.

4. Hold the lower bar. Lower the side rail, until all three bars are free of the bed end rail.
5. Repeat steps 2 to 4 when dismantling the other end of the side rail.

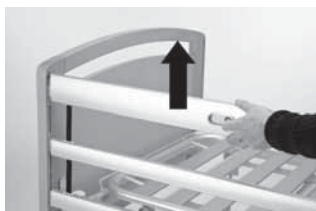
Operating

As a standard, the side rails can only be locked in top position.

As an option, the bed ends can also be equipped to lock the siderails at half height as well as in the top position.

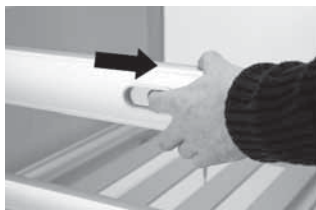
Lock / Upper position

Pull up the top wooden side rail bar, until the locking pin locks with an audible click



Release

Lift the top wooden side rail bar and press the two locking rings together.



Down / Lower position

Lower the side rail.



4.2 Operating the hand control units



WARNING!

Risk of personal injury and damage to property.

- The bed must be placed so that the height adjustment (up(down)) is not obstructed by, for example, lifts or furniture.

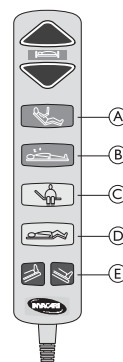


WARNING!

Risk of injury

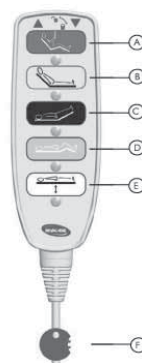
- If the bed is used by confused or restless persons or persons with spasms:
- a lockable handset can be installed to block the hand control functions
- or the hand control must be kept out of reach for the user

Soft Control

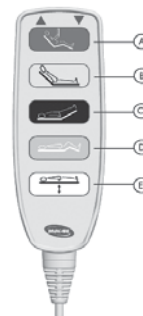


- ▲ Up
- ▼ Down
- (A) Sitting position
- (B) Horizontal mattress support
- (C) "Out of bed" button (Raises the backrest and brings the thigh section to horizontal.
- (D) Thigh section
- (E) Leg section

HL80 with integrated ACP function



HB80



- ▲ Up
- ▼ Down
- (A) Sitting position
- (B) Backrest
- (C) Leg section
- (D) Thigh section
- (E) Height adjustment
- (F) Key for locking and unlocking the electrical functions. Insert the key below each button to respectively lock and unlock the hand control functions.

4.3 Operating the castor brakes



CAUTION!

Risk of trapping

- Do not release the brake with the fingers

**CAUTION!****Risk of falling**

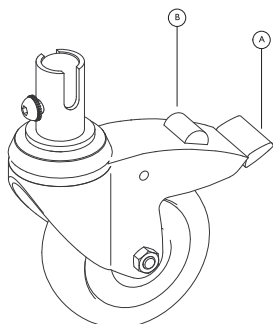
User can fall, while entering or exiting the bed, if brakes are not activated.

- Always apply the brakes when user is moving in or out of bed or when attending to the patient.



Set-off from the castors might under special conditions appear at different types of absorbing floor covering including untreated or badly treated floors. In matters of doubt, it's recommended to place a suitable kind of protection between the castors and the floor.

4.3.1 Operating castors without central braking system

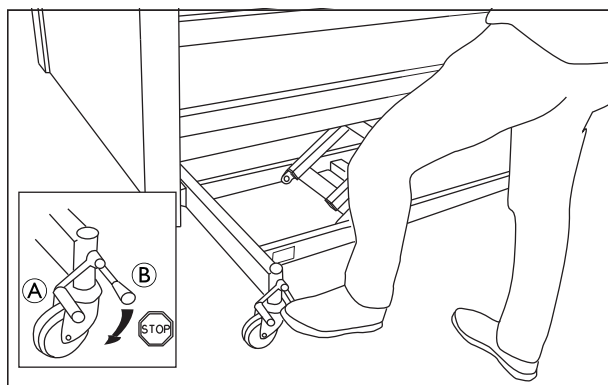
**Locking the brake**

Step on the outer pedal **A**.

Releasing the brake

Step on the inner release button **B**.

4.3.2 Operating castors with central braking system



For braking; always stand in the middle of the bed's long side, facing toward the bed.

1. **Braking**
If the brake is in neutral, step on the red pedal **B**.
2. **Releasing the brake**
Step on the green pedal **A**, until the brake is in neutral position.

4.3.3 Operating the steerable castors

The bed with central braking system may be equipped with a steerable castor. The steerable castor is operated by means of the central braking pedal.

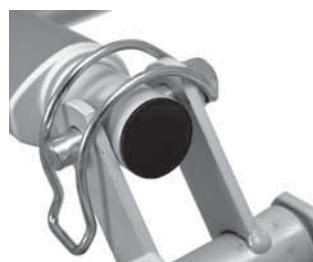
1. **Activating the steering**
If the brake is in neutral, step on the green pedal.
2. **Deactivating the steering**
Step on the red pedal, until the brake is in neutral position.

4.4 Emergency release of the backrest or thigh/leg section

An emergency release of the backrest or thigh/leg section could be necessary in the case of power- or motor failure.

**Important**

- A minimum of two persons are required to release a mattress section.
- An emergency release of the height adjustment is NOT possible.
- Remove the plug from the mains socket before emergency release of the mattress support.



1. Both persons should hold the mattress section.
2. One of them pulls out the cotter pin (from the motor in question).
3. Both persons slowly lower the mattress section until it is completely down.

4.5 Quick release backrest — CPR function

**Optional**

- This function is not standard on all beds.

The quick release handle is placed under the mattress support frame on the right hand side and is marked with this symbol:

**WARNING!****Risk of entrapment**

The backrest comes down fast and there is a risk of entrapment under the backrest.

- Do not reach under the backrest, while lowering.

Risk of head injury

User can hit the bed end while lowering.

- Make sure the users' head is not above the edge of the backrest.

Risk of spinal injury or wounds

Quick movements can cause spinal injury or wounds to open.

- Check user while lowering.

Before use

In cases where beds with CPR function are considered, be aware that the bed should be placed for free access to the release handle on the right side of the bed.

It is recommended the caregiver makes themselves familiar with using the CPR function.

Use of CPR function

1. Pull out the safety pin downwards.
2. Pull the red handle outwards until the backrest is down.

- i** The backrest motor will work normally again, when the handle has been pushed completely back and the safety pin has been replaced.

4.6 Operating the lifting pole



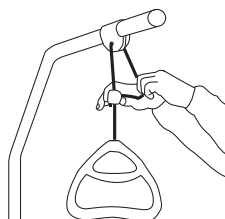
WARNING! **Risk of injury**

- The bed can tip if the handle is used, while the lifting pole is turned away from the bed.
- The lifting pole always has to be positioned with the handle hanging over the bed area.
 - Do not exceed the maximum load of the lifting pole; 70 kg.

Change height of the lifting pole handle

Lower the handle

1.

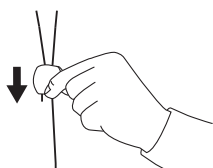


Pull the cord out to the side, to release it from the locking mechanism.

2. Keep the cord out to the side and slide the plastic cord lock upwards.

Raising the handle

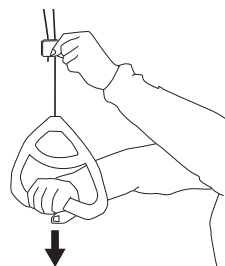
1.



Slide the cord lock downwards.

Lock the handle

1.



Lock the cord lock by pulling the handle downwards.



IMPORTANT!

- After adjustment of the lifting pole handle
- Pull the handle to make sure the cord lock has been engaged.
 - The two cords above the cord lock, must be parallel, to lock properly.

4.7 Accumulator backup



Optional

- This function is not standard on all beds.



IMPORTANT!

Low accumulator capacity

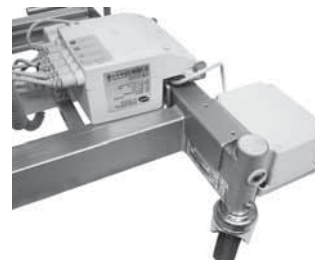
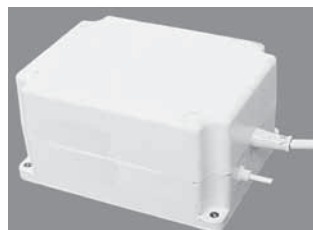
- When the accumulator only has capacity left for one more lifting cycle, the control box will make an audible sound, when using the hand control.



WARNING!

Risk of explosion

- Old or faulty accumulators may generate an explosive gas mixture during charging.
- The accumulator box is provided with vents to ensure adequate ventilation of the box. Do not block or cover the vents, as this may result in pressure built-up and the risk of explosion.



A bed with accumulator backup is equipped with an additional box next to the control unit. The backup ensures that the bed can be adjusted during a power failure or transport.

Mounting the backup battery

1. Install the box, containing the batteries, on the bed's base, next to the control unit
2. Connect the cable to the control unit.

Charging the batteries

The batteries are charged when the control unit is connected to the mains.



- The control unit must be connected to the mains for 24 hours prior to first use.
- Accumulators must be charged, at least, every 6 months for maintenance purposes.

Preventive maintenance



- Frequent, sudden discharges reduce the backup's life.

We recommend the accumulator be tested at least once a year.

Accumulators are not damaged by continuous connection to the mains.

Exchanging the accumulators

- Accumulators have to be exchanged after 4 years. Depending on how the back up is used the exchange may have to take place earlier.
- Accumulators must be exchanged as sets
- Accumulators must be replaced with accumulators of the same type or mechanically and electrically compatible accumulators
- Accumulators, in a set, must have identical production codes.




- Prior to insertion make sure that the accumulator set is correctly connected according to the drawing (in the accumulator box), and that none of the connections are loose.

The accumulators are delivered as a pair under order no.: 818323 (12V - 1,2 Ah).

Waste disposal

Return old accumulators to *Invacare®* or recycle as car batteries.

4.8 Mattress support extension

 For patients, taller than two meters it is recommended to use a mattress support extension.



WARNING!

Risk of injury

The user can fall out of bed, get trapped or suffocated.

- Always extend the mattress support when extending bed ends
- There must be a distance of more than 2,5 cm, between the bed end and outside of mattress retainer, to avoid entrapment of fingers.



WARNING!

Risk of injury

The user can get hit by the lifting pole or fall out of bed.

- Always make sure to tighten the screws for the mattress support extension.

Some beds can be adjusted between 5 and 10 cm at both foot and leg ends – 20 cm altogether.

Use the hexagonal key, which is located on the inner side of the cross bar in the head end.

Extend the bed — Foot end

1. Remove the side rail(s). See section: 4.1 Side rails, page 13.
2. Remove the two screws that holds the bed end bracket in the bed foot end.
3. Pull out the bed end brackets 5 or 10 cm, and tighten both screws.
4. Loosen both screws that holds the mattress support extension, pull out the extension to desired position, and tighten both screws.
5. Replace the mattress or put in the mattress extension.
6. Mount the side rail(s).

Extend the bed — Head end

1. Remove the side rail(s) and the lifting pole. See section: 4.1 Side rails, page 13 and Lifting Pole
2. Remove the two screws, located approximately 20 cm from the bed section.
3. Pull out the bed section brackets 5 or 10 cm, and tighten both screws.
4. Loosen both screws that holds the mattress support extension, pull out the extension to the desired position, and tighten both screws.
5. Replace the mattress or put in the mattress extension.
6. Install the side rail(s) and the lifting pole.

4.9 ACP Box



Optional

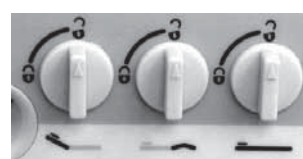
– This function is not standard on all beds.

Mounting the ACP Box



1. Place the ACP box on the bed end bracket, in the head end.
2. Insert the hand control cable into the ACP box and connect the ACP box cable to the control unit.

Operating the ACP box



OPEN

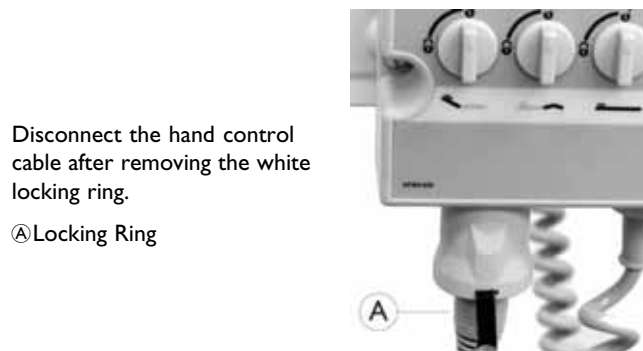


LOCKED

The hand control can be locked by activating the switch on the ACP box located in the head end of the bed.

To check if the locking function has been activated, press the buttons on the hand control.

Replace Hand Control mounted to the ACP-box



Disconnect the hand control cable after removing the white locking ring.

Ⓐ Locking Ring

5 Accessories

5.1 List of available accessories

- Siderails
 - Line Alu
 - Line Alu, extendable
 - Britt V wooden (1 pair)
 - Scala Basic 2, Metal (foldable)
 - Scala Basic Plus 2, Metal (foldable)
 - Scala Medium 2, Metal (foldable)
 - Scala Decubi 2, Metal (foldable)
 - Verso II, Metal (foldable)
- Side rail covers
 - Scala Cover for Line side rail
 - Scala Cover for Line side rail, extra padded
 - Scala Cover for Line extendable (205–210, 215–220 cm)
 - Scala Cover for metal side rail, Basic
 - Scala Cover for metal side rail, Basic, extra padded
 - Scala Cover for metal side rail, Medium and Decubi
- Wooden bed ends
 - Susanne (85, 90, 105, 120 cm)
 - Susanne lowered (90, 105, 120 cm)
 - Victoria (85, 90 cm)
 - Sophie (85, 90 cm)
 - Sophie lowered (90 cm)
 - Emma (85, 90, 105, 120 cm)
 - Anita (85, 90)
 - Anita lowered (90 cm)
- Mattresses
 - Dacapo Basic (38 kg/m³ foam, incontinence cover)
 - Dacapo Combi (2-layer 50/38 kg/m³, Visco-elastic foam, incontinence cover)
 - Dacapo Top (50 kg/m³ foam, incontinence cover)
 - Dacapo Comfort (53 kg/m³ foam, incontinence cover)
 - Dacapo Plus (53 kg/m³ foam, incontinence cover)
- Support Handle
- Lifting pole
- Limitation crossbar
- IV Drip rod
- Bumper wheels
- Low-slung set with castor
- Electrical accessories
 - Hand control Linak HB80
 - Hand control Linak HL80, with integrated ACP function

- Hand control Soft Control
- ACP box
- Backup battery kit



Important

- Use only original accessories and spare parts. Spare parts lists and extra user manuals can be ordered from *Invacare* or via homepage.

The tools necessary for mounting/dismounting the accessories of the bed are:

- one hexagonal key (use for mounting/dismounting all fittings)
- one adjustable spanner

The hexagonal key is kept on the inner side of the cross bar at the head section of the top frame.

5.2 Mattress



WARNING!

Safety aspects regarding combination of side rails and mattresses:

- In order to obtain the highest possible safety level, when using the bed in combination with side rails, it is important to respect the minimum and maximum measures for mattresses stated in the table.
- To mitigate the possibility of the user crawling over the top of the side rail, with the risk of severe injury due to e.g. falling, a minimum vertical distance of 22 cm between the top of the mattress and the top of the side rail are to be respected. The maximum mattress height in combination with a given side rail is stated in the table.
- To prevent head entrapment between the inside surface of the side rail and the mattress, with the risk of e.g. suffocation, a safety maximum space has to be respected. When especially very thick mattresses or soft mattresses (low density) or a combination of these it is important to focus on this risk. The minimum width (and length) of mattresses in combination with a given side rail is stated in the table.



- For correct mattress measures see: 9 Technical data, page 25

5.3 Limitation crossbar

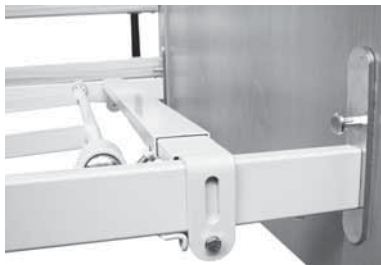


The limitation crossbar

- is fitted when the user is restless or confused.
- limits the angle of the lower leg section and prevents the lower leg section from becoming lower than the outer frame of the bed.

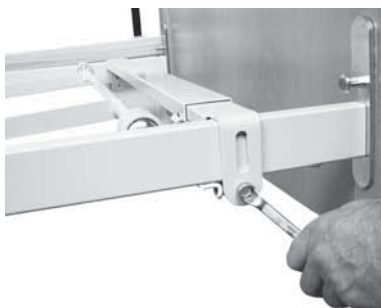
Mounting the limitation crossbar under the leg section

1.



Lift the leg section of the mattress support to free the base.

2.



Fit the crossbar into place and tighten the screws.

3.



When properly installed, the leg section of the mattress support leans on the crossbar.

6 Maintenance

6.1 Maintenance

A service contract can be made in the countries, where *Invacare®* has its own sales company. In certain countries *Invacare®* offers courses in service and maintenance of the bed. Spare parts lists and additional user manuals are available from *Invacare®*.

With normal daily use, service must be carried out according to the service schedule after two years use and thereafter every second year.

- ! IMPORTANT!**
- The mattress support must be supported during service inspections, to prevent accidental lowering.
 - Only personnel who have received the necessary instructions or training may perform service and maintenance of the bed.
 - After reconditioning the bed, or if bed functions change, service must be carried out according to the service schedule.

Before Use

- Ensure that all manual and electrical parts functions correctly and are in a secure state.
- Check, by raising and lowering the bed, that the shear arms run smoothly in the guideways.

After three months

- Ensure that all manual and electrical parts are functioning, and tighten bolts, screws, nuts, etc.

Every year

- We recommend a safety test comprising the motors' performance and mechanical state.

Every second year

- Service should be performed after the maintenance chart.



Motors, hand control and control units are serviced by exchanging the faulty part.

6.1.1 Maintenance Chart

Service and maintenance of the bed must only be performed by personnel who have received the necessary instruction or training.					
S/N (located on mattress support):					
Date/Initials					
Circlips, cotter pins and plastic fixing ring checked.					
Screws tightened.					
Weldings checked.					
Check the guideways, no bending.					
Check that the guideways reinforcement kit is properly fastened.					
Side rail locking and moving system tested.					
Castor fittings tightened.					
Castor brakes checked.					
Height adjustment motor checked.					
Backrest motor checked.					
Thigh section motor checked.					
Leg section motor checked.					
Cables correctly suspended and undamaged. Plugs undamaged.					
Damaged coating repaired.					
Line side rail straps checked (must not be frayed or cracked).					
Accessories checked.					

6.2 Inspection after relocation - Prepare for new user



IMPORTANT!

- When the bed has been relocated; before given to a new user it has to be thoroughly inspected.
 - Inspection must be done by a trained professional.
 - For regular maintenance see maintenance chart.

Check points				
Check that the lifting wedge runs in the centre of the support rolls; upper and lower.				
Check that the locking between the lifting wedge and piston from the motor is secure (pipe pins correctly mounted).				
Check that the side tubes of the mattress support are fully inserted, aligned and locked.				
Check that the latches, locking the mattress support on the shear arms, are properly engaged (red button on the mattress support).				
Check the locking of the motors (pipe pins correctly mounted).				
Check the electronic wiring for the motors (wires not squeezed).				
Check that the enclosing of the motors are intact (no cracks that enables fluids to pierce).				
Check that the locking cam is properly mounted over the contacts in the control box.				
Check the sections of the mattress support by using the hand control to activate all functions of the moving parts.				
Check the function of the brakes.				
Check that the snap locks on the bed ends are properly locked (pin all the way in = locked)				
Check the locking function(s) of the side rails.				
Check that all bed slats are intact and not loose.				

6.3 Cleaning



Important

- The bed does not tolerate cleaning in automatic washing plants or the use of water-jet based cleaning equipment.
- Make sure that the power plug is removed from the main socket before cleaning.
- Make sure that all plugs on the bed are in place, during washing.

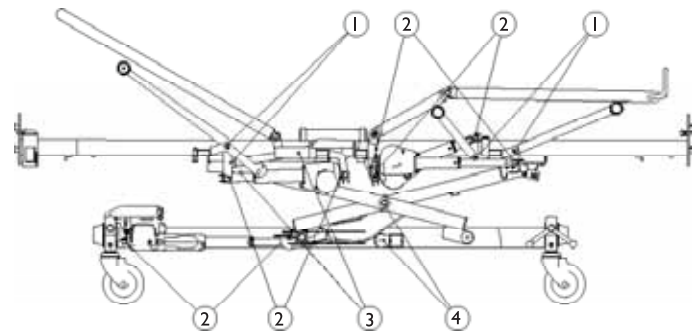


Important details for cleaning IPX6 and IPX4 hand controls

- Water may be pressurised, but never use high-pressure cleaning or steam cleaning directly on the electrical parts.

- The bed; including side rails and bands (removable and fixed) should be washed with a wet sponge, cloth or brush.
- Use ordinary household cleaning agents. Never use acids, alkalines or solvents such as acetone or cellulose thinner.
- The backrest and the leg/thigh sections can be lifted from the mattress support, which facilitates cleaning and access to the control unit.
- The hand control, motors and control unit may be washed with brush and water.
- Dry the bed after cleaning.

6.4 Lubrication



We recommend lubricating the bed according to the following table:

	Part of bed	Lubrication method
1	Bearings for lifting- and shear arms	Oil
2	Motor suspension	Oil
3	Gliders and guideways	Grease
4	Axles and rolls for shear arm (axle must be dismantled)	Grease

Lubricate with:

- medically clean oil; such as Kemitura Kem Lub KEM-WO 50, order No: 813239

or

- grease, order No: 1497607



Important

- The bars in the Line side rails' gliding system move sluggishly if lubricated with oil.
 - Only lubricate gliders and guideways with grease.

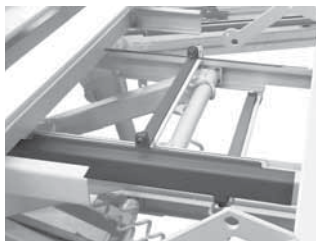
6.5 Reinforcement Kit



IMPORTANT!

On beds, with serial numbers before
011107706874001, the guideways can bend under high pressure.

- These beds need to be equipped with the guideways reinforcement kit.



Contact your *Invacare* dealer or sales company for further assistance.

7 After Use

7.1 Waste disposal

This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU. This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

The »crossed out wheelie bin« symbol is placed on this product to encourage you to recycle wherever possible.



Please be environmentally responsible and recycle this product through your recycling facility at its end of life.

All wooden parts must be dismantled and sent for incineration.

All electric parts must be dismantled and be disposed of as electric components.

Plastic parts must be sent for incineration or recycling.

Steel parts and castors must be disposed of as waste metals.

Waste disposal must comply with the laws and regulations pertaining waste handling in each country.

8 Troubleshooting

8.1 Troubleshooting electrical system

Symptom	Possible cause	Remedy
Mains indicator does not light up	Mains is not connected	Connect mains
	Fuse in the control unit is blown	Replace the control unit
	Control unit is defective	Replace the control unit
Mains indicator lights up, but the motor is not running. The relay in the control unit makes a clicking noise.	Motor plug is not fully inserted into the control unit.	Insert the motor plug properly into the control unit
	The motor is defective.	Replace the motor
	Motor cable is damaged.	Replace the cable
	Control unit is defective	Replace the control unit
Mains indicator lights up, but the motor is not running. No relay sound is heard from the control unit.	Control unit is defective	Replace the control unit
	Hand control is defective	Replace the hand control
Control unit is in order except for one direction on one channel.	Control unit is defective	Replace the control unit
	Hand control is defective	Replace the hand control
Motor is running, but the piston rod does not move.	Motor is damaged	Replace the motor
The motor cannot lift full load.		
Motor noise, but no movement of piston rod.		
Piston rod operates inwards and not outwards.		

9 Technical data

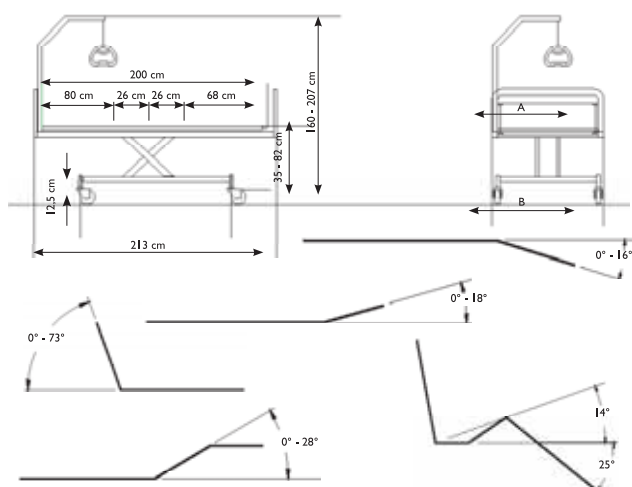
9.1 Dimensions bed

- All measurements are stated in cm.
- All angles are stated in degrees.
- All measurements and angles are stated without tolerances, on a non-extended bed.

The bed can be extended respectively 5 and 10 cm's in both ends.

Invacare® reserves the right to change the stated measurements and angles without warning.

Beds widths		
A	85 — 90 cm	105 — 120 cm
B	90 — 100 cm	110 — 125 cm



9.2 Weights

	Max. user weight (provided that the weight of the mattress and the accessories do not exceed 35 kg)	200 kg
	Max. safe working load weight (including accessories)	235 kg

Part of bed	85 / 95 bed	105 bed	120 bed
Backrest with mattress support	25 kg	33,5 kg	37 kg
Leg section with mattress support	25 kg	33 kg	28 kg
Shear arm, dismantable	40 kg	41,5 kg	42 kg
Shear arm, mountable, frame	18 kg	—	—
Shear arm, mountable, lifting part	25 kg	—	—
Complete bed (excl accessories)	90 kg	108 kg	107 kg

Line side rail	4,5 kg/pcs	4,5 kg/pcs	4,5 kg/pcs
Line side rail, extendable	6,5 kg/pcs	6,5 kg/pcs	6,5 kg/pcs
Britt V side rail	7,7 kg/pcs	7,7 kg/pcs	7,7 kg/pcs
Scala 2, foldable metal side rail	7,4 kg/pcs	7,4 kg/pcs	7,4 kg/pcs
Lifting pole	4,2 kg	4,2 kg	4,2 kg
Emma bed end	7 kg/pcs	—	—
Victoria bed end	10 kg/pcs	—	—
Susanne, Sophie bed end	8,5 kg/pcs	9,5 kg/pcs	10,5 kg/pcs
Anita Bed end	9 kg/pcs	—	—

9.3 Dimensions mattresses

Bed side rails	Mattress sizes		
	Max Height (cm)	Min Height (cm)	Min length (cm)
Line/Line Extendable	18	12	200
Britt V	18	12	200
Scala Basic 2	15	8	200
Scala Basic Plus 2	15	8	200
Scala Medium 2	20	8	200
Scala Decubi 2	29	21	200
Verso II	18	10	200

The minimum Width of the mattress differ according to the width of the bed. See table below.

Bed side rails	Mattress sizes			
	Width for SB755 – 85cm (cm)	Width for SB755 – 90cm (cm)	Width for SB755 – 105cm (cm)	Width for SB755 – 120cm (cm)
All bed side rails	83–85	88–90	103–105	118–120



9.4 Environmental conditions

	Storage and transportation	Operation
Temperature	-10°C to +50°C	+5°C to +40°C
Relative humidity	20% to 75%	
Atmospheric pressure	800 hPa to 1060 hPa	



Be aware that when a bed has been stored under low temperatures, it must be adjusted to operating conditions before use.

9.5 Electrical system

Voltage supply	Uin 230 Voltage, AC, 50 Hz (AC = Alternating current)
Maximum current input	lin max. 1,5 Ampere
Intermittent (periodic motor operation)	10 % 2 min / 18 min
Insulation class	 class II
Type B Applied Part	 Applied Part complying with the specified requirements for protection against electrical shock according to IEC60601-1. (An applied parts is a part of the medical equipment which is designed to come into physical contact with the patient or parts that are likely to be brought into contact with the patient.)
Sound level	55 dB (A)
Degree of protection	IPX6* or IPX4** (depending on configuration) The control unit, external power supply and motors are protected according to IPx6. When the bed is equipped with a HL80 hand control, it is protected according to IPx4

* IPX6 classification means that the electrical system is protected against water projected in powerful jets from any direction.

** IPX4 classification means that the electrical system is protected against water splashed against the component from any direction.



The handcontrols have different IP-classes (see label on back), the IP-classification of the hand control decides the overall classification of the bed.



The bed has no isolator (main switch). Disconnect the bed by unplugging it from the mains socket.

9.6 Electromagnetic compliance (EMC)

Guidance and manufacturer's declaration – electromagnetic emission


The medical bed is intended for use in the electromagnetic environment specified below. The customer or the user of the bed should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11 (partly)	Group I	The medical bed uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11 (partly)	Class A	The medical bed is suitable for use in all establishments including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class B	
Voltage fluctuations /flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity

The medical bed is intended for use in the electromagnetic environment specified below. The customer or the user of the bed should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrostatic transient / burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 sec	< 5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the medical bed requires continued operation during power mains interruptions, it is recommended that the medical bed be powered from an un-interruptible power supply or a battery. U_T is the a. c. mains voltage prior to application of the test level.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Conducted RF IEC 61000-4-6	3 V	3 V	Portable and mobile RF communications equipment should be used no closer to any part of the medical bed including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = \left[\frac{3,5}{V_1} \right] \sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m	3 V/m	$d = \left[\frac{3,5}{E_1} \right] \sqrt{P}$ 80 MHz to 800 MHz $d = \left[\frac{7}{E_1} \right] \sqrt{P}$ 800 MHz to 2,5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). ^b Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol: 

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the medical bed is used exceeds the applicable RF compliance level above, the medical bed should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the medical bed.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V/m.

At 80 MHz and 800 MHz, the higher frequency range applies.


Recommended separation distances between portable and mobile RF communications equipment and the medical bed

The medical bed is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the medical bed can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the medical bed as recommended below, according to the maximum output power of the communications equipment

Rated maximum output of transmitter [W]	Separation distance according to frequency of transmitter [m]		
	150 kHz to 80 MHz $d = [\frac{3,5}{V_1}] \sqrt{P}$	80 MHz to 800 MHz $d = [\frac{3,5}{E_1}] \sqrt{P}$	800 MHz to 2,5 GHz $d = [\frac{7}{E_1}] \sqrt{P}$
0,01	0,12	0,40	0,40
0,1	0,37	1,26	1,26
1	1,17	4,00	4,00
10	3,69	12,65	12,65
100	11,67	40,00	40,00

For transmitters rated at a maximum output power not listed above the recommended separation, distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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