



Hillrom™

Hillrom™ 900 Bed Instructions for Use LI900B2 and LI900B3



171051 Rev. 12

EN



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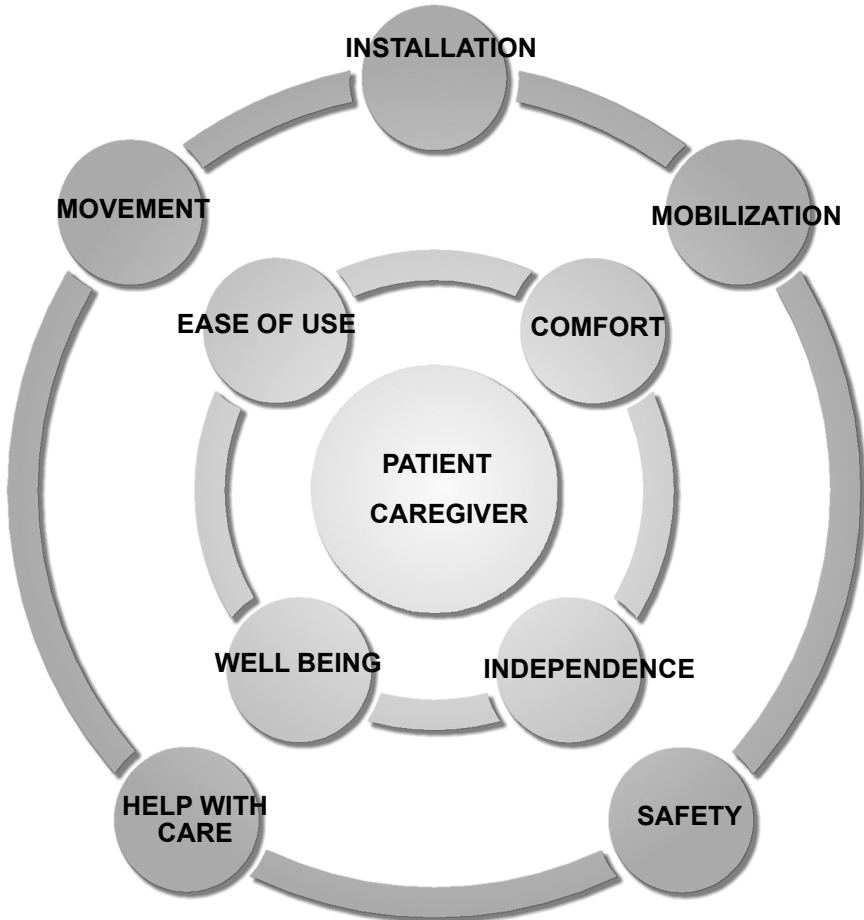
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The structure of the Instructions for Use











For every type of use, Hillrom™ beds provide patients with optimal comfort and greater independence for a feeling of well-being that is conducive to a swift recovery. They are also easy to use for caregivers.

Symbol definitions

This manual contains different typefaces and icons designed to improve readability and increase understanding of its content. Note the following examples:

- standard text - normal character style used for “basic” information.
- **Boldface text**- emphasizes a word or phrase.
- ⓘ highlights special information or explains very important instructions,
- The symbols below represent different risks or hazards:

Symbol	Description
	<p>Warning</p> <ul style="list-style-type: none"> • This symbol indicates that the failure to follow the associated recommendation can put the patient or the user in danger, or damage the equipment.
	<p>Caution</p> <ul style="list-style-type: none"> • This symbol indicates that the failure to follow the associated recommendation can result in damage to the equipment.
	<p>Tip</p>
	<p>Risk of falling</p>
	<p>Caught hazard warning</p>
	<p>Risk of crushing an upper limb</p>
	<p>Chemical Hazard Warning</p>
	<p>Electric Shock Hazard</p>

Bed model and country of use

Certain bed features or accessories may be available or not, depending on the destination country. These features are identified with an asterisk (*) and the accessories or the additional parts are identified by two asterisks (**).

To identify your bed model, its serial number SN (HRPXXXXXXXXX), its UDI and its date of manufacture, refer to the identification label (see “Overview” page 14). Your LI900BX bed is made up of a chassis/sleep surface, with a REF reference starting with CS900B2 or CS900B3 and two endboards (a headboard and a footboard).



- REF: CS900B2XXXXXXXX or CS900B3XXXXXXXX: CS900 = Hillrom™ 900; B = Version; 2XXXXXXXX or 3XXXXXXXX = unique 7-figure numerical code according to different criteria, such as the voltage, the electrical functions, the language, etc.
- SN: HRPXXXXXXXXXX: HRP = Hill-Rom Pluvigner; XXXXXXXXXXX = incremental code.
- UDI; Unique Device Identification.

Safety and Usage Tips

Intended Use

The Hillrom™ 900 medical beds with emergency Trendelenburg / Reverse Trendelenburg are beds for intensive care for **adult patients** (the emergency Trendelenburg function remains operational in the event of a power cut: SHOCK) (EN60601-2-52 application environment 1). They are designed for use in intensive care wards and also in general care and surgery care wards and allow the use of advanced techniques used in specialist units. They are designed with the needs of the whole medical team in mind and the benefits are to facilitate the use of monitoring equipment and the transfer of patients to examination wards.

The Hillrom™ 900 beds with electric comfort Trendelenburg / Reverse Trendelenburg or without Trendelenburg / Reverse Trendelenburg are variable-height beds designed for acute, general and ambulatory care or care during long hospital stays for **adult patients** (EN 60601-2-52, application environments 2, 3 and 5). They are designed with the needs of the whole medical team in mind and the benefits are to facilitate the use of monitoring equipment and the transfer of patients to examination wards, etc.

Contraindications

- children (aged less than 12 or under 1.46 m tall),
- persons measuring more than 1.85m in height,
- persons with BMI below 17,
- persons weighing less than 40 kg,

Features

The Hillrom™ 900 LI900B2 beds:

- can be fitted with batteries providing protection against power outages as an option.
- fitted with Ø 150mm casters can be used to transfer patients.

The Hillrom™ 900 LI900B3 beds:

- are equipped with batteries providing protection against power outages.
- fitted with Ø 125 mm double-band casters or Ø 150 mm casters can be used to transfer patients.
- are equipped with a patient position detection system.
- can be equipped with a nurse call function*.

Intended Users

The Hillrom™ 900 beds are designed to be used by Qualified Staff. Patients and Visitors can also use the Hillrom™ 900 medical beds depending on authorization given by Qualified Staff.

First use

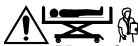


Before using the bed, it is essential to have a thorough understanding of this manual. This manual contains instructions for general use and maintenance and guarantees improved safety. Caregivers must have access to this manual.

Training can be provided on demand.

Caregivers must be informed of the risks that may be encountered in the use of electric beds.

The many sources and types of accessories, hardware, or medical devices that may be used together with this bed do not enable Hill-Rom to guarantee both the safety and conformity of all the combinations thus created. The operator who creates these device combinations must therefore ensure that security and conformity requirements are met.



Use of accessories, transducers and cables other than those specified or provided by Hill-Rom could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

- i** Waste packaging (plastic, cardboard, metal, wood, etc.) must follow suitable recovery circuits with a view to being recycled.

Before installing the bed for the first time or after bringing the bed and its accessories out of storage:

- ensure that the bed and its various parts are at room temperature,
- only connect the bed to a mains electric power supply with earth protection (see “Electrical safety” page 8),
- the power plug must be accessible to disconnect the bed,
- wait 12 hours until the battery is fully charged before using the bed without the mains power supply,
- make sure that all the moving parts are in good working order,
- make sure that the bed has been cleaned and disinfected (see “Decontamination of the bed” page 75).

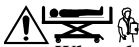
Risk prevention

General recommendations



In general:

- *check that nothing (e.g. objects, accessories or power cable) or any persons (e.g. children, limbs) will interfere with the movement of the mobile parts of the bed before actuating them. An intermittent beep sounds when one of the bed’s movements is hindered.*
- *during a movement or combination of movements of a mobile part of the bed (eg, backrest, sleep surface, siderail), be vigilant (for oneself, the patient or any other person) on the risks of pinching or crushing between moving parts or with a fixed part.*
- *always check (e.g. to and fro movements) that the various locking mechanisms are in good working order (e.g. siderails, extensions, grip handles, brakes).*
- *sufficiently qualified nursing staff determine the usage condition suitable for the various functions and the degree of supervision to ensure that the patient uses the bed safely.*



When the patient is left unattended:



- *apply the brakes to prevent any risks of falling, especially if the patient leans on the bed when getting in or out,*
- *leave the sleep surface in the lowest position to avoid serious consequences in the event of falling,*
- *use the siderails to secure the patient and reduce the risk of falling accidentally,*
- *lock any function that, if misused, could worsen existing injuries or pathologies, or even result in bodily injury,*
- *never leave the bed in the Trendelenburg position.*



Never modify the bed without Hill-Rom's prior written consent. Alterations could result in injury to the patient or damage to the bed.

Only use manufacturer's parts and accessories.

Never place objects or equipment on the chassis or use it to support a person.

Do not use of the bed with loads in excess of the safe working load.

Notice to Users and/or Patients:

Any serious incident that has occurred in relation to the device, should be reported to the manufacturer and the Competent Authority of the Member State in which the user and/or patient is established.

Recommendations for the siderails

In the case of patients suffering from particular behavioral difficulties (e.g., agitation, mental confusion, loss of sense of direction, obsessive behavior, old patients, weakness, etc.), properly trained medical staff should ascertain how the siderails should be used (irrespective of the model or type), whether the patient should be monitored closely or immobilized and whether the patient helpers should be left in position, in order to ensure that patients use the bed in complete safety.

Certain national health authorities have issued guidelines risks to patients and the reduction of these hazards, as indicated below.

It is recommended that patients at risk be identified in each establishment or ward so that the safety measures most appropriate to their particular needs can be implemented.

i *One measure which has already proved effective is to draw up a protocol specifying:*

1. *situations and conditions for siderail use and authorized mattress type or model,*
2. *for all patient monitoring procedures, both for restrained and unrestrained patients, including during intervals,*
3. *circumstances under which patients must be restrained according to the instructions and recommendations of the manufacturer of the said restraining devices.*



The siderails are designed to help reduce the risk of patients falling out of bed accidentally. They are not designed to restrain or immobilize the patient. Restraining straps or other devices must not be fastened to the half-length siderails (e.g., straps).

Recommendations for the mattresses

Hill-Rom shall not be held liable for any problems occurring if the mattress used is not included in the list of equipment recommended by Hill-Rom (see “References of recommended mattresses” page 27).

Despite the protective height above the mattress and the top of the siderail, patients can still potentially fall or become trapped in the spaces around the mattress.

Use of a mattress thicker than the thickness recommended in “References of recommended mattresses” page 27 may reduce the effectiveness of the siderails. Thicker mattresses can increase the risk of falling and shorter or narrower mattresses can increase the risk of patients becoming trapped. In such cases, the patient must be monitored closely.

As assessed by the “Hospital Bed Safety Workgroup” guide and the standard EN 60601-2-52, the mattress label on page 25 lists the mattresses recommended for use on the Hillrom™ 900 to offer the safest conditions. The therapeutic benefits of the other therapeutic mattresses listed in page 25 outweigh the residual risk of entrapment or fall incurred by their use.



Other mattresses may be used, but the manufacturer must always be consulted to make sure that the bed/mattress/siderail combination does not affect the bed's performance, its suitability for use or its safety characteristics.



If the bed is fitted with an electrically powered air mattress, the power cord must be routed so as to prevent it from being cut by the moving parts of the bed (refer to the instructions of the mattress).



Users must check the compatibility of the patient's weight and the accessories placed on the bed and the mattress system in view of the specifications of the medical bed and the mattress system.

If the mattress power cord is unplugged, it is advisable to store it on the support provided by the mattress supplier.

Recommendations for the function lockouts

The electrical function management control prevents any unintended bed movements that might cause injury to the patient.



For safety reasons, it is advisable to use the lock-out functions when treating the patient or working on the bed (e.g., examinations, transfers, maintenance), when the patient is left unattended and when caregivers believe that the patient is not in a fit state of health to operate the controls in safety.

It is thus the responsibility of the nursing staff to authorize the patient to use certain bed functions, including the HiLow.

i *The "Shock"*, Trendelenburg, Reverse Trendelenburg, chair* and return to flat* functions must only be accessible to caregivers.*

Electrical safety



When direct intravascular or intracardiac connections are in use, the electric potentials of all the unprotected metal parts need to be equalized. The bed must be connected to a mains electric power supply with earth protection.



In an environment where the electrostatic discharges are prevalent, we recommend using an antistatic caster.



The mains power supply for the bed must comply with relevant standards:

- NF C 15-100 and NF C 15-211 (France),
- International Electrotechnical Commission (IEC) 364 for other locations.

Check that the bed's power requirements on the identification label (see "Electrical characteristics" page 13) correspond to the power supply voltage of the hospital.



The power supply should be equipped with a maximum 30 mA earth leakage circuit breaker, in compliance with IEC 364-5-53.

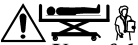
i *All the parts of the bed that are within the patient's reach, even if they are under the frame, are applied parts.*

If the integrity of the protective conductor is in doubt, the beds fitted with batteries must be used in battery mode.

In compliance with standards relating to electromagnetic interference for medical equipment, this product does not interfere with other medical devices or is not susceptible to interference when combined with other medical devices that also comply with the electromagnetic standards in force.

Some devices, particularly older ones that do not comply with the electromagnetic compatibility standards, may however undergo interference or may themselves interfere with the working of this product.

The users of such devices are responsible for ensuring that any malfunctions will not endanger the patient or any other person.



Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

Ensure that the power cord is unplugged and hooked to the bed before moving the bed (see "Securing the power cable" page 74).

Only duly qualified and authorized staff should carry out electrical maintenance.

Never clean or service the bed without unplugging it from the mains power supply and disconnecting the battery.

The battery backup must never be left in direct contact with fire, placed in liquid, or discarded in a refuse bin. In the event of the battery being damaged, see “De-commissioning” page 80.



This label indicates that the bed **must never be used with an oxygen tent or in explosive atmospheres** (presence of inflammable gases or vapors). Use only nasal tubes and oxygen masks. For reasons of safety, masks and tubes should always be kept at a higher level than the sleep surface.

Always lock out the HiLow function before any cleaning or maintenance operations.



If the bed is equipped with a battery, and the bed is stored for long periods of time, the battery must be charged every 3 months. Failure to do so could result in damage to the battery.



If a continuous alarm sounds when activating a movement, the battery needs to be recharged.

General precautions for the place of use



It is advisable not to use the bed under the following conditions:

- in hospital wards other than the intended ward (see “Intended Use” page 3),
- climatic conditions outside the corresponding ranges recommended by Hill-Rom,
- in hyperbaric chambers,
- in explosive atmospheres,
- in the presence of flammable gases or vapors,
- with oxygen tent type respiration devices or devices that extend below the sleep surface,
- outdoors or to transport a patient in a vehicle,
- moving the bed over soft ground or inappropriate surfaces,
- moving the bed along slopes of over 10° (with or without a patient).

Climatic restrictions

Service temperature	10° and +40°
Service humidity	30% - 85%
Working atmospheric pressure	700 hPa to 1,060 hPa

Precautions for transport and storage

The following conditions must be met to ensure that the bed and its accessories are shipped and stored in complete safety.

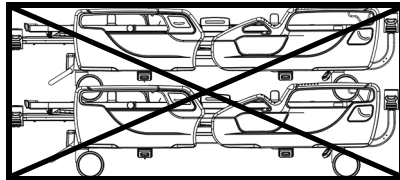
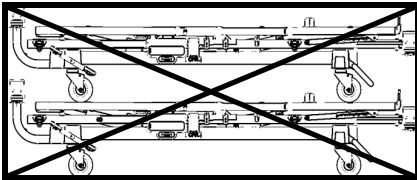
During shipment ^a , the bed must be:	When stored, the bed must be:
<ul style="list-style-type: none">- in the lowered position- all functions locked out- covered, brakes applied and all moving parts secured- protected from fluid ingress	<ul style="list-style-type: none">- in the lowered position- all functions locked out- covered, brakes applied- protected from fluid ingress

a. Transport does not include the transfer of the bed between wards with or without patients.

Climatic restrictions on transport and storage

Transport/storage temperature	-30° and +50°
Transport/storage hygrometry	20% - 85%
Transport/storage atmospheric pressure	700 hPa to 1,060 hPa

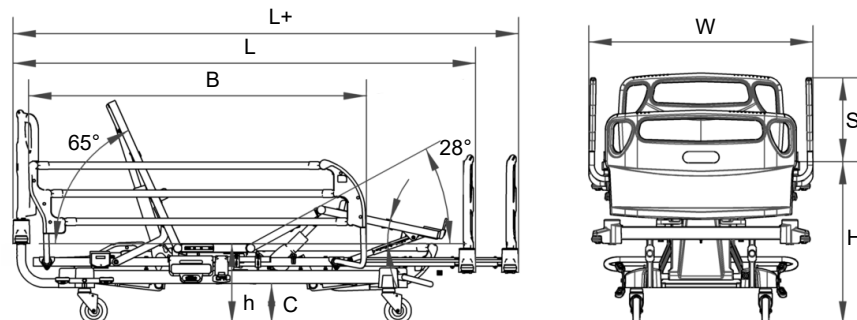
During shipment or storage, beds should not be stacked one on top the other.



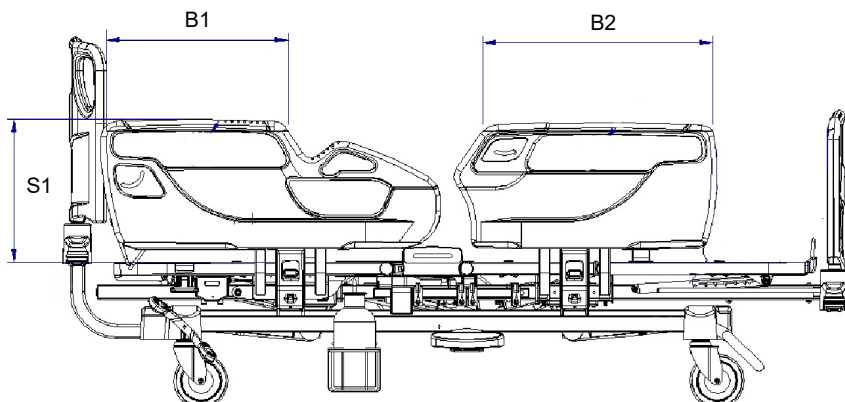
Technical specifications

i Hill-Rom has an ongoing continuous improvement policy. Therefore specifications are liable to be altered without notice.

LI900B2 with long siderails



LI900B2/LI900B3/LI900B2 with half-siderails



Features	Value
Maximum width (W)	995 mm ^a /1010 mm ^c
Maximum length (without extension) (L)	2158 mm ^a
Maximum length (with extension closed) (L)	2158 mm ^a
Maximum length (with extension open) (L+)	2358 mm ^a
Length of long siderail protection (B)	1421 mm ^b /1397 mm ^c
Long siderail protection height (without mattress) (S)	385 mm ^{ab} /380 mm ^c
Length of the head half-siderail protection (B1)	499 mm ^a
Length of the foot half-siderail protection (B2)	631 mm ^a
Long siderail protection height (without mattress) (S1)	393 mm ^a
Low position (double-band 125 ^d diameter casters ^e) (h)	386 mm ^{af}
Low position (125 diameter casters ^{da}) (h)	377 mm ^{ab} /419 mm ^{af}
Low position (double band 150 ^d diameter casters ^e) (h)	389 mm ^{ab} /431 mm ^{af}

Features	Value
Low position (150 diameter casters ^{de}) (h)	397 mm ^{ah} /439 mm ^{af}
High position (double-band 125 diameter casters ^{de}) (h)	755 mm ^{af}
High position (125 diameter casters ^{de}) (H)	748 mm ^{ah} /788 mm ^{af}
High position (double band 150 diameter casters ^{de}) (H)	760 mm ^{ah} /800 mm ^{af}
High position (150 diameter casters ^{de}) (H)	768 mm ^{ah} /808 mm ^{af}
Chassis clearance (double-band 125 diameter casters ^{de}) (C)	150 mm ^a
Chassis clearance (125 diameter casters ^{de}) (C)	183 mm ^a
Chassis clearance (double band 150 diameter casters ^{de}) (C)	195 mm ^a
Chassis clearance (150 diameter casters ^{de}) (C)	203 mm ^a
Head section ⁱ incline	+ 65°
Thigh section ⁱ incline*	+ 28 °
Foot section ⁱ incline*	- 3° to -22°
Trendelenburg/Reverse Trendelenburg	+ 17°/- 17°
Emergency Trendelenburg ("Shock") ^{hi}	- 12 °/30 sec
Maximum patient weight for the SWL version: 220 kg	155-185 kg ^j
Maximum patient weight for the SWL version: 250 kg*	185-215 kg ^k
Bed weight LI900B2 ^f (no mattress or accessories)	144 kg
Bed weight LI900B2 (no mattress or accessories)	120 kg
Bed weight LI900B3 (no mattress or accessories)	170 kg
Maximum temperature of applied parts at 40° C	56,5° C
Unweighted peak acoustic pressure levels	<120 dB
Maximum measured level of weighted acoustic pressure	42 dBA

a. These are average values, which may vary according to manufacturing tolerances..

b. Bed fitted with AD271B siderails

c. Bed fitted with AD272B siderails

d. Dimensions in mm.

e. An antistatic version is also available.

f. LI900B3 model

g. Incompatible with the CFS 250 kg version, LI900B2 with half-siderail.

h. LI900B2 model

i. Maximum incline in relation to the sleep surface

j. SWL 220 kg / the maximum patient weight varies according to the mattress and accessories used

- 155 kg as per EN60601-2-52 (acute care or intensive care)

- 185 kg as per EN60601-2-52 (other environments).

k. SWL 250 kg / the maximum patient weight varies according to the mattress and accessories used

- 185 kg as per EN60601-2-52 (acute care)

- 215 kg as per EN60601-2-52 (other environments).

l. LI900B2 models with half-siderails

Electrical characteristics

Characteristic	100V*	120V*	230V*
Voltage	100V AC	120V AC	230V AC
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Power supply unit maximum power load	300 VA	300 VA	300 VA
Power supply unit fuse rating	2 x 2.5 A T	2 x 2.0 A T	2 x 1.25 A T
Electric shock protection	Class I		
Class according to IEC 60601-1	Type B		
Protection against harmful ingress of water (according to IEC 60529)	IPX4		
Duty cycle	10% (2min/18min) ^a		

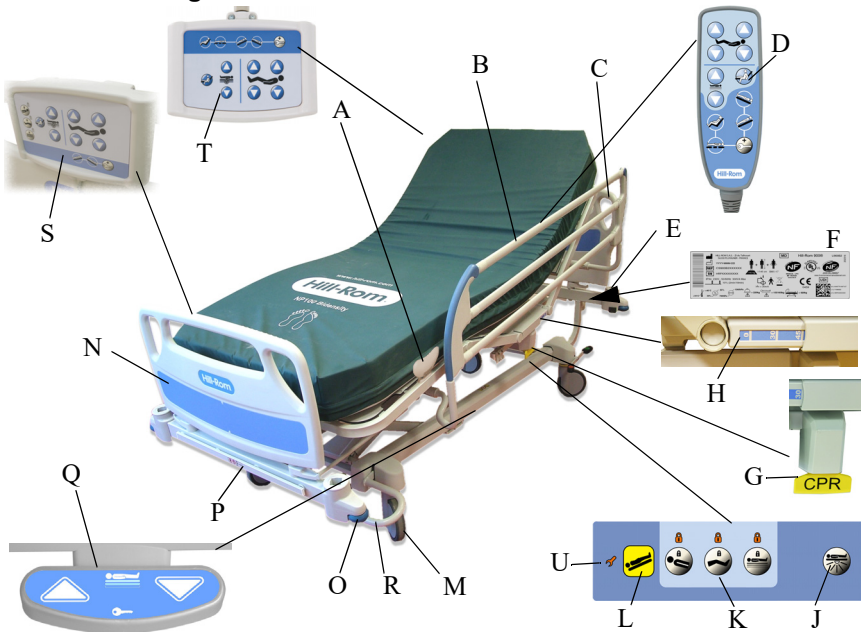
a. Do not operate electrical functions continuously for more than 2 minutes in any 18 minute period when the bed is loaded at the safe working load value as this may damage electrical components. The power supply of the actuator is temporarily cut off if the load factor is exceeded when using the HiLow.

Conditions required to connect the nurse call system

For more information about the connections required to use the nurse call function, please refer to the *SideCom® Communication System Design and Application Manual* (DS059).

Overview

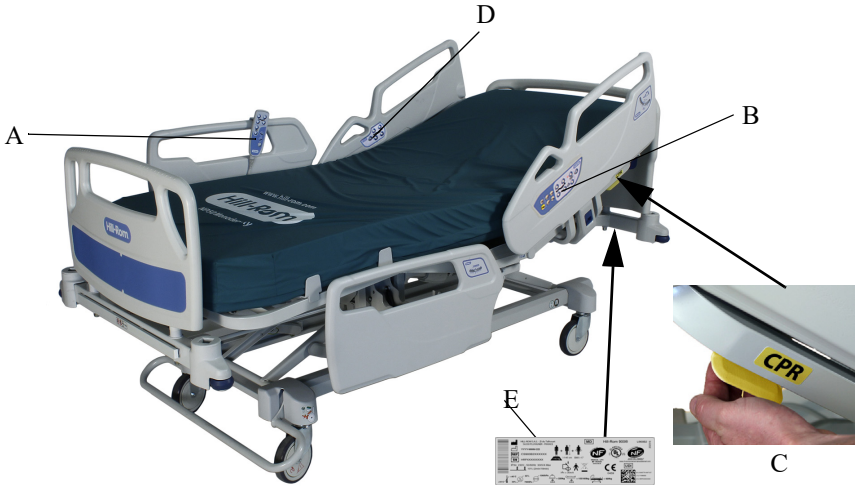
LI900B2 long siderails



Item	Name	Item	Name
A	Egress handle ^a	L	Electric emergency Trendelenburg (Shock) ^{ab}
B	Removable metal siderails ^a	M	150 mm diameter single band casters ^a
C	Headboard	N	Footboard
D	Control pendant ^a	O	Bumper (4)
E	2 sockets for I.V. pole and patient helper	P	Extension + linen holder ^a
F	HRP and identification label	Q	Bilateral HiLow pedal with caregiver mode ^a
G	Head section "CPR" control	R	Central brake and steer bar control
H	Head section angle indicator	S	Foot control pendant ^a
J	Night light ^a	T	Control unit on a flexible arm ^a
K	Lateral caregiver unit ^a	U	Maintenance indicator ^a

a. Equipment varies depending on bed model
 b. Incompatible with the 250 kg SWL version

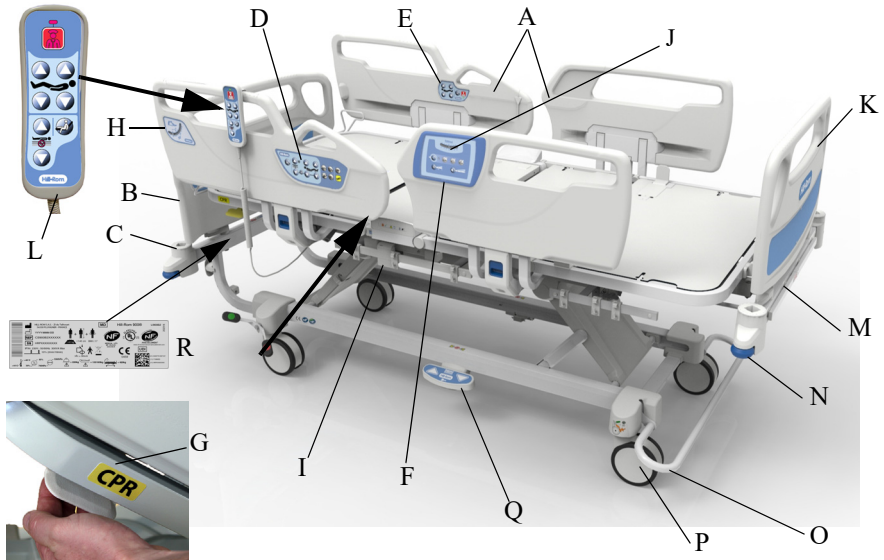
LI900B2 Bed with half siderails



Item	Name	Item	Name
A	Control pendant ^a	D	Patient siderail keypad ^a
B	Caregiver siderail keypad ^a	E	HRP and identification labels
C	Head section "CPR" control		

a. Equipment varies depending on bed model.










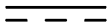



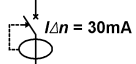



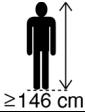








LI900B3












Item	Name	Item	Name
A	Half-siderails ^a	J	Sleep surface angle indicator
B	Headboard	K	Footboard
C	Two sockets for I.V. pole and patient helper	L	Control pendant
D	Caregiver half-siderail controls	M	Extension + linen-holder ^a
E	Patient half-siderail controls	N	Bumper (4)
F	BEA interface half-siderail controls	O	Central brake and steering wheel control
G	Head section "CPR" control	P	Ø150 double-band casters ^a
H	Head section angle indicator	Q	Bilateral HiLow pedal with caregiver mode ^a
I	Night light	R	HRP and identification labels


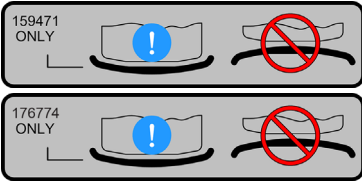
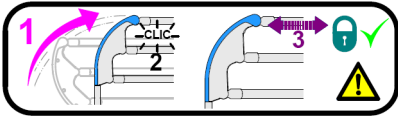
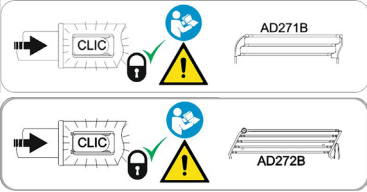
a. Equipment varies depending on bed model.

General Symbols

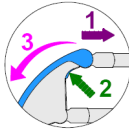
	Manufacturer		Date of manufacture
	Product reference		Serial number
	General safety sign		Equipotential terminal
	Refer to the user manual.		Type B Equipment
	DO NOT BIN, follow the local recycling regulations.		Direct Current
	Danger - do not use		Alternating Current
	Recyclable Material		Earth leakage circuit breaker rating
	Total weight authorized during moving		Body Mass Index ≥ 17
	Patient weight ≥ 40 kg		Patient height ≥ 146 cm
	Atmospheric pressure limits		Hygrometry limits
	Temperature limits		Maximum patient weight
	Protective earth		Safe working load (SWL)
	Do not store in the place shown		No oxygen tents

 <p>Medical Device conformity mark</p>	 <p>Duty Cycle</p>
 <p>NF MEDICAL - LITS "Hospital beds" compliant</p>	 <p>NF ENVIRONNEMENT compliant bed</p>
 <p>Compliant with the ROHS Europe regulations</p>	 <p>Compliant with the ROHS China regulations</p>
 <p>Steam Cleaning</p>	 <p>Medical Device</p>
 <p>Unique Device Identification</p>	

Function Symbols

<p>Head section CPR</p>  <p>Information page 30</p>	<p>Headboard position</p>  <p>Information page 30</p>
<p>Siderail lock*</p>  <p>Information page 52</p>	<p>Siderail assembly lock*</p>  <p>Information page 53</p>

Siderail release*



Information page 52

Electric functions lockout*



Information page 7

Do not sit or climb on the linen holder*



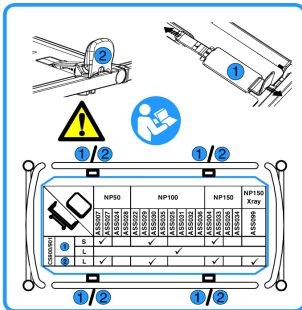
Information page 61

Do not sit or climb on the extension*



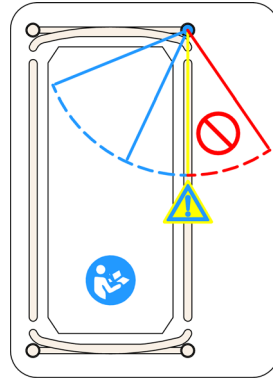
Information page 31

References of recommended mattresses*



Information page 25 and page 27

Patient helper position



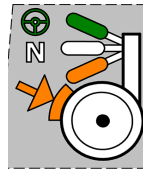
Information page 42

Endboard lock label*



Information page 30

Caster control



Information page 71

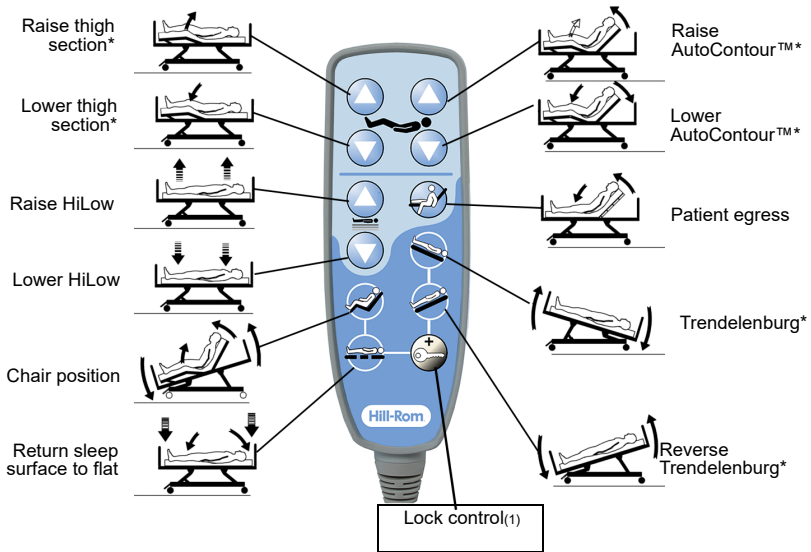
Earth continuity and earth leakage current

HILL-ROM S.A.S - Zi du Talhouet 56330 PLUVIGNER - FRANCE

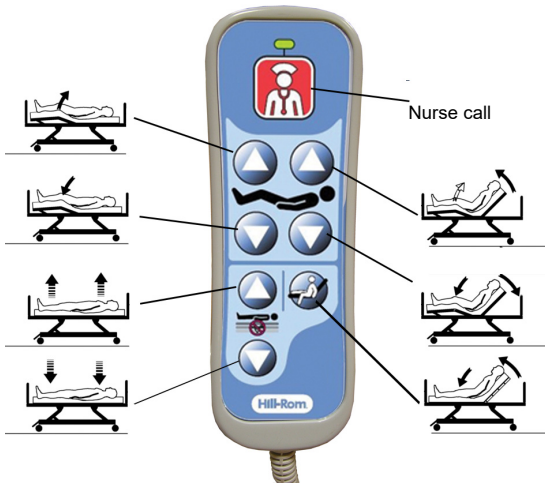
CONTINUITÉ A LA TERRE / EARTH CONTINUITY / DAUERERDSCHLUSS	9.999 Ohms
COURANT DE FUITE A LA TERRE / EARTH LEAKAGE CURRENT / ERDABLEITSTROM	9.999 mA

Electrical controls

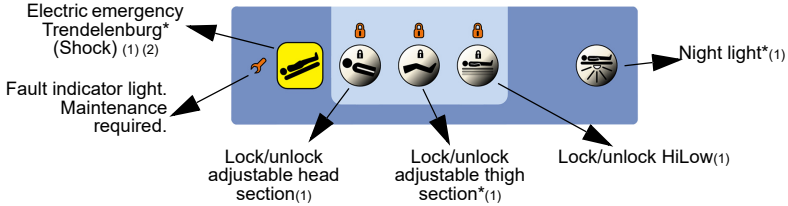
Control pendant* (LI900B2)



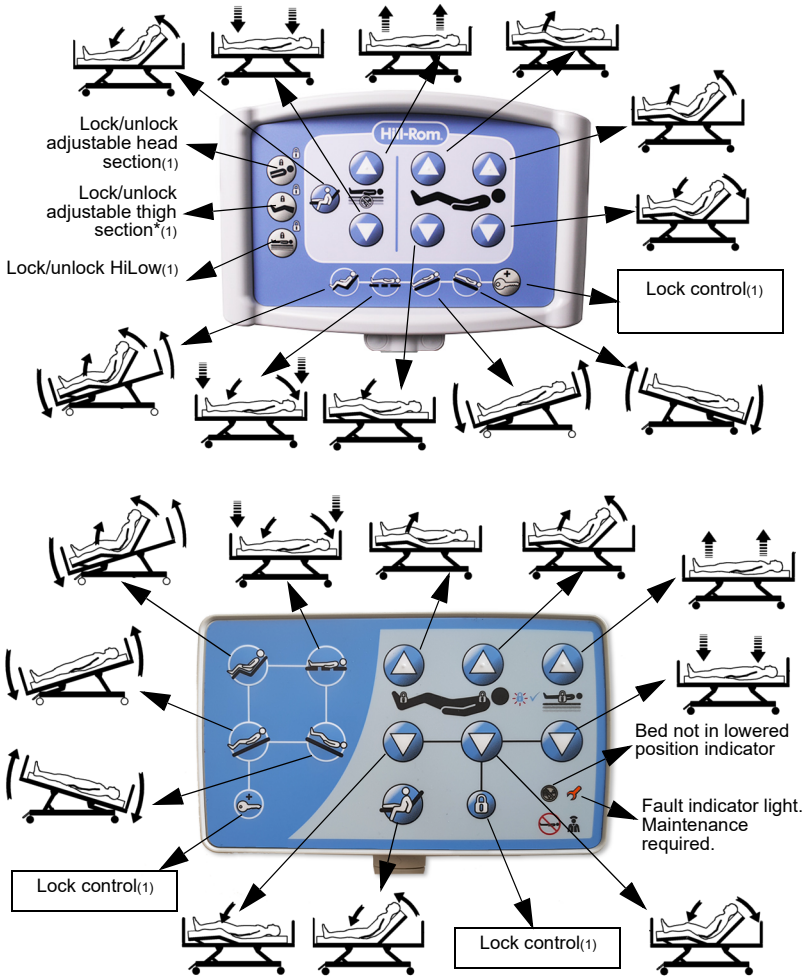
Control pendant* (LI900B3)



Lateral caregiver unit* (LI900B2)

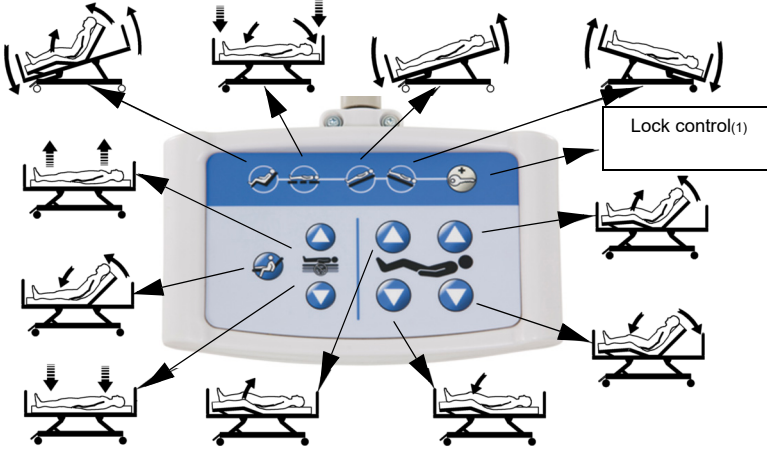


Foot control pendant* (LI900B2)

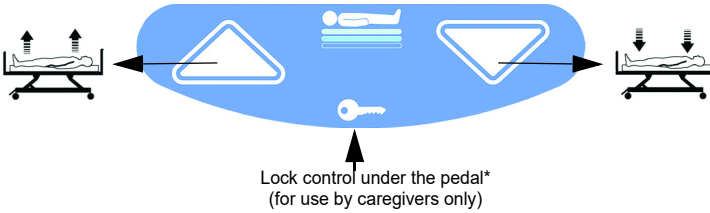


1. Functions available only to the caregiver
 2. Incompatible with the 250 kg SWL version

Control unit on a flexible arm* (LI900B2)

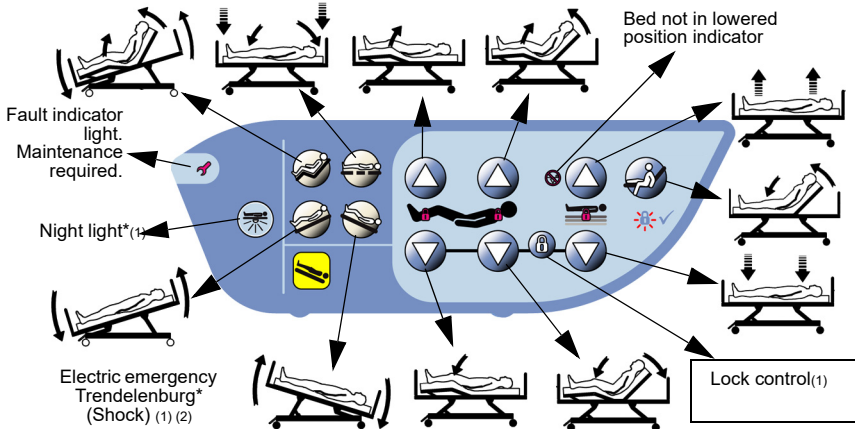


Bilateral HiLow pedal with caregiver mode*



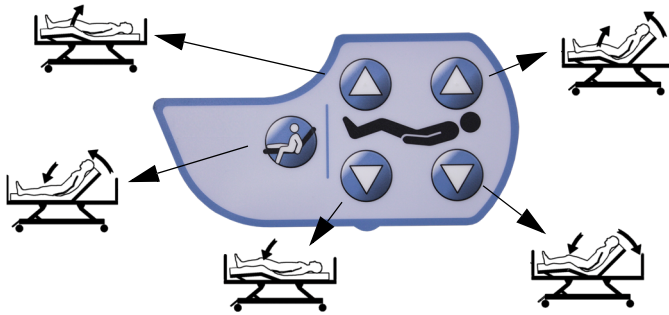
12

Caregiver half-siderail* control (LI900B2)



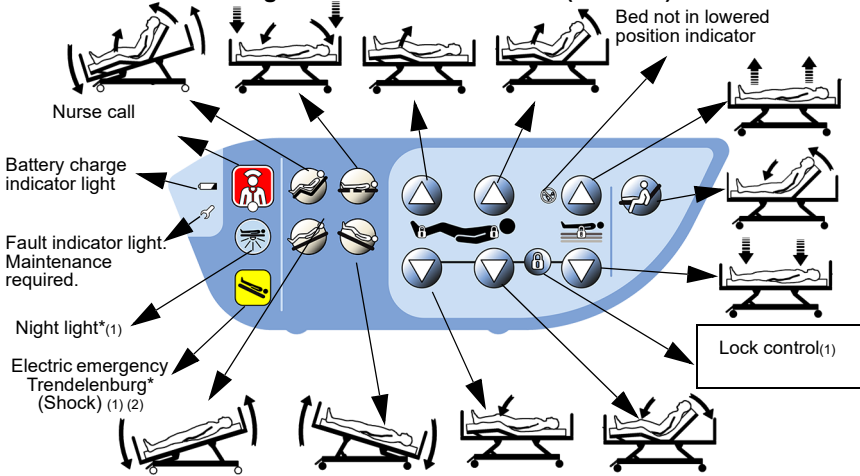
1. Functions available only to the caregiver
 2. Incompatible with the 250 kg SWL version

Patient half-siderail* control (LI900B2)



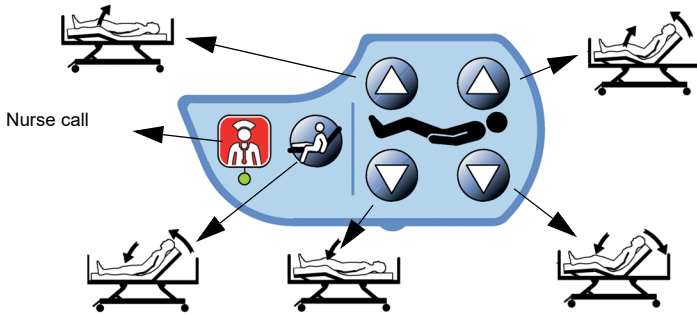
12

Caregiver half-siderail* control (LI900B3)

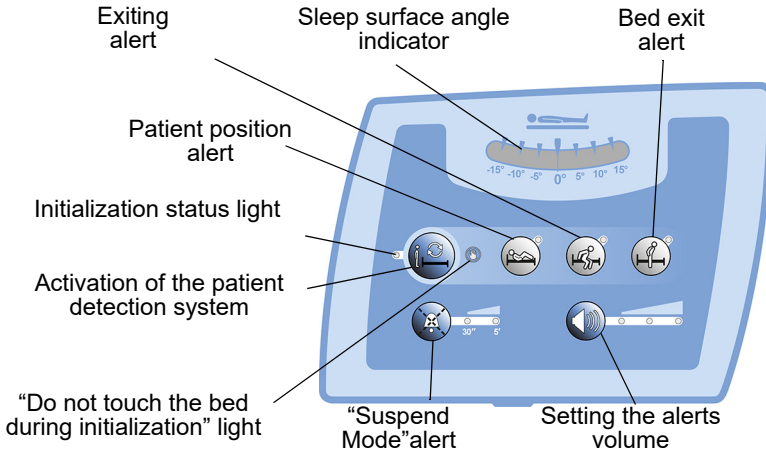


1. Functions available only to the caregiver
2. Incompatible with the 250 kg SWL version

Patient half-siderail* control (LI900B3)



Functions available only to the caregiver (LI900B3)

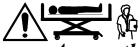


1. Functions available only to the caregiver



Installing the patient

Before placing the patient on the bed



Assess the various risks, including but not limited to the following (incomplete list):

- make sure that all the functions of the bed are in good working order,
- caught hazard,
- potential falls of the patient,
- patient in state of confusion,
- patient's learning ability,
- persons lacking the mental capacity to recognize unsafe actions,
- unauthorized persons,
- check the list of recommended mattresses on the label on the adjustable head section.

i All persons authorized to use the bed's functions must be capable of doing so in a safe and controlled manner. In case of doubt, the bed's functions must be locked.

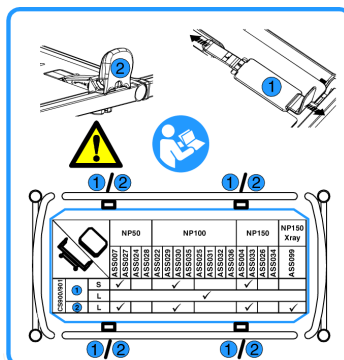
Accessories and peripheral equipments

Using accessories and peripheral equipments other than those recommended by Hill-Rom may incur risks of damage or accidents to users.

Mattress**

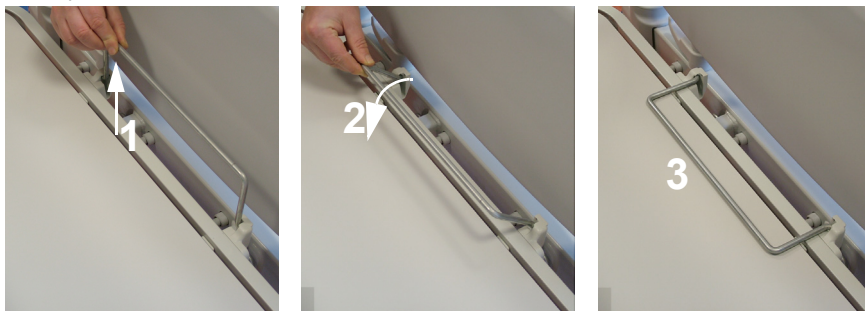
For the Hillrom™ 900 bed, Hill-Rom recommends the mattresses listed below, which are compatible with the safety recommendations (see "Risk prevention" page 5):

Mattress label



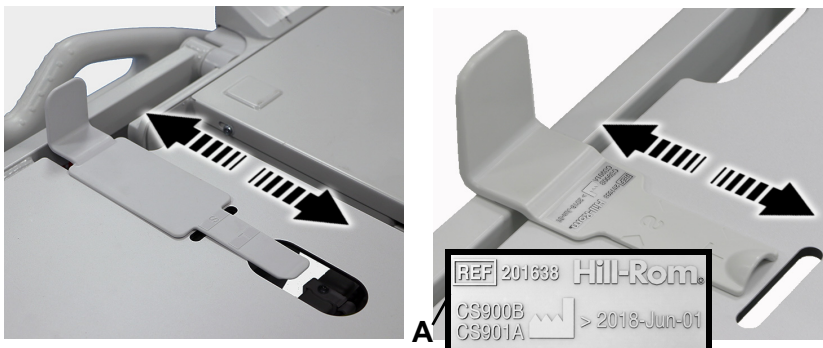
Folding mattress clamp

When installing a mattress extension cushion, the clamp must be folded to avoid any contact with the lower limbs.



Adjustable mattress clamp

The position of the clamps must be adjusted according to the width of the mattress in order to center and secure the mattress.



Make sure that the mattress is correctly installed and well centered on the sleep surface using the adjustable clamps (2 positions: S and L) and that the foot is secured by the clamp to avoid the creation of entrapment zones.



Other mattresses may be used, but the manufacturer must always be consulted to make sure that the bed/mattress/siderail combination does not affect the bed's performance, its suitability for use or its safety characteristics.



Users must check the compatibility of the patient's weight and the accessories placed on the bed and the mattress system in view of the specifications of the medical bed and the mattress system.



For beds made after June 1, 2018, it is imperative to use hard surfaces with clamps marked (A) to prevent the hard surface from sliding and the adjustable head section from becoming blocked when lowering.

References of recommended mattresses

i 90 cm wide mattresses are incompatible with egress handles*.

Part number	Name	Position Bride		
		1		2
		S	L	L
P02033A	Primo™ - AD085A (200 x 85 x 16 cm)	X		X
P02062B	ClinActiv® ⊕ Alternating Low Pressure mattress system - AD237A (230V) (203 x 85 x 18 cm)	X		X
P02063B	ClinActiv® ⊕ Continuous Low Pressure mattress system - AD238A (230V) (203 x 85 x 18 cm)	X		X
P02064B	ClinActiv® ⊕ MCM™ Alternating Low Pressure mattress system - AD234A (230V) (203 x 85 x 18 cm)	X		X
P02065B	ClinActiv® ⊕ MCM™ Continuous Low Pressure mattress system - AD235A (230V) (203 x 85 x 18 cm)	X		X
P02039B	Duo® 2 Multi Mode mattress system - AD140A (200 x 85 x 23 cm)	X		X
ASS027	NP50-SW single-density foam mattress (198 x 85 x 14 cm) - excluding UK and Italy	X	X	X
ASS028	NP50-SW single-density foam mattress (198 x 90 x 14 cm) - excluding UK and Italy		X	
ASS007	NP50-SW single-density foam mattress (198 x 85 x 14 cm) - UK and Italy only	X	X	X
ASS029	NP100-SW dual-density foam mattress (198 x 85 x 14 cm) - excluding UK and Italy, without handles	X	X	X
ASS031	NP100-SW dual-density foam mattress (198 x 90 x 14 cm) - excluding UK and Italy, without handles		X	
ASS030	NP100-WD dual-density foam mattress (198 x 85 x 14 cm) - excluding UK and Italy, with handles	X	X	X
ASS032	NP100-WD dual-density foam mattress (198 x 90 x 14 cm) - excluding UK and Italy, with handles		X	
ASS022XT	NP100-WD dual-density foam mattress (198 x 85 x 14 cm) - UK and Italy only, without handles	X	X	X
ASS033	NP150-WD viscoelastic foam mattress (198 x 85 x 14 cm) - excluding UK and Italy	X	X	X
ASS034	NP150-WD viscoelastic foam mattress (198 x 90 x 14 cm) - excluding UK and Italy		X	
ASS004XT	NP150-WD viscoelastic foam mattress (198 x 90 x 14 cm) - UK and Italy only			
ASS099	NP150 X-RAY viscoelastic foam mattress (198 x 90 x 15 cm)		X	X
PAH005010180-1	AccuMax Quantum™ VPC AD mattress (203 x 89 x 18 cm)		X	X
P005856A	P280 Overlay mattress (230V) (203 x 90 x 10 cm)	According to main mattress		
P005858A	P280 overlay mattress (120V) (203 x 90 x 10 cm)			
P005987A	P280 MRS mattress base (230V) (198 x 85 x 17 cm)	X		X
P006052A	P280 MRS mattress base (120V) (198 x 85x 17 cm)	X		X
P006172A	P280 Air Mattress (230V) (198 x 85x 17 cm)	X		X
P006173A	P280 Air Mattress (120V) (198 x 85x 17 cm)	X		X
ASS078	Extension mattress			

Recommended accessories

AD810A	Patient helper
AD811A	Adjustable patient helper
AC953A	Chrome-plated IV hook
AC959A	Oxygen cylinder holder model B5 (Ø140)
AD101A	Oxygen cylinder holder model D (Ø100)
AD102A	Oxygen cylinder holder model E (Ø100)
AC962A ^a	Pivoting 3-liter cylinder holder
AC963A	Syringe-driver holder
AD242A ^a	X-ray-transparent adjustable head section
AD244B	Monitor stand
AD271B	Pair of metal siderails without attachments
AD290B	Foot egress handle
AD296B	Head egress handle
AD294A	FIXED IV pole
AD298A	Telescopic IV pole with four hooks
AD299A	Telescopic IV pole with four hooks
AD312A	Net for siderail AD271
AD286A	IV line manager & support
AD288A	Foot gap panels

a. Incompatible with half side-rails.

b. Incompatible with side-rails AD271A, AD271B et AD272A.

Recommended additional parts

AC968A	Equipotential connecting cable
AD270B	Removable frame
AD276A ^a	5th wheel
AD277A	Wall stop
AD280A ^a	Control unit on a flexible arm
AD281B ^a	Control pendant
AD282A ^a	LI900B2 control pendant
AD283A ^a	LI900B2 Control unit on a flexible arm
AD292A	Cable attachment
AD325A	Label holder
P379XXXXX ^b	Communication cable

a. Remember to specify the model when ordering.

b. The XXXXX in the part number identifies the type of connector corresponding to the communication system installed.

Recommended traction frame

ST875A^a T39 traction frame

a. Traction frame incompatible with beds equipped with a bed exit alerts system* (LI900B3)

Recommended patient lifts

2020003	Sabina™ II EE sit-to-stand lift
2020004	Sabina™ II EM mobile lift
2040015	Viking™ M mobile lift
2040013	Viking™ XL mobile lift
2000014	Golvo™ 8000 mobile lift
2000015	Golvo™ 8008 mobile lift
2000019	Golvo™ 8008 LowBase™ mobile lift



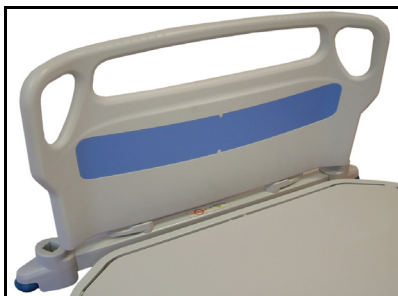
When the Viking™ XL is used with a bed equipped with 125 mm diameter casters, when lowering the bed to the low position, make sure that the elevation arms do not hit the chassis of the patient hoist.*

Recommended bed dining tables

TA270	Bed dining table
TA519	Bed dining table
TA529	Bed dining table

Endboards

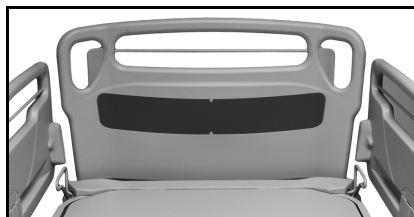
Lockable* headboard



Lockable* footboard



Afssaps* headboard



Afssaps* footboard



i The Afssaps headboard and footboard meet the demands stipulated by the AFSSAPS in the "Decision dated 26/04/2010" (article 2) for use with children measuring less than 146cm in height.

Installing the endboards

Headboard

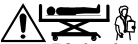


The headboard is fitted with fins that must point towards the sleep surface. If the headboard is installed in the bed frame the wrong way round, the risk of entrapment increases.

Standard headboard*



Afssaps headboard*



If the headboard is removed from the bed frame, the risk of patient entrapment or falling increases. Similarly, the use of the accessories installed at the head of the bed (e.g., IV poles, helpers, etc.) can incur risks for the patient.



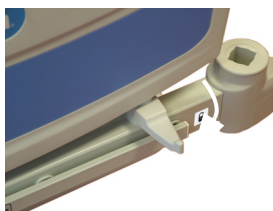
The headboard can be removed for easier access to the patient's head.



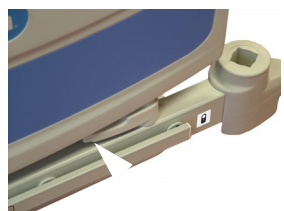
Endboard fastening system*



System locked

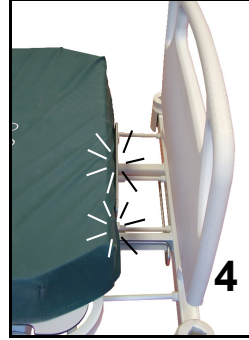
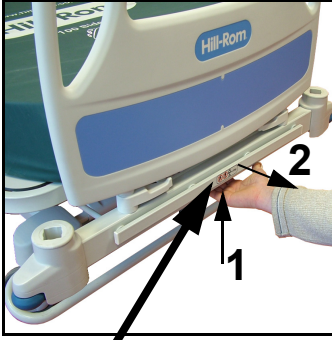


System unlocked



System locked

Bed frame extension*



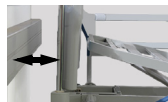
Do not sit or climb on the extension.

The extension can be pulled out by 20 cm in intermediate steps of 4 cm.

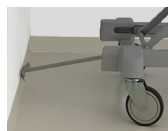
i *Cushion for extensions is available as accessory.*

Wall stop AD277A*

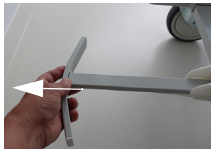
Located at the head of the bed, the extractable wall stop protects the bed against impacts with walls or headwalls.



Store the wall stop before moving.



Take out the wall stop



Store the wall stop





Mobilizing the patient

Electrical Functions

The bed's power-driven movements are controlled using a control pendant*, a control unit on a flexible arm*, controls built into the half-siderails* or bilateral HiLow pedals with caregiver mode* by pressing and holding the button for the corresponding function. The movement stops when the button is released or when the limit of movement is reached.



Caregivers need to assess whether patients can be left unattended with access to the functions on the control pendant or the flexible arm.

Control pendants*

The control pendant can be stowed on the siderail.

i *If the bed was not originally fitted with a control pendant, they can be ordered as an additional part with the P/N AD282A** on LI900B2. It can be placed on the right-hand side of the bed.*



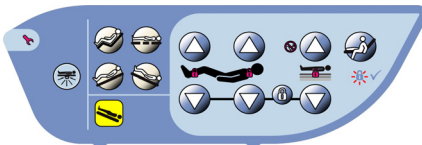
If the patient-pendant is positioned so as to stretch the coil cord and it is released, it retracts and can impact someone



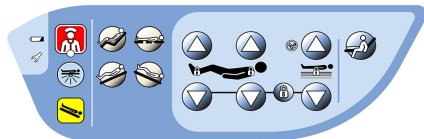
LI900B3

Caregiver half-siderail* controls

They are placed inside the head half-siderails on either side of the bed. They are to be used by caregivers



LI900B2



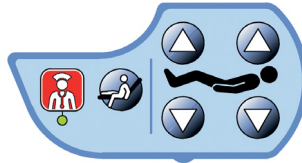
LI900B3

Patient half-siderail* controls

They are placed inside the head half-siderails on either side of the bed. They are to be used by the patient.



LI900B2



LI900B3

Bilateral HiLow pedal with caregiver mode*

The HiLow pedals are positioned on each side on the chassis. They are to be used by caregivers.



Foot control pendant*

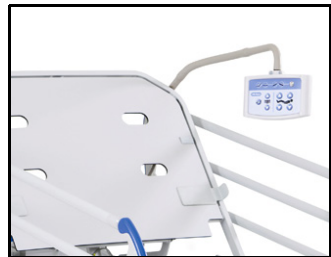
The unit is positioned on the footboard. It is to be used by caregivers.



Control unit on a flexible arm*

The large control buttons mean that patients can clearly see and easily use the controls.

- i** *If the bed was not originally fitted with a control unit on a flexible arm*, they can be ordered as an additional part with the P/N AD283A** on LI900B2.*

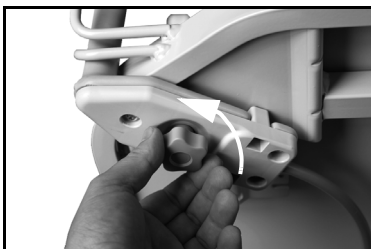
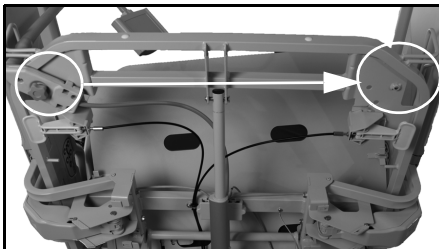


Positioning the control unit on a flexible arm

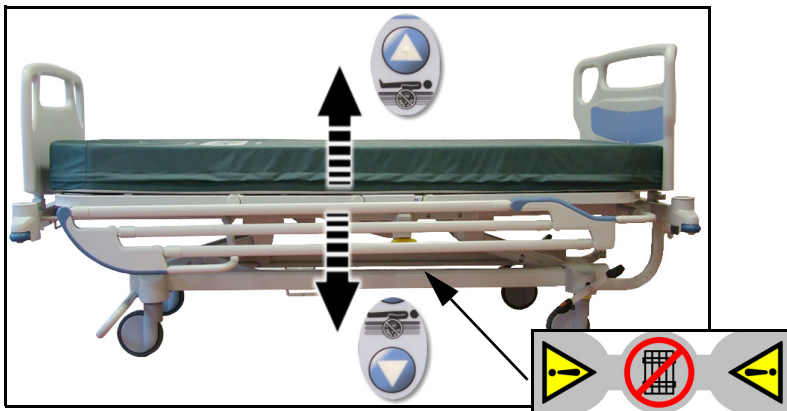


The position of the flexible arm must be changed by two people and when the bed is empty.

To change the position of the flexible arm:



Raising/lowering the sleep surface



Before using this function, check that no obstacles (e.g., objects, accessories, power cables) or persons (especially children) are under the sleep surface and that none of the patient's limbs protrude beyond the edges of the sleep surface. An intermittent beep sounds when one of the bed's movements is hindered.

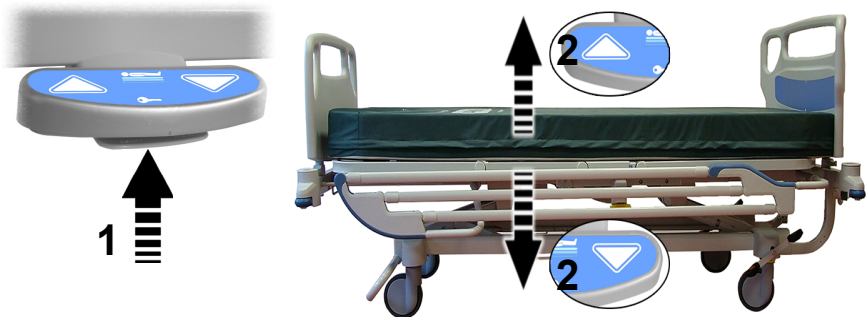


When descending to the low position, make sure that:

- the drainage devices do not come into contact with the floor.
- the elevation arms do not hit the chassis of the Viking XL patient hoist if the bed is equipped with 125 mm diameter casters*.



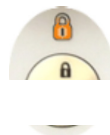
Use the HiLow feature of the sleep surface to adjust the bed to the required height when the patient must be moved.



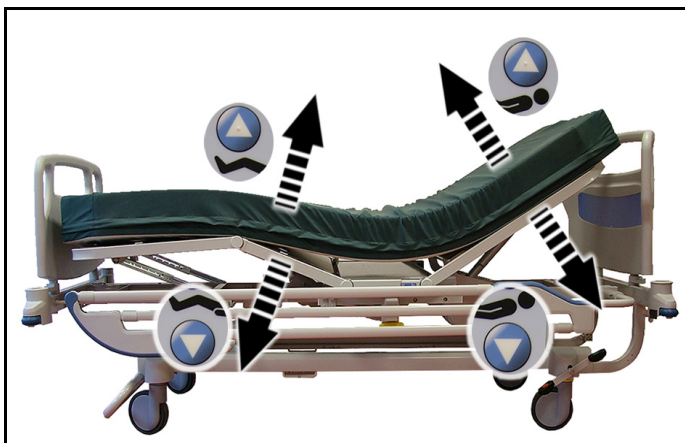
- ① *The HiLow lock out on the foot control pendant or on the control unit on a flexible arm does not lock out the HiLow pedal, which remains operational. By default, the pedal is locked to avoid accidental movement. It is necessary to unlock the HiLow pedal before use.*
- ① *After about one minute, caregiver mode is deactivated automatically.*

Raising/lowering the head and thigh sections

- ① *If the bed is fitted with an electric thigh section with the AutoContour™ function, the thigh section function must be inhibited using the control unit in order to move the head section only.*



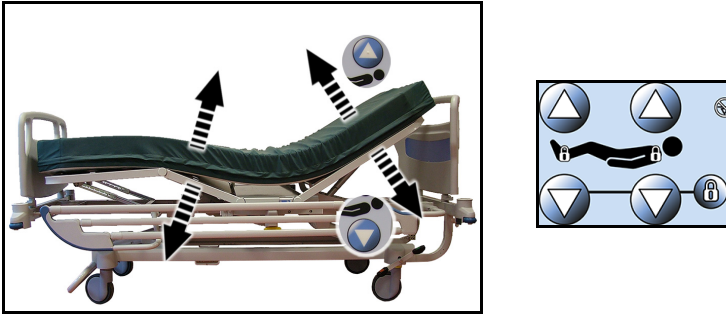
Before adjusting the head section, check that there are no obstacles preventing the section from being lowered or moving (e.g., limbs, electric cables, foreign bodies or accessories). An intermittent beep sounds when one of the bed's movements is hindered.



- ① *When the thigh section is fully raised, the foot section is inclined at an angle of approximately -6° from the sleep surface.*

Electric AutoContour™

- i** The AutoContour™ feature is available when both the adjustable head section and the adjustable thigh section functions are enabled.



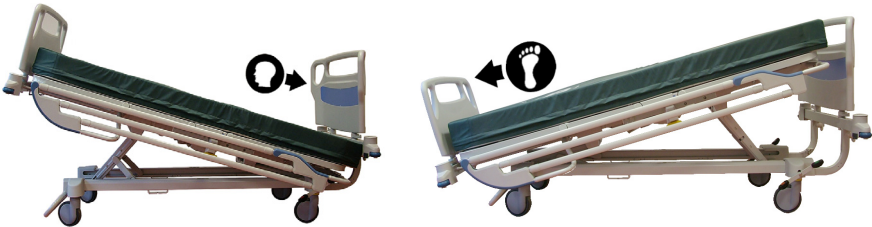
The AutoContour™ simultaneously raises the head section and the thigh section. This function prevents patients from slipping.

Trendelenburg/Reverse Trendelenburg*

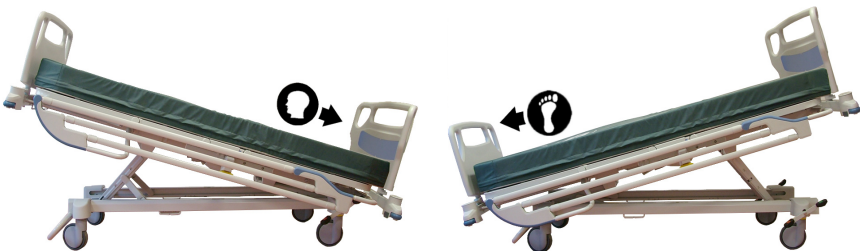
The sleep surface can be tilted in two ways:

- Trendelenburg (the head end is lowered),
- Reverse Trendelenburg (the foot end in low position).

Fixed head version*



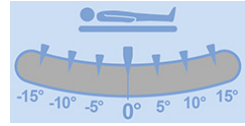
Mobile head version*



The maximum Reverse Trendelenburg movement is obtained when the sleep surface is positioned between mid-height (~ 615 mm) and the raised position.

The complete Trendelenburg function is available at all heights of the sleep surface.

A spirit level* near the lockout unit* or the foot half-siderail* can be used to check that the sleep surface is horizontal.



Before using this function, check that:

- *the bed frame extension is securely locked in one of the notches and that nothing (e.g., objects, accessories, power cables, tubes) and no persons (especially children) are under the sleep surface,*
- *the patient's limbs are within the sleep surface,*
- *there is enough space between the head of the bed and the partition, especially for Trendelenburg,*
- *no accessories (IV pole in particular) may come into contact with the fittings,*
- *check that the drainage devices do not come into contact with the floor.*

Trendelenburg/Reverse Trendelenburg

The electrical Trendelenburg / Reverse Trendelenburg is operated using the control pendant* or the control unit on a flexible arm* or the foot control pendant* or the caregiver half-siderail controls*.



i Before using this function, check that it is enabled.

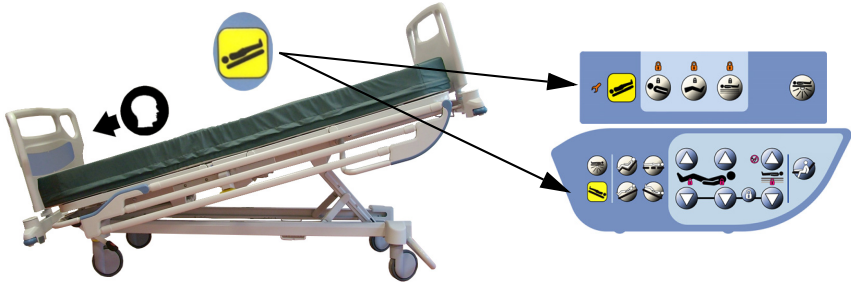
To tilt the sleep surface:

- depending on the controls, press the key (A) and the required function (B) or (C) at the same time, or directly press (B) or (C),
- release the button when the required angle is attained.

i This function can be used without a mains power supply thanks to the battery.

Electric emergency Trendelenburg (Shock)*¹

This function is mandatory for intensive care beds.



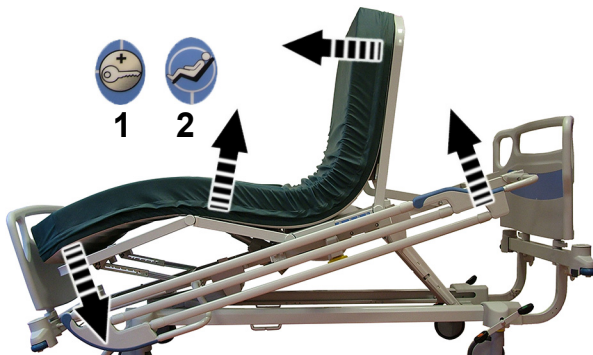
To activate the emergency Trendelenburg, press the yellow button and release the button when the required angle is reached.

i This function can be used without a mains power supply thanks to the battery.

Chair position*



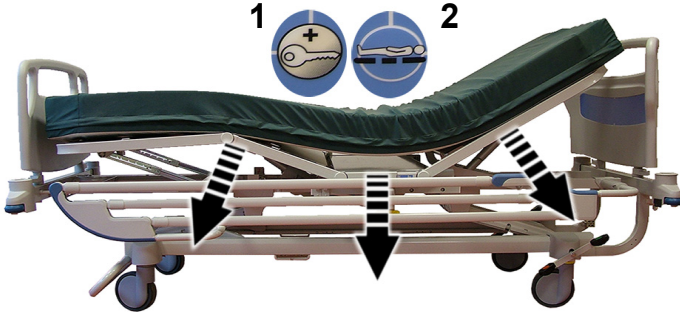
The chair position* gradually returns the patient to the vertical position without having to leave the bed..



1. Incompatible with the 250 kg SWL version.

Place sleep surface flat

This function flattens the sleep surface and descends the bed into the lowered position by pressing a single button.



Bed exit aid*

This function makes it easier for the patient to get out of the bed by raising the head section and flattening the thigh section by pressing a single button.



i It is necessary to adjust the sleeping surface height to the patient's morphology.

Mechanical adjustable foot section*

The foot section can be placed in four different positions and is held in place by mechanical notches.

To raise the foot section:



To lower the foot section:

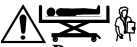


Patient helpers**

This accessory must only be fitted at the head of the bed.

Fixed patient helper - AD810A

Safe working load: 75 kg⁽¹⁾

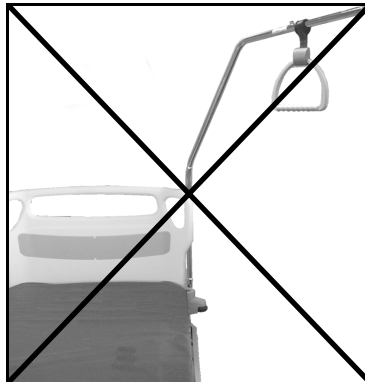


Do not position the patient helper at the outside of the bed. See incorrect position shown below.

The patient helper can be fitted into either of the two square sockets at the head of the bed.



Correct position



Incorrect position

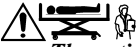
1. The safe working load specifications for normal use allow for a substantial safety margin.

Adjustable patient helper - AD811A

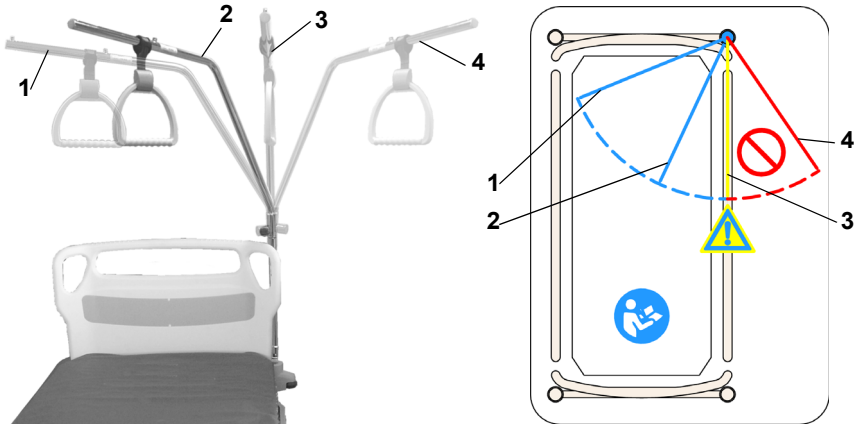
Safe working load: 75 kg⁽¹⁾

The adjustable patient helper can be placed in three positions.

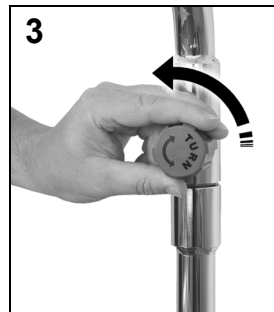
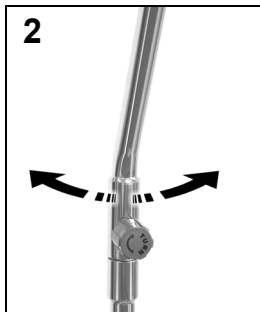
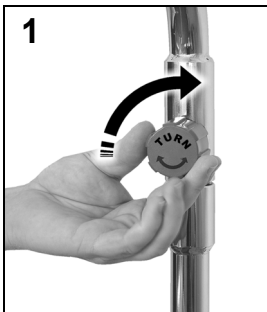
Patient Helper Positioning



The patient helper in the patient transfer position is designed to help the patient lift some of his/her weight so as to assist the nursing staff with their work. This position is not designed to allow patients to transfer themselves alone. Failure to do so could result in material damage or injury.



- position 1 (blue): tuck-away position,
- position 2 (blue): normal (egress) position,
- position 3 (yellow): patient transfer aid position,
- position 4 (red): “**incorrect**”, risk of bed tipping.

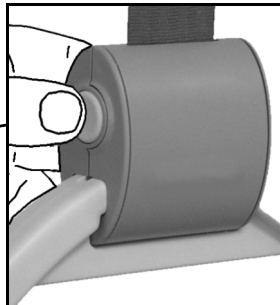
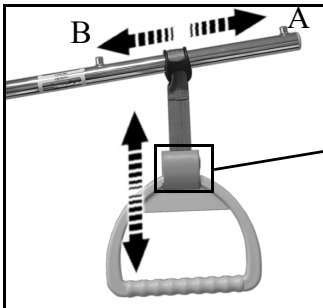


Patient helper handle

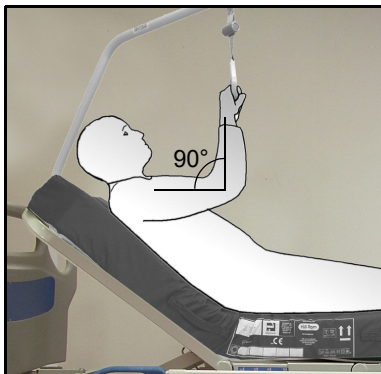


The patient helper handle must be positioned between lugs A and B to avoid any danger of slippage.

The patient handle on the patient helper can be adjusted to the patient.



Adjust the height of the handle until there is a right angle at the elbow. It is easier for the patient to change position in the bed, making for greater comfort and independence.



Place the patient handle on the patient helper arm when not in use, in order to eliminate any obstruction (see photo below).

If the bed is equipped with both an adjustable patient helper (AD081D - AD811A) and an IV Pole (AD165A, AD148A, AD298A or AD299A), do not use the patient helper "tuck-away" position as this may interfere with the IV pole.



Egress handles*

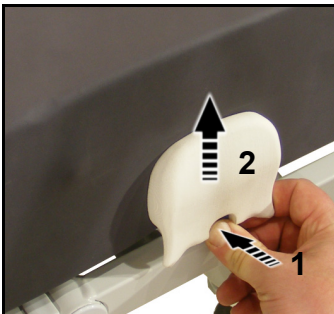
Four egress handles enable mobile patients to get in and out of the bed with greater ease and in safety.



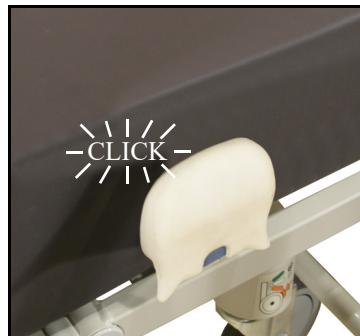
Assistance when moving to a chair.

i Incompatible with half-siderails.

Extracting the egress handle:



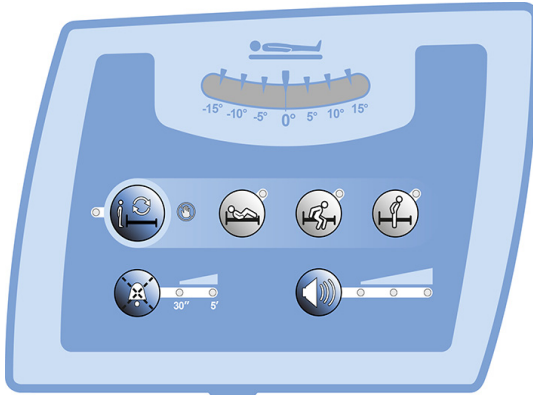
Lowering the egress handle:



i If the bed was not originally fitted with egress handles, they can be ordered as an accessory with the P/N AD290B (foot section) and AD296B (head section). Incompatible with half-siderails.

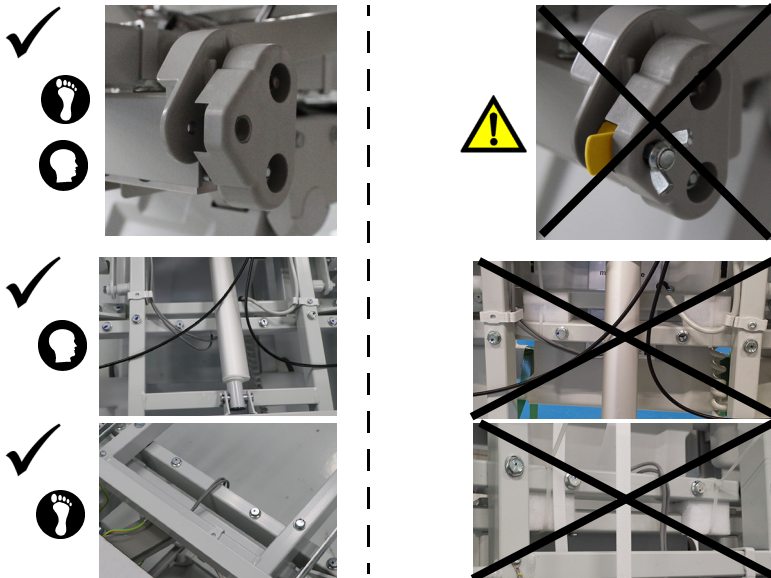
Patient position monitor half-siderail control*

The control is on the exterior of the right foot half-siderail. They are to be used by caregivers.



Initialization

1. Check that the transport locks protecting the patient position monitor system have been removed from their housing,



2. Check that neither the mattress nor any accessories are touching the fixed parts of the bed (and in particular the head section) and that no traction is applied to the parts installed above and below the sleep surface (e.g., power cable and air mattress pipes).

Headboard



Correct position



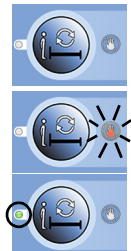
Incorrect position

3. Install the mattress (only mattresses recommended by Hill-Rom (See table on page 26), cushions, sheets and blankets, and all other accessories that must remain on the bed.

i *The weight of these additional articles must not exceed 65 kg or 45 kg, depending on the destination of the product and the maximum patient weight (see “Technical specifications” page 11). No more than 39 kg must be added at a time.*

The system is initialized without the patient on the bed.

1. Press the initialization button and hold until the bed reaches the initialization position (sleep surface in the raised position and horizontal). A beep indicates that initialization can begin. Release the button
2. The orange “do not touch” light flashes during initialization.
3. A beep sounds and the light turns green to indicate that the initialization is complete, then it goes out after a few seconds.



NOTE:

If the initialization fails, a beep sounds three times and the light turns orange.

NOTE:

If a load is added to the bed and the orange light comes on, it is necessary to proceed with an initialization.



Bed exit alerts

Position mode: The “Patient Position” mode alert is activated when the patient starts to move.

Exiting mode: The “Exiting” mode alert is activated when the patient moves away from the center of the bed to try and get out.

Out of bed mode: This mode must be used when the caregivers want to allow the patient to move freely in the bed. The “Out of bed” mode alert is activated when the patient leaves the bed.

i This information can be sent to the duty nurse if the bed is connected to a hospital network with a compatible information system (see “Sending bed exit alerts” page 49).

i Using the patient position monitor system does not remove the need to secure the patient in the bed (see “Risk prevention” page 5). Function sensitivity may be impacted if accessories are added or if the Trendelenburg/Reverse Trendelenburg angle is $\pm 8^\circ$.



The bed exit alerts are no longer operational when the bed switches to battery mode.

To activate the Bed exit alert detection:

Activating the bed exit detection to a given degree of sensitivity is subject to the following pre-conditions that guarantee effective patient detection.

Pre-conditions for the activation of the Position and Exiting modes:

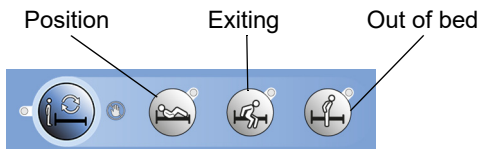
- The patient is in the center of the bed and aligned with the hip position markers.

NOTE:

If the pre-conditions for activation are not met, a beep sounds. In this case, follow the instructions and repeat the procedure.

NOTE:

Only one bed exit mode can be activated at a time.



1. Press the button of the required function and hold it until activation (the green light flashes during activation).
2. A beep sounds and the light turns green to indicate that the function has been activated.



NOTE:

If the activation fails, a beep sounds three times and the light does not come on.

To deactivate the Bed exit alert monitor

Press the button of the required function and the green light goes off.



When an alert sounds

When the bed exit monitor is active and it detects alert conditions, a continuous alert signal sounds, the green light corresponding to the function flashes in orange (whatever the height of the hard surface), the night light comes on and a signal is sent to the duty nurse (see "Sending bed exit alerts" page 49).



- ① Press the appropriate button to switch off the night light (see "Night light*" page 59).

Press the "Alert mode suspension" button to deactivate the alert for 30 seconds or 5 minutes (see "Selecting the duration of the alert suspension" page 48).



NOTE:

If a load weighing more than 9 kg is added or removed, it is necessary to proceed with an initialization.

Alert suspension mode

An active monitoring system can be suspended using the "Alert mode suspension" button, without having to deactivate the monitor.

To activate the alert mode suspension

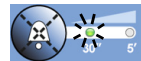
Press the "Alert mode suspension" button.

The patient can now move and follow procedures without any alerts sounding.



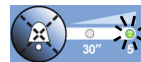
Selecting the duration of the alert suspension

Press the button once to suspend the alert for 30 seconds.



Press the button twice to suspend the alert for 5 minutes.

The light flashes during the alert suspension.



- ① To extend the duration of the alert suspension, reactivate the suspension mode and select the required duration.

To deactivate the alert mode suspension

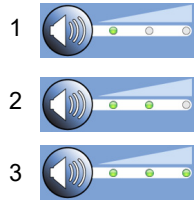
Press the "Alert mode suspension" button.



Setting the alerts volume

The volume of the alerts can be set to three levels of intensity.

Press the “Alerts volume setting” button several times to increase the volume from 1 to 3 or to return to level 1, etc.



Sending bed exit alerts

i Check that the bed is connected to the hospital's communications system.

- When a bed exit alert is raised, a signal is automatically sent to the duty nurse.
- If the bed has a “Nurse call” function, the light under the Nurse call symbol flashes for 1 minute. If the system acknowledges reception of the signal during this time, the light turns green. Otherwise, it goes out automatically.
- The light also goes out if the caregivers confirm reception of the alert.

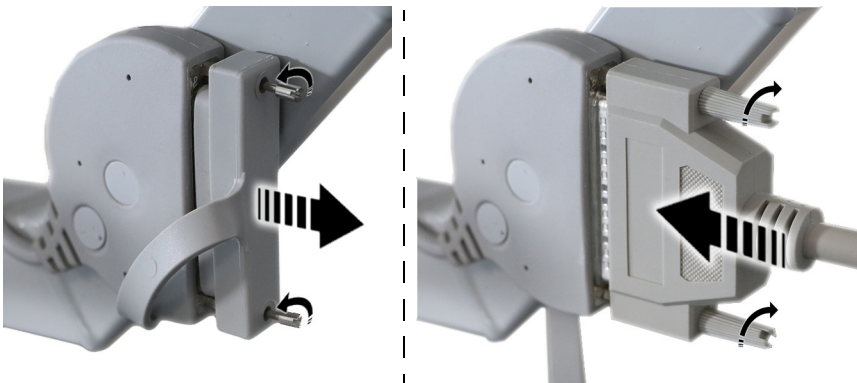


i If the bed detects a connection fault (cable not connected or fault), a discontinuous signal sounds when the bed exit alert is raised.

NaviCare® system

NaviCare™ is a system used to connect and check Hillrom™ beds and mattresses. It sends alerts to caregivers. Refer to the NaviCare™ system User Manual for more detailed information about the use of this system.

Communication cable**





Securing the patient

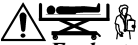
Siderails

The Hillrom™ 900 Electric Bed is fitted with long detachable metal or integrated half-siderails.

i If the bed was not originally fitted with siderails, the long siderails can be ordered as an accessory with the P/N AD271B.

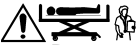


Always ensure that there are no obstacles before raising or lowering a siderail (e.g., person's limb, objects, accessories). They are not designed to restrain or immobilize the patient. No containment devices must be fastened to the siderails (e.g. straps).



Evaluate patients for entrapment risk according to protocol, and monitor patients appropriately. Ensure that all siderails are fully latched when in the raised position.

i Siderails are intended to show patients where the edges of the bed are. They are not patient-restraining devices. When appropriate, Hill-Rom recommends that medical personnel determine the proper methods necessary to ensure a patient remains safely in bed without being constantly observed.



Do not place accessories (respiratory or other medical devices) on the siderail in a manner that could prevent the siderail from being lowered when emergency access to the patient is required. The siderails must be handled according to the instructions in the user manual.

The AD271B siderails are part of the sleep surface and are detachable. The siderails are unfolded by raising them on the side of the bed.

When fully raised and locked, siderails aims to reduce the risk of falls.

AD271B* siderails

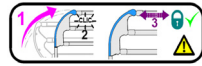
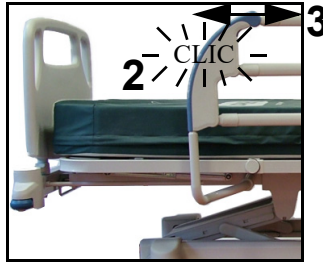
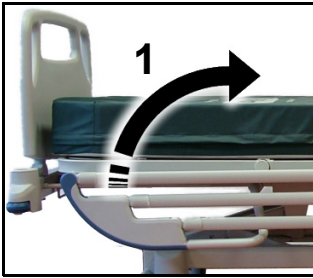
Siderail in low position



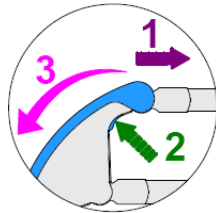
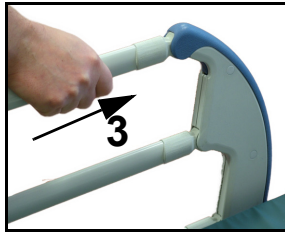
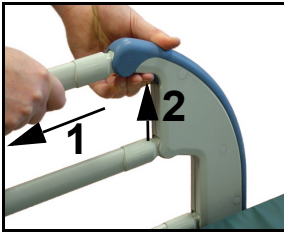
Siderail in high position



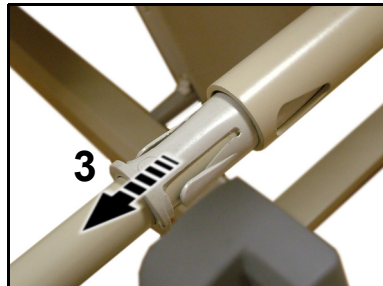
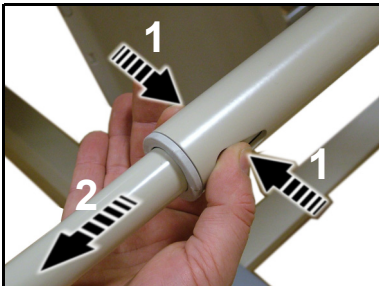
Raising a siderail



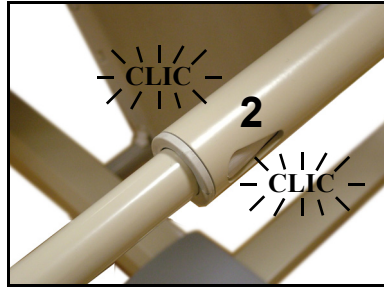
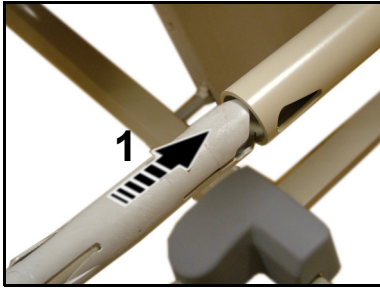
Lowering the siderail



Removing the long siderails



Installing the the long siderails



Half-siderails*

Standard half-siderails*

Siderail in low position



Siderail in high position

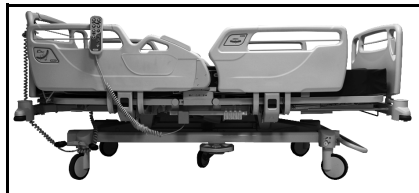


Affsaps* half-siderails¹

Siderail in low position



Siderail in high position



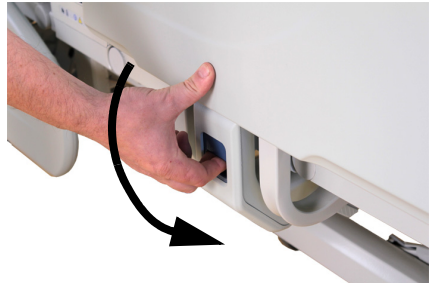
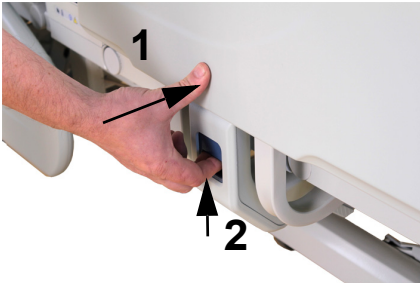
i The Afssaps half-siderails meet the demands stipulated by the AFSSAPS in the "Decision dated 26/04/2010" (article 2) for use with children measuring less than 146cm in height.

1. Incompatible with the fixed head version.

Raising a half siderail



Lowering a half siderail



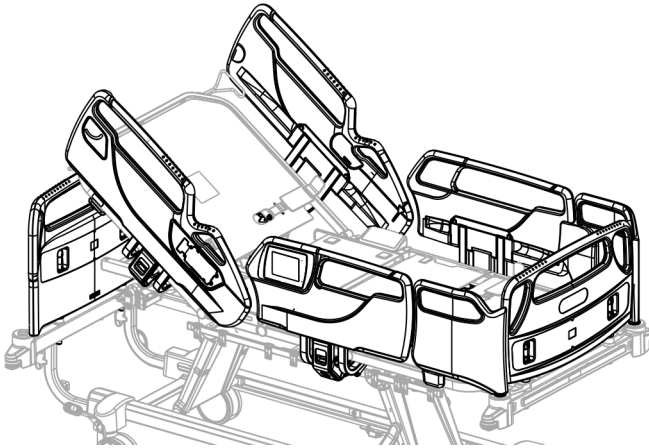
Siderail safety net (AD312A)**

The AD312A polyester bed net, designed to cover Hillrom™ 900 medical beds for adults fitted with AD271B metal siderails, is secured by press studs and zip fasteners.

The tightening effect reduces the risk of the patient's head or limbs passing between the bars of the siderails, while providing a bright environment for the patient

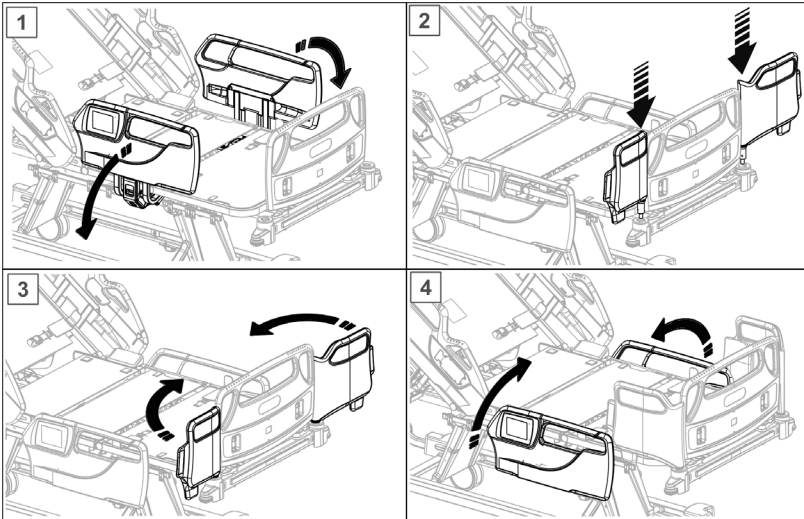


Space Filler panel (AD288A)**

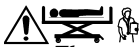


In order to mitigate the risks incurred by patient egress through the gaps at the foot of the bed, between the half-siderails and the foot panel, Hill-Rom has developed a kit of two detachable panels, one for each side, designed to block this gap.

Installing the panels



Patient safety



The panels are not designed to restrain or immobilize the patient in the bed.



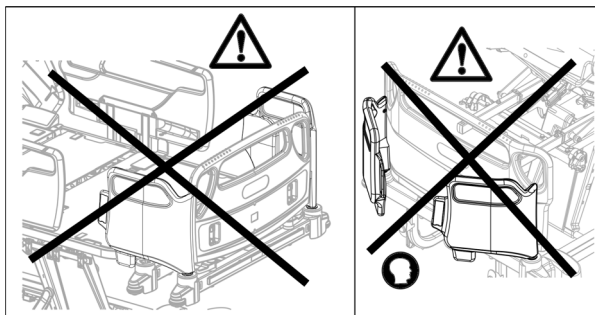
Check that the panels are correctly installed.



The authorized medical personnel must consider the use of siderails depending on the state of health and behavior of the patient, according to a protocol that indicates in which situations and when the panels can be used.



*They are not egress handles. Do not lean on them.
Do not use when the extension is deployed.
Do not use with Afssaps half-siderails.
Do not use with AD271A siderails.
Do not store at the head of the bed and remove from the foot of the bed when not in use.*

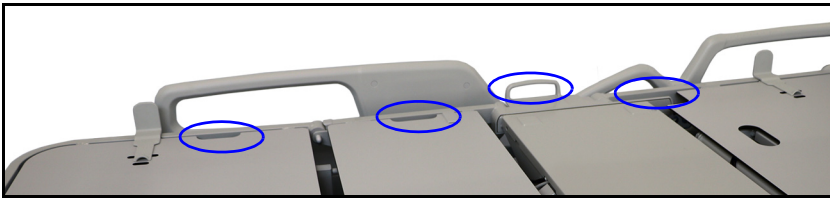


Fittings for the restraining strap handles¹



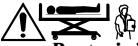
Do not attach the restraining straps to any part of the bed (particularly the siderails) other than those provided for this purpose. When the patient is restrained by the straps, the electric functions must be locked out. When the patient is restrained with an abdominal strap, a system used to restrict the ankles must also be used.

Immobilize patients on the bed using the fittings provided.

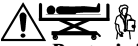


The sleep surface has fittings on each side of the bed located on the head, thigh and foot sections.

Thread the straps through the bars.



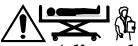
Restraining devices must not be used as a replacement for the nursing care required by the patient. Even when correctly installed, physical restraining devices may become entangled and injure the patient or even cause death, especially if the patient is agitated and confused. Whenever containment devices are used, the patient must be observed in accordance with legal requirements and protocol.



Restraining devices must be secured to the articulated sections of the bed using appropriate attachment points in order to avoid injury to the patient.



Never use restraining straps for the ankles when the bed is in the seated position or the foot section is lowered.

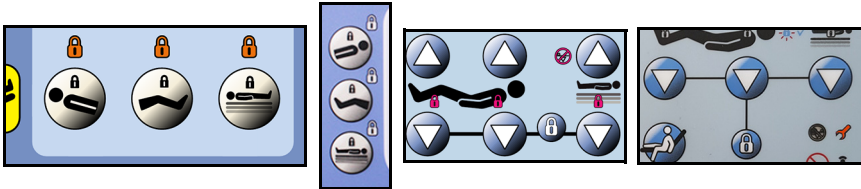


Adjust the restraining systems and articulations so as to prevent any risk of the patient slipping or moving.

¹. Only to be used in compliance with local regulations.

Electrical function management

The electrical functions are controlled by the general lock-out unit* located on the right of the bed or the caregiver units located on the right* or left* of the bed, the foot control pendant* or the half-siderail* keypads.



These lockout units are used to inhibit or enable selectively the electrical functions of the bed.

Selective lock-out*

- To inhibit an electric function using a side lockout unit* or the foot control pendant*, press the symbol of the corresponding function.
- To inhibit an electric function from a half-siderail keypad*, press and hold the lock symbol, then press the function to be inhibited.



The indicator light of the corresponding function comes on to indicate that the function is locked out (1).

i Locking out the thigh section adjustment control will also lock out the AutoContour™ when the adjustable head section function is disabled.

- To unlock an electric function using a side lockout unit* or the foot control pendant*, press the symbol of the corresponding function.
- To unlock an electric function from a half-siderail keypad*, press and hold the lock symbol, then press the function to be enabled.



The indicator light of the corresponding function goes off to indicate that the function is enabled (0).

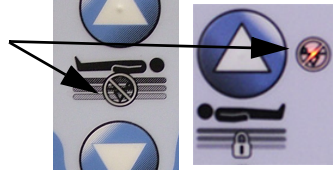


The selective locking out of functions is intended mainly to prevent accidental use that may cause injury or worsen a patient's conditions (e.g. for patients with hip replacements, disable the adjustable thigh section function).

i Locking out a function does not affect the CPR.

Bed not in lowered position indicator

An indicator light on the control pendant*, foot control pendant*, the control unit on a flexible arm* or the caregiver half-siderail control* goes off when the bed is in the lowered position. This position is recommended when patients are left unattended.



Night light*

A night light under the caregiver unit can be used to quickly see whether the bed is in the low position at night for greater safety.

Once activated, the night light comes on and changes color according to the height of the sleep surface.

- green: bed in low position.
- orange: bed not in low position.



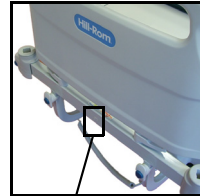
Equipotential terminal



Failure to connect the equipotential cable may result in corporal injury.

When direct intravascular or intracardiac connections are in use, the electric potentials of all the unprotected metal parts need to be equalized.

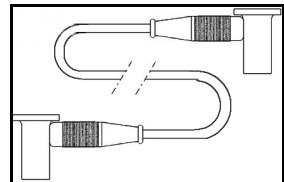
The bed must be connected to the electrical installation. To equalize potentials if a grounded power connection is unavailable, connect the equipotential cable (AC968A) to the connection terminal on the bed and the device.



Equipotential cable (AC968A)

It is fitted with two POAG-WB 6 DIN type connectors and a 2 m long yellow and green cable.

This cable permit to equalize the electric potentials of all the unprotected metal parts of a device and the bed.



Nurse call*

Use the controls on the patient keypads, the caregiver keypads or the control pendant* to activate the “Nurse call” function.

- ⓘ *Check that the cable connecting the bed to the hospital’s communications system is connected.*

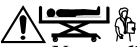
To Activate:

- Press a Nurse call control.
- The light under the Nurse call symbol flashes for 1 minute. If the system acknowledges reception of the call during this time, the light turns green. Otherwise, it goes out automatically.
- The light goes out if the caregivers confirm reception of the call.

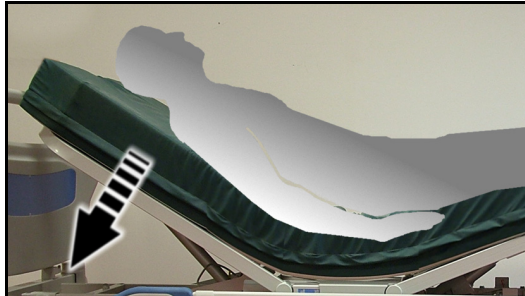
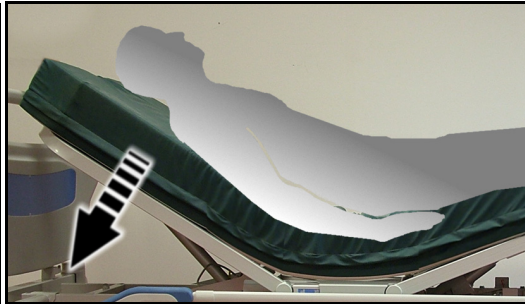


i If the bed detects a connection fault (cable not connected or fault), a discontinuous signal sounds if the nurse call control is activated.

CPR



Never allow a non-qualified person to operate this function and check that no obstacles (e.g., limbs, accessories, objects, power cables) or persons are under the head section.



This function is used in emergencies (e.g.: reanimation, cardiac massage) or in the event of a power cut.

It is operated by a handle located centrally and bilaterally under the sleep surface or under the head section, if the bed is fitted with half-siderails.

i The head section actuator is automatically re-enabled after the yellow CPR handle is released. Never use CPR to raise the head section.



Fixed IV pole (AD294A)**

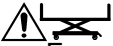
The IV pole is mounted in the angle supports and is used to hold IV bags.

Safe working load:

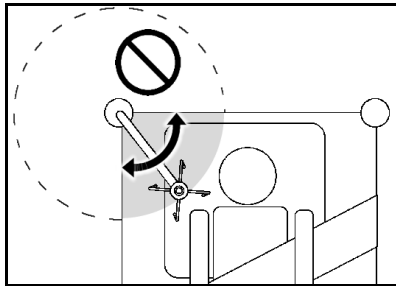
Refer to the value indicated on the IV pole

Telescopic IV pole (AD298A-AD299A)

The IV pole is mounted in the angle supports and is used to hold IV bags

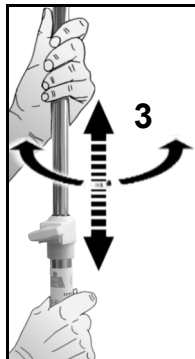
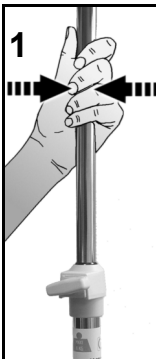


Ensure that the IV pole is positioned facing towards the bed and not outwards as shown in the following illustrations.



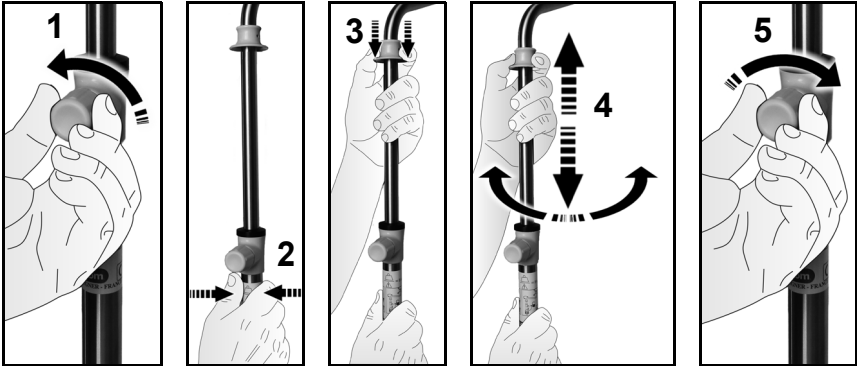
Using the IV pole (AD298A)**

To adjust the height or angle of the IV pole:



Using the IV pole (AD299A)**

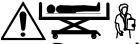
To adjust the height or angle of the IV pole:



Linen holder*

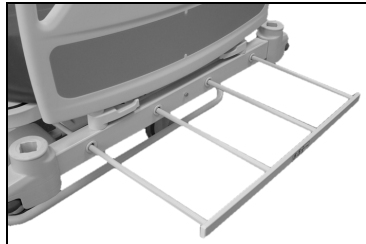
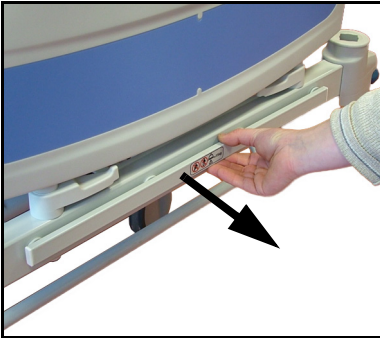


The linen holder must not be used to support luggage or as a seat, even for young children.



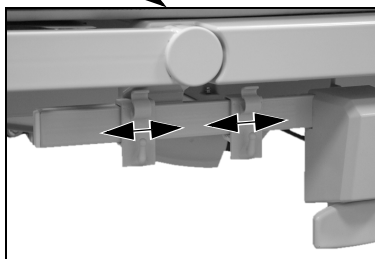
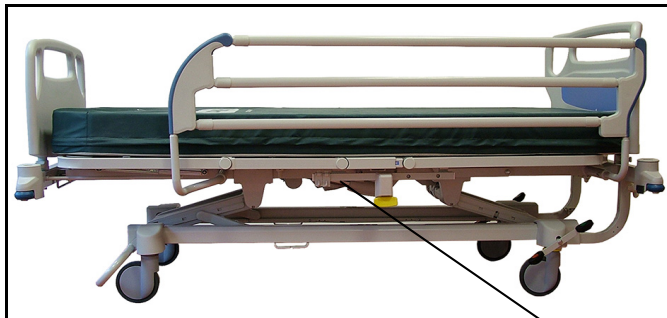
Do not sit or climb on the linen holder.

Safe working load: 15 kg¹.



1. The safe working load specifications allow for a substantial safety margin.

Drainage bag holder pins



LI900B2 half-siderails



Help with care

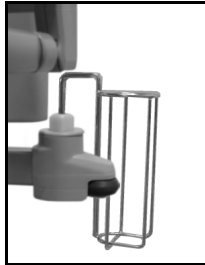
Oxygen Cylinder Holder (AC959A-AD101A-AD102A)

Safe working load: 15 kg⁽¹⁾

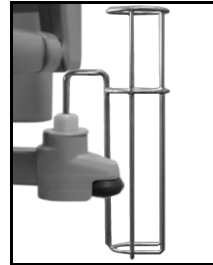
The oxygen cylinder holder is designed to accept an oxygen cylinder and must only be fitted on the patient helper supports at the head end of the bed outside the sleep surface. It can be rotated through 80°. Each type of holder corresponds to a cylinder model and must never be used with a different cylinder. See below.



AC959A for
cylinder model
B5 (Ø140)



AD101A for
cylinder model D
(Ø100)

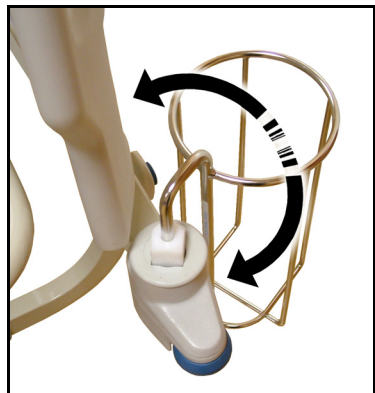


AD102A for
cylinder model E
(Ø100)



The following recommendations are designed to prevent any possible incidents so that this accessory can be used in optimum safety conditions for both the patient and nursing staff.

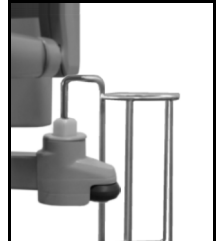
- Check that the cylinder is correctly positioned at the base of the cylinder holder.
- Never use a different oxygen cylinder model from the model that is specified above (danger of dropping the cylinder or interfering with various operations could occur).
- Prevent any impact when moving a bed equipped with a cylinder holder (especially doorways).
- If the cylinder holder does not allow the bed to go through a doorway, position the holder in front of the bed, otherwise place it and the cylinder on the mattress (remember to put the holder in its normal position after moving the bed).



1. The safe working load specifications allow for a substantial safety margin.

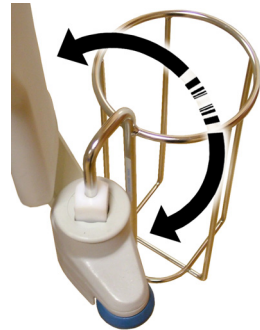
Pivoting 3L Bottle Holder (AC962A)**

The bottle holder is designed to accept a 3 liter bottle and can be fitted on the supports at the foot end of the bed outside the sleep surface. It can be rotated through 80°.



The following recommendations are designed to prevent any possible incidents so that this accessory can be used in optimum safety conditions for both the patient and nursing staff.

- Prevent any impact when moving a bed equipped with a bottle holder (especially doorway or reverse Trendelenburg).
- If the bottle holder does not allow the bed to go through a doorway, position the holder in front of the bed, (remember to put the holder in its normal position after moving the bed).



Monitor stand (AD244B)

Safe working load: 15 kg⁽¹⁾

The monitor stand fits into the sockets at the foot of the bed.



When fitting the monitor, ensure that the folded table is located on the outer edge of the bed.

The table must be folded away when moving the bed.

If the bed is in Trendelenburg or Reverse Trendelenburg, any devices must be placed on the monitor stand.



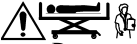
To fit a monitor stand:



1. The safe working load specifications allow for a substantial safety margin.

Syringe-driver holder (AC963A)

Safe working load: 15 kg⁽¹⁾

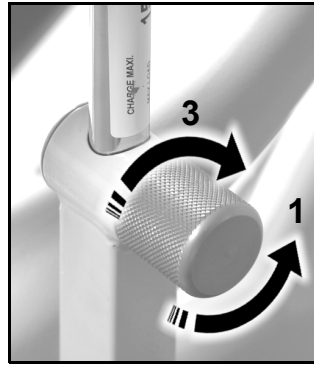
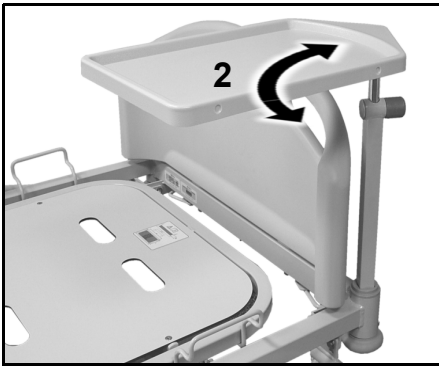


Do not position the accessory facing inwards, particularly under the head section when it is raised, so as to prevent any risk of the accessory obstructing the head section or siderail when being handled.

This accessory is designed to accept a syringe-driver and is fitted at the head end of the bed in the sockets provided.

To adjust position of the syringe driver holder:

- hold the tablet and loosen the knob,
- position the tablet as required and then tighten the knob.



Line manager & support (AD286A)**



This accessory must be fitted by an authorized technician.

Please refer to the fitting instructions provided with the accessory when fitting the accessory.

A Line Manager is on each side of the head end of the bed. The Line Manager helps to keep lines (such as IV lines, suction lines, etc.) together and away from the articulating frame. The flexibility of the Line Manager lets you bend it in any direction.



Make sure the lines are not pinched or kinked and there is sufficient slack in the lines for bed articulations and patient movement. Failure to do so could cause injury or equipment damage.

- **Do not wrap the power cord or communication cable around the line manager.**



1. The safe working load specifications allow for a substantial safety margin.

X-ray-transparent adjustable head section (AD242A)**

The X-ray-transparent adjustable head section accessory allows a cassette for 35 x 43 cm X-ray films (as per the standard EN ISO 4090) to be installed in order to take chest X-rays. It is installed in place of the hard surface of the head section.

i *The type (foam or air), the materials, the density and the thickness of the mattress, and the weight and morphology of the patient can affect the quality of the X-ray images. The best way to produce X-rays of an optimal quality is to get as close to the patient as possible. The radiologist is responsible for deciding on the best solution to take the X-ray according to the medical target and the hospital's protocol adapted to the patient's illness.*

NOTE:

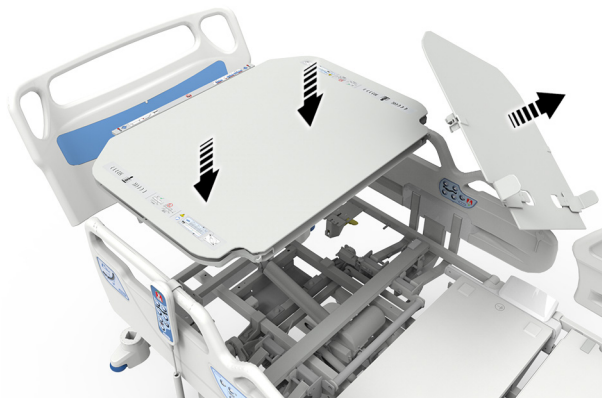
For patients weighing more than 100kg, the user must adjust the angle of the head section and the position of the patient to produce quality images.

NOTE:

Incompatible with side-rails AD271A, AD271B et AD272A.

Installing the accessory

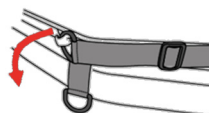
1. Remove the mattress to gain access to the hard surface of the head section.



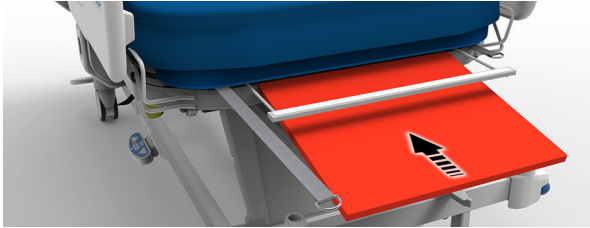
2. Unclip and remove the hard surface of the head section.
3. Install and clip the accessory in its place.

Installing an X-ray cassette

1. Remove the headboard to install the X-ray cassette in the top of the head section.
2. Raise the sleep surface or raise the head section in order to insert the cassette.
3. Unhook the buckle of the right strap from its storage hook.
4. Pull on the left strap to extract the cassette support.



5. Lift the cassette retaining bar and insert the cassette in the landscape or portrait direction, as required.



6. Check that the retaining bar locks the cassette in position.
7. For portrait images, pull the retaining bar upwards to lock the cassette.
8. If necessary, adjust the cassette in the sideways direction.
9. Adjust the position of the cassette using the right and left straps so that the retaining bar is positioned on the edge of the mattress.



10. Adjust the cassette positioning buckle. Wind the right strap around the mattress and put the buckle on the upper edge of the mattress. Once it has been adjusted using the right and left straps, this buckle is used to position the top of the cassette as required.



11. Position the patient on the bed with their hips by the marker on the siderail.
12. Adjust the height of the sleep surface and incline the head section as required.

13. Adjust the position of the cassette as required.



Removing the X-ray cassette

1. Pull on the left strap to extract the cassette support.
2. Raise the retaining bar and take out the cassette.
3. Pull on the right strap to insert the cassette support.
4. Hook the buckle of the right strap on its storage hook.

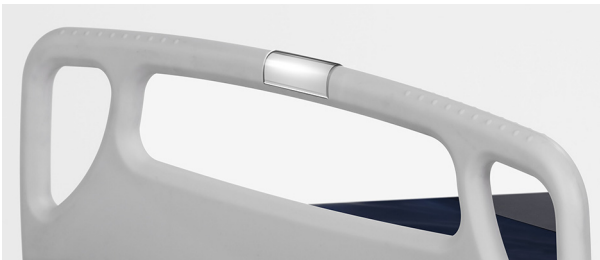
Chrome-plated IV hook (AC953A)**

This accessory is used to hold the IV bag to the patient helper AD810A** or AD811A**.



Label holder (AD325A)**

This accessory is used as a place to holder to insert patient name label.





Brake and steer system

i Casters are available with two dimensions: Ø125 or Ø150 (mm).

Ø125 casters are not intended to transfer patients but to move the bed for housekeeping purposes.

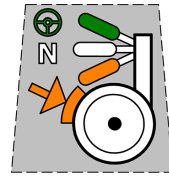
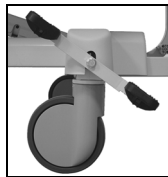
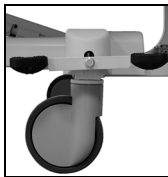
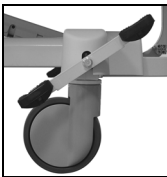
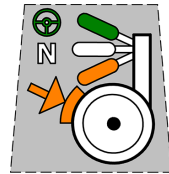
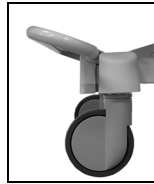
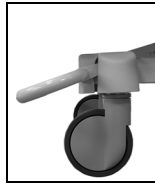


Always put the brake in the “STOP” position, except during transport. Once the brakes have been applied, push and pull the bed to make sure that it does not move.

The brake bar, located at the foot of the bed, or the bilateral pedals at the head end, simultaneously control all four casters, including one steering caster.

It has three positions:

- “STOP” to prevent the bed from moving,
- “NEUTRAL” to move the bed in all directions,
- “STEERING” for easier movement in a straight line.



STOP

NEUTRAL

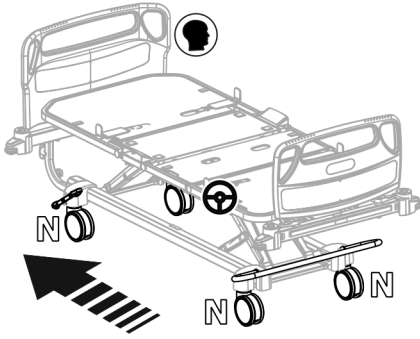
STEERING

Label

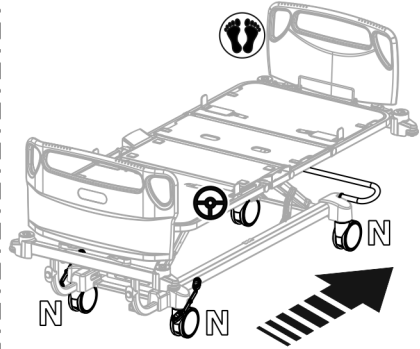
Using the bar in the steering position

- **without 5th wheel (basic version):**
Three wheels turn freely (NEUTRAL) and one wheel steers (it no longer swivels).

Steering wheel at head end



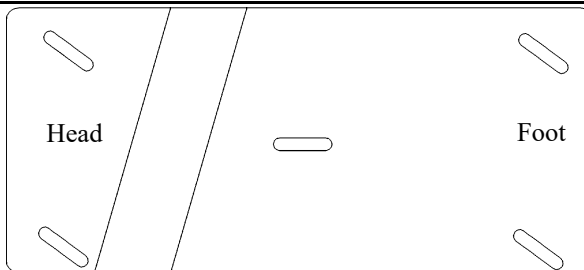
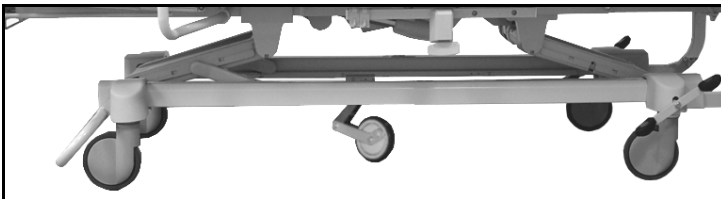
Steering wheel at foot end*



- **with 5th wheel with controlled release*:**

When the brake and steer bar is in the steering position, the 5th wheel automatically switches to the steering position as soon as the bed moves forwards or backwards.

The wheel can be released by returning the brake bar to the “NEUTRAL” position.



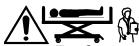
NOTE:

Before moving the bed sideways, check that the brake and steer bar is in the “NEUTRAL” position.

"Bed connected to power mains, brake not applied" detection*

When the bed is plugged into the mains and the brakes are not applied, a continuous alarm sounds until the brakes are applied or the bed is disconnected from the mains.

Moving the bed

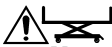


Before moving the bed, perform the following checks:

- *If there is a patient in the bed, ensure that the siderails are raised and locked to help prevent the patient from falling.*
- *Position the sleep surface so the top of the footboard is at the most suitable height for transporting the bed (approximately ½ Hi-Low) and with the foot section horizontal.*
- *Disconnect the general power cable and the power cable of the electric accessories (e.g., air mattress, etc.) and hook them to the bed as described in paragraph "Securing the power cable" on page 74.*
- *Check that the bed or accessories (e.g., patient helper, wall stop) cannot hit door frames or other obstacles (e.g., lights).*
- *Place the control pendant in its holder near the CPR handle to prevent any damage to the control pendant or cable (e.g., catching on doorways, etc.).*
- *Place the patient in a stable and comfortable position (do not fully raise the head section).*



Never try to move the bed by pulling on the power cable or you may damage it. A damaged power cable is an electric shock hazard.



Never use the patient helper or the IV stand to move the bed.



The bed should only be moved while in the transport position by two people (one at each end so as to ensure that there is always one person to operate the brake bar) when moving the bed on a slope, with a foot end directional caster or when moving the bed with a heavy load (heavy patient, accessories fitted, etc.).

Moving the bed:

- hold the endboard with both hands,
- raise the brake and steer bar to the "NEUTRAL" position to release the brakes,
- push the bed, steering with the headboard.



If the endboard is not lockable, be careful that it does not fall on the patient or injury someone in case of a fall.



For easy transportation in a straight line:

- push the bed using the end board opposite the steering wheel (See "Always put the brake in the "STOP" position, except during transport. Once the

brakes have been applied, push and pull the bed to make sure that it does not move.” page 71),

- after having moved the bed for a short distance to align the casters, raise the brake and steer bar to the “STEER” position.

Securing the power cable



Always correctly store the power cable. Failure to follow this recommendation may result in damage to the cable by crushing and create the risk of electric shock.

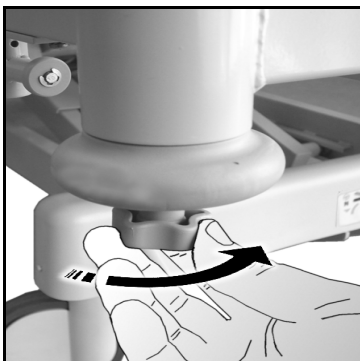
The power cable must be hooked in place before moving the bed.

Attachment with cable tie AD292A



Removable frame (AD270B)

The detachable tube helps to guide the bed when transferring.





Decontamination, Maintenance

Decontamination of the bed

Safety recommendations

- Ensure that the bed cannot move.
- Lock out all electrical functions.
- Disconnect the bed and stow the power cable (see “Securing the power cable” page 74).
- Check that all plugs are well connected (control and lockout units, electric motors on the power supply unit).
- Never clean the bed by pouring water on it, nor with high-pressure hoses nor in tunnel washes.
- Never use water at a temperature of more than 60°C.
- Avoid excess water on the connectors.
- Refer to the recommendations of the cleaning product manufacturer.
- Thoroughly dry before reusing.

Failure to implement one or more of these recommendations may lead to damage or deterioration, preventing use of the bed and rendering the warranty void.

Recommendations for cleaning and disinfection

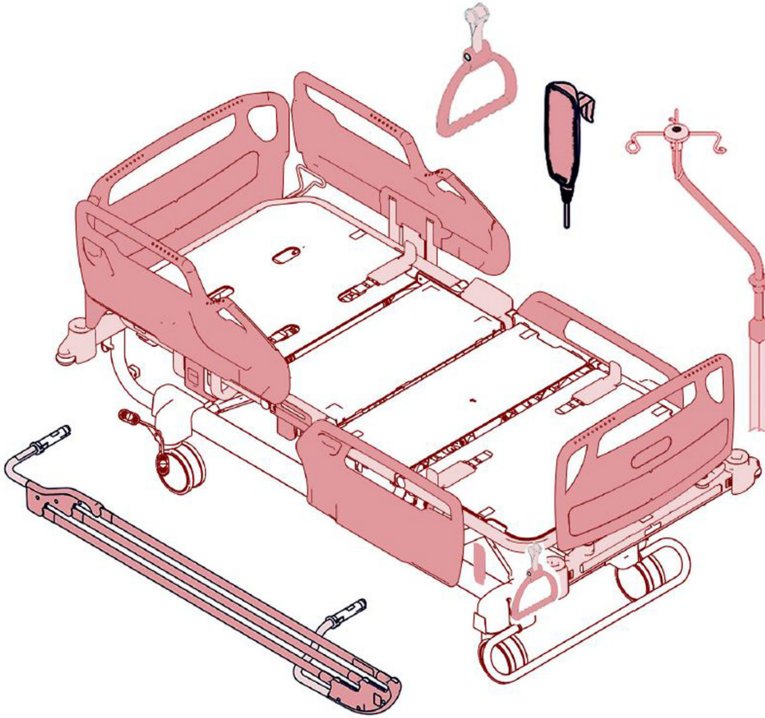
The following recommendations are not designed to replace existing cleaning protocols drawn up by the hygiene officer or by other bodies for your hospital.


The disinfecting method described below applies specifically to the bed and its accessories and is designed to save time and to help combat nosocomial infection more effectively.



Clean the bed with a lightly dampened cloth and ordinary disinfectant. Do not use excessive liquid.




This bed is designed for easy cleaning and optimal hygiene.

Recommended Cleaning and Disinfection



 Clean and disinfect every day.

 +  Clean and disinfect after patient departure or before patient transfer.

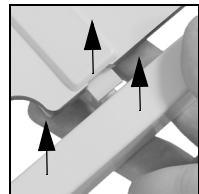
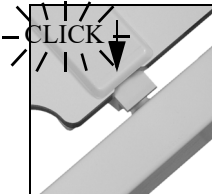
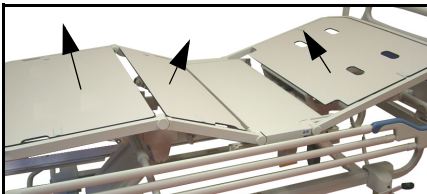
 +  +  Clean and disinfect thoroughly (after the departure of an infected patient or recommended every two months).

Decontamination Record

A decontamination record should be kept for each bed, mentioning:

- month, ward and room number, bed reference number.
- cleaning frequency, materials and products used.

Sleep surface.



Recommended Materials and Products

NOTE:

A list of recommended cleaning products for all types of cleaning requirements is available on your request along with a special maintenance advice leaflet.

- Single-use tissues or recyclable textile wipers.
- One pair of household gloves.
- Detergent-disinfectant solution diluted according to hospital guidelines (and taking into account the recommendations given below) or a disinfecting spray.
- Use a product that complies with standard EN 14885 (bactericide including TB, fungi and viruses, including HIV-1 and HBV).
- Chlorine (26,000ppm) solution that complies to EN 13727 and EN 13624 can be used, but has the risk of discoloration. Non coated metal parts should be rinsed to prevent pitting corrosion.

The following products should not be used

Formaldehyde, or phenol-based products and solvents of any kind (toluene, xylene or acetone).

Never use abrasives, cleaning powder or cleaning pads that may damage components.

Recommended Cleaning and Disinfection Method

- Always wipe downward, working from the cleanest to the dirtiest areas.
- Do not scrape surfaces.
- Keep wipes damp (wet as many times as needed and do not wring out too much water).
- Let product dry according to disinfectant manufacturer's recommendations to ensure maximum efficiency.
- Rinse if necessary: follow the recommendations of the disinfectant supplier.
- Change wipes when cleaning the least contaminated areas to areas of medium or to highly contaminated areas.
- Change wipes when cleaning another bed.
- Always dry the bed thoroughly after it has been cleaned.

Cleaning tough stains

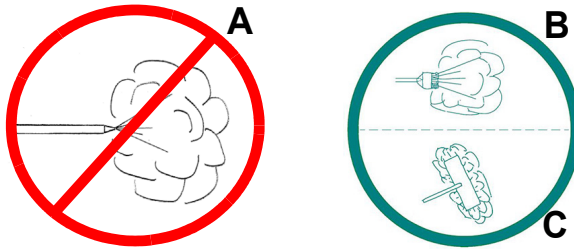
- ① *Quickly wipe away any traces of pharmaceutical solutions or other staining products, in order to avoid permanent damage to the surface.*

To remove tough stains, use standard household cleaners and a soft bristle brush. To loosen heavy, dried-on soil or excreta, you may first need to saturate the spot.

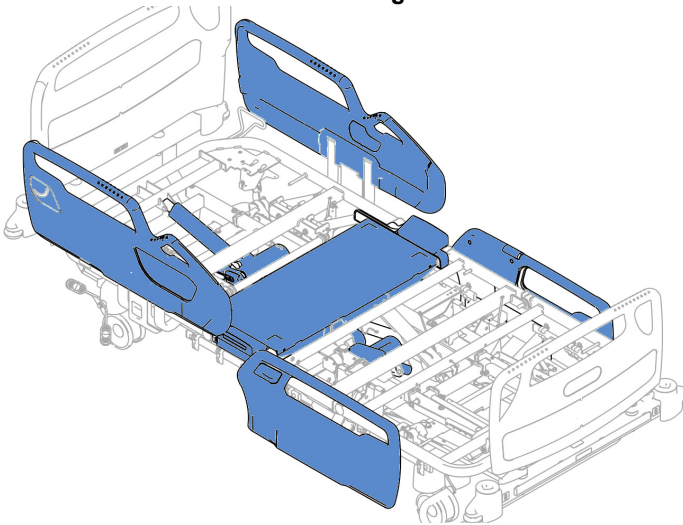
Steam Cleaning


These beds can be steam cleaned. However, in order to avoid any damage or deterioration caused by high pressure or abnormal surface temperature, the following precautions should be taken:


- avoid any excess water and use reduced steam pressure with microfiber support when cleaning electrical components (control unit, actuators, lateral caregiver units, half-siderails with keypads, remote controls and control cluster arms),
- do not use accessories such as high pressure hoses (A). It is preferable to use soft non-metallic brushes (B) and microfiber support (C) in such a way as to reduce the pressure to an acceptable level.



Steam cleaning areas



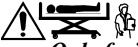
 Clean with a microfiber support only.

 Clean with a soft non-metallic brush or a microfiber support.

- prevent water and steam from getting into connectors that are not in use,
- do not brush and use reduced pressure on labels and markings,
- carefully dry and test the bed before reuse.

Maintenance

Safety recommendations



Only facility-authorized personnel should perform maintenance of the Hillrom™ 900 bed.

Before maintenance or servicing works:

- ensure that the bed has been immobilized (if no movements are required),
- lock out all electrical functions,
- disconnect the bed from the mains if no electrical operations are planned,
- secure the sleep surface and take whatever steps are necessary to prevent any movement.
- Do not work on the device when it is occupied.

All devices connected to the CAN socket, used exclusively for maintenance operations, must meet the requirements of IEC 60950-1.

Never open or pierce an electric actuator.

For all problems with actuators (e.g., blockage), contact our after-sales service.

Preventive maintenance

i *A service manual and a catalog of spare parts are supplied on delivery, but can also be obtained on demand from Hill-Rom After-Sales. Hill-Rom guarantees that the original functional parts or parts performing equivalent functions will remain available for 7 years after the corresponding range goes out of production.*

i *The product design life is validated on 10 years of normal use.*

i *The frequency of inspections must be adapted to the general condition of the product and its use, for example, if the bed is used by heavy patients. It is the responsibility of the facility to implement a preventive maintenance program for the bed's functions under its conditions of use.*

The bed and accessories should be inspected at least once a year to keep it in good condition and working properly.

The following points should be given particular attention:

- movement mechanisms and cables (actuators in particular),
- locking mechanisms (head section, foot section, thigh section and AutoContour™),
- the accessory mechanisms,
- bed movement and ancillary part bearings,
- The condition of the electric cables (e.g., control unit, power supply unit) in particular that they are not crushed or cut and thus could make contact with a metal part,
- earthing of the metal parts of the bed,
- waterproofing of electrical parts,
- CAN socket protection when no maintenance operations are in progress,
- siderails: check the play and the lock mechanisms (condition and working order),
- patient position monitor system.



Every year, it is preferable to ask Hill-Rom After-Sales Service or a Hill-Rom approved supplier to inspect the actuators and the electrical systems in order to keep them in safe and good working order over time. Depending on the maintenance operations and observations, the date of the next inspection must be recommended every time the bed is serviced.

De-commissioning

The device and its accessories should be cleaned and disinfected before de-commissioning.



Customers should adhere to all federal, state, regional, and/or local laws and regulations as it pertains to the safe disposal of medical devices and accessories. If in doubt, the user of the device shall first contact Hill-Rom Technical Support for guidance on safe disposal protocols (Directive 2012/19/EU).

As regards the battery:



•Never dispose of the batteries which contains substances and dangerous metals for the environment and the health (Directive 2006/66/EEC).

The bed is designed for easy dismantling so that it can be destroyed or reused in accordance with the applicable recycling regulations (e.g., electric parts, plastics, metal).

At the end of the bed's life, Hill-Rom recommends that you contact a specialist in the dismantling of beds or, if the bed can still be used, to donate the bed to a charitable organization so that it can be used again.

Always clean and disinfect the bed before shipment for dismantling or donation.

Warranty and after sales service conditions

The warranty for our beds will be rendered null and void, in part or in total, in the event of:

- Unauthorized interference with or incorrect maintenance of:
 - actuators,
 - electrical drives and components,
 - mechanical systems,
 - any abnormal use.

The details of after sales service contacts in your country are shown on the back of this manual.

Compliance

- The CE mark was applied for the first time in 2010.
- CE mark applying to class I medical devices in accordance with (see Declaration of Conformity):
 - the Essential Requirements of the directive 93/42/EEC,
 - the General Safety and Performance Requirements of the Regulation (EU) 2017/745 regulation
- Complies with standards:
 - NF S 90-312 (1984),
 - EN 60601-1 (2006) & A1 (2013) / IEC 60601-1 (2005) & A1 (2012),
 - EN 60601-1-2 (2015) / IEC 60601-1-2 (2014),
 - EN 60601-2-52 (2010) / IEC 60601-2-52 (2009), application environments 1, 2, 3 and 5, according to version,
- The LI900B2 and LI900B3 beds meet the NF MEDICAL - LITS for "Hospital beds"
Authorization N°: NF178-01/01
 - Certified characteristics:
 - electrical safety precautions,
 - electromagnetic compatibility,
 - mechanical safety precautions,
 - aptitude for use.
- The LI900B2 and LI900B3 beds meet the "NF Environnement - Ameublement" standard
 - Institut Technologique FCBA
10, rue Galilée
77420 Champs-sur-Marne
FRANCE
www.fcba.fr



- The NF ENVIRONNEMENT marking guarantees performance and ecology:
 - Quality / Durability
 - Health / Safety
 - Environment

Visit the website for more information
www.nf-environnement-ameublement.com

- The NF Environnement certified Hillrom™ 900 bed is designed, manufactured and checked to reduce environmental impact up to end of life (limitation of transformation energy of the materials, heavy metal-free finishing products, possibility to recycle, etc.).
- INMETRO rule Nr. 350, September 06, 2010 and mandatory certification of electrical equipment under requirements of National Health Surveillance Agency - ANVISA - RDC Nr. 27, 2011-06-21 and IN 03, 2011-06-21.



Electromagnetic conformance

Complies with electromagnetic emission standards



This device meets all the requirements related to electromagnetic compatibility, in accordance with the standard IEC 60601-1-2 and the directives applicable to medical devices, and has passed all the tests to demonstrate that it meets these requirements. It is most improbable that users experience problems due to deficient electromagnetic immunity. However, electromagnetic immunity is always relative, and standards are based on anticipated environments of usage. If the user notices that the device behaves unusually, and especially if this behavior is intermittent and occurs when in the vicinity of radio or TV transmitters, cell phones or electrosurgical equipment, this may be a sign of electromagnetic interference. If such behavior occurs, users must try to move the equipment well clear of the origin of the interference with the device.



The Hillrom™ 900 Bed must not be used close to or on top of other items of equipment. If this is necessary, the Hillrom™ 900 Bed must be tested to confirm that it functions properly in the required configuration. Make sure that the Hillrom™ 900 Bed functions correctly when used in the vicinity of other electric appliances. Mobile and portable radio frequency (RF) communication equipment may damage the electric medical equipment.


Electric medical equipment demands special precautions regarding electromagnetic compatibility (EMC) and must be installed and used in accordance with the EMC-related information contained in this manual.

The use of accessories, transducers and cables other than those specified, apart from the transducers and cables sold by the manufacturer of these devices, such as replacements of internal components, may result in an increase and/or reduction of the immunity of the Hillrom™ 900 Bed.

Manufacturer's guide and declaration – electromagnetic emissions		
The Hillrom™ 900 is designed for use in the electromagnetic environment specified below. Users must ensure that the bed is used in this environment.		
Emission test	Compliance	Electromagnetic environment - Guide
RF emissions CISPR 11	Group 1	The Hillrom™ 900 only uses radio electric power for its internal functions. Consequently, it only produces very weak RF emissions that are unlikely to cause interference with nearby electronic equipment.
CISPR 11 RF emissions	Class A	The Hillrom™ 900 can be used in all places other than domestic premises and premises that are directly connected to the low voltage public mains power network used to supply domestic buildings.
Harmonic emissions IEC 61000-3-2	Class A	
Flicker IEC 61000-3-3	Applicable	
CISPR 14-1 RF emissions	Compliant	The Hillrom™ 900 is not designed to be connected to other equipment.

Compliance with electromagnetic immunity

Manufacturer's guide and declaration – electromagnetic immunity			
The Hillrom™ 900 is designed for use in the electromagnetic environment specified below. Users must ensure that the bed is used in this environment.			
Immunity test	IEC 60601 Severity	Compliance	Electromagnetic environment - Guide
Electrostatic discharges IEC 61000-4-2	± 8 kV on contact ± 2 kV, ± 4 kV, ± 8 kV and ± 15 kV in the air	± 8 kV on contact ± 2 kV, ± 4 kV, ± 8 kV and ± 15 kV in the air	The relative humidity must be at least 5%.
Fast transients in bursts IEC 61000-4-4	± 2 kV for the power supply lines ± 1 kV for the input/output lines (100 kHz Repetition Frequency)	± 2 kV for the power supply lines ± 1 kV for the input/output lines (100 kHz Repetition Frequency)	The quality of the main power supply must be that of a typical commercial or hospital environment.
Voltage surges IEC 61000-4-5	1 kV differential mode 2 kV common mode	1 kV differential mode 2 kV common mode	The quality of the main power supply must be that of a typical commercial or hospital environment.
Magnetic field at the frequency of the mains power supply (50/60 Hz) IEC 61000-4-8	30 A/m 60 Hz	30 A/m 60 Hz	The magnetic field at the frequency of the mains supply must be characteristic of a typical commercial or hospital environment.
Voltage Dips IEC 61000-4-11	0% U _T : 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° 0% U _T : 1 cycle 70% U _T : 25/30 cycles Single phase: at 0° (see note)	0% U _T : 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° 0% U _T : 1 cycle 70% U _T : 30 cycles Single phase: at 0° (see note)	The quality of the main power supply must be that of a typical commercial or hospital environment. If the user of the Hillrom™ 900 requires that the bed remain functional during outages of the mains power supply, it is advisable to power the Hillrom™ 900 using a UPS or a battery.
Voltage Interruptions IEC 6100-4-11	0% U _T for 250/300 cycles	0% U _T for 300 cycles	
Note : U _T is the nominal value of the supply voltage applied during the test.			

Manufacturer's guide and declaration – electromagnetic immunity			
The Hillrom™ 900 is designed for use in the electromagnetic environment specified below. Users must ensure that the bed is used in this environment.			
Immunity test	IEC 60601 Severity	Compliance	Electromagnetic environment - Guide
Conducted RF IEC 61000-4-6	3 Vrms 0.15 MHz - 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz 80% AM at 1 kHz rms 150 kHz to 80 MHz	3 V 0.15 MHz - 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz 80% AM at 1 kHz rms 150 kHz to 80 MHz	
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz	3 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz	The field levels emitted by fixed RF transmitters, as determined by an electromagnetic measurement of the site ^a , must be below the level of compliance in each frequency band ^b . Interference may occur close to devices identified with the following symbol: 
These recommendations may not apply to certain situations. The propagation of electromagnetic waves is affected by absorption and reflection due to structures, objects and persons.			

- a. The field levels of fixed transmitters, such as radio telephone bases (cell/wireless) and terrestrial mobile radios, amateur radios and AM, FM and TV communication radios cannot be theoretically evaluated precisely. Site measurements are required in order to obtain the electromagnetic environment due to fixed RF transmitters. If the field level measured in the working environment of the Hillrom™ 900 bed is greater than the above applicable levels of compliance, the operation of the Hillrom™ 900 bed must be checked. If any anomalies are detected, additional measures must be taken, such as redirecting or relocating the reference equipment.
- b. The field level must be less than 3V/m above the frequency band 150 kHz to 80 MHz.

Recommended separation distances

Recommended separation distances between portable and mobile RF communications equipment and the bed Hillrom™ 900

The Hillrom™ 900 is designed for use in an electromagnetic environment in which interference due to radiated RF is monitored. The user of the Hillrom™ 900 can contribute to the prevention of electromagnetic interference by keeping the Hillrom™ 900 bed at the recommended distances from portable and mobile RF equipment (transmitters) as shown below, according to the maximum power output of the communication equipment.

Maximum assigned power output of the transmitter W	Separating distance versus the frequency of the transmitter m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
	$d= 1, 16 \cdot \sqrt{P}$	$d= 1, 16 \cdot \sqrt{P}$	$d= 2, 23 \cdot \sqrt{P}$
0,01	0,12	0,12	0,24
0,1	0,37	0,37	0,74
1	1,12	1,12	2,33
10	3,67	3,67	7,37
100	11,6	11,6	23,3

For transmitters with a maximum power output that is not in the list above, the recommended separation distance in meters (m) can be calculated using the equation that applies to the frequency of the transmitter, where P is the maximum output power of the transmitter in Watts (W) assigned by the manufacturer of the transmitter.

NOTE:

At 80 MHz and 800 MHz, the separating distance in the upper frequency band applies.

NOTE:

These recommendations may not apply to certain situations. The propagation of electromagnetic waves is affected by absorption and reflection due to structures, objects and persons.