User Manual

ProAxis® Plus

Bed
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Chapter 1
Symbols / destination / Installing the bed

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

- Standard text - used for regular information.
- **Boldface text** - emphasizes a word or phrase.
- **NOTE** - sets apart special information or important instruction clarification.
- The symbol below highlights a paragraph:

  **WARNING or CAUTION!**

  Warning / caution

  - A **WARNING** identifies situations or actions that may affect patient or user safety. Disregarding a warning could result in patient or user injury.
  - A **CAUTION** points out special procedures or precautions that personnel must follow to avoid equipment damage.

- The symbol below highlights a CAUGHT HAZARD WARNING:

  Caught Hazard Warning

- The symbol below highlights a CHEMICAL HAZARD WARNING:

  Chemical Hazard Warning

- The symbol below highlights a:

  ELECTRIC SHOCK HAZARD:

  Electric Shock Hazard
General Symbols

Attention, read the safety instructions carefully and refer to the user manual.

Do NOT BIN, follow the local recycling regulations.

Do not connect the bed to the mains power supply without the power transformer

Weight indicator connection

Class II Device

Type B Equipment

Intended Use

The ProAxis® Plus bed Range of hospital beds includes acute care beds (Trendelenburg and CPR functions, permanently available, are mandatory requirements for acute care beds) and general-purpose variable height hospital beds for general care, for use in postoperative care, in ICUs and General Medicine Wards. They can be used both for intensive and non-intensive care. They are designed for obese patients with the needs of the whole medical team in mind.
Before placing the patient on the bed

Carry out individual risk assessments including but not limited to:

- Caught Hazard
- Potential falls from the bed
- Confused patients
- Patients with learning difficulties
- Small children
- Persons without the mental capacity to recognize unsafe actions
- Unauthorized persons

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.

Installing the Bed

First Steps

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.

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.

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.
- connect the bed to the mains power supply (See “Connection to the Mains Power Supply” page 1-4),
- make sure that all the moving parts are in good working order,
- make sure that the bed has been cleaned and disinfected (See “Cleaning” page 4-1).
Connection to the Mains Power Supply

ProAxis® Plus bed is powered through a low voltage transformer, provided with the bed.

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 low voltage transformer label correspond to the power supply voltage of the hospital.

The Power Transformer supplied is unique to the ProAxis® Plus, under no circumstances must any other power supply be used, nor should this power supply be used with any other equipment.

The jack plug from the power supply must be connected to the fly lead attached to the main control box. No power will be received by the bed until this cord is connected.

If at any time the bed is to be moved, please disconnect the power supply from the outlet and store with the bed, this will ensure it is available when the bed is next needed.

⚠️ ATTENTION:
Ensure the power transformer is plugged in order to be sure having CPR and Trendelenburg functions availability. Failure to do so could result in patient injury.
Introduction

Function Symbols

Control identification

The controls are identified by colour and symbols:
- blue controls are bed movement
- red controls are CPR
- yellow controls are preset positions
- green controls are Trendelenburg movements
- symbols indicate area and direction of movement.

Electrical controls

Lateral caregiver unit

Functions available only to the caregiver:

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a. CPR function is activated by pressing both buttons simultaneously.
b. CPR function is deactivated by pressing one of the CPR buttons.
Control Pendant or Weight indicator Control

A  B  C  D  E  F  G  H

<table>
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Warning and Caution Labels

Do Not Store label
Overview

- Foot section
- Integral siderail
- Head section
- Removable headboard
- Bumper (4)
- Lateral caregiver unit (on each side)
- Interface Socket
- Removable footboard
- Integrated linen holder
- 125 mm diameter single band casters
- Central brake and steer pedal
Standard Features

- Sleep surface dimensions 95 x 218 cm
- Integral siderails
- Selective electrical function lockout
- Electrical Trendelenburg (mandatory requirement for acute care beds)
- Electrical Reverse Trendelenburg
- Adjustable head section
- CPR (mandatory requirement for acute care beds)
- Adjustable foot section
- Adjustable HiLow
- Battery
- Central brake and steer system
- Casters 125 mm diameter single band
- Directional caster at head end of bed
- Integrated linen holder
- Thermo contour® mattress
Chapter 3
Instructions for Use

Instructions for Use

Power Management

The ProAxis® Plus bed is supplied as standard with a battery back up system; this ensures that if the bed is disconnected from the mains supply the bed will still function. The back up system will operate for up to 8 hours of normal use.

Power Indicator

ProAxis® Plus bed is supplied as standard with a power connection indicator, this is to ensure optimum operation at all times.

Power Indicator Functions

The power indicator is located under the mattress platform on the foot section at the right hand side of the bed (as viewed from the foot end)

- When the power indicator LED is NOT lit then power is reaching the bed and the batteries are being charged.
- When the LED flashes red then power is not reaching the bed and the batteries are not being charged. Only 8 hours use and shutdown will occur. (Flashing is 3 short flashes followed by 3 long flashes then 3 short flashes)

Additional Diagnostic Function

The power indicator LED is also used as wiring integrity indicator.

- The LED will flash one short, one long to indicate missing or damaged control pendant.
- In that case, please contact your service engineer.
Battery

To prevent damage to the batteries due to complete discharge, the system will monitor battery power and shut the system down once the batteries are below 50% charge. Once the system has shut down all electrical functions will not be available, to restore functions please connect to the supplied transformer to recharge the batteries. There may be a period of 1-2 hours before enough charge is available to move the bed.

The power unit automatically charges the battery.

Maximum life is approximately 8 hours when disconnected from to mains supply.

An alarm will sound when the power is disconnected. The alarm will continue to sound periodically gradually increasing in volume and frequency as time progresses. The alarm will sound constantly prior to the system shut-down. Reconnecting the power will wake the system and there will be sufficient power to move the bed within 1 hour.

It is important to have the bed connected to the power supply as much as possible and to ensure the bed is shut down correctly (see “Storing of Bed” on page 3-2) when being stored. This will ensure optimum life of the batteries.

Storing of Bed

If the bed is to be stored for more than 24 hours then the following procedure must be followed to ensure that the system is immediately available when needed.

• Disconnect the power supply from the bed and unplug, store with the bed.
• Using the control pendant, press simultaneously the "hilow raise" and "hilow lower" button. The LED's will flash for approx. 20 seconds then go out. Once the LED's have stopped flashing the bed will be in sleep mode, this preserves the power in the batteries ensuring the system to be available when needed.

Waking the Bed

If the bed has been stored and needs to be used the following procedure must be followed to ensure the system is immediately available.

• Using the power supply stored with the bed (see “Storing of Bed” on page 3-2) plug this into a suitable mains socket and connect the cable to the jack plug on the bed.
• The electrical functions will now be restored to the system.
• If, when a button is pressed on the control pendant there is no movement and all the LED's flash then power is below required level. Simply leave the system for 1 hour for sufficient charge to be achieved.
Siderails

The ProAxis® Plus bed is designed for mattresses of the dimensions indicated in “Mattress” on page 6-3.

The siderails are part of the mattress platform. They move vertically by releasing the button catch and locking into the low, intermediate or high positions.

When fully raised, the rails ensure patient protection and reduce the risk of falls.

A plastic collar on the siderail upright tubes is fitted to prevent a pinch point, please do not remove.

In the intermediate position, the rails can help a fully mobile patient get in and out of bed safely and comfortably.

⚠️ WARNING:
Nursing staff must decide which side rail position is best suited to the patient's condition. With patient's suffering from obsessive behavioural disorders, for instance, it may be better to leave the Head Section rails fully raised and the leg section rails in an intermediate position. Failure to do so could result in patient injury or equipment damage.

⚠️ WARNING:
Always ensure that there are no obstacles (patient's limbs, objects, accessories, etc.) before raising or lowering a siderail. Failure to do so could result in patient injury or equipment damage.

Raising a siderail

The siderails are located on the side of the mattress platform.

To raise a siderail:

- Gently hold the safety side rail.
- Press the black retention button.
- Lift the rail to the position required, release the black retention button and ensure the safety side has clicked into place.
Lowering a siderail

To lower a siderail:

- Hold the top of the safety side
- Press the black retention button
- Lower the safety side holding on to it until it reaches the desired position
- Release the button and ensure the safety side has clicked into place

Electrical functions

The bed’s power-driven features are accessed by a control pendant or a weight indicator control. Certain emergency functions are available on the lateral caregiver unit.

ProAxis® Plus bed is computer controlled this enables the smooth operation of the actuators and accurate control of movement.

Control identification

The controls are identified by colour and symbols:

- blue controls are bed movement
- red controls are CPR
- yellow controls are preset positions
- green controls are Trendelenburg movements
- symbols indicate area and direction of movement.

Control pendant

⚠️ WARNING:
Nursing staff need to assess whether the patient can be left unattended with the control pendant. Failure to do so could result in patient injury or equipment damage.

The bed can be equipped with a control pendant accessible to the patient and the nursing staff. The control pendant provides access to the various power-driven features of the bed.

For the functions, refer to “Electrical controls” on page 2-1.

The control pendant is connected by a curly cable to the head end of the bed frame.
Weight Indicator Control

The bed is equipped with a weight indicator control for the nursing staff. The weight indicator control provides access to the various power-driven features of the bed.

For the functions, refer to “Electrical controls” on page 2-1.

For the weight functions, refer to “Weight Indicator Control” on page 3-12.

The weight indicator is connected by a curly cable to the foot end of the bed frame.

Electrical function management

⚠️ WARNING:
See “Safety Tips” on page 6-1.

The electrical function management (nursing mode) selectively locks out or releases the power-driven functions of the bed according to the nurse’s patient management needs.

The functions to be locked out or released are selected on the lateral caregiver unit.

⚠️ WARNING:
It is the responsibility of the nursing staff to authorize the patient to use certain bed functions, including the HiLow. Failure to do so could result in patient injury or equipment damage.

Locking out electrical functions

- Press the symbol (1) representing the function to be locked out on the lateral caregiver unit.
- The indicator of the corresponding function will then be lit to indicate that the function is locked out (2).
Authorizing electrical functions

- Press the symbol representing the function to be authorized (3) on the lateral caregiver unit.
- The indicator of the relevant function will then switch off to indicate that the function is enabled (4).

**NOTE:**
**Important:** Even with the lockout activated the CPR function can still be activated.

### Sleep Surface

**Power-driven HiLow**

Sleep surface height can be adjusted using the control pendant or the weight indicator control.

**WARNING:**
Before using this function, check that no obstacles (e.g., objects, accessories, power cables) or persons (especially children) are under the sleep surface.
Also it is important that the safe working load is not exceeded; to this end please ensure that staff or visitors do not sit/kneel on the bed when it is occupied by a patient. Particular care must be taken not to overload the foot section of the bed. Failure to do so could result in patient injury or equipment damage.

**CAUTION:**
Ensure that the bed cannot strike any fittings (light fittings, headwalls, etc.) or hospital furniture (chair, bedside cabinet, etc.). Failure to do so could result in equipment damage.

**NOTE:**
Before using the HiLow function, check that it is enabled (see “Electrical function management” on page 3-5).

To adjust the height of the sleep surface:

- Press the arrow of the symbol for the movement you require.
- Release when the required height is reached.
Trendelenburg/Reverse Trendelenburg

⚠️ WARNING:
keep the bed plugged to the mains power in order to guarantee the safety functions. Failure to do so could result in patient injury.

⚠️ WARNING:
Before enabling this function, check that the linen holder is securely locked in one of the notches and that no obstacles (e.g., objects, accessories, power cables, tubes) or persons (especially children) are under the sleep surface. Check that patient’s limbs are within the sleep surface. Failure to do so could result in patient injury or equipment damage.

⚠️ WARNING:
Never leave the patient unattended in the Trendelenburg/Reverse Trendelenburg position (see “Trendelenburg and Reverse Trendelenburg” on page 6-1).

NOTE:
The Trendelenburg/Reverse Trendelenburg is not an emergency function and is controlled by the nursing staff from the lateral caregiver unit.

The sleep surface may be inclined in two ways: in Trendelenburg (head end in low position) or Reverse Trendelenburg (foot end in low position).

The maximum angle for the Trendelenburg/Reverse Trendelenburg is available at all heights of the sleep surface.

To tilt the sleep surface:
• Press the button corresponding to the function required on the lateral caregiver unit.
• Release the button when the required angle is attained.
• To remove the tilt press the OPPOSITE function key until the bed stops moving and the green LED indicator flashes, at this point release the key and the bed will be level.
Head section

⚠️ WARNING:
Ensure that there are no obstacles (patient's limb, power cable, objects, and accessories) before using the head section features. Failure to do so could result in patient injury or material damage.

Head section control
Head section adjustment can be activated from the control pendant or the weight indicator control.

Press and hold the head section raise button to raise the head section, then release it when the required angle is attained.

The head section is lowered using head section lower button.

The head section raise button also activates the autocontour function, as the head rises the foot section will lower activating the knee break, this prevents the patient from slipping down the bed and reduces friction and shear on the heels. As the head section reaches 30° the foot section will lower at a quicker rate. Once the head section is at the desired angle the foot section can be moved to any position between horizontal and -17° using the foot raise and foot lower keys on the control pendant (see “Electrical Foot Section” on page 3-9).

If movement of the foot section is not desirable when using the head section, activate the foot section lockout (see “Electrical function management” on page 3-5).

To lower the head section use the head lower button, press and hold until the desired angle is achieved. Please note that the foot section will not automatically raise when the head section is lowered, please use the foot raise key (see “Electrical Foot Section” on page 3-9).
**Electrical Foot Section**

Foot section elevation can be adjusted by using the control pendant or the weight indicator control.

![Foot section raise](image1)

![Foot section lower](image2)

The foot section angle can be changed between horizontal and -17°.

**WARNING:**

Ensure that there are no obstacles (patient's limb, power cable, objects, and accessories) before using the head section features. Failure to do so could result in patient injury or material damage.

Press and hold the foot section raise button to raise the foot section, then release it when the required angle is attained.

The foot section is lowered using foot section lower button.

**Advanced Cardiac Chair Position**

The advanced cardiac chair position allows the patient to be progressively mobilized, without the need for transfer from the bed.

![Advanced Cardiac Chair Position](image3)

The advanced cardiac chair position can be adjusted by using the control pendant or the weight indicator control.
**WARNING:**

Ensure that there are no obstacles (patient's limb, power cable, objects, and accessories) before using the head section features. Failure to do so could result in patient injury or material damage.

To place the patient into the cardiac chair position:

- Press and hold the relevant yellow button.
- The head section will raise and the foot section will lower to their maximum levels.
- Once the sections have reached their maximum levels the bed will rest for 2 seconds.

To place the patient into the advanced cardiac chair position:

- If the button is still depressed the bed will rise and the reverse trendelenburg function will activate to place the bed into the full "Advanced Cardiac Chair Position".
- Release the button.

To return to flat sleep surface:

- Press the return to flat sleep surface button and the following will happen in this order.
  1. The sleep surface will return to horizontal position.
  2. The head section will lower and the foot section rise until both are flat.
  3. The bed will now lower to its minimum height.

**NOTE:**
The button can be released at any time to stop the movement, if the button is pressed again the function will continue from the last position.
**Electrical CPR Function**

⚠️ **WARNING:**
keep the bed plugged to the mains power in order to guarantee the safety functions. Failure to do so could result in patient injury.

⚠️ **WARNING:**
Ensure that there are no obstacles (patient's limb, power cable, objects, and accessories) before using the CPR function. Failure to do so could result in patient injury or material damage.

ProAxis® Plus bed has a computer controlled CPR function for speed and ease of use. The CPR control is located on the lateral caregiver unit (one on each side of the bed).

To operate the CPR function:

- Press simultaneously the red CPR buttons.
- The sleep surface will now move to the horizontal and the platform will raise or lower to 600mm, this will take a maximum of 10 seconds.

If the above action needs to be cancelled then press any of the red CPR buttons to stop the movement.

**NOTE :**
There will be a delay of 2 seconds before the cancel function will operate.
Weight Indicator Control

The weight indicator control is NOT an accurate scale.

The weight indicator operates by calculating the energy required to raise and lower the patient through a pre determined range, as the energy required is determined by the load on the system a weight is output. Due to the difference in operating temperatures at the control board, batteries and actuators the weight indicated can fluctuate. It is recommended that the weight indication only be used once every two hours with a rest period of at least one hour, during which time the bed is not used. For consistent readings it is best that the indicator is used first thing in the morning before the bed functions are used.

Weight Indicator Symbols

The following are the symbols used during the weighing operation.

- Intro Screen
- Movement direction
- Weigh Patient
- Calibrate Bed
- Tare Function
- Enter Known Weight
- Greater
- Lesser
- Exit
- Confirm
- Bed tilted
- Level bed
Weight indicator Operation

To obtain a weight indication for the patient, lower the head section as far as is possible taking into account the patient's current condition. During the weigh operation the bed will raise, lower and then raise again, please ensure that there are no obstructions under the bed during this movement.

NOTE:
PLEASExThe reading given is an ESTIMATION only, this is NOT an accurate scale, the reading given is to be used only to ascertain that equipment being used with the patient is within safe working loads. The reading must NOT be used for clinical purposes i.e. calculating drug doses.

To obtain a patient weight indication:

1. Press function key below "Weigh Patient" symbol.

2. Press function key below "Weigh Patient" symbol.

3. Press and hold function key below "Weigh Patient" symbol.

4. Press and hold function key below "Weigh Patient" symbol until the bed stops.

5. Weight indication is shown in the window, then press function key below "Exit" symbol to clear.

If at any time the function key is released during the weigh operation the display will revert back to the intro screen. Repeat the procedure ensuring the function key is held down until the bed stops moving and the reading is displayed.
**Calibrate "Zero" Function**

The Zero function is used to compensate for any items that may be placed on the sleep surface before the patient is to be weighed. This is also known as a TARE function, it ensures that only the weight of the patient is shown not the total weight of the patient AND the equipment. Ensure only the equipment to be compensated for is on the bed and follow the diagram below.

To calibrate "Zero":

1. Press function key below "Weigh Patient" symbol.

2. Press function key below "Calibrate" symbol.

3. Press and **hold** function key below "Tare" symbol.

4. Press and **hold** function key below "Tare" symbol until the bed stops.

5. Two reading will be shown. An upper and a lower. The upper reading is the new offset weight.

6. To accept the new reading, press "A". To reject the new reading, press "B".

7. Press function key below "Exit" symbol to save and exit.
Calibrate "Known Weight" Function

The "Known Weight" function is used to optimise the weight range of the system, by simply placing a known weight onto the sleep surface and following the diagram below. Please note the weight should be a minimum of 50 kg and a maximum of 318 kg.

To calibrate "Known Weight":

1. Press function key below "Weigh Patient" symbol.

2. Press function key below "Calibrate" symbol.

3. Press and **hold** function key below "Know Weight" symbol.

4. Press and **hold** function key below "Know Weight" symbol until the bed stops.

5. If the reading is correct, press "A", then go to step 7.

6. If the reading is incorrect, press "B". Press "+" or "+" until the reading is correct.

7. Press function key below "Exit" symbol to save and exit.
Bed Tilt Function

If at the start of any of the above procedures the bed is tilted, the following diagram will need to be followed.

1. Press function key below "Weigh Patient" symbol.

2. If when pressing "Calibrate" or "Weigh Patient" symbol the "Tilted Bed" symbol appears, you have to level the sleep surface.

3. Press and hold function key below "Level Bed" symbol.

4. Once the bed is level, the desired function will then continue.

Important information.

The weigh function is NOT designed for repetitive use, it is important that once the patient has been weighed the function is not used again for at least 1 (one) hour. If the bed has been stored for some time please ensure that the system is connected to the power supply for at least 1 (one) hour before attempting to weigh.
Brake and steer system

Using the brake and steer pedal

**WARNING:**
Always put on the brakes when the bed is occupied, except during patient transport. To make sure the bed will not move, push and pull on the bed to check it after the brakes are engaged.

The brake and steer pedal, located at the foot of the bed on the chassis cover, controls all four casters.

- **“BRAKE” position (bar down, foot):** the bed cannot be moved.
- **“NEUTRAL” position (bar horizontal):** all four casters can turn and swivel. The bed can be turned in any direction.
- **“STEER” position (pedal down, head):** Three wheels turn and only the front left-hand wheel is used to steer (wheel swivel is disabled). The bed can be moved in a straight line.

Moving the bed

**WARNING:**
Failure to perform any of the checks below could result in injury or equipment damage. 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 footboard handles are at the most suitable height for transporting the bed (approximately ½ Hi-Low) and with the foot section horizontal.
- Disconnect and remove the power transformer and the power cable of the electric accessories (e.g., air mattress, etc.).
• Place the control pendant on the inside of the head siderail 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 put the bed in the chair position or with a fully raised head section).

⚠️ **SHOCK HAZARD:**

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.

⚠️ **WARNING:**

The bed must be moved while in transport position by 2 people (one at each end in order to have always one person to action the brake bar) when moving the bed on a slope, with a foot end steer caster or when moving the bed with a heavy load (heavy patient, accessories fitted, etc.).

Moving the bed:

• Grip the headboard or frame with both hands.
• Raise the brake and steer pedal to the “NEUTRAL” position to unlock the brakes.
• Push the bed, steering with the headboard.

For easy transportation in a straight line:

• Push the bed using the end board opposite the steering wheel (See “Using the brake and steer pedal” on page 3-17.).

• After having moved the bed for a short distance to align the casters, raise the brake and steer pedal to the “STEER” position.
Headboard and footboard

The head and foot boards have been designed for easy removal without the need for any tools. They are both identical, so there is no danger of putting them back the wrong way round.

Remove an endboard

- Loosen the two thumb screws located at the base of the head/foot boards (only loosen do not remove)
- Grip the top of the end board and lift up vertically.
- Store the endboard safely.

Replace an endboard

- Line up the securing posts with the holes in the mattress platform and drop the endboard vertically down into the holding tubes.
- Ensure the endboard is level.
- Turn the thumb screws to secure, please do not over tighten.

Frame

⚠️ WARNING:
Ensure that sections are properly positioned and secured after fitting. Failure to do so could result in patient injury or material damage.

The sleep surface is composed of 3 sections with hard surfaces and can be removed for easy cleaning.

To remove the thigh hard surface, simply lift it up.

To remove the head hard surface:

- Remove the siderails by operating as for raising a siderail (see “Raising a siderail” on page 3-3) but lift them out from their support.
- Lift them up.

To remove the foot hard surface:

- Remove the siderails as above.
- Remove the footboard (see “Remove an endboard” on page 3-19).
- Lift it up.
Linen holder

⚠️ WARNING: 
Do not sit on the linen holder or use it as a step. Failure to do so could result in patient injury or equipment damage.

The bed features a linen holder that is built into the foot end.

Safe Working Load: 15 kg (33.07 lb)\(^1\)

To use the linen holder:

- Grasp the linen holder with both hands, one at each end of the stop bar.
- Pull the linen holder towards you using even pressure at both ends.
- The linen holder will slide out until a stop is felt.

---

1. Safe Working Load specification allowing for a substantial safety margin.
Chapter 4
Cleaning, Maintenance, and Spare Parts

Cleaning

⚠️ WARNING:
Follow the cleaning product manufacturer’s instructions. Failure to do so could result in patient injury or equipment damage.

 электрошок
Unplug the bed from the mains power supply. Do not expose the bed to excessive moisture that would allow for liquid pooling. Patient injury or equipment damage could result.

⚠️ CAUTION:
Do not use harsh cleaners or detergents such as scouring pads and heavy duty grease removers or solvents such as toluene, xylene or acetone. Equipment damage could occur with an impact on user safety.

General Cleaning

The bed has been designed for easy cleaning and optimized disinfecting.

Safety Recommendations

1. Ensure that the bed cannot move.
2. Set the bed to the high position.
3. Lock out all electrical functions.
4. Disconnect the bed.
5. Ensure that all connections on the control units are firmly in place (control pendant and weight indicator control).
6. Never pour water on the bed, use a high-pressure hose, or wash in a tunnel wash.
7. Never use water at a temperature of over 60°C (140°F).
8. Avoid getting excess water on connecting plugs, lateral caregiver units, control units, on the siderail supports and on the mattress.
9. Thoroughly dry the bed before reusing it.

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.
General Advice

NOTE:
Staining disinfectant products such as methylene blue or eosine must be removed rapidly to avoid permanent staining.

Avoid excessive temperature differences between the water and the actuators.

• For all bed parts: See “Recommended Cleaning and Disinfection Method” on page 4 - 3.
• For hard surface: After removing (see “Frame” on page 3 - 19) and moving them away from the bed, they can be washed in running hot water.

The following products should not be used: chlorine, formaldehyde, or phenol-based products and solvents of any kind. Never use abrasives, cleaning powder or cleaning pads that may damage components.

Steam Cleaning

⚠️ CAUTION:
Do not use any steam cleaning device on the bed. Excessive moisture can damage mechanisms in this bed.

Cleaning tough stains

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.

Disinfecting

Dilute disinfectants and germicides as specified on the manufacturer’s label.

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.
Recommended Materials and Products

- Several 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 above) or a disinfecting spray.
- Use a standard product that complies with AFNOR standards.
  NF T 72-101 (bactericide including TB, fungi and viruses, including HIV-1 and HBV-).

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.

Recommended Cleaning and Disinfection Periodicity

Clean and disinfect every day:

- Safety sides,
- head and foot boards,
- control pendant,
- weight indicator if fitted.

Clean and disinfect after patient departure or transfer:

- As above plus the mattress platform covers

Clean and disinfect thoroughly (after the departure of the infected patient or according to the facility’s disinfection protocol):

- As above plus the frame,
- chassis,
- castors.
**Disinfection Record**

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

- Date (month, year),
- ward and room number,
- bed reference number.
- Cleaning frequency, materials and products used.
Maintenance

Safety Recommendations

⚠️ WARNING:
Only facility-authorized personnel should perform maintenance. Failure to observe this precaution could result in patient injury or equipment damage.

Before any maintenance or repair work, carry out the following operations in the order presented:

• Lock out all electric functions (see “Locking out electrical functions” on page 3 - 5).
• Unplug the bed from the mains power supply.
• Ensure that the bed cannot move.
• Secure the frame and ensure that all movements are locked.
• Never open, heat, or pierce an electrical actuator or gas actuator (high-pressure cylinder).
• Contact our after sales service for any specific maintenance problem (leaks, blockages, etc.).
• Never open, burn, or immerse a worn out battery. See “De-commissioning” page 6 - 6.
• A new battery should only be installed by facility-authorized personnel.
• Never leave the covers open.

Preventive Maintenance

NOTE:
Maintenance visit frequency should be determined according to the condition of the bed and specific usage, as some components may need changing after a given period of use.

The bed should be inspected at least once a year to keep it in good condition and working properly. More frequent inspections may be necessary, depending on the use made of the bed.

If the bed is in storage, it must be charged every 3 months to prevent failure of the battery.
The following points should be given particular attention:

- braking system and wheels
- siderail locking mechanisms
- drive systems (especially actuators, etc.), electrical function management and lockouts (head and thigh sections, Trendelenburg/ReverseTrendelenburg)
- CPR emergency function
- bed movement and ancillary part bearings
- brake/steer pedal operation (in particular, return to neutral)
- the condition of cables and electrical components (in particular, power cable)
- waterproofing of electrical connections (tears, damage)
- cable ways
- good condition of the frame and welded assemblies (corrosion and shocks)

The entire electrical system should be inspected by an approved after sales service person on an average of once every three years in order to ensure continuing operation in optimal condition.
Chapter 5
Accessories

Accessories
No accessories.
NOTES:
Chapter 6
Safety tips and precautions

Safety Tips

Brake and steer

⚠️ CAUTION:
Risk if not locked:
The patient may fall if he leans on the bed to get in or out of the bed.

Ensure that the brakes are applied if the bed is not to be moved or if the patient is to be left unattended (see "Brake and steer system" on page 3-17).

Try moving the bed to ensure that the wheels are locked.

Patients should be moved with the bed in mid hilow position by two people.

Ensure that the power cable is disconnected and correctly stowed.

Bed Position

The bed should be kept in the lowest hilow position to help to reduce the risk of patient falls, especially when left unattended.

Use the HiLow feature of the sleep surface to adjust the bed to the required height when the patient is undergoing treatment.

Trendelenburg and Reverse Trendelenburg

⚠️ CAUTION:
The patient’s safety may be jeopardised in the absence of a Reverse Trendelenburg feature in cases of haemodynamic shock or severe breathing difficulties.

The patient must never be left unattended while the bed is in Trendelenburg. Failure to observe this precaution could result in patient injury or equipment damage.

Trendelenburg/Reverse Trendelenburg and emergency Trendelenburg (required in intensive care units) must only be operated under the supervision of or by trained nursing staff.

⚠️ CAUTION:
Sufficiently qualified nursing staff determine the usage condition suitable for this function and degree of supervision to ensure that the patient uses the bed safely.
**Integral Siderails**

The siderails should be raised and locked when a patient is left unattended. 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 (according country) or other devices must not be fastened to the half-length siderails (e.g., straps).

In the case of patients suffering from particular behavioural difficulties (agitation, mental confusion, loss of sense of direction, weakness, etc.), properly trained medical staff should ascertain how the siderails should be used and whether the patient should be monitored closely to ensure patient safety.

Medical staff should note the risks involved in the use of siderails of any model or type with particularly old, frail, restless, disorientated or confused, and obsessive patients.

Certain national health authorities have issued guidelines on how to reduce these hazards, as indicated below.

It is recommended that patients with health or behavioural problems of this type be identified in each establishment or ward so that the safety measures most appropriate to their particular needs can be implemented (see above).

One measure which has already proved effective is to draw up a protocol (if such a protocol is not already in place) specifying:

1. Situations and conditions for siderail use and authorised mattress type.
2. Situations and conditions for patient immobilization.
3. Patient monitoring procedures, both for restrained and unrestrained patients, and procedures for the monitoring of straps, abdominal belt, ankle restraints, etc.
4. Should it be necessary to restrain a patient using special equipment, follow the manufacturer’s instructions carefully.

Use of a mattress thicker than the recommended 175 mm may reduce the effectiveness of the siderails in preventing falls. In such cases, the patient must be monitored closely. The recommendations below may contribute to patient safety.

- Always keep the bed in its lowest Hi-Low position when the patient is left unattended.
- It is not possible to ensure the compliance of all mattresses with our recommendations, given the many different types of mattresses available. For safety reasons, we recommend that users pay particular attention to mattress dimensions with regard to siderail height.
• Mattresses are not all interchangeable. Hill-Rom shall in no way be held liable for problems arising from the use of siderails or mattresses produced by other manufacturers, which do not comply with the recommendations set out in this manual.

Implementing the recommendations listed above should help to reduce accident hazards.

Mattress

Only mattresses recommended by Hill-Rom or Nigthingale should be used. In order to reduce the risk of the mattress sliding, it is recommended that the mattress be placed between the raised edges and that it is laid correctly on the sleep surface.

Should you wish to use a mattress other than those recommended, please ensure that it is compatible with the Hill-Rom bed model and that it will not have any adverse effect on performance, quality, or safety.

The bed is designed for a specific mattress size (length: 216 cm, width: 92.5 cm, thickness: 15 cm) this is the only size suitable for the sleep surface dimensions.

⚠️ CAUTION:

If the bed is fitted with a non recommended 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. Failure to observe this precaution could result in patient injury or equipment damage.

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

Headboard

⚠️ ATTENTION:

The headboard are not intended to receive accessories, accessory support device or any means of immobilization of the patient (e.g.: straps).

Cleaning and recommended cleaning fluids

Always disconnect the bed from the mains power supply before cleaning (see "General Advice" on page 4-2).

Only use recommended cleaning fluids and products (see "Recommended Materials and Products" on page 4-3).
Electrical function management

The electrical function management controls prevent any unintended bed movements that might cause injury to the patient. It is highly recommended that functional lock out should be used whenever a patient is undergoing examination or treatment or when the bed is being serviced or moved. Functions should also be locked out when the patient is left unattended and if the nursing staff believe that the patient is not capable of operating the controls independently with safety.

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

Parts and accessories

⚠️ CAUTION:

Never modify the bed without the manufacturer's prior consent. Alterations could result in injury to the patient or damage to the bed.

Only use manufacturer's parts and accessories.

Electrical safety precautions

⚠️ SHOCK HAZARD:

In an environment where the electrostatic discharges are prevalent we recommend using our antistatic casters.

All power connections must comply with standards as defined in (see “Connection to the Mains Power Supply” on page 1-4).

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.

Ensure that the power cord is unplugged.

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.
The battery 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" on page 6-6.

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 Hi-Low function before any operations other than cleaning or maintenance.

### Abnormal use

⚠️ **CAUTION:**

Abnormal use may result in damage to the bed and injury to patients or staff.

Examples of abnormal use:
- Use of the bed for any purpose other than for general or intensive care.
- Use of the bed in a hyperbaric chamber.
- Use of bed, functions, accessories or bed movement by persons who do not have the ability to operate the bed safely.
- Operation of electrical functions by several persons at the same time.
- Placing objects or equipment on the chassis or using it to support a person.
- Use of the bed with a loads over 353 Kg (Safe Working Load).
- Connection to a non standard power supply.
- Connection of other electrical appliances to the bed.
- Use of accessories and equipment other than those specified by the manufacturer.
- Use of abdominal belt without ankle restraints and not having locked out the electrical functions.
- Pulling on the power cord to move the bed.
- Washing with excessive water or high pressure jet or in a tunnel wash.
- Use outdoors or in a vehicle.
- Climatic constraints (operation/storage) other than those specified by the manufacturer.
- Use of the bed in an atmosphere presenting a risk of explosion.
- Moving the bed over soft ground or over inappropriate surfaces.
- Moving the bed along slopes of over 10° (with or without a patient).
- Actuator overload (see intermittent operation in paragraph “Technical specifications” on page 7-1).
- Use of oxygen tent type respiration devices or devices that extend below the sleep surface.
- Use of the bed in the presence of flammable gas or vapours.
- Use at unauthorized temperatures (not between 0°C and 40°C).
- Any use not complying with the instructions for use described in this manual.
- Any other use which does not comply with normal use of a hospital bed or its stated purpose.

De-commissioning

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

De-commissioned equipment materials (plastics, electrical components, etc.) must be recycled in accordance with local recycling regulations. Please, previously check and comply with the local environmental policy (Directive 2002/95/CEE).

As regards the battery:

- Never dispose of the lead-acid dry fit battery which contains substances and dangerous metals for the environment and the health.

Life expectancy of components

The bed and its listed elements below were designed to be used, under normal conditions according to the instructions for use and maintenance, with an expected life of approximately:

<table>
<thead>
<tr>
<th>Element</th>
<th>Expected life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric actuators</td>
<td>5 years</td>
</tr>
<tr>
<td>Battery</td>
<td>5 years</td>
</tr>
<tr>
<td>Frame</td>
<td>10 years</td>
</tr>
</tbody>
</table>

NOTE:
It is the responsibility of the facility to implement a preventive maintenance program for the bed’s functions under its conditions of use.
Safety Tips and Precautions

Transport, Storage

All the necessary precautions must be taken to ensure that the bed and its accessories are shipped and stored in complete safety under optimal conditions.

The following conditions must be met.

<table>
<thead>
<tr>
<th>During shipment, the bed must be:</th>
<th>When stored, the bed must be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>in the “low” position,</td>
<td>in the “low” position,</td>
</tr>
<tr>
<td>all electrical functions locked out,</td>
<td>all electrical functions locked out,</td>
</tr>
<tr>
<td>covered, brakes applied and all moving parts secured,</td>
<td>covered, brakes applied,</td>
</tr>
<tr>
<td>protected from fluid ingress,</td>
<td>protected from fluid ingress,</td>
</tr>
<tr>
<td>at a temperature of between -10° and +50°C (+14° and +122°F)</td>
<td>temperature between -10° and +50°C (+32° and +104°F)</td>
</tr>
<tr>
<td>Humidity: 20% to 80% at 30°C (86°F)</td>
<td>Humidity: 20% to 80% at 30°C (86°F)</td>
</tr>
<tr>
<td>pressure: 500hPa to 1060hPa (0 to 2000m)</td>
<td>pressure: 500hPa to 1060hPa (0 to 2000m)</td>
</tr>
</tbody>
</table>

1. Shipment means the moving of the bed between facilities, not patient transfer within the facility.

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

Use

The bed must be used in the following conditions:

- temperature between 0° and +104.00°F (+32° and +104°F)
- Humidity: 20% to 80% at 30°C (86°F)
- pressure: 700hPa to 1060hPa (0 to 2000m)

⚠ ATTENTION:

As the bed is equipped with a battery, and if the bed is stored for long periods of time, the battery must be charged every 3 weeks. Ignoring this recommendation risks damaging the battery, functions may not be available until batteries have reached sufficient charge, or have been replaced.

NOTE:

Before use, refer to “First Steps” on page 1-3.
Chapter 7
Specifications and warranty

Specifications

Nightingale has an ongoing continuous improvement policy. Therefore specifications are liable to be altered without notice.

Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>ProAxis® Plus</td>
</tr>
<tr>
<td>Reference</td>
<td>LI190Ax</td>
</tr>
<tr>
<td>Class according to IEC 60601-1</td>
<td>Type B</td>
</tr>
<tr>
<td>Protection against harmful ingress of water</td>
<td>IPX5</td>
</tr>
<tr>
<td>Safe working load</td>
<td>353 kg (778.23 lb)</td>
</tr>
<tr>
<td>Intermittent operation</td>
<td>10% (6min/60min)</td>
</tr>
<tr>
<td>Maximum patient weight</td>
<td>318 kg (701.07 lb)</td>
</tr>
<tr>
<td>Bed weight (no mattress or accessories)</td>
<td>165 kg (336.76 lb)</td>
</tr>
<tr>
<td>Electric shock protection</td>
<td>Class I</td>
</tr>
<tr>
<td>Voltage</td>
<td>230V AC</td>
</tr>
<tr>
<td>Frequency</td>
<td>50-60 Hz</td>
</tr>
<tr>
<td>Power transformer maximum power load</td>
<td>35.5 VDC</td>
</tr>
<tr>
<td>Power supply unit fuse rating</td>
<td>15 A T</td>
</tr>
</tbody>
</table>

a. Do not operate electrical functions continuously for more than 6 minutes in any 60 minute period when the bed is loaded at the safe working load value as this may damage electrical components.

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum bed width</td>
<td>1080 mm</td>
</tr>
<tr>
<td>Maximum bed length</td>
<td>2330 mm</td>
</tr>
<tr>
<td>Minimum height (in chair position)</td>
<td>300 mm</td>
</tr>
<tr>
<td>Maximum height</td>
<td>830 mm</td>
</tr>
</tbody>
</table>
Specifications

<table>
<thead>
<tr>
<th>Maximum inclination with respect to horizontal</th>
<th>Head section</th>
<th>Thigh section</th>
<th>Foot section</th>
<th>Reverse Trendelenburg/Trendelenburg</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ 60°</td>
<td>+ 17°</td>
<td>- 25°</td>
<td>+12°/-12°</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
These are average values, which may vary according to manufacturing tolerances.

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,
- use of parts and accessories not authorized by the manufacturer,
- use of unauthorized cleaning procedures,
- any use, including cleaning and servicing, that does not comply with the instructions in this manual.

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

Compliance

- Complies with essential requirements of EC directive 93/42/EEC applicable to class I medical equipment.