
RotoRest System

Operating Instructions

ARJOHUNTLEIGH
GETINGE GROUP



Contents

INTRODUCTION	1
The System at a Glance	1
System Components	1
System Features	1
Features	1
Intended Use.....	1
Indications.....	2
Contraindications	2
Safety Precautions	2
Applications.....	2
Connecting the system to other devices	2
Devices That can be Used in Conjunction to This System.....	2
Devices to Which the System can be Connected.....	2
SAFETY	3
General Safety Precautions.....	3
Height and Weight of the Patient	3
SAFETY NOTICES	3
General Protocols.....	3
Skin Care	3
Brakes.....	3
Bed Height.....	3
Lock Pin	4
Head and Shoulder Immobilization Set	4
Thorax Supports.....	4
Access Hatches	4
Head Access Hatch	4
Moving Parts.....	4
Handling Catheters, Lines and Drainages.....	4
Posey Restraints.....	4
Cardiopulmonary Resuscitation (CPR)	4
Fire Hazard Prevention.....	5
Transportation	5
Hazard Protection	5
Fluids	5
Disposal.....	5
Mains Cable.....	5
Interference with Other Devices	5
PREPARING FOR USE	6
Bed Pad Arrangement.....	6
Support Pad Arrangement	7
Access Hatch Arrangement.....	8
Subframe.....	8
Preparing the System for Use	9
Preparing to Position the Patient.....	10

OPERATION	14
Procedure for a Cardiopulmonary Resuscitation (CPR)	14
Following Cardiopulmonary Resuscitation and Stabilization of the Patient	14
The Operating Panel	15
Menu / Select Button.....	15
Cancel / Alarm Reset Button	15
Cursor Buttons	15
Operating Elements for the Hydraulic System	16
Button for Training Mode.....	16
Menu Structure of the Display	16
Menu Structure of the Display	17
Mechanical Operating Elements	18
Lock Pin	18
Release Lever for the Drive Belt	18
The Operating Unit	19
Operating Display.....	19
Menu Screen.....	19
Setting the Maximum Rotation Angle	20
Zeroing the Timer	21
Setting Holding Times.....	22
Checking the Bed Settings (Display Status)	23
Setting the Trendelenburg Angle	24
Activating Training Mode.....	24
Alarm and Warning Messages	25
Side Supports Fixed?	25
Not Fully Locked.....	25
Bed Stop Alarm.....	25
Obstacle Alarm	26
POSITIONING THE PATIENT	27
Preparing to Position the Patient	27
Transferring the Patient to the <i>RotoRest</i> System	27
Patient-specific Settings	35
Counterweights.....	35
Adjusting the Support Pads.....	36
Thorax X-ray Imaging	37
Thorax Drainages	37
Drip Stands (available as accessories)	38
Positioning with Amputations	38
Transporting the Patient in the <i>RotoRest</i> System	38

PATIENT CARE	39
Bathing the Patient.....	39
After Bathing the Patient.....	39
Skin Care	39
Access Hatches	40
Arm Access Hatches.....	40
Hip / Leg Access Hatches	40
Head Access Hatch	41
Thorax Access Hatch.....	41
Posterior Access Hatch.....	41
Bladder Emptying.....	41
Intestinal Voiding	42
Respiratory Toilet	42
CLEANING AND CARE	43
The Bed Platform.....	43
Transport	44
Storage.....	44
SPECIFICATIONS	45
Technical Specifications.....	45
Dimensions	45
Functional Specifications	45
Electrical Specifications	45
Explanations of Symbols Used	46
CUSTOMER CONTACT INFORMATION	47

Introduction

This chapter provides a general overview of the RotoRest™ system. In addition to a description of the functions and intended use of the system, the system components are also explained. The system's compatibility with other devices, the components that can be connected to the system and the components to which the system can be connected are also covered.

The System at a Glance

The *RotoRest* system permits Kinetic Therapy up to 62° for trauma and intensive care patients.

System Components

- Drip stands
- Bed pads
- Support pads
- Removable holder for respiratory tube
- Removable cervical extension fixture

System Features

Features

- Bilateral rotation up to 62° (124° arc)
- Variably adjustable intervals of up to 20 minutes on each side
- Various access hatches, which permit easy access to the patient's dorsal surface
- Access hatch in the thorax region for routine thorax X-ray imaging
- Individually adjustable pads for the patient's safety

Intended Use

The *RotoRest* system offers unique Kinetic Therapy for consistent treatment of pulmonary complications.

Indications

The *RotoRest* System is indicated for the treatment and prevention of pulmonary complications as a result of immobility and is suitable for adult patients with:

- Thorax trauma or rib fractures
- Lumbar vertebra fracture
- Cervical or skeletal extension after primary stabilization

Contraindications

The *RotoRest* System must not be used for:

- Patients with a body weight of over 150 kg
- Uncontrolled intracranial pressure



The RotoRest System must not be used as a primary medium for stabilizing fractures of the cervical spine or for a cervical extension. An external fixation with a halo brace and halo body jacket or operative stabilization is required for this purpose.

Safety Precautions

In the following cases, the risks and benefits of positioning therapy should be discussed with a physician:

- Hemodynamic instability
- Uncontrollable diarrhea
- Pronounced restlessness or uncontrollable claustrophobia
- Bone extension
- Severe pain or discomfort



During an extension, it is possible that the patient may slip in the system. If necessary, a suitable restraint should be provided in these cases.



Prior to commencing Kinetic Therapy, all supply and drainage lines should be checked, taking into account the maximum rotation angle, to minimize the risk of them being trapped, disconnected or accidentally removed.

Applications

- Intensive care units or other areas where the patient is under constant observation

Connecting the System to Other Devices

Devices That can be Used in Conjunction to This System

- Extension system
- Extension clamps for stretching the cervical spine

Devices to Which the System can be Connected

- None

Safety

This chapter contains information on the general safety precautions for the use of the system as well as recommendations for the patient's minimum or maximum body weight and height.

General Safety Precautions

- The *RotoRest* system should not be used in combination with an oxygen tent.
- Mechanical cleaning or high-pressure cleaning will damage the system.
- All maintenance work must be carried out by qualified specialists who are trained in the repair and maintenance of this bed. All repair and maintenance work should be carried out by authorized personnel.
- Only recommended replacement parts should be used. ArjoHuntleigh accepts no liability in respect of incidents due to the use of non-recommended spare parts or to unauthorized modifications to the bed.

Height and Weight of the Patient

- The safe operating load for the *RotoRest* system is 150 kg.
- The bed can be adjusted to suit patients of different heights. Options for comfortable positioning are limited for persons over 190 cm in height.

SAFETY NOTICES

General Protocols

Observe all applicable safety regulations and procedures in your facility to ensure the safety of patients and care personnel.

Skin Care

The patient's skin condition must be regularly monitored, especially at the most common sites, in cases of incontinence and at drainage exit points. Additional or alternative therapies should be considered for high-risk patients. Early intervention is essential to prevent serious skin damage.

Brakes

The parking brakes should be locked whenever the bed is stationary.

Bed Height

The bed height should be set to the lowest possible position whenever the patient is left unattended. Before adjusting the height, make sure that there are no objects, persons or body parts beneath or around the bed frame. When opening the access hatches, the system should be at maximum height and maximum lateral rotation to reduce the strain on the caregiver's spine.

Lock Pin

The arresting bolt should be pushed in whenever automatic rotation is deactivated.

Head and Shoulder Immobilization Set

The securing wing nuts on both sides of the head and shoulder immobilization set should always be tightened securely to prevent any displacement of the immobilization pads along the retainers.

Thorax Supports

A clearance of 25 mm should be maintained between the end of the thorax supports and the patient's armpit (approximately the width of two fingers). The thorax supports should never rest beneath the patient's armpits as the resulting pressure could cause serious injury to nerves and obstruct circulation.

Access Hatches

Only open one access hatch at any one time to prevent the patient from slipping. For patients with fractures of the lower thoracic spine and / or lumbar spine, the access hatches in the thorax and posterior areas may be opened ONLY if the support surface is rotated by 62° or 69° degrees and the arresting bolt is pushed in. Make sure that the access hatches are closed and locked before rotating the patient support surface. Proceed with caution when opening and closing the access hatches. Keep arms, legs, hair, clothing and other objects well away from the access hatch openings to avoid injury or damage. The dropping of access hatches is an injury hazard and causes damage to the system.

Head Access Hatch

Make sure that the patient's head is adequately supported before opening the head access hatch.

Moving Parts

Keep all devices, catheters, drainages, lines, loose-fitting garments, hair and body parts away from moving parts and areas in which they may become trapped.

Handling Catheters, Lines and Drainages

Before activating bed rotation, check that all supply and discharge lines are securely fastened taking account of the maximum rotation angle, so as to minimize the risk of them being accidentally trapped, disconnected or removed. Supply and discharge lines should always have sufficient clearance to allow rotational and patient movements.

Posey Restraints

The posey restraints should be attached and fastened at all times. Do not leave the patient unattended when the belts and pads have been removed for basic care, X-rays, etc.

Cardiopulmonary Resuscitation (CPR)

The care givers and other hospital personnel must be familiar with the CPR function and the emergency release procedure via which the patient support surface can be manually rotated to and locked in the horizontal position, as well as with other procedures that allow the patient to be accessed in case of emergency.

Fire Hazard Prevention

To minimize the fire hazard, connect the unit's mains cable to a wall socket. Do not use extension cables or power strips. Read and follow the relevant European safety directives.

Transportation

The bed should always be transported by a minimum of two persons.

Hazard Protection

Fluids

Make sure that no fluids get onto the system's electrical components.

If fluids do come into contact with the device, proceed as follows:

- Disconnect the unit's mains plug
- Remove any fluids from the housing



Before re-connecting to the power supply, make sure that there are no fluids in or around the socket, mains switch or plug.

- Check that operating elements and other components in areas that have been in contact with fluids function correctly



Corrosion can occur if fluids are allowed to remain on the electronic operating elements. This can cause the electronic components to malfunction. Malfunctioning components can disrupt unit operation, posing a risk to the patient and staff.

Disposal

If you have any questions regarding disposal, please contact your local ArjoHuntleigh representative.

Mains Cable

The system must not be operated if the mains cable is worn or damaged. To obtain a replacement cable, please contact your local ArjoHuntleigh representative.

Interference With Other Devices

Although this device conforms to Standard IEC 60601-1-2 on Electromagnetic Compatibility, it may cause interference, just like any other electrical device. If you suspect interference, remove the device from the vicinity of sensitive equipment or contact the manufacturer.

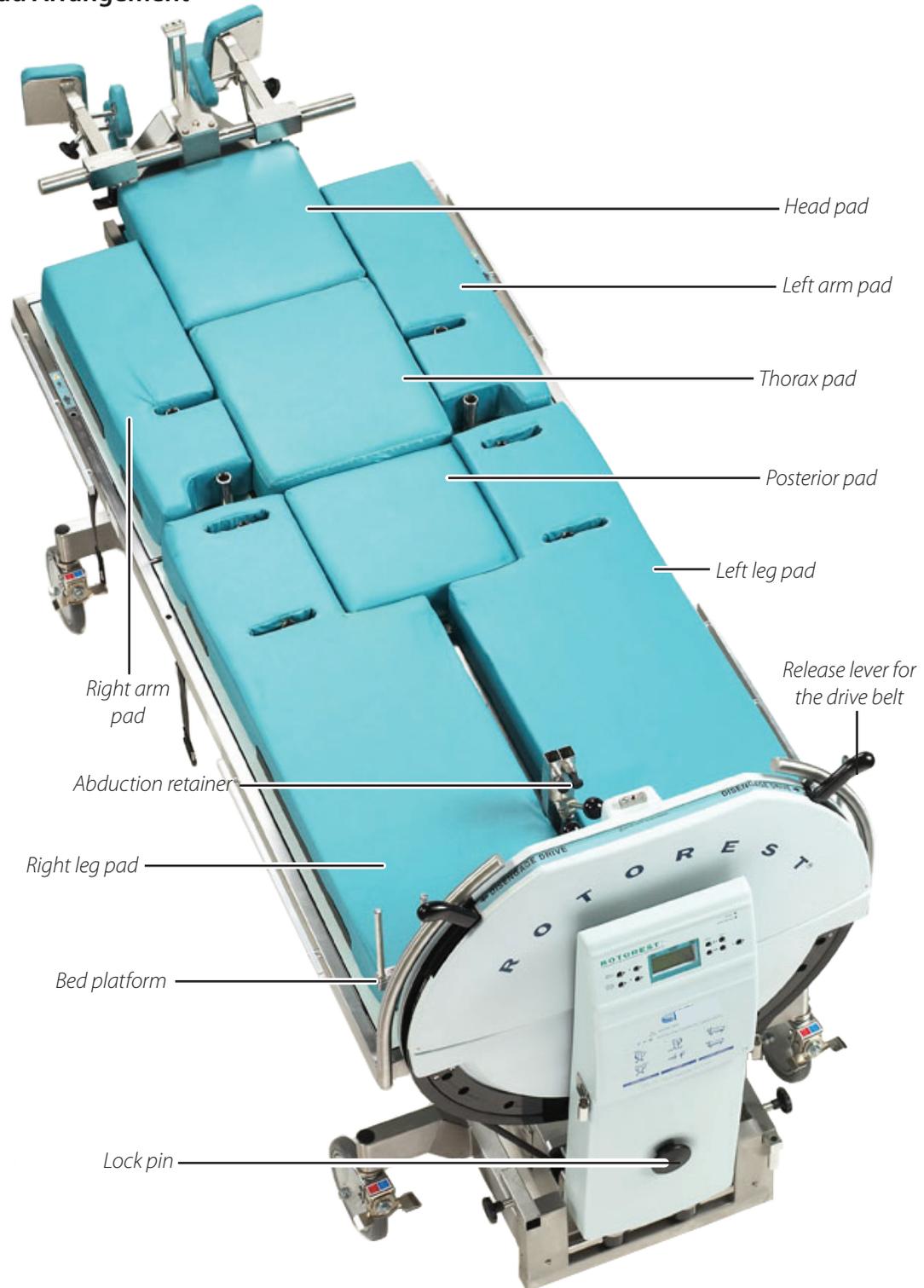
(IEC 60601-1-2. Electrical Medical Products - Part 1: General Specifications for Safety, 2nd Collateral Standard: Electromagnetic Compatibility - Requirements and Inspections).

Preparing for use

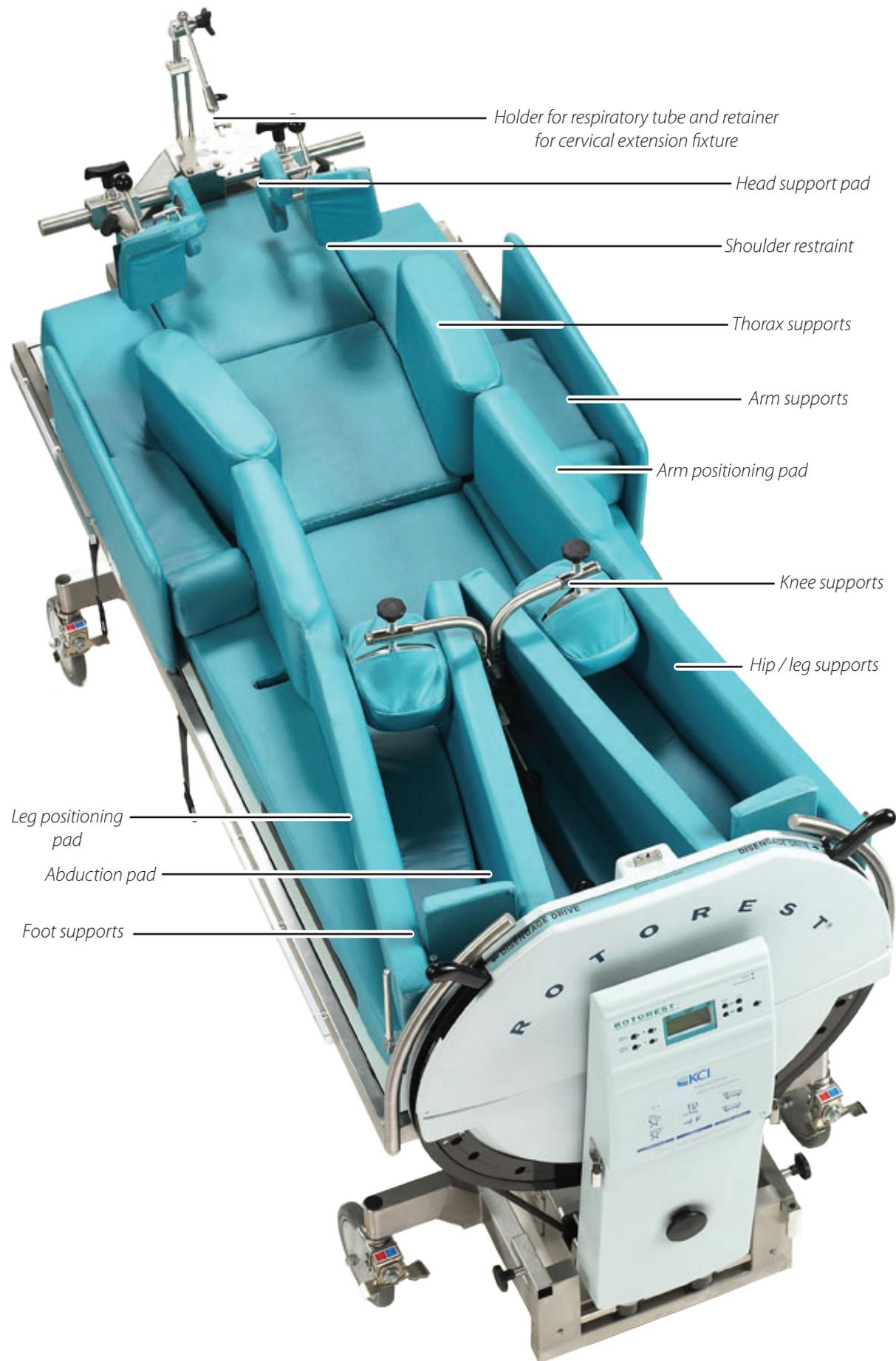
This chapter describes the steps required to prepare the *RotoRest* system for use.

i **Before you prepare the *RotoRest* system for use, check the system for damage or parts that cannot be maintained.**

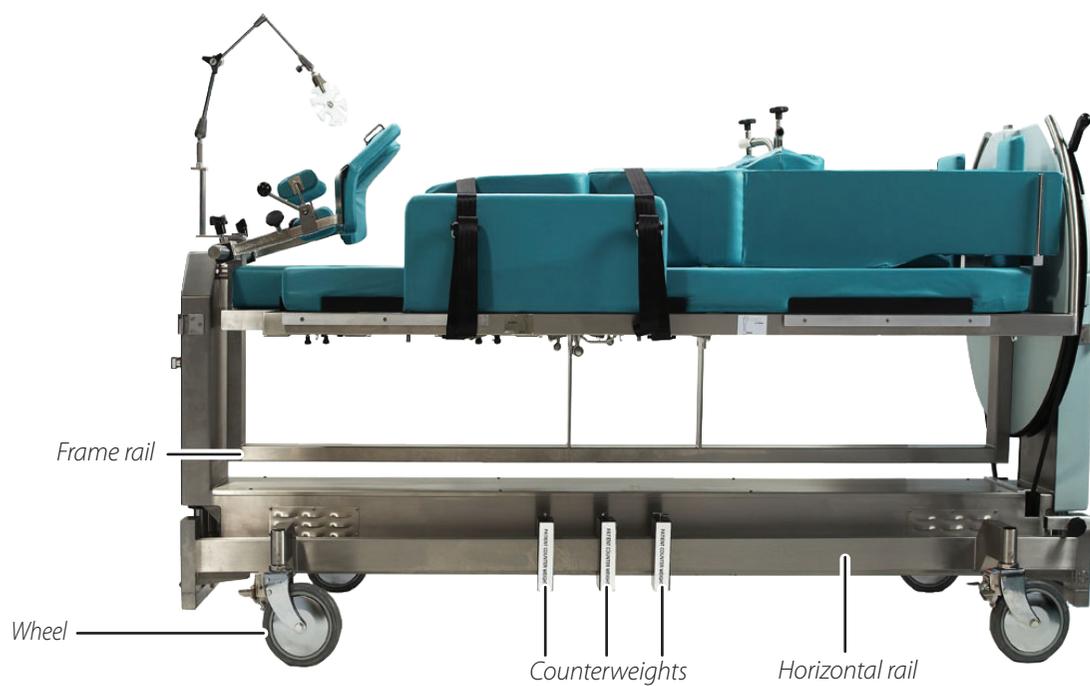
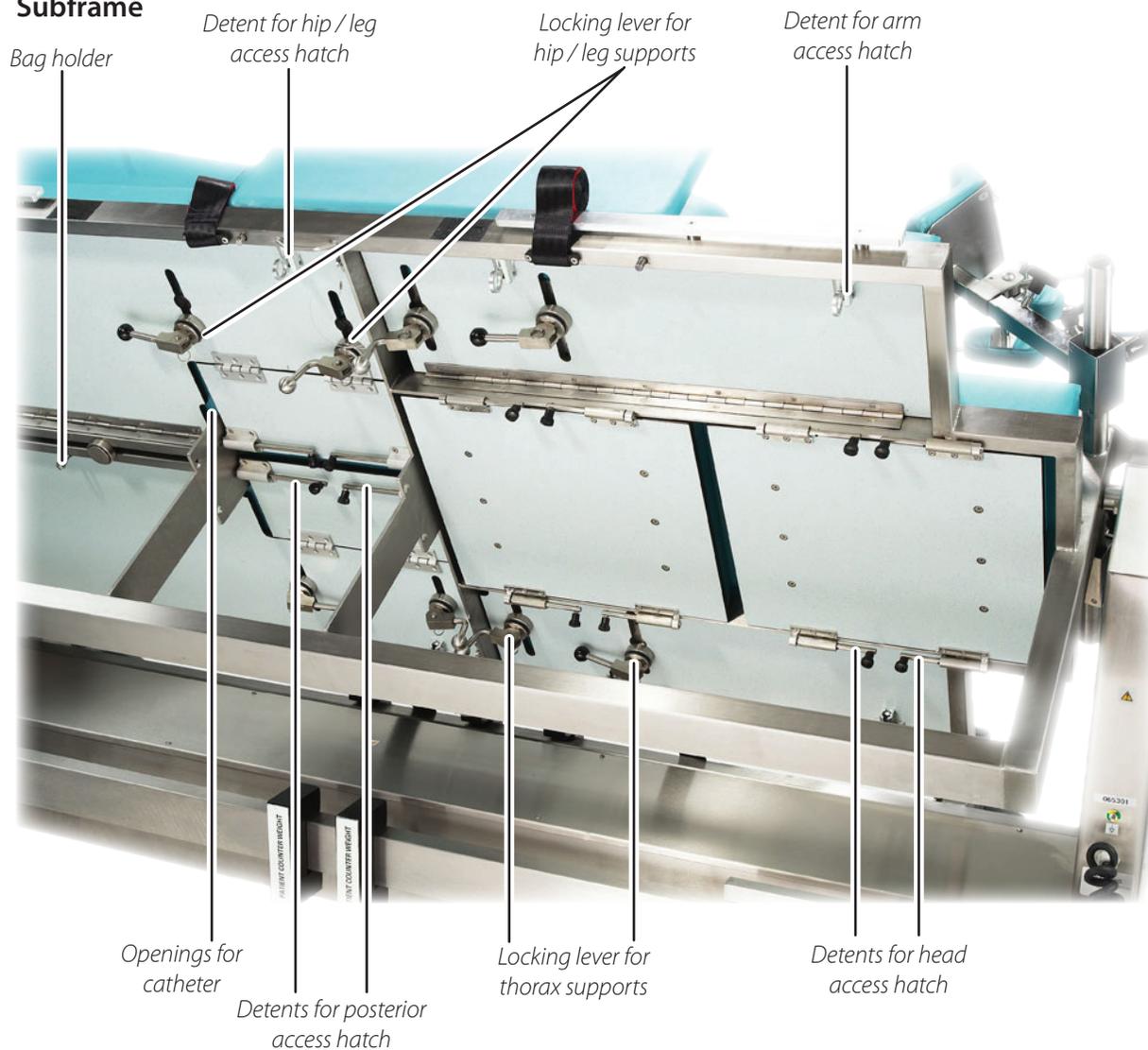
Bed Pad Arrangement



Support Pad Arrangement



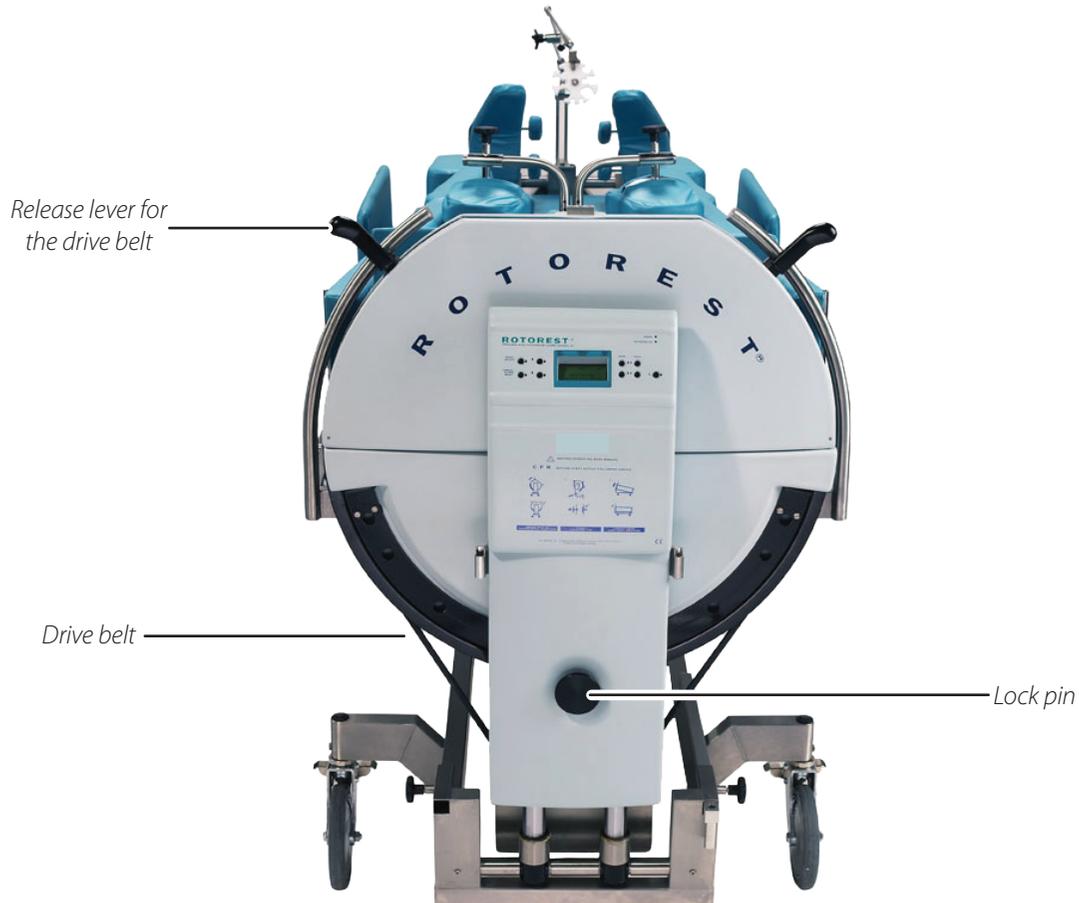
Access Hatch Arrangement Subframe



Preparing the System for Use



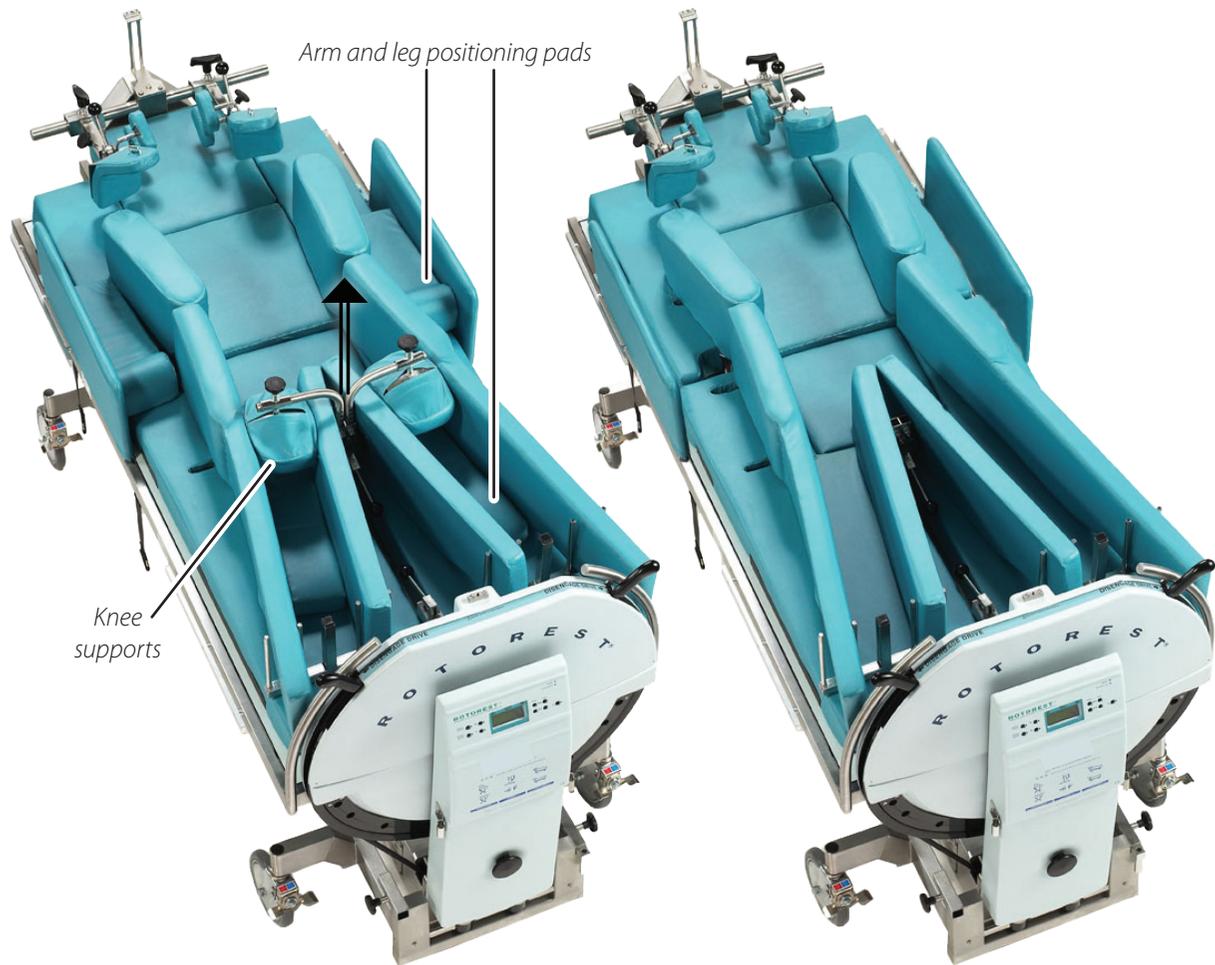
Remove any counterweights located on the frame rail and place them on the horizontal rail of the castor frame.



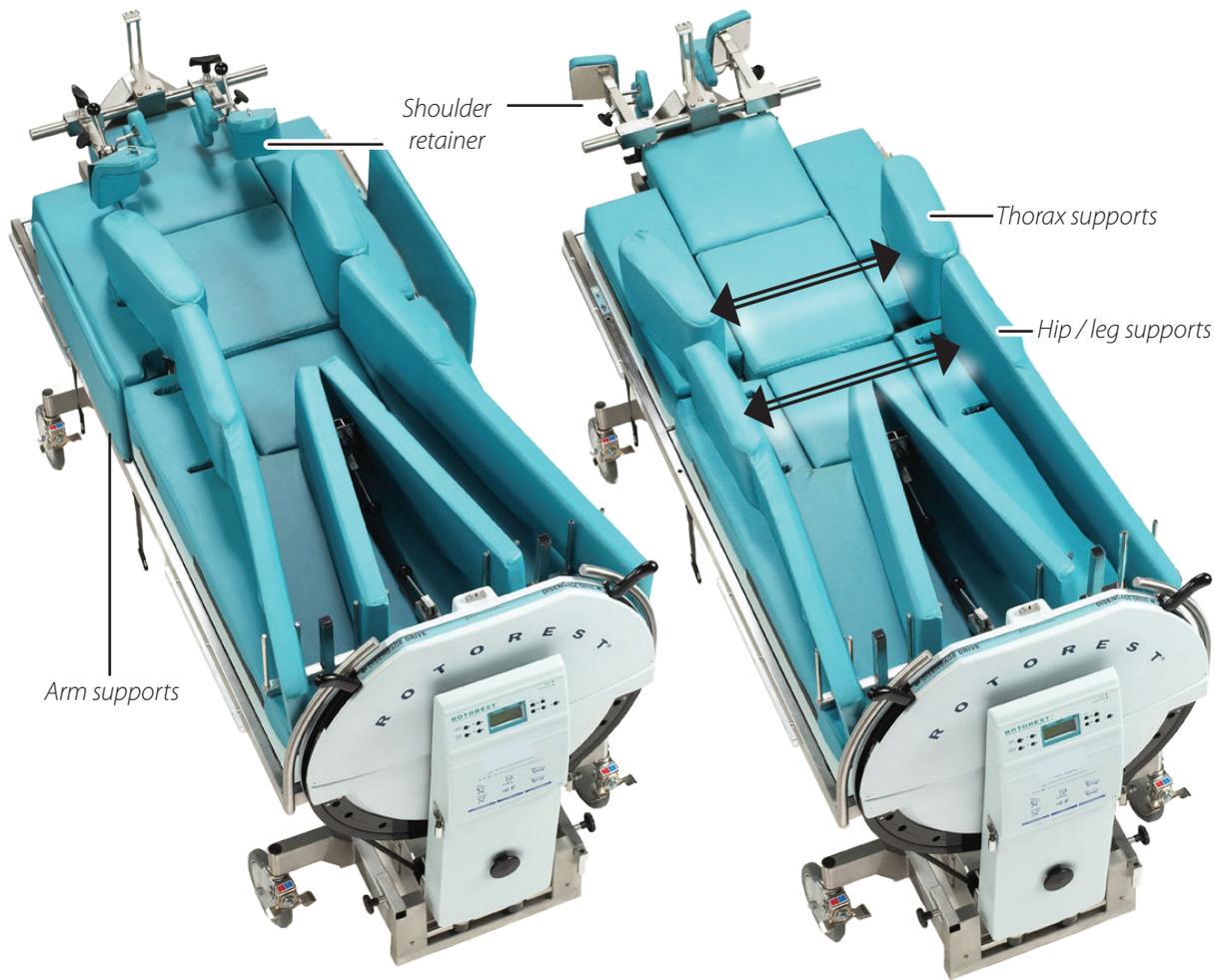
1. Make sure that the bed is in the horizontal position.
 - Disengage the drive by pushing one of the release levers for the drive belt down; the bed can now be rotated by hand in the direction in which the lever was pushed.
 - Once the bed is in the horizontal position, release the lever.
 - Lock the bed in the horizontal position by pushing the lock pin fully into the lowermost opening on the drive.
2. Lock all wheels.

Preparing to Position the Patient

1. Remove the knee supports by pulling out the pin and withdrawing the shaft from the square tube of the abduction retainer.
2. Remove the positioning pads for the arms and legs.



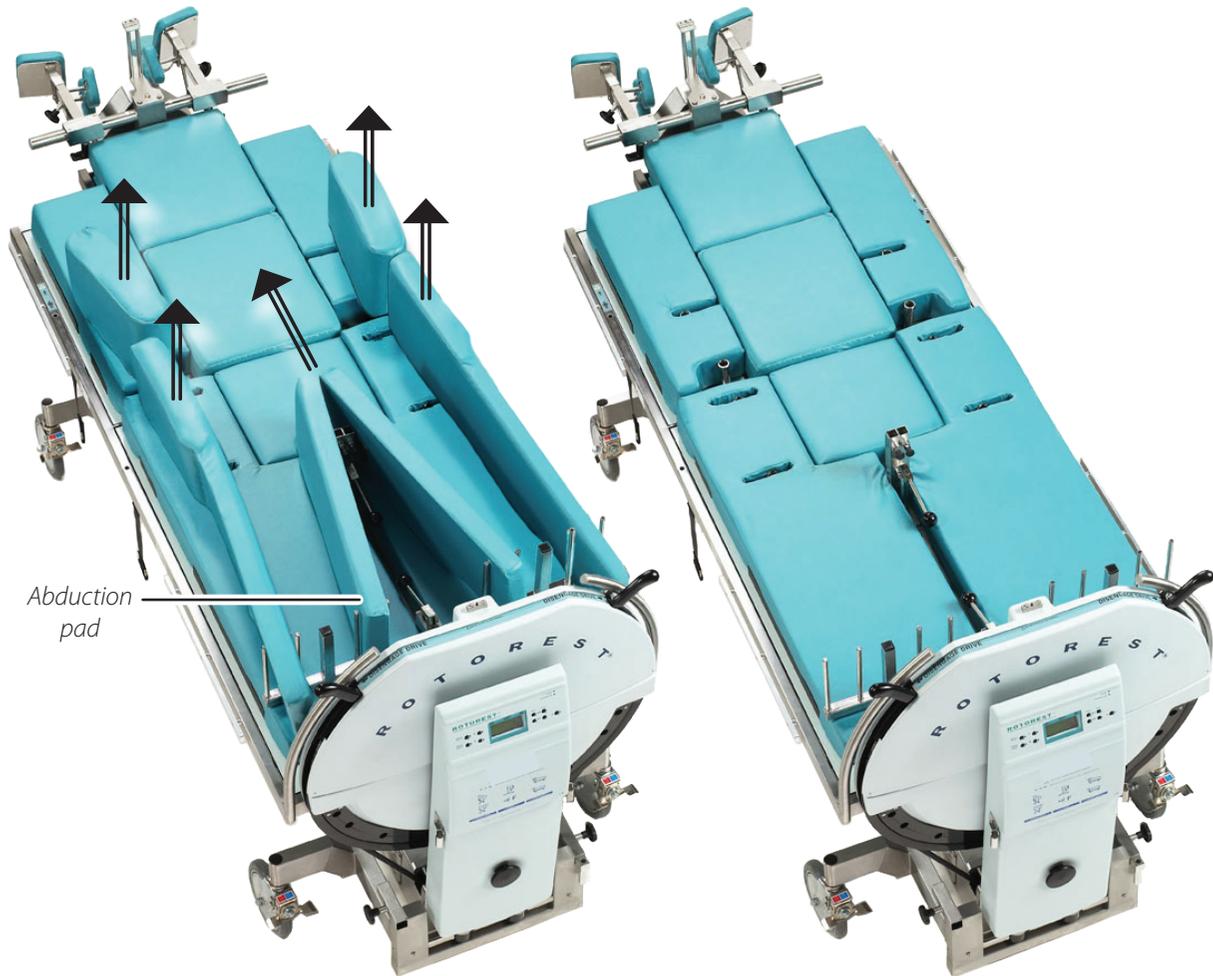
3. Remove the side arm supports by pulling them off the bed in a vertical direction.
4. Place all side supports in the outermost lateral position before removing them. This makes them easier to re-attach and adjust at a later time.
 - Loosen the locking lever for the thorax supports on the underside of the bed.
 - Apply pressure to the top of the pad and to the locking lever for the support pad located beneath the bed at the same time.



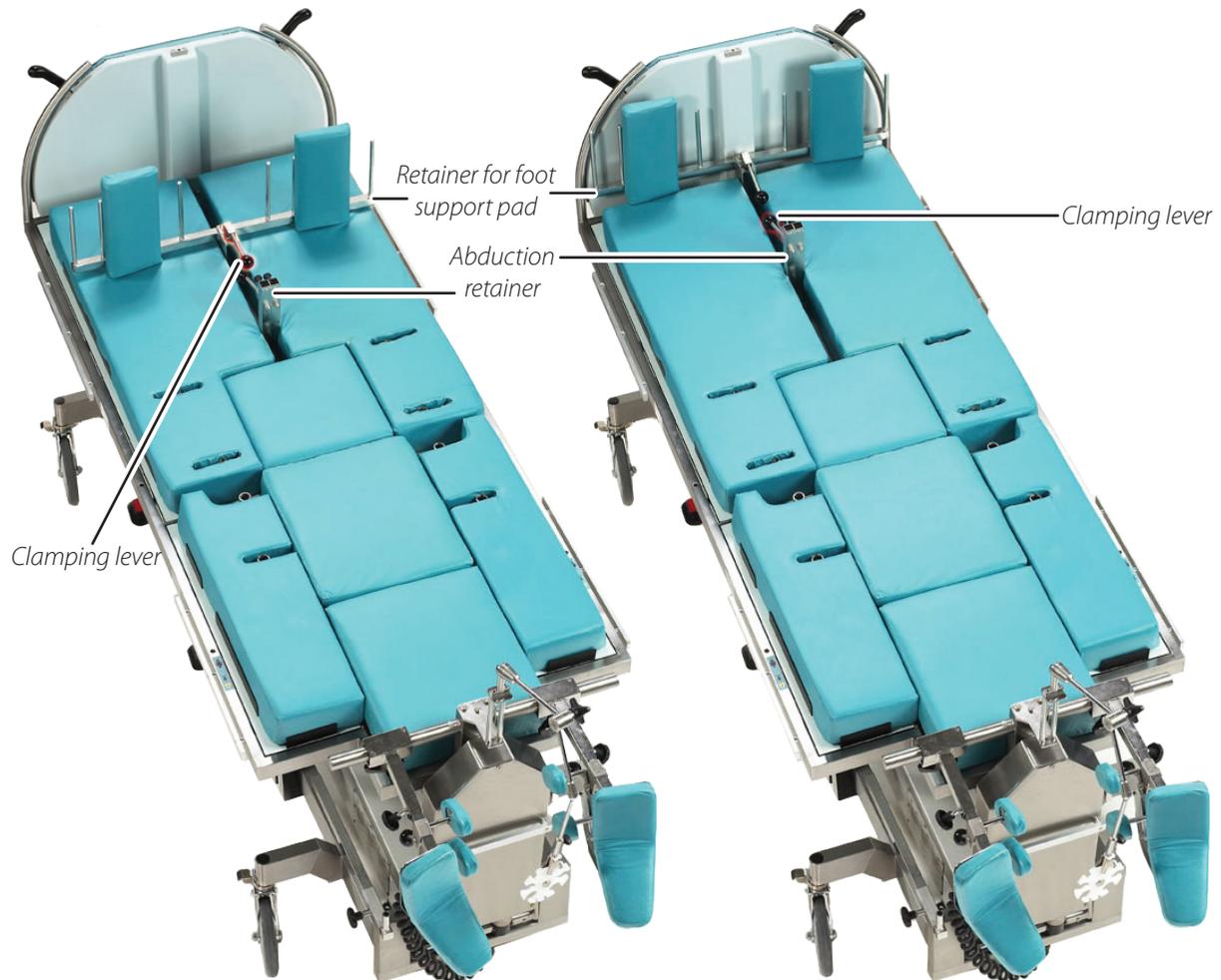
5. Loosen the restraints for the shoulder retainers and rotate the retainers by 100°.



6. Remove the other side arm support pads by pulling them off the bed in a vertical direction.
7. Remove the abduction pad by pushing it towards the head end of the bed and loosen it from the foot support retainer and from the securing bolts on the abduction retainer.



8. Loosen the retainer for the foot supports by pulling the clamping lever upwards. The retainer will then slide free in its rail. Slide it all the way to the foot end of the bed.



9. To loosen the abduction retainer, pull the clamping lever upwards and push the retainer to the foot end of the bed. Place both hands (one on each side) on the bottom of the retainer and carefully slide it into the vertical position.

For very broad patients, it may be necessary to adjust the locking lever to achieve the greatest possible clearance between the side supports. This requires all four locking levers on both sides to be rotated by 180°. Proceed as follows:

1. Loosen the locking lever by pushing the clamping lever beneath the bed down.
2. Move the locking lever to the center of the slot and rotate by 180° in the opening in the center of the slot.
3. To make the necessary adjustments for very tall patients, you must rotate the left and right arm support by 180°.

Operation

This chapter describes the operation of the *RotoRest* system, how to handle and navigate through the various screens and how to safely switch the system on and off.

Procedure for a Cardiopulmonary Resuscitation (CPR)

1. Move the bed to the horizontal position and push in the lock pin.
2. Lower the frame to a comfortable working height.
3. Remove the pads and side supports as required to gain access to the patient.

Following Cardiopulmonary Resuscitation and Stabilization of the Patient

1. Put back all pads and side supports that were removed.
2. Ensure that the bed is remade as described in the chapter, Positioning the Patient, in these instructions (page 27).
3. Resume the therapy as described in the chapter, Operation, in these instructions (page 14).

The Operating Panel

The operating panel is at the foot end of the bed and features several buttons, a display and various indicator lamps. The button functions are described below:



Menu / Select Button

This is the most important button on the operating panel. It performs the following functions:

1. Displays the menu on the screen
2. Alters all bed settings
3. Confirms all selected settings

Cancel / Alarm Reset Button

This button performs two functions:

1. Cancels and automatically resets all alarms
2. Clears the current display and returns to the operating display from which the menu can be accessed

Cursor Buttons

Use these buttons to select the menu options that are to be altered or checked. Select a menu option by moving the arrow (>) on the screen up or down until the required menu option is indicated.

Operating Elements for the Hydraulic System

These buttons are used to raise and lower the bed.

Button for Training Mode

This button is used to switch the bed to training mode.

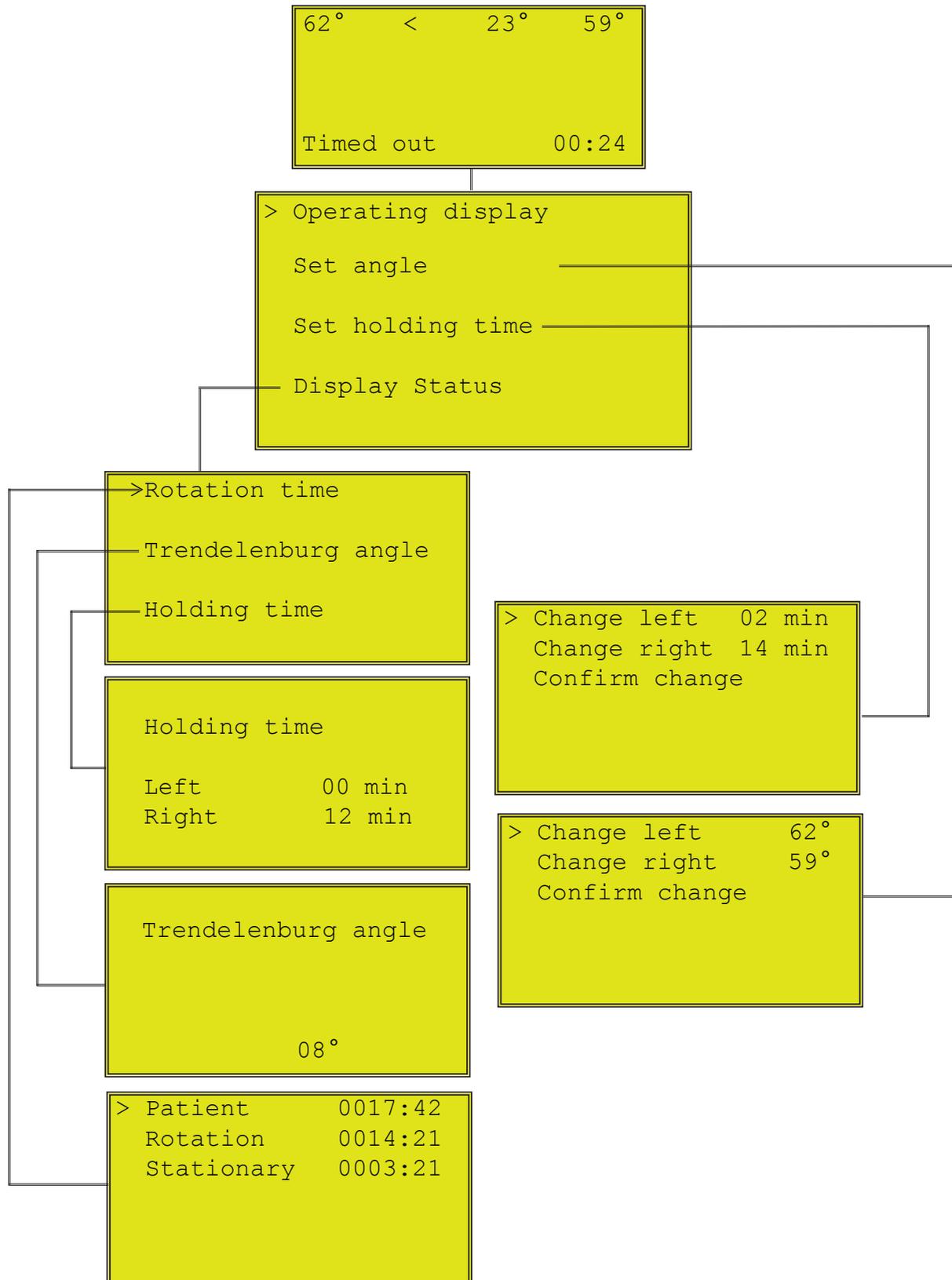
Rotation begins at 30° and is then gradually increased until the required rotation angle is reached.

Menu Structure of the Display

The following information is shown on the display:

- Information on operating the bed with details of the maximum rotation angle for the right and left sides, the actual rotation angle and the current rotation direction. The display also shows how long the bed has been in operation.
- The menu.
- The changes made to a menu option.
- The settings for the various menu options.

Menu Structure of the Display



Mechanical Operating Elements

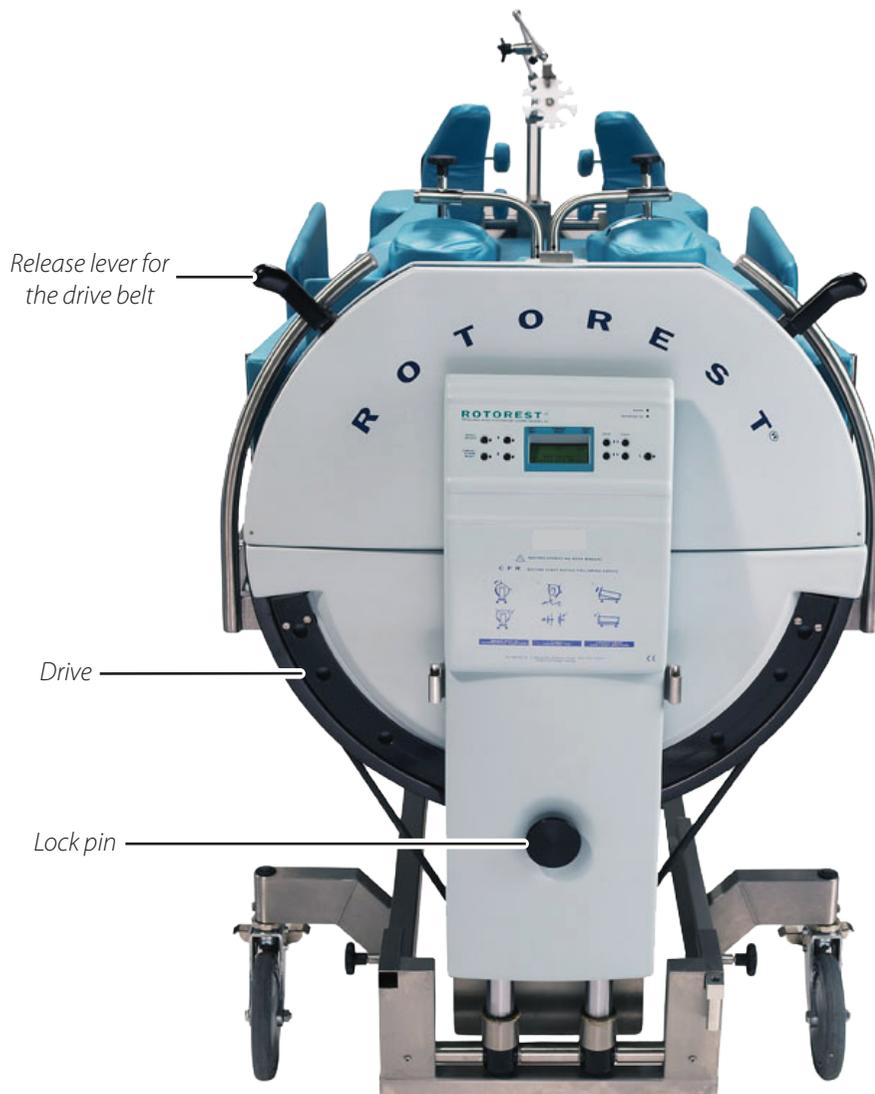
Lock Pin

The lock pin is at the foot end of the bed. The lock pin is used to mechanically lock the bed in position at different predetermined angles.

When the lock pin is engaged in one of the openings in the drive, the power supply to the motor is interrupted. To resume the bed's rotational movement, pull out the lock pin. The message, Side supports fixed?, appears on the screen and an alarm sounds. After checking the side supports, press the Cancel / Alarm Reset button. The bed will then rotate automatically to the set angle.

Release Lever for the Drive Belt

The release levers are located at the foot end of the bed (one on each side). To release the drive, push one of the release levers downwards. The bed can now be rotated by hand in the direction in which the lever was pressed. When the lever is released, it is retracted by a spring into the engaged position. This prevents the bed from being able to rotate or swing unchecked.



The Operating Unit

The bed has a menu-controlled operating unit, which is used as follows. Please also refer to the menu structure diagram.

Operating Display

Once the bed is switched on, the operating display appears on the screen.

The screen illustrated in the example shows the bed rotating to the left (flashing arrow).

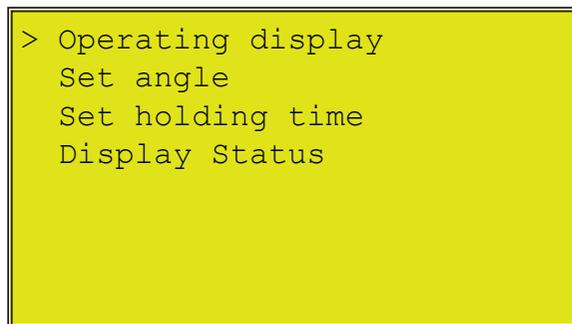


The maximum rotation angle for the left side is set to 62° and for the right side to 59°. In this example, the bed has been rotated for 24 minutes.

Menu Screen

To open the menu screen, press the Menu / Select button.

The cursor buttons enable you to move the cursor within this screen.



The menu is displayed for 15 seconds; if no other button is pressed during this time, the display reverts to the operating display screen.

Setting the Maximum Rotation Angle

To change the angle setting for the right or left side, proceed as follows:

1. Press the Menu / Select button.

```
Operating display
> Set angle
  Set holding time
  Display Status
```

2. Press the down cursor key ↓ to move the arrow to, Set angle.
3. Press the Menu / Select button to view the following screen.
4. Move the arrow to the angle you wish to modify.

```
> Change left      62°
  Change right     59°
  Confirm change
```

```
Change left      62°
> Change right   59°
  Confirm change
```

5. Press the Menu / Select button. Press and immediately release the key repeatedly to increase the angle in 1° increments.



If you hold the button down, the angle value is increased continuously until the required angle is reached and you release the button.

6. Press the down cursor key ↓ until the arrow moves to, Confirm Change. Now press the Menu / Select button to confirm the change.

```
Change left      62°
Change right     59°
> Confirm change
```

7. After 2 seconds the display reverts to the Operating Display screen.

Zeroing the Timer

Lock the bed in the horizontal position. Make sure that the lock pin is pushed all the way in and that the screen displays, Bed Locked.

1. Press the Menu / Select button to view the menu screen. Move arrow to, Display Status, and press the Menu / Select button.

```
Operating display
Set angle
Set holding time
> Display Status
```

2. With arrow positioned at, Rotation Time, press Menu / Select button.

```
> Rotation time
Trendelenburg angle
Holding time
```

3. Press the down cursor key ↓ three times (the > arrow will disappear).

```
Patient      0017:42
Rotation     0014:21
Stationary   0003:21
```

4. Press the Menu / Select button to view the following screen.

```
Patient      0000:00
Rotation     0000:00
Stationary   0000:00
```

After 15 seconds, the display will revert to the menu screen and the word, Charging, will appear.

Setting Holding Times

To set holding times for the left or right hand side, proceed as follows:

1. Press the Menu / Select button.

```
Operating display
Set angle
> Set holding time
Display Status
```

2. Press the down cursor key ↓ twice to move the arrow to, Set Holding Time.
3. Press the Menu / Select button.
4. Move the arrow to the holding time that is to be changed.

```
> Change left 02 min
Change right 14 min
Confirm change
```

```
Change left 02 min
> Change right 14 min
Confirm change
```

5. Press the Menu / Select button. If you hold the button down, the time will change continuously, if you press and release the key repeatedly, the time will change in increments until the holding time you require for the left side is reached.
6. Press the down cursor key ↓ to move the arrow to, Confirm Change.
7. After two seconds the display reverts to the Operating Display screen.

Checking the Bed Settings (Display Status)

Press the Menu / Select button to view the menu screen.

Move the arrow to, Display Status, and press the Menu / Select button.

```
Operating display
Set angle
Set holding time
> Display Status
```

```
> Rotation time
Trendelenburg angle
Holding time
```

To check the bed rotation time, press the Menu / Select button again. The following screen will appear.

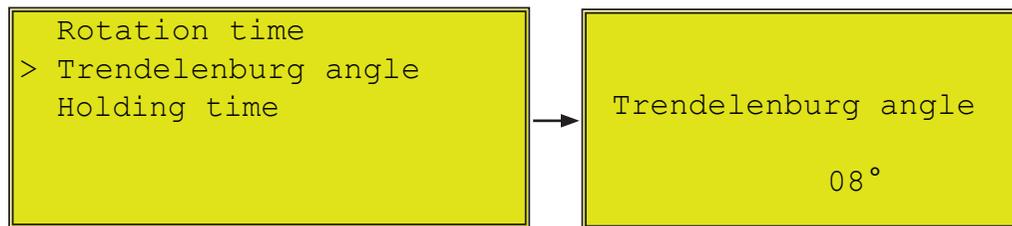
```
> Patient           0017:42
Rotation           0014:21
Stationary         0003:21
```

The time displayed next to patient is the total amount of time the patient has been lying in the bed.

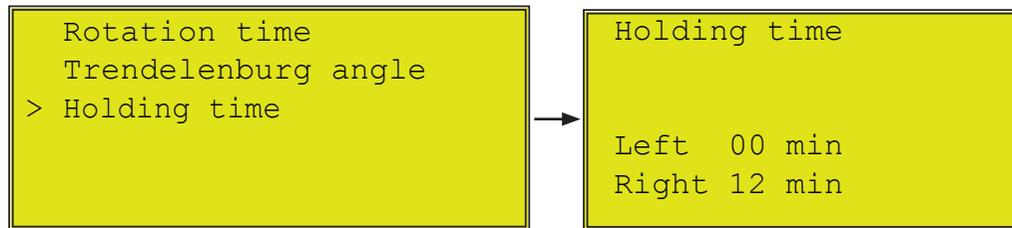
The time displayed next to rotation is the amount of time the bed has been rotating, and the time displayed next to Stationary is the amount of time the bed has remained in the stationary state. The sum of the times for Rotation and Stationary is equal to the time displayed for Patient.

After 15 seconds the display reverts to the Operating Display screen.

To check the setting for the Trendelenburg angle, move the arrow to Trendelenburg Angle. Press the Menu / Select button to view the following screen.



To check the settings for the holding times, move the arrow to, Holding Time, and press the Menu / Select button. The settings for the holding times are displayed for 15 seconds.



Setting the Trendelenburg Angle

Located to the right of the screen display are two rows of buttons, one row labeled Head, and the other, Foot. To raise the head end of the bed, press the top button, labeled, Head, (↑). The head end will be raised slowly up to a maximum angle of 11°. To lower the head end, press the bottom button (↓). To raise the foot end of the bed, proceed exactly as described above but use the buttons labeled, Foot. To raise the entire bed, press the buttons for raising the head end and the foot end at the same time. To lower the entire bed, press the buttons for lowering the head end and the foot end at the same time.

Activating Training Mode

Set the rotation angle you require. Press the button labeled, L, at the right outside edge of the control panel. The yellow display lamp comes on and, Training Mode, appears on the screen. The bed will rotate to an angle of 30° and then stop. It then reverses and rotates to an angle of 30° on the opposite side, at which point it stops and reverses again. With each rotation, the angle is increased by 1° until the desired rotation angle (maximum 62°) is reached.



Training mode can only be activated if one or both maximum angle values are greater than 30°.

Alarm and Warning Messages

To guarantee a higher level of safety for patients and to make caregivers aware of potential hazards, the bed features various alarm functions. The following alarms can be triggered:

Side Supports Fixed?

If the *RotoRest* system is stopped but the lock pin is not fully pushed into one of the openings of the drive, the message, *Bed Locked*, appears on the screen. If the lock pin is withdrawn from the drive, an alarm sounds and the screen displays the message, *Side Supports Fixed?*. Rotation is now not possible until the alarm has been acknowledged with the *Cancel / Alarm Reset* button. This alarm is to remind the operator that the side supports should be checked if they were released or adjusted when the bed was stationary.

Not Fully Locked

If the *RotoRest* system is stopped but the lock pin is not fully pushed into one of the openings of the drive, an alarm sounds after 15 seconds and the screen displays the message, *Not Fully Locked*.



The, Not Fully Locked, alarm can be acknowledged with the Cancel / Alarm Reset button. However, the bed must either be set in motion by pulling out the lock pin or locked by pushing the lock pin all the way into one of the openings in the drive belt. Otherwise, the alarm will sound again after 15 seconds to indicate that the problem has not been resolved.



While administering treatment or conducting examinations, the lock pin should always be fully pushed in and the message, Bed Locked, should appear on the screen.

Bed Stop Alarm

When the bed is locked in any position and has been stationary for 30 minutes, an alarm sounds and the message, *Bed Stop Alarm*, appears on the screen. To cancel the alarm, pull out the lock pin and press the *Cancel / Alarm Reset* button; the system now begins with the rotation therapy.



If the alarm is cancelled but the bed is not rotated, the alarm will sound again after 30 minutes.

Obstacle alarm

Two situations can cause the bed to block.

1. The bed rotates away from its zero (horizontal) position.
 - If the bed platform hits an obstacle, the bed will stop and an alarm will sound. The screen displays the message, Obstruction Alarm. The bed returns to its zero position, where it remains. The alarm continues to sound and the obstruction message is displayed on the screen. Remove the obstacle and then press the Obstacle Alarm button. The bed will now continue to rotate normally.
2. The bed rotates towards its zero position.
 - If the bed platform hits an obstacle, an alarm will sound and the screen displays the message, Obstruction Alarm. The bed stops and remains in this position. Press the release lever and turn the bed away from the obstacle. Remove the obstruction and then press the Obstacle Alarm button – the bed will continue to rotate normally.

Positioning the Patient

This chapter describes in detail the procedure for safely positioning the patient in the *RotoRest* system.



Before patients are transferred to the RotoRest system, nursing staff should familiarize themselves with the information given in the Safety and Operation chapters of these instructions, and read the procedures described below.

Preparing to Position the Patient

Make sure that the *RotoRest* system has been prepared as described in the Preparation for Use chapter of these instructions.

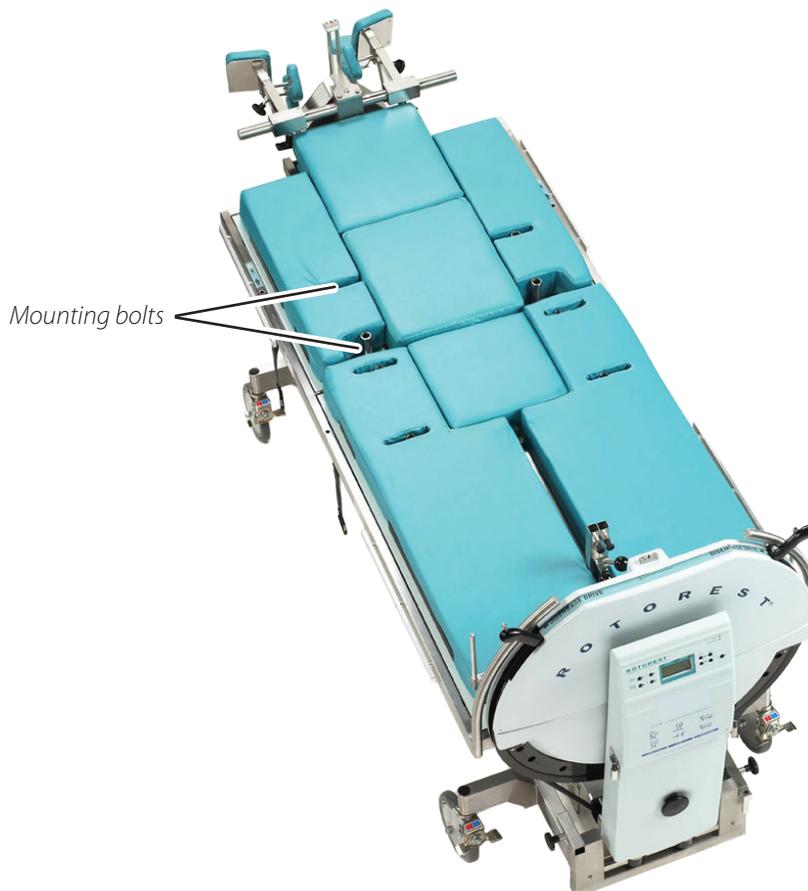
Make sure that the *RotoRest* bed has been cleaned as described in the Cleaning and Care chapter of these instructions.

Transferring the Patient to the *RotoRest* System

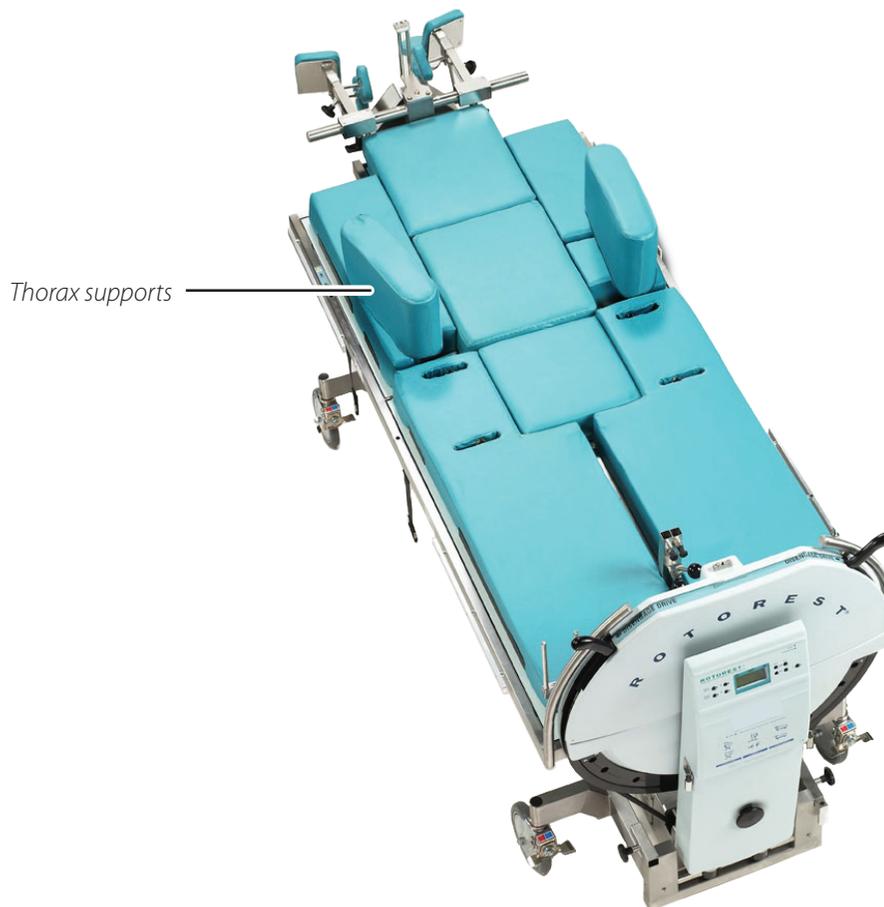


Make sure that the bed has been locked in the horizontal position. Check whether all access hatches have been correctly locked. Make sure that the brakes on all wheels are locked.

1. Position the patient in the center of the system, taking care not to pull him / her over the mounting bolts.



2. Move the patient into the center of the support surface by lining up the patient's nose, navel and pubic region with the center of the bed. The patient must be lying in the center of the support surface to prevent imbalance. Otherwise, it is difficult to control the manual rotation of the bed.
3. Attach the thorax support pads to the corresponding locking levers. The patient's arms should be positioned to the side at an angle of 90°.



4. Adjust the patient's position on the bed to create a clearance of 25 mm (approximately the width of two fingers) between the patient's armpit and the side support.



Never position the patient in such a way that the thorax supports rest up against the armpits as the resulting pressure could cause serious injury to nerves and obstruct circulation.

5. Slide the thorax supports close against the patient's ribcage. (The supports can be moved by pushing the top of the pad and the locking lever beneath the bed at the same time).
6. Lock the locking lever.



The thorax supports are the primary supports. Make sure that they are secured correctly.

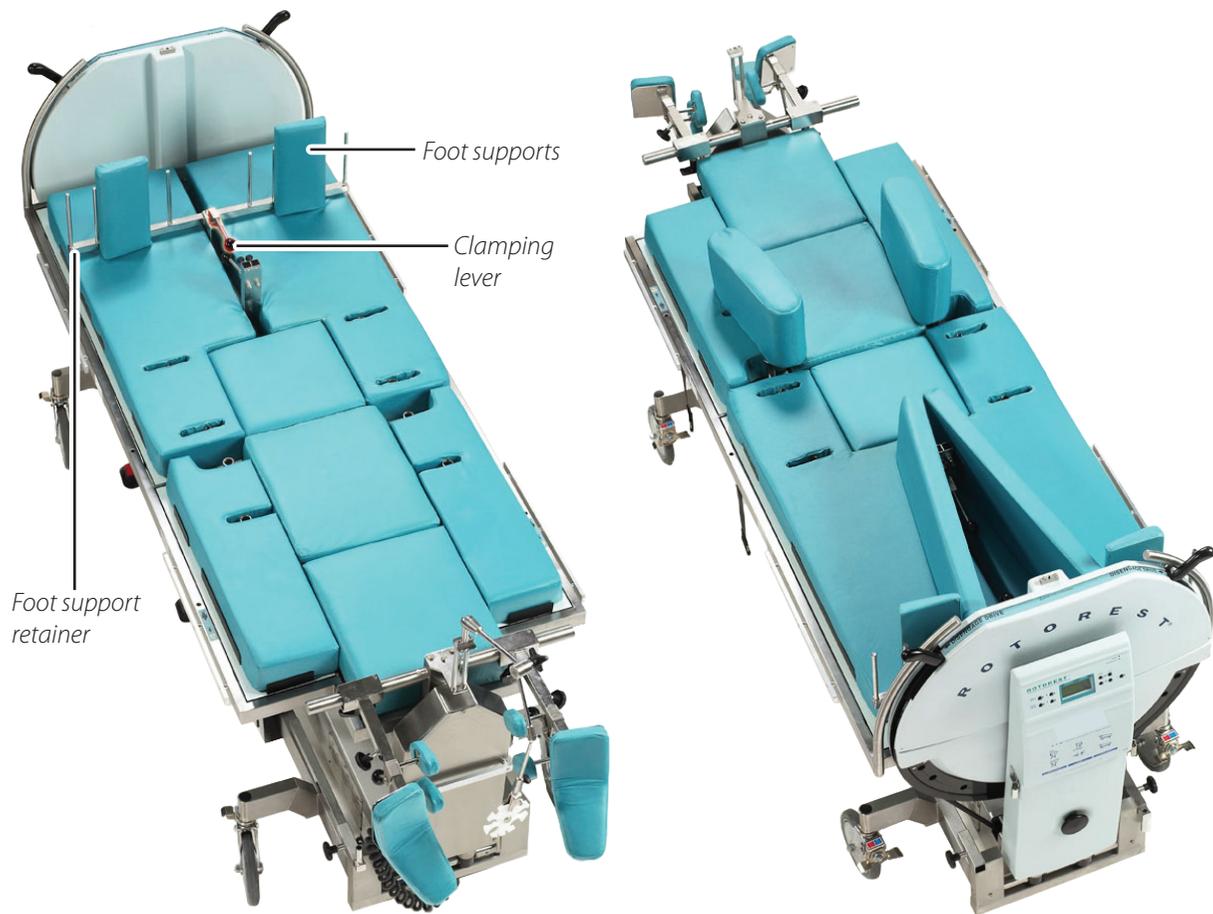
7. Place a leg positioning pad beneath each calf so that the heel is free of the pad.



The patient's heels should be relieved with a suitable support material to prevent bed sores developing.



8. Attach the abduction pads so that they are positioned just above the patient's knee joints. Fasten them by pushing the clamping lever down.
9. Attach the foot supports to the foot retainer, as shown in the image.



As the rotational movement does not relieve the pressure on the soles of the feet, the foot supports should not be in place for more than two hours. The foot supports should be used every day to prevent drop foot. When the foot supports have been removed from the bed, the patient's feet should be able to move freely from one side to the other while the bed is rotating.

10. Position the foot retainers so that the pads support each foot in an anatomically neutral position. Now secure the foot supports by pushing the clamping lever down.

11. Attach the leg abduction pads by placing the narrow pointed ends into their positioning openings on the foot support pad retainer and attaching the opposite ends at the locking lever on the abduction retainer.
12. Attach the leg and hip supports to their respective retainers and adjust them so that they are in close contact with the patient's hips. Firmly tighten the clamping lever. This pad is the most difficult to attach and remove due to its length. Holding the supports in a horizontal position simplifies attachment.



13. Attach the knee supports. A hand's thickness of space should be left between the patient's knee and the knee pad to prevent pressure being applied to the knee joint. The knee pad must be positioned such that it rests against the back of the hand. The knee pads can be adjusted to allow for differences during abduction and flexion of the patient's legs.

- Carefully lower the head and shoulder pad set until it is in contact with the pads. Carefully slide the unit until it is touching both sides of the patient's head.

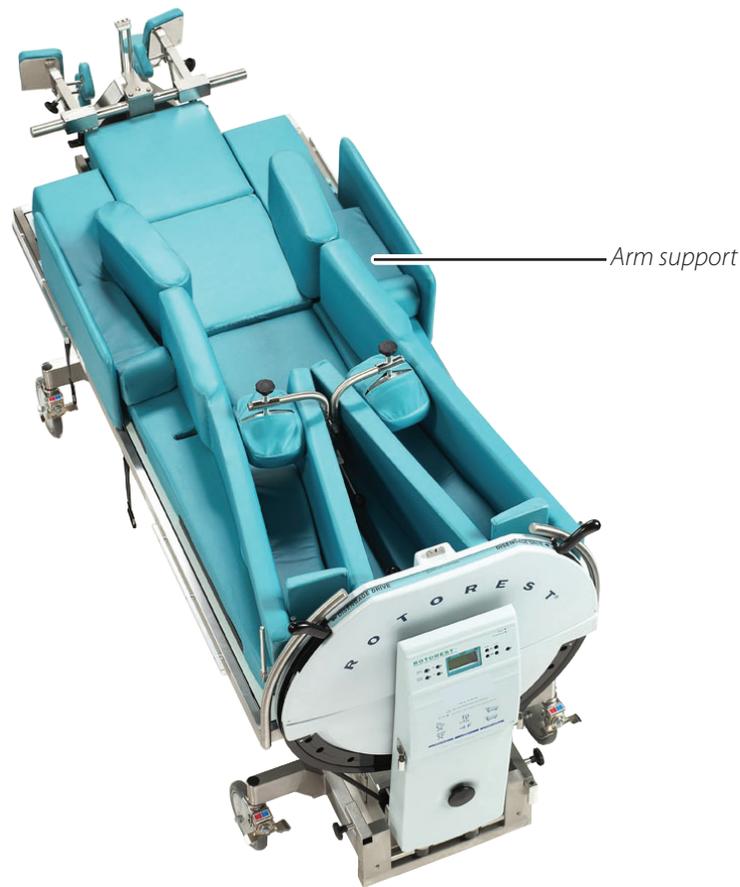


- Adjust the head pad so that the patient's ears are free. The head pad can be moved in any direction and allows the use of an extension clamp. Secure the complete head and shoulder pad set in position.
- Place a hand on the patient's shoulder and position the shoulder pad so as to leave a hand's thickness of clearance. Secure it in this position. To prevent the patient's shoulders from developing bed sores, a clearance of 25 mm should be maintained between the patient's shoulders and the pads at all times. Ensure that the shoulders are not subjected to constant pressure. If serious cervical extension due to the Reverse Trendelenburg position makes it impossible to prevent the patient from slipping, one of the shoulder pads can be placed firmly against the shoulder. The other shoulder pad must not be in contact with the patient's other shoulder.



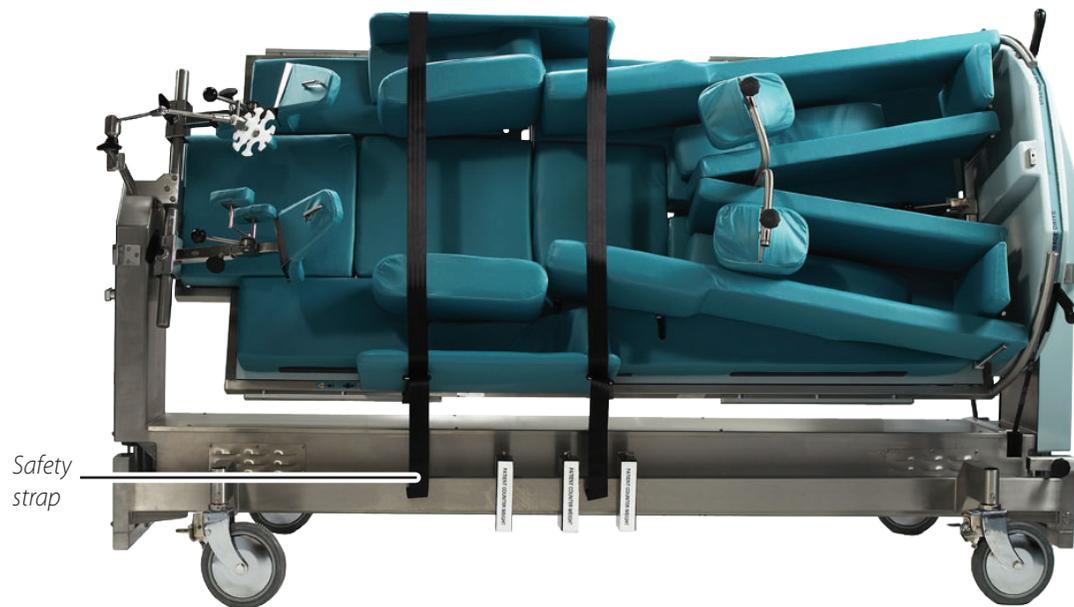
To prevent bed sores, the shoulder pads must be swapped over every two hours if this procedure is employed.

17. Firmly tighten the restraints on the crossbeam in order to secure the pad sets in the correct lateral position.
18. Attach the arm supports as shown in the image.



19. Fasten the arm supports to the openings located in the frame.
20. With larger patients, attach the arm supports so that the front edge closes on the label with the line below the symbol for, large person. In the case of smaller patients, the front edge should close on the label with the line below the symbol for small person.

21. Fasten the two safety straps as shown in the image.



22. Guide the urinary catheter and the thorax drainages through the corresponding openings, see **Access Hatch Arrangement** in the **Preparation for Use** section.

Patient-specific Settings

Counterweights

The counterweights are required for patients weighing over 75 kg. They are attached to the frame rail immediately below the posterior access hatch in order to keep the bed balanced. An additional counterweight is required for every 10 kg of bodyweight over 75 kg. Example: For a patient weighing 125 kg, five weights must be attached to the frame rail.



i ***Take care with heavy patients, especially when manually rotating patients with a large abdomen. The bed must be well balanced otherwise it will rotate rapidly and halt suddenly at the stop.***

Check again whether all pads are securely fastened. Pull the lock pin out fully. The message, Side Supports Fixed?, appears on the screen and an alarm sounds. Press the Cancel / Alarm Reset button – the bed rotates automatically according to the selected angle. Observe the patient for a number of rotations to ensure that the bed is correctly set and that none of the supply or discharge lines are under strain or catch at any point.

i ***The system's setting should be checked on a daily basis to ensure that the patient is in the correct position.***

i ***Once the system has been set correctly, the side supports can be removed and then re-attached without having to adjust the bed again.***



The bed should be kept rotating continuously except when treatment is being administered. In the event of a power failure or a motor malfunction, the bed can be rotated by hand and locked every 30 minutes, or as required, in the lateral or center position, in order to prevent bed sores from developing.

Adjusting the support pads



Do not start the rotational movement until you have carried out the following checks and made the necessary adjustments.

Check the position of the thorax support. The clearance from the edge of the bed should be the same on both sides. Otherwise, the patient will not be positioned in the center of the bed. Arrange the patient and the pads so that a central position is achieved. Now proceed as follows:

1. Pull out the lock pin. Carefully rotate the bed into the maximum lockable lateral position, and lock it in that position. At this angle, there should be a maximum clearance of 12 mm between the pad's inner side and the patient's ribcage, hips and thighs. This guarantees complete pressure relief when the bed is rotated. If the pads sit too closely, return the bed to its horizontal position. Slide the two side pads outwards slightly in order to maintain the patient's center position.



The correct alignment of the side pads is most easily checked when the bed is being rotated to its maximum lockable lateral position, i.e. up to the last hole in the drive.

2. If the clearance is too great - more than 15 mm - the patient will slip from one side to the other when the bed is rotated. This causes unnecessary movement and possibly a bed imbalance. The bed might need to be locked again in the horizontal position and re-aligned. Slide the side pads on both sides of the patient inwards in order to maintain the patient's central position. Repeat the procedure until the patient is in the correct position.



It is easier to administer care to the patient if the pads are carefully arranged when the patient is positioned.



To reduce the risk of bed sores, check on a regular basis that the patient is correctly positioned and whether the retainers, supports and pads need to be adjusted.

Thorax X-ray Imaging

1. Move the bed into one of the two maximum lockable lateral positions and lock in place. Use one hand to compress the spring-loaded detents on the thorax access hatch. The hatch will open. With your other hand, allow the access hatch to slide down until it is resting on the frame rail. Remove the clearance cushion and place it on the bed frame.
2. Insert the cassette into the gap previously occupied by the clearance cushion. A standard 35 cm x 43 cm X-ray cassette fits into the access hatch.
3. Close and lock the access hatch by pushing together the spring-loaded detents and then releasing them again once the access hatch has closed. The bed can now be moved into the horizontal position for X-ray imaging. To remove the cassette, proceed as described above in reverse order.

Thorax Drainages

The bed is fitted with special openings for thorax drainages at the corners of the arm access hatches. To prevent fluid reflux, the drainages should be guided through the bed platform from above.

The respiratory tube holder is intended for fastening sensitive devices such as intracranial catheters.



An accessory of the traction bracket assembly is the intercranial tube holder. The intercranial tube holder or any accessory of the traction bracket assembly is not intended to be used as a handle to steer or move the bed, this would not be considered normal use.



To guide the drainage tube through the opening, lower the arm access hatch and guide the thorax drainage system through the opening from above. Make sure that the tube is correctly positioned in the recess on the arm access hatch. Now carefully close the access hatch. Once the drainage tubes have been guided through the openings in the arm access hatches, they can be routed along the frame beneath the hatches up to the head end of the bed, where the thorax drainage system can be positioned.



If the thorax drainage system is placed under the bed, check that it does not obstruct bed rotation. It is absolutely essential to use tubes of adequate length so that when the bed is rotated, no tension is applied to the thorax catheter or the drainage system.

Drip Stands (Available as Accessories)

The bed is equipped with three drip stand holders: two at the foot end and one at the head end. The stand holders can be adjusted to prevent the drip stands obstructing bed rotation.

Drips can be infused while the bed is rotating.

However, the tubes must be long enough not to be stretched when the bed is rotated.



Positioning with Amputations

Patients with amputations can also be treated in the *RotoRest* system. In this case the bed must be balanced in order to make manual rotation easier. Simply place sandbags at the relevant location on the bed in order to compensate for the weight of the missing extremity on the bed surface.

Transporting the Patient in the *RotoRest* System

We do not recommend transporting the patient in the *RotoRest* system.

Patient Care

This chapter describes general patient care procedures.

Bathing the Patient

- Move the bed to the horizontal position and push in the lock pin.
- If necessary, remove the positioning pads to gain access to the front of the body and to the patient's limbs. Wash and dry the patient as normal.
- To wash the patient's dorsal surface, open one each of the access hatches in the head, thorax and posterior area, as described in the section on access hatches.
- When opening the access hatches, the system should be at maximum height and maximum lateral rotation to reduce the strain on the caregiver's spine.

After Bathing the Patient

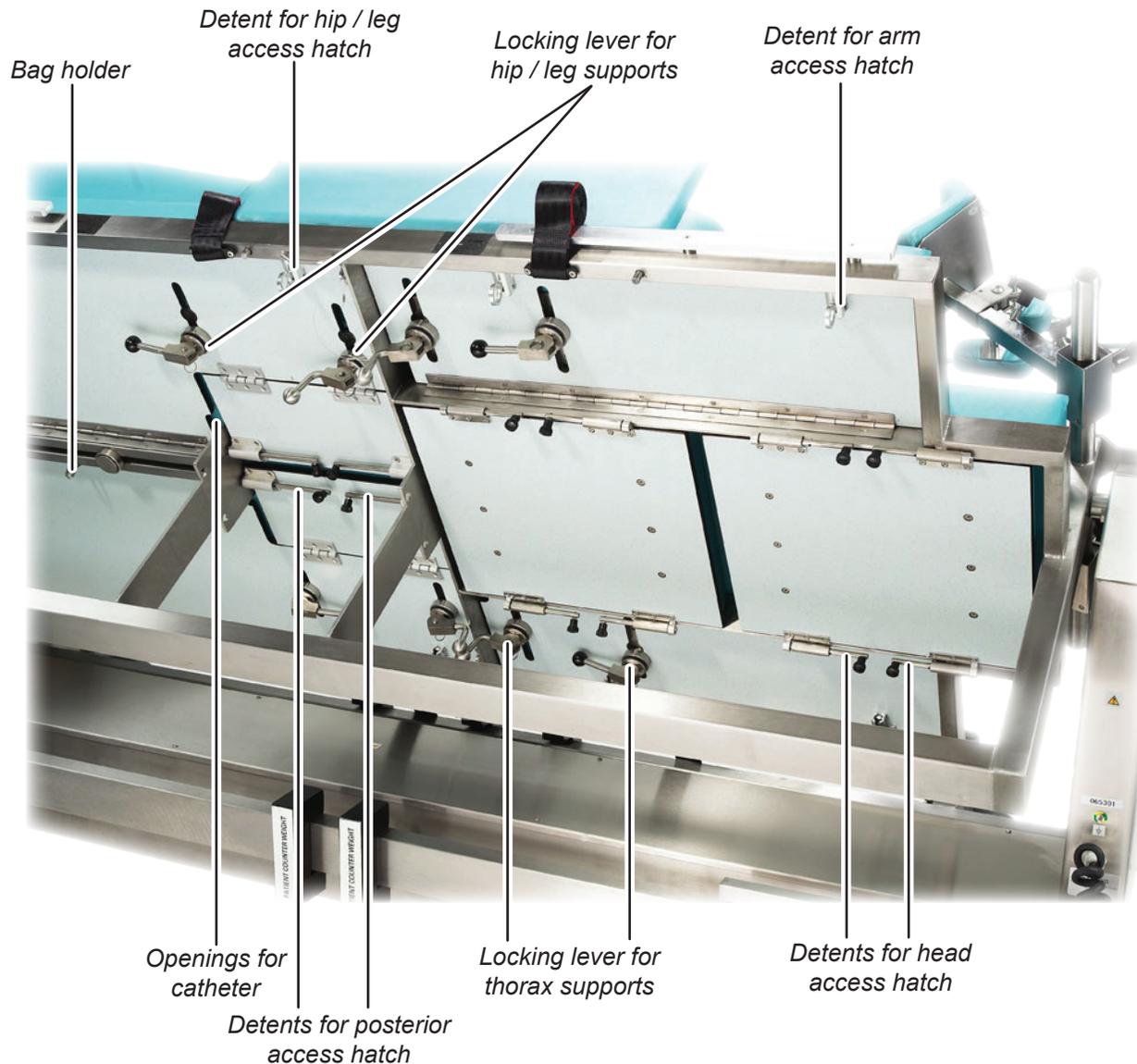
- Make sure that the patient's skin is clean and dry.
- Make sure that all access hatches are fully closed and locked.
- Replace all the positioning pads and check the patient's position, as described in the, Positioning the Patient, chapter.

Skin Care

- As the rotational movement provides pressure relief, it is recommend the bed not remain in a stationary position for a period greater than two hours or as indicated by the treating physician.
- Make sure that the patient's skin is kept clean and dry at all times, as described above.

Access Hatches

One of the bed's outstanding features is the special arrangement of access hatches underneath the bed, which provide access to the patient's entire dorsal surface without having to move the patient.



Arm Access Hatches

For physiotherapy on the arms, the arm access hatches can be opened so as not to restrict the range of movement and to allow the shoulders to be rotated.

Hip / Leg Access Hatches

The hip / leg access hatches can be opened to allow the hip to be extended.

Head Access Hatch

The back of the patient's head can be accessed through this hatch. For hair washing, hair care and skin care on the scalp and neck, proceed as follows:

1. Rotate the bed into the maximum lockable lateral position and secure it in that position.
2. Use one hand to release the detents on the head access hatch. The access hatch opens downward. Using your other hand, allow it to slide down until it rests on the frame rail. (This gives you one free hand for supporting the patient's head in case of a problem).
3. Remove the head pad. The patient's head should be supported by the head support pads. If better access to the head or neck is required, the upper shoulder / head pad set can be moved away.



Even if this stable position can be achieved for a patient with cervical extension, it is advisable for a second caregiver to be present to support the head.

Proceed as follows to re-start the automatic rotation of the patient:

1. Re-attach the head pad.
2. Close the head access hatch and make sure that all detents are closed.
3. Re-attach the head / shoulder support pads and secure.
4. Unlock the bed and activate the automatic rotation.

Thorax Access Hatch

The thorax and upper lumbar area is accessed through this hatch. To open the access hatch, rotate the bed into the maximum lockable lateral position, and lock it in that position. Unlock the detents, the hatch will then open. Remove the thorax pad.

When the hatch is open, the thorax drainages can be placed in position and the skin care routines can be carried out. To re-start the automatic rotation, re-attach the pad. Close and lock the access hatch.

Posterior Access Hatch

The patient's posterior is accessed through this hatch for the skin care routine. Lock the bed in one of its maximum lockable lateral positions. Open the access hatches and secure using the straps. Remove the posterior pad. To continue with the automatic rotation, carry out the steps described in the reverse order.

Bladder Emptying

To lay an indwelling catheter, guide the drainage tube through the recess provided on the edge of the hip / leg access hatch. The drainage bag should be fastened to the special eyelets located on the underside of the frame.

The catheter should be fixed to the leg.

If a patient with an indwelling catheter already in place is to be moved to the bed, the posterior access hatch must be opened, the collecting bag and drainage tube must be guided through the opening to prevent damage to the closed drainage system.

Intestinal Voiding

Continuously rotating the patient stimulates peristalsis, so more frequent intestinal voiding can therefore be expected. Proceed as follows to slide the bed pan beneath the patient:

1. Rotate the bed to its maximum lockable lateral position.
2. Open the posterior access hatches and secure the upper hatch using the integral strap.
3. Remove the posterior cushions and slide the bed pan beneath the patient.
4. Close the access hatches to prevent the bed pan from slipping.
5. Move the bed into the horizontal position during intestinal voiding.
6. After intestinal voiding, return the bed to its maximum lockable lateral position, and carefully remove the bed pan.
7. Once you have washed the patient, re-attach the posterior pad and close the access hatches.
8. Pull out the lock pin to activate automatic bed rotation.



For fecal incontinence, highly absorbent incontinence pads, such as Dri Flo™, can be used for adult patients.

Respiratory Toilet

By constantly changing position, the bed ensures continuous postural drainage and mobilization of bronchial secretions. If the patient is artificially respired, the trachea cannula or the endotracheal tube should be correctly fitted and the respirator positioned so as to largely inhibit tube movement during rotation. For selective bronchial aspiration, the bed should be moved into the maximum lockable lateral position and the catheter introduced in the usual way.



If a patient with high secretion production is being treated in the system, frequent aspiration may be necessary in the initial 12 - 24 hours because the improved postural drainage may cause a considerable increase in the amount of secretion during this period.

For thorax percussion and other respiratory therapy, the bed can be moved into the maximum lockable lateral position and into the Trendelenburg position. Percussion can be carried out through either the opened access hatch or after removing the thorax side pad, as illustrated above.

Cleaning and Care

This chapter describes the general cleaning and care of the *RotoRest* system. Scheduled, non-scheduled and preventive maintenance are included. This chapter also contains information on how to transport and store the system when not in use.

The cleaning methods recommended by the manufacturer for the *RotoRest* system, as well as procedures for regular system maintenance during use are described below.

The Bed Platform

1. Remove all pads from the bed and check the covers for tears and damage. Torn covers constitute a permanent contamination risk and the affected pads must be replaced.
2. Wipe down the covers using a soft cloth, moistened with a mild detergent and water (or with the cleaning solution recommended by the hospital).
3. Wipe the covers using a clean damp cloth and dry them thoroughly.



Do not use phenols to disinfect the pads, as these agents destroy the covers.

1. Remove all retainers from the bed platform.
2. Open each access hatch and wash down the hatch edges and the inner surfaces of the stainless steel frame with a solution of mild detergent and water.
3. Wipe the edges and inner surfaces of the frame using a clean, damp cloth. Wipe dry all surfaces thoroughly.
4. Close all access hatches and clean the top side of the bed platform and the foot end of the bed in the same way.
5. Rotate the bed platform into the maximum lockable lateral position and clean the underside of the platform in the same way.
6. Clean all retainers and wipe off traces of blood or other bodily fluids using a solution of mild detergent and water. As the retainers have many crevices in which bacteria can colonize, carry out a wet or dry disinfect using an approved disinfectant.
7. Proceed to clean and disinfect the main frame and castor frame exactly as described above.
8. Once all parts of the bed have been cleaned and disinfected, re-attach the retainers and pads.



The bed must not be cleaned using steam.



The RotoRest system is designed for use in hospitals at an operating temperature of between 10°C and 45°C.

Transport

1. The system must be completely lowered. To lower the head and foot part, the buttons marked Head / Foot must be pressed and held until the main frame is in contact with the castor frame; this prevents the hydraulic cylinders having to support the load of the patient support surface during transport.
2. The lock pin must be completely pushed in and the bed platform must be in the horizontal position.
3. Make sure that all retainers and pads are attached as shown in the Introduction chapter of these instructions.
4. The mains plug must be pulled out and the mains cable wound around the head retainers on the bed platform.
5. The drip stands and any accessory used in the traction bracket assembly must be removed and stowed securely in the truck.



Do not lay the drip stands or any accessory used in the traction bracket assembly on the bed during transport.

6. Once the bed has been consigned to the truck, lock the wheels and fasten the bed to the side wall or floor of the truck using nylon straps.



Fasten the nylon straps to the castor frame only. Do not fasten the straps to the main frame or to the bed platform. Make sure that the outer edge of the bed platform does not come into contact with the side wall of the truck or any other transport goods. Soft foam should be placed between the bed and other objects in the truck.

Storage

The bed must be cleaned and disinfected prior to storage. Treat the system with appropriate care during transport and storage. Store the system in a dry and clean environment at a moderate temperature. The bed is also fitted with a reserve battery, which supplies the micro-processor in case of a power failure, thereby ensuring that the system can be shut off and stored data is not lost. During normal operation, the batteries are charged continuously. If the system is not connected to the power supply for more than two weeks, the batteries should be charged for at least 12 hours. This can be done in two ways:

1. Plug in the bed's mains plug and allow the bed to rotate for 12 hours.
2. However, if there is insufficient space for the bed to rotate, and to save you having to disable the stop bed alarm every half an hour, perform the zeroing the timer procedure. The batteries will then be charged automatically without the alarm sounding every half hour.



The batteries must be charged twice a month for a minimum of 12 hours.

Specifications

This chapter contains the technical specifications for the *RotoRest* system, as well as data on replacement parts.

Technical Specifications



Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.



When using half-bed-length type oxygen administering equipment, ensure that side rails are not contained in oxygen enriched environment.

Type B device
Class II device
Standard device

Maximum recommended patient weight..... 150 kg
Maximum recommended patient height (see page 3) 190 cm

Dimensions

Length 2475 mm
Height of bed frame
(when bed is in lowered position)..... 1250 mm
Height of patient support surface
(when bed is in lowered position)..... 884 mm
Weight 415 kg
Ground clearance
(platform raised) 110 mm
Ground clearance
(platform lowered) 90 mm

Functional specifications

Rotation angle 0° to 62° in both directions
Trendelenburg (maximum) 11°
Reverse Trendelenburg (maximum) 11°

Electrical specifications

Voltage 230 V alternating current
Frequency 50 Hz
Current rating (ampere) (rotation only) 1.0 A
Current rating (ampere) (lowering / lifting hydraulics) 4.6 A
Leakage current (microampere) <100 µA
Isolating transformer..... 1 KVA
Ground resistance (ohm) <0.1 Ω
Noise level..... <70 dB (A)
Duty cycle..... Continuous (rotation)



Specifications are subject to change without notice.

Explanations of Symbols Used



Important information
for operation



Equal Potential



Dangerous Voltage



Alternating current



On



Off



Application part Type B



The *RotoRest* system conforms
to the Directive on Medical
Devices
(93 / 42 / EEC).



Important - Observe
accompanying documentation



Manufacturer

CUSTOMER CONTACT INFORMATION

For questions regarding this product, supplies, maintenance or additional information about ArjoHuntleigh products and services, please contact an ArjoHuntleigh authorized representative or visit www.ArjoHuntleigh.com.

® and ™ are trademarks belonging to the ArjoHuntleigh group of companies

© ArjoHuntleigh 2015. P/N M3252253-AH Rev A 01/2015

GETINGE GROUP

Geringe Group is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of **ArjoHuntleigh**, **Geringe** and **Maquet**. **Geringe** provides solutions for infection control within healthcare and contamination prevention within life sciences. **Maquet** specializes in solutions, therapies and products for surgical interventions, interventional cardiology and intensive care.

ARJOHUNTLEIGH

GETINGE GROUP

ArjoHuntleigh focuses on patient handling and hygiene, disinfection, DVT prevention, medical beds, therapeutic surfaces and diagnostics.



ArjoHuntleigh AB
Hans Michelsengatan 10
211 20 Malmö, Sweden
www.arjohuntleigh.com

CE
0086
