

SERVICE MANUAL

Century⁺™ Bed From Hill-Rom



Product No. P1400

**For Parts Or Technical Assistance
USA (800) 445-3720 Canada (800) 267-2337
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man241

Century⁺™ Bed Service Manual

Revisions

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Revisions

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Chapter 1

Introduction

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NOTES:

Purpose

This manual provides requirements for the Century+™ Bed normal operation and maintenance. It also includes parts lists (in chapter 5) for ordering replacement components.

Audience

This manual is intended for use by only facility-authorized maintenance personnel. Failure to observe this restriction can result in severe injury to people and serious damage to equipment.

Organization

This manual contains seven chapters.

Chapter 1: Introduction

In addition to a brief description of this service manual, chapter 1 also provides a product overview.

Chapter 2: Troubleshooting Procedures

Repair analysis procedures are contained in this chapter. These procedures are used to gather information, identify the maintenance need, and verify the effectiveness of the repair.

Chapter 3: Theory of Operation

This chapter describes the application of the mechanical and electrical systems employed in this product.

Chapter 4: Removal, Replacement, and Adjustment Procedures

Chapter 4 contains the detailed maintenance procedures determined necessary in chapter 2.

Chapter 5: Parts List

This chapter contains the warranty, part-ordering procedure, and illustrated parts lists.

Chapter 6: General Procedures

Cleaning, preventive maintenance, and other general procedures are described in this chapter.

Chapter 7: Accessories

A list of additional products, that can be used in conjunction with the Century+™ Bed, is available in chapter 7. Installation procedures for these accessories are also included.

Typographical Conventions

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 WARNING or CAUTION:

Figure 1-1. Warning and 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:

Figure 1-2. Caught Hazard Warning



- The symbol below highlights a CHEMICAL HAZARD WARNING:

Figure 1-3. Chemical Hazard Warning



- The symbol below highlights an ELECTRICAL SHOCK HAZARD WARNING:

Figure 1-4. Electrical Shock Hazard Warning



Introduction

Overview

This manual provides the information required for normal operation and maintenance of the Century+™ Bed by Hill-Rom. It also includes a complete parts list for ordering replacement components. The parts list is located in chapter 5.

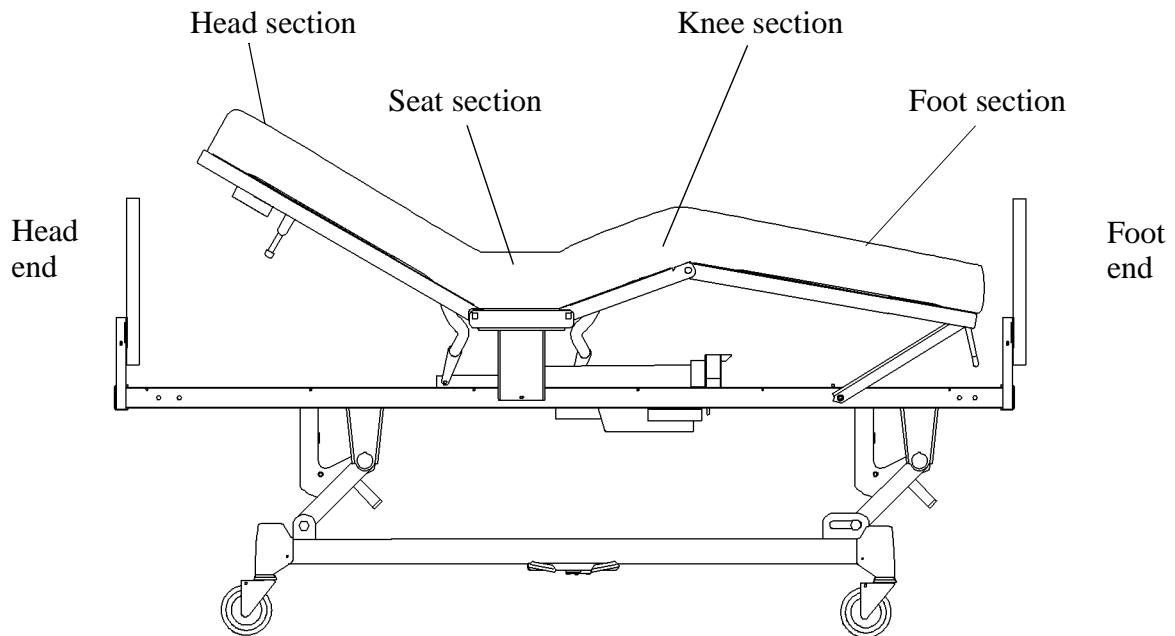
Operating Precautions

Before operating the Century+™ Bed, be sure that you have read and understand in detail the contents of this manual. It is important that you read and strictly adhere to the aspects of safety immediately following. Any reference to a side of the bed is from the patient's view lying in the bed.

Bed Positions

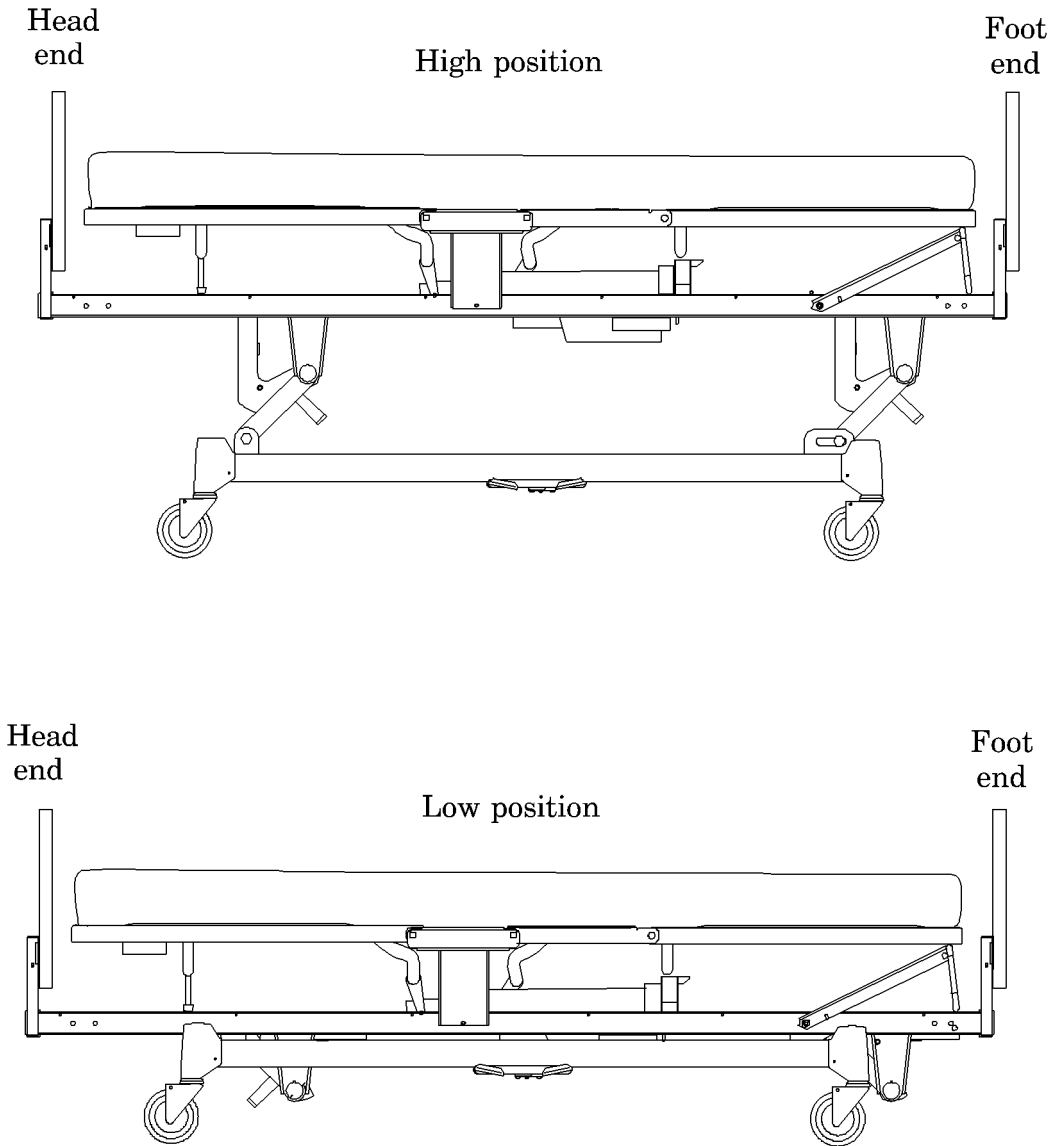
The Century+™ Bed has four sections: the head, seat, knee, and foot (see figure 1-5 on page 1-8). Bed positions are shown in figure 1-6, figure 1-7, and figure 1-8.

Figure 1-5. Bed Location Description



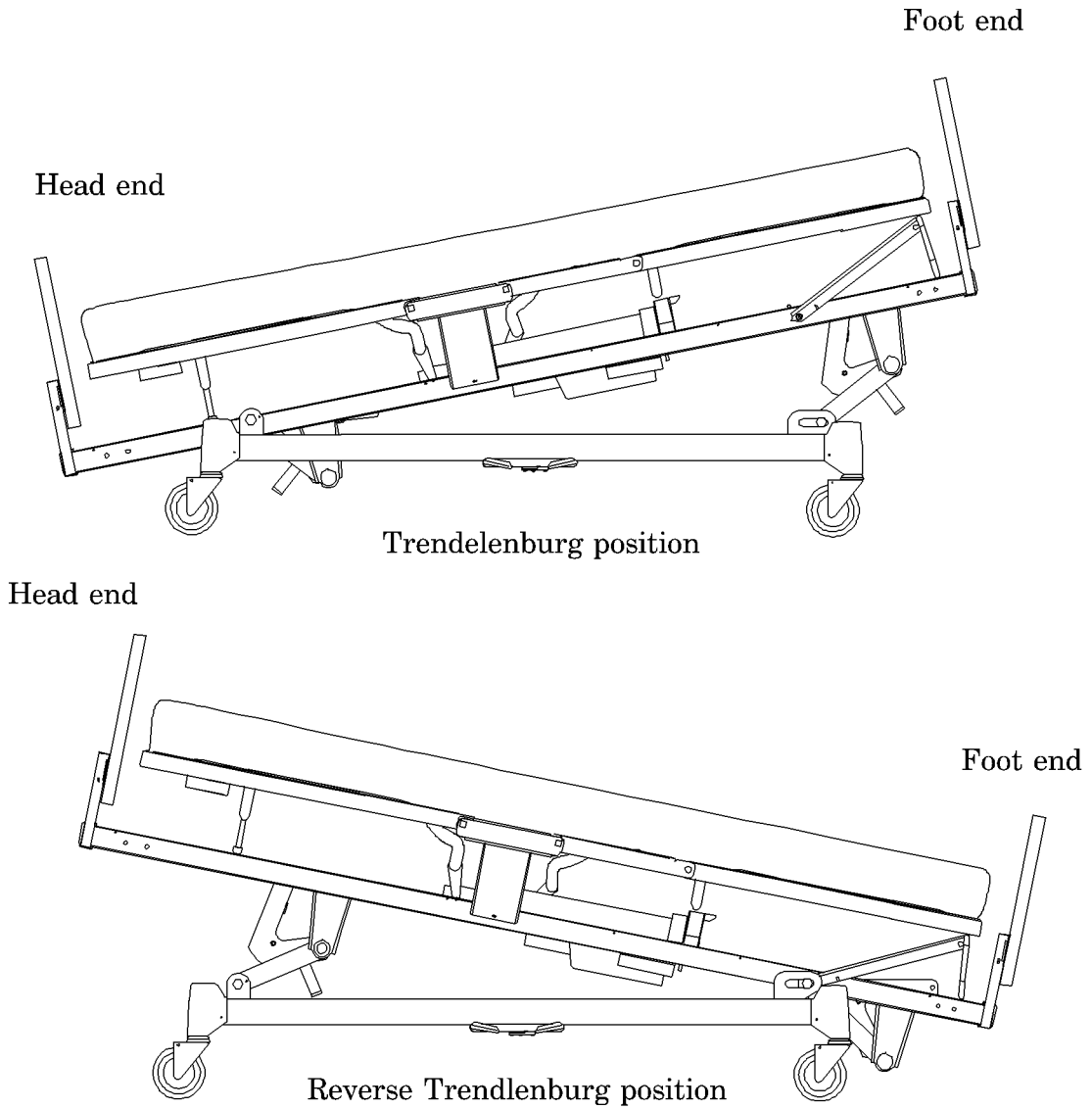
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Figure 1-6. Hilow Positions



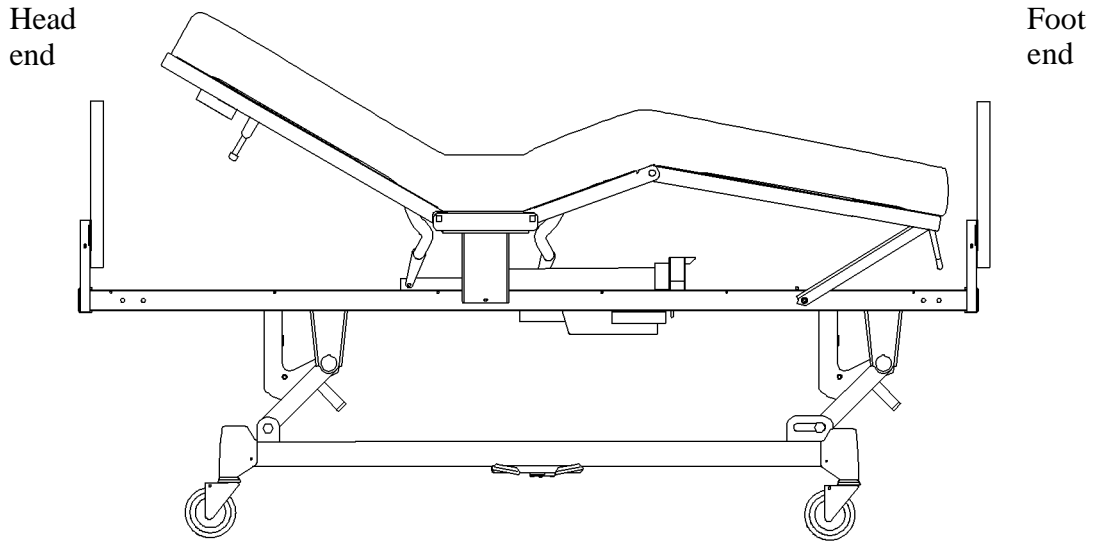
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Figure 1-7. Trendelenburg/Reverse Trendelenburg Positions



m241_010

Figure 1-8. Automatic Contour Position



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Specifications

Physical Description

See table 1-1 on page 1-12 for Century+™ Bed specifications.

Table 1-1. Specifications

Feature	Dimension
Height in high position—floor to sleep deck	30 1/4" (76.8 cm)
Height in low position—floor to sleep deck	17 3/4" (45.1 cm)
Maximum head elevation angle	60°
Caster size	5" (13 cm)
Clearance under base (5" casters)	7 1/2" (19.0 cm)
Sleep surface	36" x 80" (91 cm x 203 cm)
Overall frame (without bumpers)	36" x 88" (91 cm x 224 cm)
Overall frame (with roller bumpers)	36" x 92" (91 cm x 234 cm)
Wheel base	27" x 60.5" (69 cm x 153.7 cm)
Weight—Century+™ Bed (without mattress)	250 lb (113 kg)
head siderails 1/2 length	25 lb (11 kg)
full or 3/4 length siderails	35 lb (16 kg)
headboards and footboards	25 lb (11 kg)
Maximum safe working load	500 lb (227 kg)
Battery back-up (high-low cycles)	100

Head Section Inclination

The bed is mechanized so that the occupant can raise or lower the head section by touching the switch with a finger. The switch activators are the momentary type. The selected function will operate as long as the switch is depressed, and will stop once the switch is released. The switches are labeled with pictures that indicate their function, and are fixed in relation to the head section in order to provide the occupant with easy access, regardless of the degree of inclination.

Knee Section Inclination

The bed is mechanized so that the occupant can raise or lower the knee section by touching the switch with a finger. The switch activators are the momentary type. The selected function will operate as long as the switch is depressed, and will stop once the switch is released. The switches are labeled with pictures that indicate their function, and are fixed in relation to the head section in order to provide the occupant with easy access, regardless of the degree of inclination.

Foot Section Inclination

The foot section may be elevated by raising it manually and engaging the support arm. This does not affect the operation of other bed functions.

Hilow Sleeping Surface

The bed is mechanized so that an attendant can raise or lower the sleeping surface. The switch activators are the momentary type. The selected function will operate as long as the switch is depressed, and will stop once the switch is released. The switches are labeled with pictures that indicate their function. Siderail switches are fixed in relation to the head section, regardless of the degree of inclination. The switches face toward the attendant position, but are accessible for the occupant.

CPR Release

The head section can have an emergency quick-release mechanism incorporated into it. The release mechanism requires intentional action by an attendant for it to operate.

Casters for Beds with Central Brake and Steer

The bed is mounted on four cup and cone swivel type casters. The casters have 5" (13 cm) diameter molded rubber wheels and a minimum tread width of 31/32". The wheels are easily removed for cleaning or replacing.

Central Brake and Steer (Optional)

The braking system is activated from either side of the bed by means of foot pedals that allow single foot operation. Activation of the braking system locks two of the casters (wheels and swivels). Activation of the steering system locks the swivel on one caster (steer lock), which allows easy steering of the bed.

The foot pedals are located in convenient, accessible locations, and are clearly identified to distinguish between the braking and steering.

Trendelenburg/Reverse Trendelenburg

When activated, the bed can be positioned in Trendelenburg or Reverse Trendelenburg. These functions are available only at the attendant control console. Visual indicators show the bed's surface angle in degrees and inches. Activating any *hilow* switch automatically brings the bed out of the Trendelenburg or Reverse Trendelenburg position.

Manual Operation

The hilow, head, and knee functions may be manually operated if electrical power is not available.

Lockouts

When activated, lockouts prevent the patient from operating the head, knee, or hilow functions. Lockouts are only available at the attendant control console, and are used when necessary for patient safety. Activation of the knee lockout also prevents the automatic contour function.

Attendant Control Console

The attendant control console is located at the foot end of the bed. Access is limited so that the bed occupant cannot accidentally activate these functions.

The attendant control console houses:

- Trendelenburg/Reverse Trendelenburg control lever
- Hilow/Trendelenburg/Reverse Trendelenburg control switch
- Hilow function lockout switch
- Knee function lockout switch
- Head function lockout switch

IV Rod Accommodation

There are six locations where an IV rod can be installed—two at the head end, two at the seat section, and two at the foot end. The four corner locations (head end and foot end) have enough structural integrity to allow the use of fracture frame equipment.

Bed Frames

The mattress is supported by a steel frame that is 36" x 82" (91 cm x 208 cm), and is covered with four 16 gauge formed steel panels. The panels have molded edges for safety.

The frame has restraint attachment slots, drainage bag holders, and mattress stops. The restraint attachment slots are part of the head and foot sections. The rigid mattress stop is attached to the foot section, and can be folded down when not in use.

Docking/Wall Protection

The bed can be equipped with various types of roller bumpers designed to protect walls. The roller bumpers can be retrofitted as desired.

Siderails

The bed has two head siderails (1/2 length), and two foot siderails as standard equipment. The siderails can be retracted and stored under the sleeping surface frame.

Each head siderail contains head, knee, and hilow controls, and can be fitted with a phone.

Head Siderail Configurations

The head siderails can contain a variety of bed functions and other SideCom® Communication System controls:

- Nurse call activator (both sides required)
- Ambient light actuator (both sides required)
- Entertainment center actuator (music, TV, radio) (both sides required)
- Patient exit on/off switch, reset switch, and indicator light (one side only)
- Patient Phone (external option)

Bed Exit System

The bed exit system is an optional feature. When activated, a warning signal is placed through the nurse call system if the patient exits the bed. There is a selectable 2, 4, or 6 second delay in the audible signal. The selectable delay switch and system on/off switch are located in the head siderail.

Regulations, Standards, and Codes

UL Classification

- Class grounded equipment per UL 544
- CSA risk class 2G per CA per CSA 22.2

Model Identification

See table 1-2 on page 1-17 for Century+™ Bed model identification.

Table 1-2. Model Identification

Model Number	Description
P1400	Century+™ Bed

General Operation



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

The Century+™ Bed by Hill-Rom has independent motors that operate the following features:

- Bed height adjustment—hilow motor
- Foot section adjustment—foot motor
- Head section adjustment—head motor
- Trendelenburg—hilow motor
- Reverse Trendelenburg—hilow motor

The motors are governed by a single circuit board. Controls are located in the head siderail, pendant control, and/or the attendant control console.

Automatic Contour (Optional)

The Century+™ Bed has an optional feature called automatic contour. This feature automatically raises the knee section of the bed up to 15° as you raise the head section. The automatic contour feature helps prevent patients from sliding to the foot end of the bed when the head section is raised. If the automatic contour feature is not wanted, activating the *knee lockout* switch will disable the function. The automatic contour feature can be temporarily disabled by simultaneously pressing the *head up* and *knee down* switches.

Bed End Panels

Century+™ beds have post-type mountings for bed end panels. The bed end panels fit over two vertical mounting posts located at each end of the bed. You can remove the panels by lifting them vertically off the mounting posts.

CPR Release (Optional)

Beds with the optional CPR release feature have two CPR release handles located on each side at the head end of the head section. Use either of the CPR release handles to lower the head section in an emergency.

The CPR release lowers the head section from any elevated position. You activate it by pushing a button on the CPR release handle and pulling out on the handle. Continue to pull out on the CPR release to lower the head section.

Battery Backup

The battery backup allows all the motor functions of the bed to operate without external power. This feature enables the caregiver or patient to adjust the bed during transport or power outages.

Motor Assemblies

Thermals

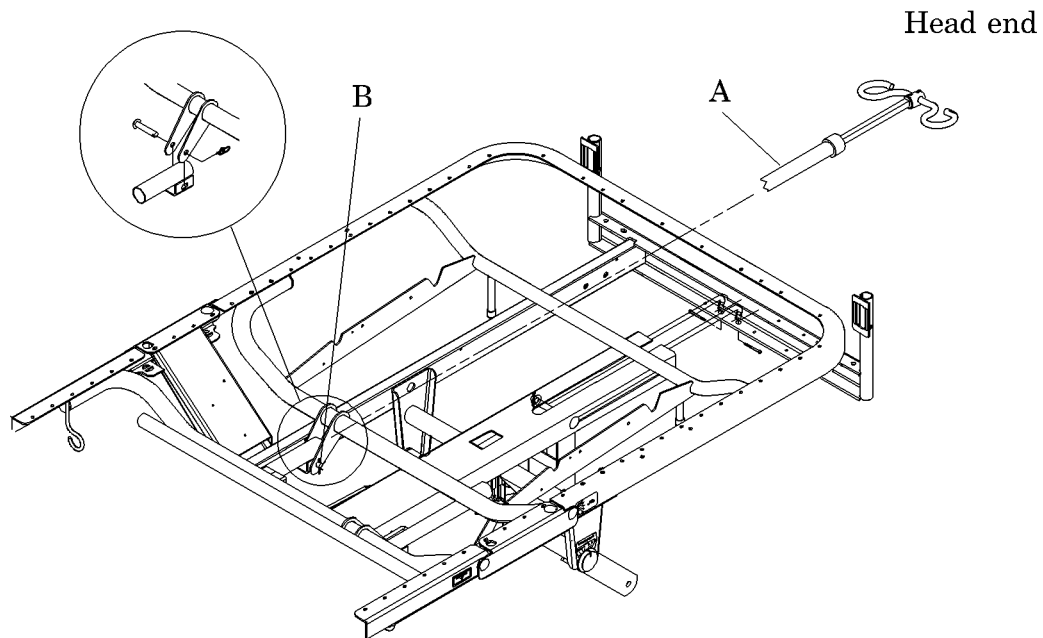
Thermals are an integrated part of the motors, protecting them in the event that an overload condition occurs. Thermals will stop the motor automatically if it heats up to a certain temperature. The motors will not run again until the automatic thermal resets.

Manual Operation

Head Function—Manual Operation

You can raise or lower the head function using a Hill-Rom P2217 IV rod (A) as a crank (see figure 1-9 on page 1-20). Access the head drive screw assembly (B) from the head end of the bed.

Figure 1-9. Head Function—Manual Operation



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WARNING:

Unplug the bed from its power source, and disconnect the motor before inserting the IV rod for manual operation. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.
2. Disconnect the head drive motor.
3. Extend the IV rod, and insert the lower end through the head end of the bed to engage the roll pin of the head drive screw.

4. Turn the IV rod clockwise or counterclockwise to raise or lower the head function as desired.



WARNING:

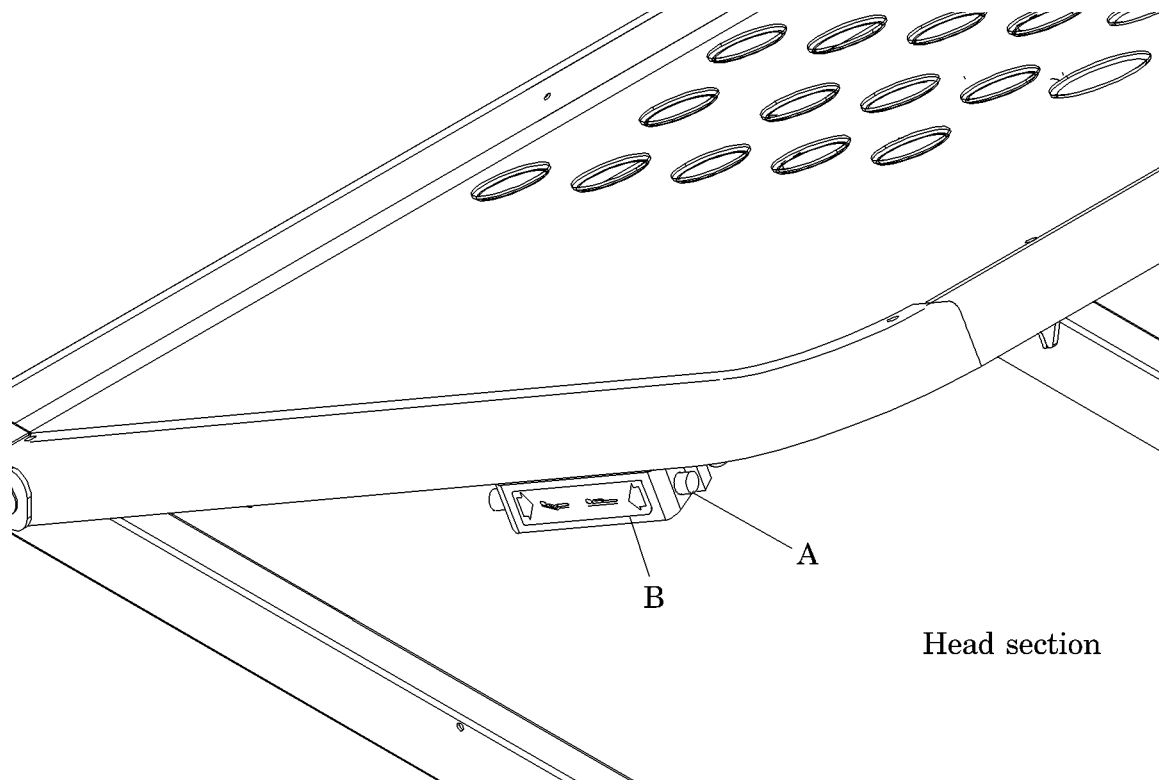
Remove the IV rod before plugging the bed into its power source. Failure to do so could result in personal injury or equipment damage.

5. Remove the IV rod from the bed once the head function is at the desired position.

Head Function—Manual Operation for Beds with CPR Release

You can raise or lower the head section using the CPR release at the head end of the bed. Depress the CPR release button (A), and pull out on the handle (B) (see figure 1-10 on page 1-22). Manually raise or lower the head section to the desired position, then let go of the CPR release.

Figure 1-10. Head Function—Manual Operation, Beds with CPR Release

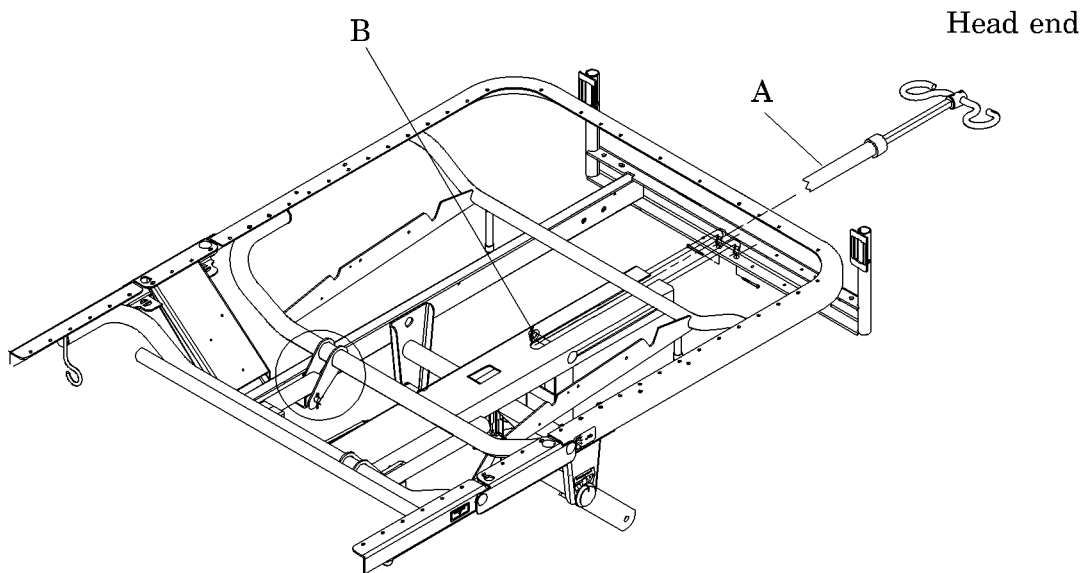


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Hilow Function—Manual Operation

You can raise or lower the bed using the Hill-Rom P2217 IV rod (A) as a crank (see figure 1-11 on page 1-23). Access the hilow drive screw (B) from the head end of the bed.

Figure 1-11. Hilow Function—Manual Operation



m241_132



WARNING:

Unplug the bed from its power source, and disconnect the motor before inserting the IV rod for manual operation. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.
2. Disconnect the hilow drive motor.
3. Extend the IV rod, and insert the lower end through the head end of the bed to engage the roll pin of the hilow drive screw.
4. Turn the IV rod clockwise or counterclockwise to raise or lower the hilow function as desired.



WARNING:

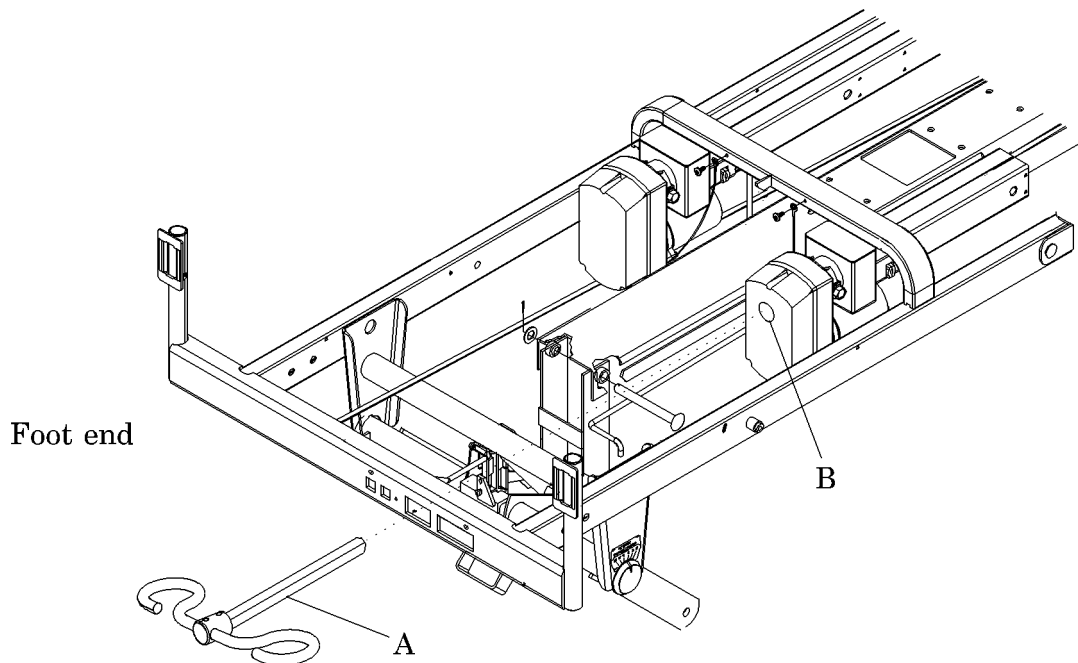
Remove the IV rod before plugging the bed into its power source. Failure to do so could result in personal injury or equipment damage.

5. Remove the IV rod from the bed once the hilow function is at the desired position.

Knee Function—Manual Operation

You can raise or lower the knee section using a Hill-Rom P2217 IV rod (A) as a crank (see figure 1-12 on page 1-24). Access the knee drive (B) through the hole in the back of the knee motor from the foot end of the bed.

Figure 1-12. Knee Function—Manual Operation



m241_125



WARNING:

Unplug the bed from its power source, and disconnect the motor before inserting the IV rod for manual operation. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.

2. Disconnect the knee drive motor.
3. Extend the IV rod, and insert the lower end through the foot end of the bed and into the hole in the knee drive motor casing.
4. Turn the IV rod clockwise or counterclockwise to raise or lower the knee function as desired.



WARNING:

Remove the IV rod before plugging the bed into its power source. Failure to do so could result in personal injury or equipment damage.

5. Remove the IV rod from the bed once the knee function is at the desired position.

Safety Tips

We urge you to incorporate the following safety tips into your procedures for the safety of both patients and staff.

Service and Maintenance

When you work with the bed in the high position, set the brakes, and place bed stands under the upper lift arm pivots or 2" x 4"s between the frame and lift arms. This will help prevent injury in case someone accidentally actuates the *hilow down* switch.

If service on the bed requires it to be placed on its side, be sure to store and pad the siderails to prevent damage. Use at least two people to place the bed on its side. If applicable, remove the brake/steer pedal to keep it from being damaged.

At no time is it prudent or necessary for service personnel to have their entire body below the sleep surface and within the confines of the bed. Unplug the bed from its power source prior to cleaning or servicing it. If service personnel need to get under the bed, they must block up the *hilow* portion as an added precaution.

Bed Position

To reduce the number and severity of falls by patients, always leave the bed in the low position when the patient is unattended.

Siderails

Hill-Rom has traditionally recommended when a patient is left unattended, the siderails should be in a straight up and locked position. However, a facility should make its own determination concerning the appropriate use of the siderails.

Siderails are intended as reminders, not restraining devices.

Braking and Steering

Always keep the casters in the brake position when the bed is occupied. Patients use the bed for support when getting in or out of the bed, and serious injuries can result if the bed moves. After the brakes are set, rock the bed

gently to ensure that they are locked. When applicable, put the casters in the steer mode when moving the bed. This will make the bed much easier to move.

Fluids

When massive spills occur in the area of the circuit board and motors, immediately perform the following:

1. Unplug the bed from its power source.
2. Take care of the patient.
3. Clean the fluid from the bed.
4. Have maintenance check out the bed completely. Fluids can short out controls, and cause the bed to become inoperable. Component failure caused by fluids can even cause the bed to operate erratically or without warning, causing injury.
5. Do not place the bed back into service until the unit is unquestionably dry and tested safe to operate.

Water Mattresses

The excessive weight of water mattresses puts too much stress on the motor drives. Generally, the patient's weight plus the water mattress weight will exceed the recommended bed capacity. More importantly, water mattresses can rupture, which would allow large amounts of water to come into contact with the electrical components of the bed. We feel the possibility of rupture to be a serious problem for which the facility would not want to be responsible.

Lockout Switches

Whenever a patient or visitor should be restricted from operating the siderail controls, activate the appropriate lockout switch at the attendant control console located at the foot end of the bed. The lockout switches are for the convenience of the staff and the safety of the patient. Use them when appropriate.

CPR Release

Only healthcare professionals should use the emergency CPR release. The release handle is located under the head section of the bed. To activate the CPR release, press the red button, and pull the handle. Continue to pull out on the handle until the head section is flat. Once this is complete, attend to the patient.



WARNING:

Unplug the bed from its power source, and disconnect the motor before inserting the IV rod for manual operation. Failure to do so could result in personal injury or equipment damage.



WARNING:

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.



WARNING:

Remove the IV rod before plugging the bed into its power source. Failure to do so could result in personal injury or equipment damage.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.



WARNING:

Only facility-authorized maintenance personnel should troubleshoot the Century+™ Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.



WARNING:

Refer to your VOM owner's manual for complete and detailed information regarding the operation of your VOM. Failure to do so could result in personal injury or equipment damage.



WARNING:

Get additional personnel to help you turn the bed over on the side that has the stored siderails. Failure to do so could result in personal injury or equipment damage.



WARNING:

Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

**WARNING:**

Adhere to the “Infection Control Policies and Procedures” outlined in the *Safety Coordinator Reference Guide*. Failure to do so could result in the spread of infection.

**WARNING:**

Only facility-authorized maintenance personnel should perform preventive maintenance on the Century+™ Bed. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

**WARNING:**

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

**SHOCK HAZARD:**

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

**SHOCK HAZARD:**

Do not expose the unit to excessive moisture. Personal injury or equipment damage could occur.

**CAUTION:**

Leave enough slack in the cable to allow the head section to move up and down without stressing the cable. Failure to do so could result in equipment damage.

**CAUTION:**

Do not use harsh cleaners, solvents, or detergents. Equipment damage could occur.



CAUTION:

Do not use silicone-based lubricants. Equipment damage could occur.



CAUTION:

Ensure that your hands are clean, and **only** handle the P.C. boards by their edges to prevent component damage.



CAUTION:

Wear an antistatic strap when handling electronic components. Failure to do so could result in component damage.



CAUTION:

Place the removed P.C. boards in antistatic protective bags for shipping and storage. Equipment damage can occur.

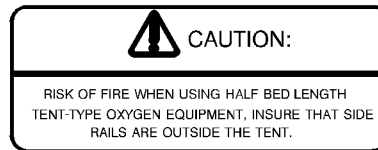
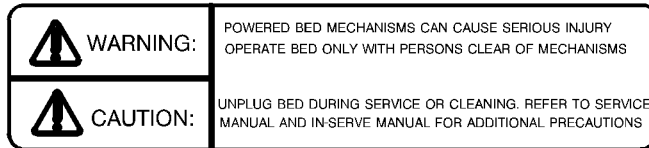
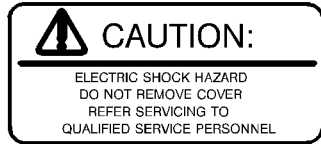


CAUTION:

Do not lower the bed frame while the trapeze support assembly is attached to the bed. Use the control box lockout to deactivate the hilow function. Equipment damage could occur.

Warning and Caution Labels

Figure 1-13. Warning and Caution Labels



m241_015

NOTES:

Chapter 2

Troubleshooting Procedures

2

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NOTES:

Getting Started

**WARNING:**

Only facility-authorized maintenance personnel should troubleshoot the Century+™ Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.

Begin each procedure in this chapter with step 1. Follow the sequence outlined (each step assumes the previous step has been completed). In each step, the normal operation of the product can be confirmed by answering **Yes** or **No** to the statement. Your response will lead to another step in the procedure, a repair analysis procedure (RAP), or a component replacement. If more than one component is listed, replace them in the given order.

Start with **Initial Actions** to begin gathering information about the problem.

Perform the **Function Checks** to isolate or identify a problem and to verify the repair after completing each corrective action (replacing or adjusting a part, seating a connector, etc.).

Perform the **Final Actions** after the Function Checks to verify the repair.

If troubleshooting procedures do not isolate the problem, call Hill-Rom Technical Support at (800) 445-3720 for assistance.

These troubleshooting techniques will help you locate operational problems on the Century+™ Bed. This section includes a list of functions and the technical information required to inspect and diagnose problems. Wiring diagrams for the Century+™ Bed are located in chapter 3.

Test Equipment

**WARNING:**

Only facility-authorized maintenance personnel should troubleshoot the Century+™ Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.

You will need a digital or analog volt ohm meter (VOM) with fine tip probes to troubleshoot the Century+™ Bed. The following section describes the three basic electrical functions that you will be testing with the VOM.

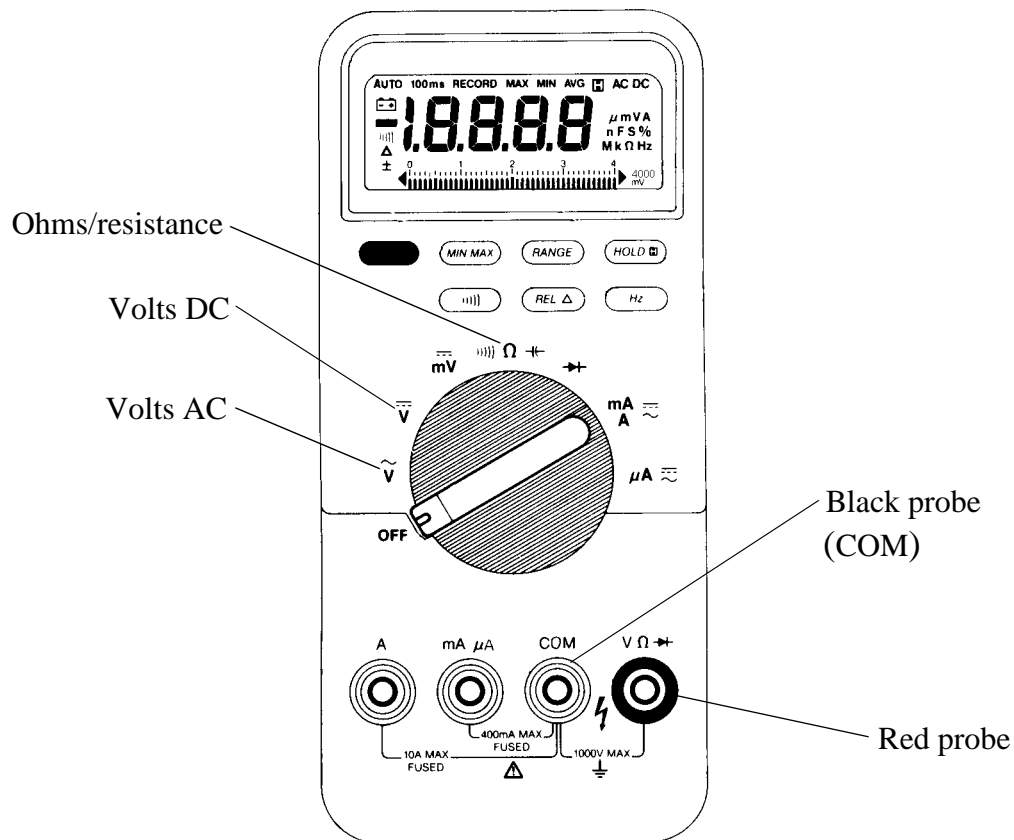
**WARNING:**

Refer to your VOM owner's manual for complete and detailed information regarding the operation of your VOM. Failure to do so could result in personal injury or equipment damage.

Electrical Functions

Figure 2-1 on page 2-4 represents a common digital VOM. The three basic electrical functions that you will test are alternating current (AC), direct current (DC), and ohms/resistance.

Figure 2-1. Volt Ohm Meter (VOM)



m241_016

Figure 2-1 on page 2-4 displays the correct connection for the fine tip probes. The red probe plugs into the port marked "V Ω \bar{V} ." The black probe plugs into the port marked "COM." The troubleshooting repair analysis procedure (RAP) indicates where on the bed to connect the red probe and black probe.

Initial Actions

Use Initial Actions to gather information from operators concerning problems with the Century+™ Bed. Note symptoms or other information concerning the problem that the operator describes. This information helps identify the probable cause.

1. Someone who can explain the problem is available.

Yes **No**

↓ → Go to “Function Checks” on page 2-5.

2. Ask that person to demonstrate or explain the problem. The problem can be duplicated.

Yes **No**

↓ → Go to “Function Checks” on page 2-5.

3. The problem is a result of improper operator action.

Yes **No**

↓ → Go to “Function Checks” on page 2-5.

4. Perform the “Function Checks” on page 2-5 to ensure proper operation of the Century+™ Bed.

Function Checks

1. Initial Actions have been performed.

Yes **No**

↓ → Go to “Initial Actions” on page 2-5.

2. The bed is plugged into an appropriate power source.

Yes **No**

↓ → Plug the bed into an appropriate power source. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 3.

3. The lockouts on the functions are off.

Yes **No**

↓ → Turn off the lockouts and proceed to step 4.

4. The bed functions are not at the limit of their movement.

- | | |
|------------|--|
| Yes | No |
| ↓ | → Operate the bed functions so they are no longer at the limit of their movement, as applicable. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 5. |

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

5. Test bed functions for up and down operation. All up and down bed functions work properly.

- | | |
|------------|---|
| Yes | No |
| ↓ | → If none of the bed functions operate, go to RAP 2.1. Otherwise, go to step 6. |

NOTE:

If a bed function is not working properly, perform the following function checks. Otherwise, go to “Final Actions” on page 2-7.

6. Press the *head up* switch, and activate the head section. The head section raises when the *head up* switch is activated.

- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to RAP 2.2. |

7. Press the *head down* switch, and activate the head section. The head section lowers when the *head down* switch is activated.

- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to RAP 2.3. |

8. Press the *knee up* switch, and activate the knee section. The knee section raises when the knee up switch is activated.

- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to RAP 2.4. |

9. Press the *knee down* switch and activate the knee section. The knee section lowers when the *knee down* switch is activated.

- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to RAP 2.5. |

10. Press the *bed up* switch, and activate the hilow function on the bed. The bed raises when the *bed up* switch is activated.

- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to RAP 2.6. |

11. Press the *bed down* switch, and activate the hilow function on the bed. The bed lowers when the *bed down* switch is activated.

Yes **No**
↓ → Go to RAP 2.7.

12. With the *knee lockout* switch on, press the *head up* switch, and activate the head section up and automatic contour function. The head section and knee section raise when the *head up* switch is activated.

Yes **No**
↓ → Go to RAP 2.8.

13. With the *knee lockout* switch on, press the *head down* switch, and activate the head section down and automatic contour function. The head section and knee section lower when the *head down* switch is activated.

Yes **No**
↓ → Go to RAP 2.9.

14. When the bed is in the high position, activate the *Trendelenburg* control lever and the *bed down* switch. The bed goes into the Trendelenburg position.

Yes **No**
↓ → Go to RAP 2.10.

15. When the bed is in the high position, activate the *Reverse Trendelenburg* control lever and the *bed up* switch. The bed goes into the Reverse Trendelenburg position.

Yes **No**
↓ → Go to RAP 2.10.

Final Actions

1. Complete the required preventive maintenance procedures. See “Preventive Maintenance Checklist” on page 6-8.
2. Remove any bed stands or 2" x 4"s, as applicable.
3. Plug the bed into an appropriate power source, as applicable.
4. Complete all required administration tasks.

NOTES:

2.1 None of the Bed Functions Work

1. Ensure the lockouts are in the unlocked position.

NOTE:

The lockouts and switches can hang up on the bezel if they are not adjusted properly.

2. The bed is plugged in to its proper power source.

Yes No

↓

→ Plug the bed in to the proper power source. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 3.

3. Check the fuses in the transformer box at the head end of the bed. The fuses are good.

Yes No

↓

→ Replace the fuses. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 4.

4. Check circuit breaker on the transformer box at the head end of the bed. The circuit breaker good.

Yes No

↓

→ Reset the circuit breaker. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 5.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

5. Using your VOM, measure the logic power from the control board (see figure 3-4 on page 3-5, and figure 3-6 on page 3-6). The voltage is between 10V and 15V.

Yes No

↓

→ Replace the control board (see “Control Board” on page 4-5). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 6.

6. Using your VOM, measure the motor power from the control board (see figure 3-4 on page 3-5, and figure 3-6 on page 3-6). The voltage is between 24V and 33V.

Yes **No**

↓

→ Replace the control board (see “Control Board” on page 4-5). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 7.

7. Check the supervisor relay on the control board (see figure 3-6 on page 3-6). The relay closes when any of the four bed functions are activated.

Yes **No**

↓

→ Replace the control board (see “Control Board” on page 4-5). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 8.

8. Replace the motor. For the head and knee motor, see “Head or Knee Motor” on page 4-18. For the hilow motor, see “Hilow Motor” on page 4-24.

Yes **No**

↓

→ Call Hill-Rom Technical Support at (800) 445-3720.

9. Go to “Final Actions” on page 2-7.

2.2 The Head Up Function Does Not Work

1. The head up function does not work when it is activated from either the left siderail or the right siderail.

Yes **No**

↓ → Go to step 19.

2. Perform the following steps:
 - a. Set your VOM to measure volts DC.

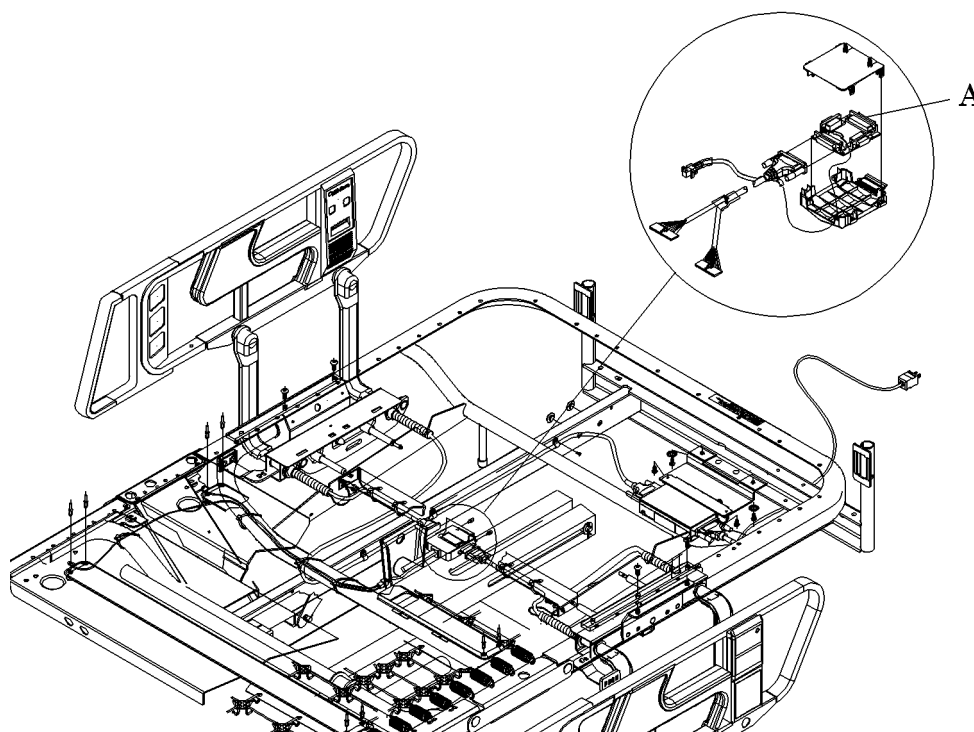


SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P200 (A) (see figure 2-2 on page 2-11), check the voltage between VSS (pin 21) and the head up function (pin 9) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

Figure 2-2. P200 Location



m241_111

- c. Activate the *head up* switch.

d. The voltage is 12V DC ($\pm 3V$).

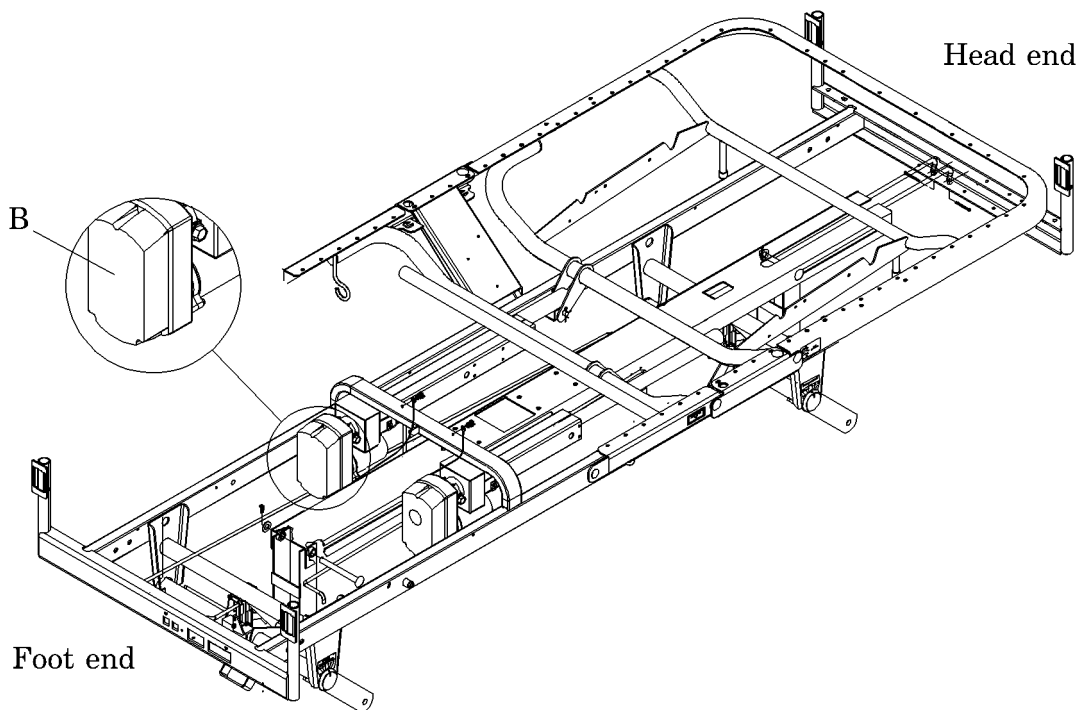
Yes **No**

↓ → Go to step 7.

3. Perform the following:

a. Disconnect the power cable to the head motor (B) (see figure 2-3 on page 2-12).

Figure 2-3. Head Motor Location



m241_118

b. Set your VOM to measure volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

c. Using the VOM, check the voltage in the power cable (see figure 3-4 on page 3-5).

d. The voltage is 12V DC $\pm 3V$.

4. Check the voltage to the head motor. The voltage is 24V DC $\pm 3V$.

Yes **No**
↓ → Go to step 15.

5. Replace the head motor (B) (see figure 2-3 on page 2-12) (see “Head or Knee Motor” on page 4-18). The head up function now works properly.

Yes **No**
↓ → Go to step 27.

6. Go to “Final Actions” on page 2-7.
7. Perform the following:
- Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- At P1, measure the voltage between common (pin 1) and 32V (pin 3) (see figure 3-4 on page 3-5).
- The voltage is 32V AC \pm 3V.

Yes **No**
↓ → Go to step 10.

8. Perform the following:
- Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- At P1, measure the voltage between common (pin 1) and 12V (pin 2) (see figure 3-4 on page 3-5).
- The voltage is 12V AC \pm 3V.

Yes **No**
↓ → Go to step 12.

9. Go to step 27.
10. Reset the circuit breaker on the transformer box. The head up function now operates normally.

Yes **No**
↓ → Go to step 13.

11. Go to step 27.

12. Check the fuse at the power outlet (common) side in the transformer box (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Replace the fuse. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 13.

13. Check the fuse at the inlet power (primary side) (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Go to step 17.

14. Go to step 27.

15. Perform the following:

a. Set your VOM to read volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

b. At P3, measure the voltage for the head motor (pins 5 and 6) (see figure 3-4 on page 3-5).

c. The voltage is 12V DC \pm 3V.

Yes **No**
↓ → Go to step 17.

16. Replace the cable from the control board to the head motor. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

17. Replace the control board (see “Control Board” on page 4-5) The head up function now operates properly.

Yes **No**
↓ → Go to step 27.

18. Go to “Final Actions” on page 2-7.

19. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-2 on page 2-11), disconnect the cable that connects test port to the siderail with the inoperative head up function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the head up function (pin 3) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. The VOM ohm reading is “open” (near infinite).

Yes	No
↓	→ Go to step 22.

20. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-2 on page 2-11), disconnect the cable that connects to the siderail with the inoperative head up function.

- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the head up function (pin 3) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *head up* button.
- g. The VOM reads 100 Ω or less.

Yes **No**
↓ → Go to step 23.

21. Replace the test port. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

22. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative head up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-2 on page 2-11) to the siderail with the inoperative head up function at the siderail end of the cable.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the head up function (pin 3) (see figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes **No**
↓ → Replace the cable that connects the test port (P200) (see figure 2-2 on page 2-11) to the siderail with the inoperative head up function. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

23. Perform the following

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative head up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-2 on page 2-11) to the siderail with the inoperative head up function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes	No
------------	-----------

↓	→
---	---

→	Replace the head up function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.
---	--

24. Perform the following

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).

- c. Open the siderail with the inoperative head up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-2 on page 2-11) to the siderail with the inoperative head up function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *head up* switch.
- g. The VOM reads 100Ω or less.

Yes **No**

- ↓ → Replace the head up function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

25. The head up function on the bed now works properly.

Yes **No**

- ↓ → Go to step 27.

26. Go to “Final Actions” on page 2-7.

27. Call Hill-Rom Technical Support at (800) 445-3720.

2.3 The Head Down Function Does Not Work

1. The head down function does not work when it is activated from either the left siderail or the right siderail.

Yes **No**

↓ → Go to step 19.

2. Perform the following steps:
 - a. Set your VOM to measure volts DC.

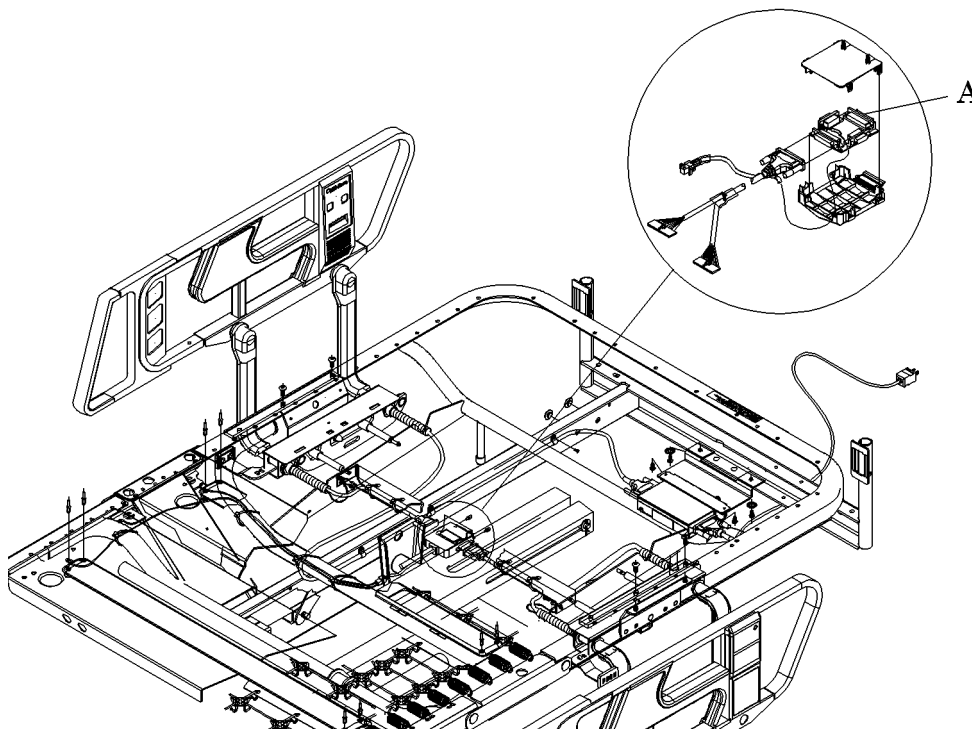


SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P200 (A) (see figure 2-4 on page 2-19), check the voltage between VSS (pin 21) and the head down function (pin 8) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

Figure 2-4. P200 Location



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- c. Activate the *head down* switch.

d. The voltage is 12V DC ($\pm 3V$).

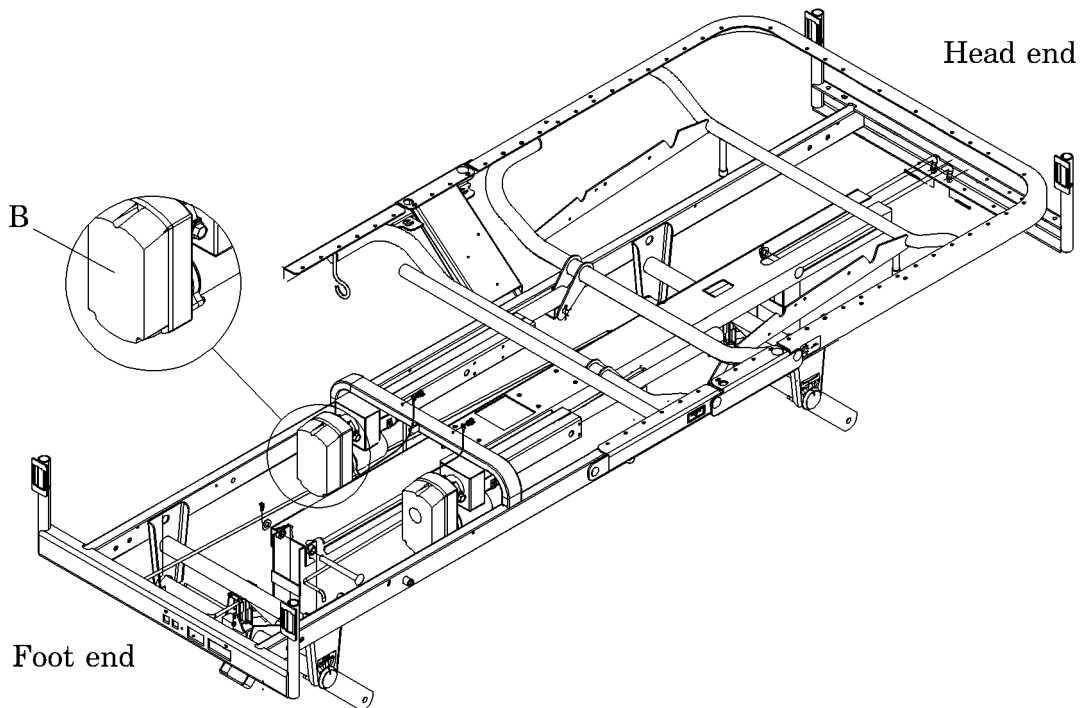
Yes **No**

↓ → Go to step 7.

3. Perform the following:

a. Disconnect the power cable to the head motor (B) (see figure 2-5 on page 2-20).

Figure 2-5. Head Motor Location



m241_118

b. Set your VOM to measure volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

c. Using the VOM, check the voltage in the power cable (see figure 3-4 on page 3-5).

d. The voltage is 12V DC $\pm 3V$.

4. Check the voltage to the head motor. The voltage is 24V DC $\pm 3V$.

Yes **No**
↓ → Go to step 15.

5. Replace the head motor (B) (see figure 2-5 on page 2-20) (see “Head or Knee Motor” on page 4-18). The head down function now works properly.

Yes **No**
↓ → Go to step 27.

6. Go to “Final Actions” on page 2-7.
7. Perform the following:
- Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- At P1, measure the voltage between common (pin 1) and 32V (pin 3) (see figure 3-4 on page 3-5).
- The voltage is 32V AC \pm 3V.

Yes **No**
↓ → Go to step 10.

8. Perform the following:
- Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- At P1, measure the voltage between common (pin 1) and 12V (pin 2) (see figure 3-4 on page 3-5).
- The voltage is 12V AC \pm 3V.

Yes **No**
↓ → Go to step 12.

9. Go to step 27.
10. Reset the circuit breaker on the transformer box. The head down function now operates normally.

Yes **No**
↓ → Go to step 13.

11. Go to step 27.

12. Check the fuse at the power outlet (common) side in the transformer box (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Replace the fuse. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 13.

13. Check the fuse at the inlet power (primary side) (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Go to step 17.

14. Go to step 27.

15. Perform the following:

a. Set your VOM to read volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

b. At P3, measure the voltage for the head motor (pins 5 and 6) (see figure 3-4 on page 3-5).

c. The voltage is 12V DC \pm 3V.

Yes **No**
↓ → Go to step 17.

16. Replace the cable from the control board to the head motor. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

17. Replace the control board (see “Control Board” on page 4-5) The head down function now operates properly.

Yes **No**
↓ → Go to step 27.

18. Go to “Final Actions” on page 2-7.

19. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-4 on page 2-19), disconnect the cable that connects test port to the siderail with the inoperative head down function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the head down function (pin 4) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. The VOM ohm reading is “open” (near infinite).

Yes	No
↓	→ Go to step 22.

20. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-4 on page 2-19), disconnect the cable that connects to the siderail with the inoperative head down function.

- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the head down function (pin 4) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *head down* button.
- g. The VOM reads 100 Ω or less.

Yes **No**
↓ → Go to step 23.

21. Replace the test port. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

22. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative head down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-4 on page 2-19) to the siderail with the inoperative head down function at the siderail end of the cable.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the head down function (pin 4) (see figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes **No**
↓ → Replace the cable that connects the test port (P200) (see figure 2-4 on page 2-19) to the siderail with the inoperative head down function. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

23. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative head down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-4 on page 2-19) to the siderail with the inoperative head down function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes No

↓

→ Replace the head down function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

24. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative head down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-4 on page 2-19) to the siderail with the inoperative head down function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *head down* switch.
- g. The VOM reads 100Ω or less.

Yes No

- ↓ → Replace the head down function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

25. The head down function on the bed now works properly.

Yes No

- ↓ → Go to step 27.

26. Go to “Final Actions” on page 2-7.

27. Call Hill-Rom Technical Support at (800) 445-3720.

2.4 The Knee Up Function Does Not Work

1. The knee up function does not work when it is activated from either the left siderail or the right siderail.

Yes **No**

↓ → Go to step 19.

2. Perform the following steps:
 - a. Set your VOM to measure volts DC.

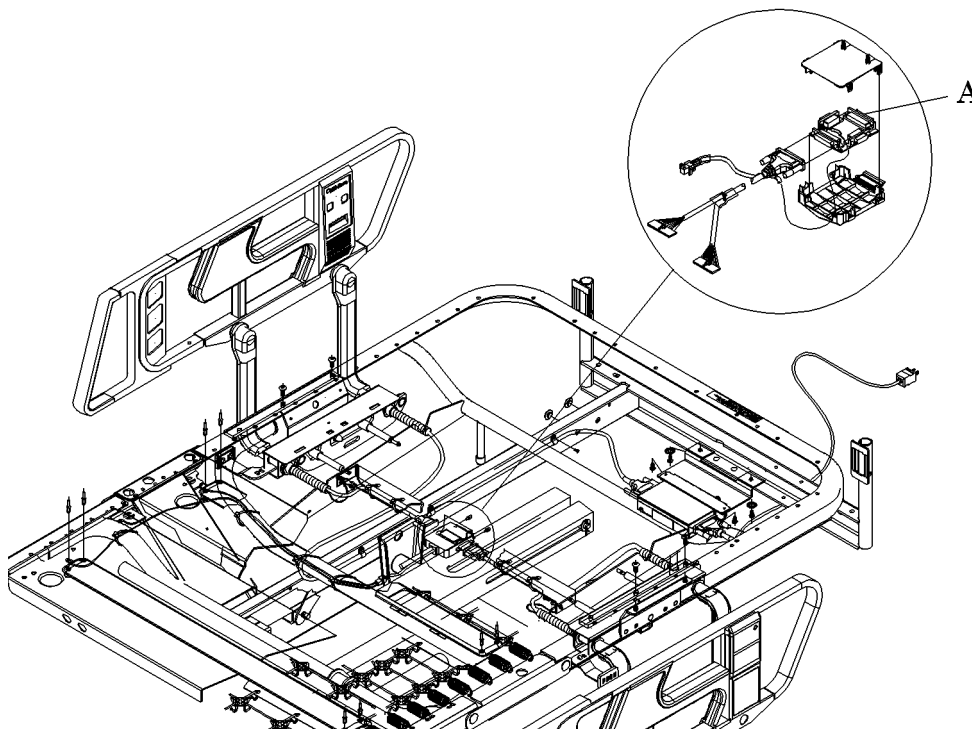


SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P200 (A) (see figure 2-6 on page 2-27), check the voltage between VSS (pin 21) and the knee up function (pin 7) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

Figure 2-6. P200 Location



m241_111

- c. Activate the *knee up* switch.

d. The voltage is 12V DC ($\pm 3V$).

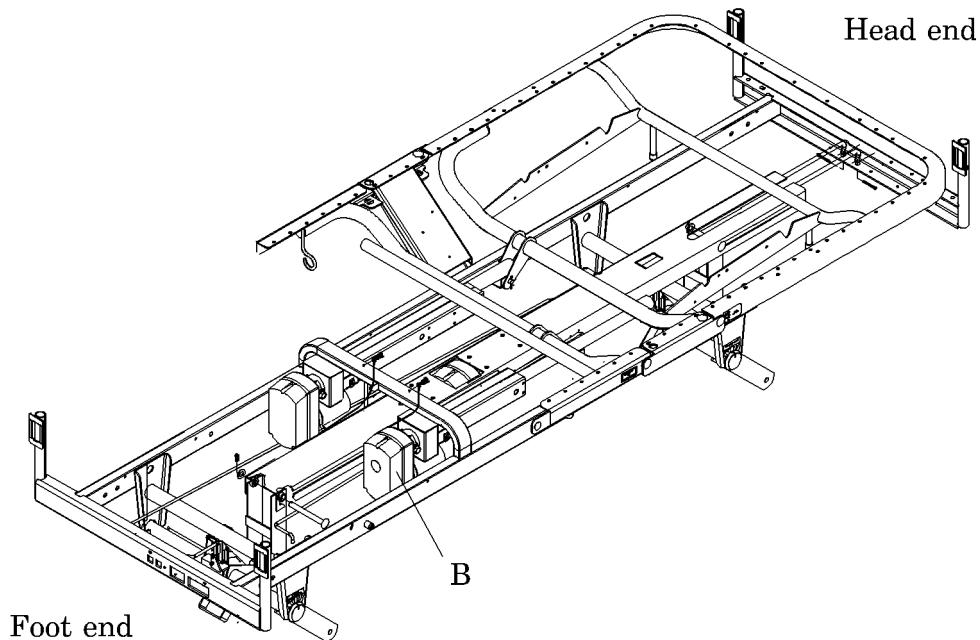
Yes **No**

↓ → Go to step 7.

3. Perform the following:

a. Disconnect the power cable to the knee motor (B) (see figure 2-7 on page 2-28).

Figure 2-7. Knee Motor Location



m241_117

b. Set your VOM to measure volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

c. Using the VOM, check the voltage in the power cable (see figure 3-4 on page 3-5).

d. The voltage is 12V DC $\pm 3V$.

4. Check the voltage to the knee motor. The voltage is 24V DC $\pm 3V$.

Yes **No**
 ↓ → Go to step 15.

5. Replace the knee motor (B) (see figure 2-7 on page 2-28) (see “Head or Knee Motor” on page 4-18). The knee up function now works properly.

Yes **No**
 ↓ → Go to step 27.

6. Go to “Final Actions” on page 2-7.
7. Perform the following:
- a. Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P1, measure the voltage between common (pin 1) and 32V (pin 3) (see figure 3-4 on page 3-5).
- c. The voltage is 32V AC \pm 3V.

Yes **No**
 ↓ → Go to step 10.

8. Perform the following:
- a. Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P1, measure the voltage between common (pin 1) and 12V (pin 2) (see figure 3-4 on page 3-5).
- c. The voltage is 12V AC \pm 3V.

Yes **No**
 ↓ → Go to step 12.

9. Go to step 27.
10. Reset the circuit breaker on the transformer box. The knee up function now operates normally.

Yes **No**
↓ → Go to step 13.

11. Go to step 27.

12. Check the fuse at the power outlet (common) side in the transformer box (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Replace the fuse. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 13.

13. Check the fuse at the inlet power (primary side) (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Go to step 17.

14. Go to step 27.

15. Perform the following:

a. Set your VOM to read volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

b. At P3, measure the voltage for the knee motor (pins 1 and 4) (see figure 3-4 on page 3-5).

c. The voltage is 12V DC \pm 3V.

Yes **No**
↓ → Go to step 17.

16. Replace the cable from the control board to the knee motor. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

17. Replace the control board (see “Control Board” on page 4-5) The knee up function now operates properly.

Yes **No**
↓ →

↓ → Go to step 27.

18. Go to “Final Actions” on page 2-7.

19. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-6 on page 2-27), disconnect the cable that connects test port to the siderail with the inoperative knee up function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the knee up function (pin 5) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. The VOM ohm reading is “open” (near infinite).

Yes	No
↓	→ Go to step 22.

20. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.

- d. At the test port (P200) (see figure 2-6 on page 2-27), disconnect the cable that connects to the siderail with the inoperative knee up function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the knee up function (pin 5) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *knee up* button.
- g. The VOM reads 100Ω or less.

Yes **No**
 ↓ → Go to step 23.

21. Replace the test port. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

22. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative knee up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-6 on page 2-27) to the siderail with the inoperative knee up function at the siderail end of the cable.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the knee up function (pin 5) (see figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes **No**
 ↓ → Replace the cable that connects the test port (P200) (see figure 2-6 on page 2-27) to the siderail with the inoperative knee up function. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

23. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative knee up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-6 on page 2-27) to the siderail with the inoperative knee up function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes No

↓

→ Replace the knee up function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

24. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).

- c. Open the siderail with the inoperative knee up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-6 on page 2-27) to the siderail with the inoperative knee up function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *knee up* switch.
- g. The VOM reads 100Ω or less.

Yes **No**

- ↓ → Replace the knee up function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

25. The knee up function on the bed now works properly.

Yes **No**

- ↓ → Go to step 27.

26. Go to “Final Actions” on page 2-7.

27. Call Hill-Rom Technical Support at (800) 445-3720.

2.5 The Knee Down Function Does Not Work

1. The knee down function does not work when it is activated from either the left siderail or the right siderail.

Yes **No**

↓ → Go to step 19.

2. Perform the following steps:
 - a. Set your VOM to measure volts DC.

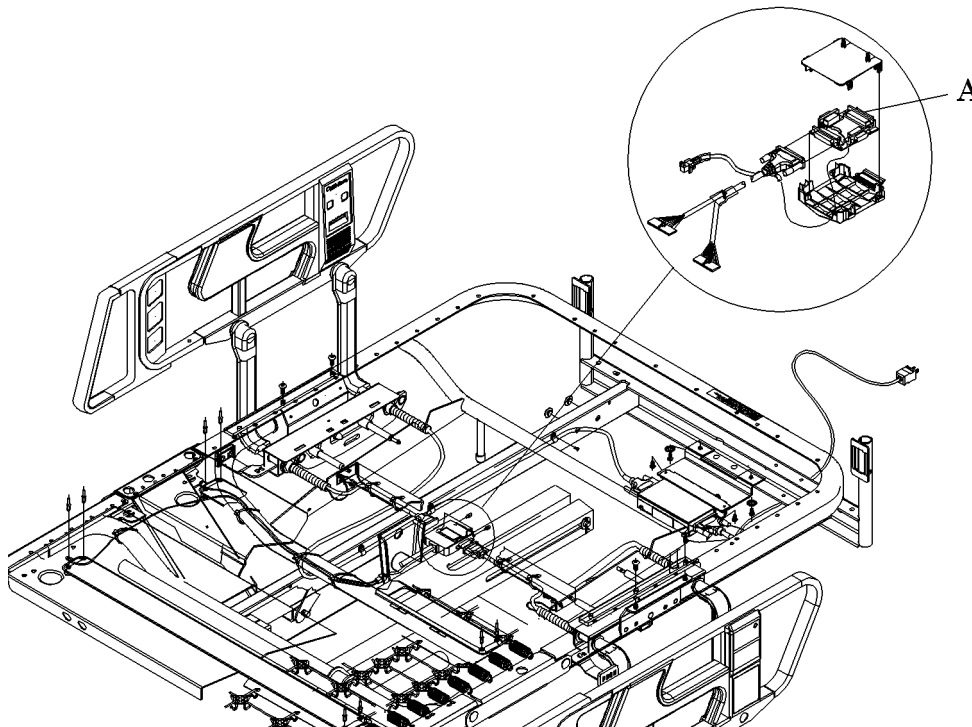


SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P200 (A) (see figure 2-8 on page 2-35), check the voltage between VSS (pin 21) and the knee down function (pin 6) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

Figure 2-8. P200 Location



m241_111

- c. Activate the *knee down* switch.

d. The voltage is 12V DC ($\pm 3V$).

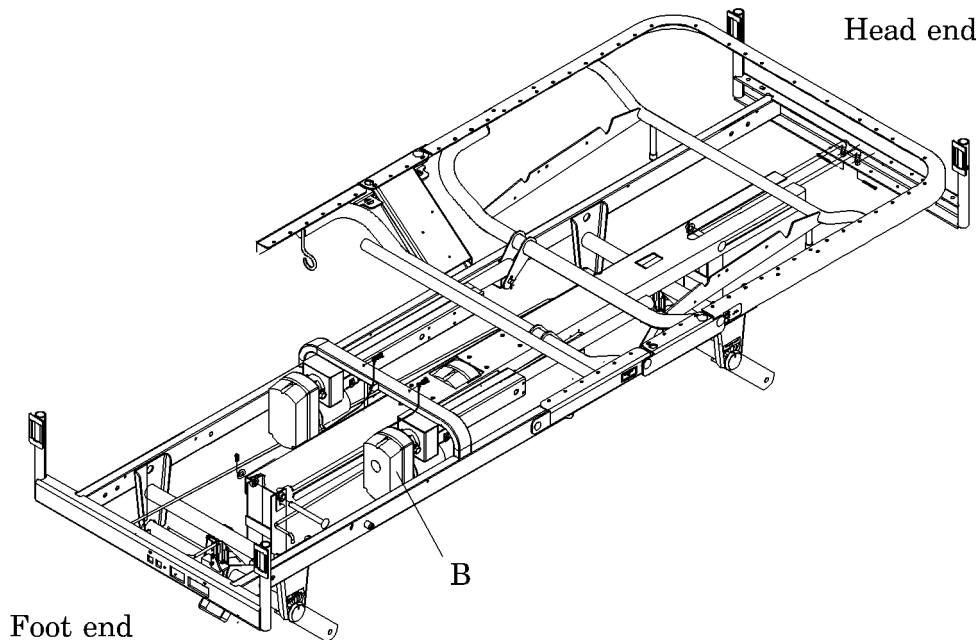
Yes No

↓ → Go to step 7.

3. Perform the following:

a. Disconnect the power cable to the knee motor (B) (see figure 2-9 on page 2-36).

Figure 2-9. Knee Motor Location



m241_117

b. Set your VOM to measure volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

c. Using the VOM, check the voltage in the power cable (see figure 3-4 on page 3-5).

d. The voltage is 12V DC $\pm 3V$.

4. Check the voltage to the knee motor. The voltage is 24V DC $\pm 3V$.

Yes **No**
 ↓ → Go to step 15.

5. Replace the knee motor (B) (see figure 2-9 on page 2-36) (see “Head or Knee Motor” on page 4-18). The knee down function now works properly.

Yes **No**
 ↓ → Go to step 27.

6. Go to “Final Actions” on page 2-7.
7. Perform the following:
- Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- At P1, measure the voltage between common (pin 1) and 32V (pin 3) (see figure 3-4 on page 3-5).
- The voltage is 32V AC \pm 3V.

Yes **No**
 ↓ → Go to step 10.

8. Perform the following:
- Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- At P1, measure the voltage between common (pin 1) and 12V (pin 2) (see figure 3-4 on page 3-5).
- The voltage is 12V AC \pm 3V.

Yes **No**
 ↓ → Go to step 12.

9. Go to step 27.
10. Reset the circuit breaker on the transformer box. The knee down function now operates normally.

Yes **No**
↓ → Go to step 13.

11. Go to step 27.

12. Check the fuse at the power outlet (common) side in the transformer box (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Replace the fuse. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 13.

13. Check the fuse at the inlet power (primary side) (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Go to step 17.

14. Go to step 27.

15. Perform the following:

a. Set your VOM to read volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

b. At P3, measure the voltage for the knee motor (pins 1 and 4) (see figure 3-4 on page 3-5).

c. The voltage is 12V DC \pm 3V.

Yes **No**
↓ → Go to step 17.

16. Replace the cable from the control board to the knee motor. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

17. Replace the control board (see “Control Board” on page 4-5) The knee down function now operates properly.

Yes **No**
↓ →

↓ → Go to step 27.

18. Go to “Final Actions” on page 2-7.

19. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-8 on page 2-35), disconnect the cable that connects test port to the siderail with the inoperative knee down function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the knee down function (pin 6) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. The VOM ohm reading is “open” (near infinite).

Yes	No
↓	→ Go to step 22.

20. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.

- d. At the test port (P200) (see figure 2-8 on page 2-35), disconnect the cable that connects to the siderail with the inoperative knee down function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the knee down function (pin 6) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *knee down* button.
- g. The VOM reads 100 Ω or less.

Yes **No**
↓ → Go to step 23.

21. Replace the test port. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

22. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative knee down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-8 on page 2-35) to the siderail with the inoperative knee down function at the siderail end of the cable.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the knee down function (pin 6) (see figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes **No**
↓ → Replace the cable that connects the test port (P200) (see figure 2-8 on page 2-35) to the siderail with the inoperative knee down

function. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

23. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative knee down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-8 on page 2-35) to the siderail with the inoperative knee down function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes No

- | | | |
|---|---|--|
| ↓ | → | Replace the knee down function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27. |
|---|---|--|

24. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative knee down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-8 on page 2-35) to the siderail with the inoperative knee down function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *knee down* switch.
- g. The VOM reads 100Ω or less.

Yes No

- ↓ → Replace the knee down function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

25. The knee down function on the bed now works properly.

Yes No

- ↓ → Go to step 27.

26. Go to “Final Actions” on page 2-7.

27. Call Hill-Rom Technical Support at (800) 445-3720.

2.6 The Bed Up Function Does Not Work

1. The bed up function does not work when it is activated from either the left siderail or the right siderail.

Yes **No**
↓ → Go to step 23.

2. Press the *bed down* button. The bed moves downward.

Yes **No**
↓ → Go to step 5. After you complete this procedure, go to RAP 2.7.

3. Check if the hilow drive was at the limit of its movement by pressing the *bed up* button. The bed moves upward.

Yes **No**
↓ → Go to step 5.

4. If the bed up function now operates normally, go to “Final Actions” on page 2-7. Otherwise, go to step 5.

5. Check the hilow limit switch by grasping the hilow rod and moving it back and forth approximately 3" (8 cm). You hear the hilow limit switch clicking on and off.

Yes **No**
↓ → Replace the hilow limit switch. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 6.

6. Perform the following steps:
 - a. Set your VOM to measure volts DC.

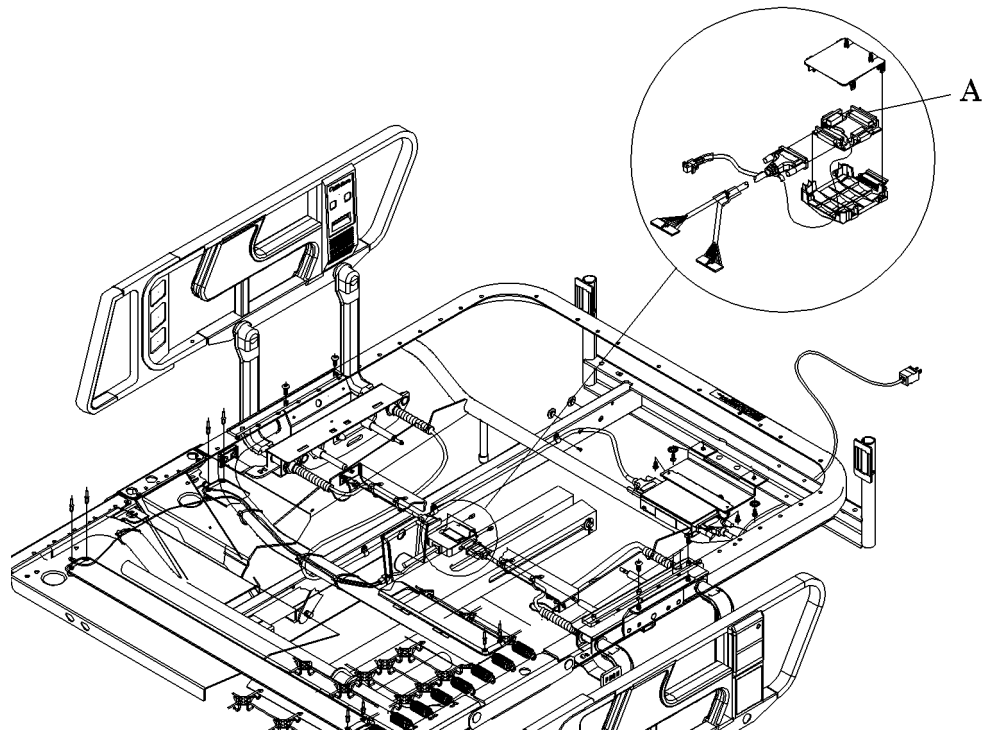


SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P200 (A) (see figure 2-10 on page 2-44), check the voltage between VSS (pin 21) and the bed up function (pin 11) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

Figure 2-10. P200 Location



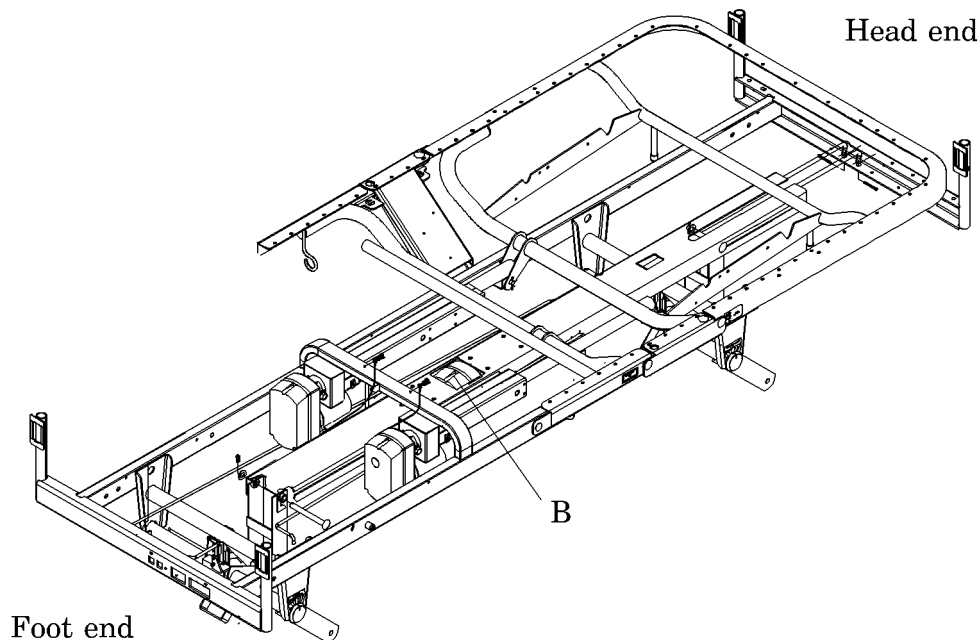
m241_111

- c. Activate the *bed up* switch.
- d. The voltage is 12V DC ($\pm 3V$).

Yes **No**
↓ → Go to step 11.

- 7. Perform the following:
 - a. Disconnect the power cable to the hilow motor (B) (see figure 2-11 on page 2-45).

Figure 2-11. Hilow Motor Location



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- b. Set your VOM to measure volts DC.

**SHOCK HAZARD:**

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- c. Using the VOM, check the voltage in the power cable (see figure 3-4 on page 3-5).
- d. The voltage is 12V DC \pm 3V.
8. Check the voltage to the hilow motor. The voltage is 24V DC \pm 3V.
- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to step 19. |
9. Replace the hilow motor (B) (see figure 2-11 on page 2-45) (see “Head or Knee Motor” on page 4-18). The bed up function now works properly.
- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to step 31. |

10. Go to “Final Actions” on page 2-7.

11. Perform the following:

- a. Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P1, measure the voltage between common (pin 1) and 32V (pin 3) (see figure 3-4 on page 3-5).
- c. The voltage is 32V AC \pm 3V.

Yes **No**
↓ → Go to step 14.

12. Perform the following:

- a. Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P1, measure the voltage between common (pin 1) and 12V (pin 2) (see figure 3-4 on page 3-5).
- c. The voltage is 12V AC \pm 3V.

Yes **No**
↓ → Go to step 16.

13. Go to step 31.

14. Reset the circuit breaker on the transformer box. The bed up function now operates normally.

Yes **No**
↓ → Go to step 17.

15. Go to step 31.

16. Check the fuse at the power outlet (common) side in the transformer box (see figure 3-4 on page 3-5). The fuse is good.

Yes No

↓

→ Replace the fuse. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 17.

17. Check the fuse at the inlet power (primary side) (see figure 3-4 on page 3-5). The fuse is good.

Yes No

↓

→ Go to step 21.

18. Go to step 31.

19. Perform the following:

a. Set your VOM to read volts DC.

**SHOCK HAZARD:**

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

b. At P3, measure the voltage for the hilow motor (pins 2 and 3) (see figure 3-4 on page 3-5).

c. The voltage is 12V DC \pm 3V.

Yes No

↓

→ Go to step 21.

20. Replace the cable from the control board to the hilow motor. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

21. Replace the control board (see “Control Board” on page 4-5) The bed up function now operates properly.

Yes No

↓

→

↓

→ Go to step 31.

22. Go to “Final Actions” on page 2-7.

23. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-10 on page 2-44), disconnect the cable that connects test port to the siderail with the inoperative bed up function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the bed up function (pin 1) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. The VOM ohm reading is “open” (near infinite).

Yes	No
↓	→ Go to step 26.

24. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-10 on page 2-44), disconnect the cable that connects to the siderail with the inoperative bed up function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the bed up function (pin 1) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *bed up* button.

g. The VOM reads 100Ω or less.

Yes **No**

↓ → Go to step 27.

25. Replace the test port. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

26. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).

c. Open the siderail with the inoperative bed up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).

d. Disconnect the cable that connects the test port (P200) (see figure 2-10 on page 2-44) to the siderail with the inoperative bed up function at the siderail end of the cable.

e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the bed up function (pin 1) (see figure 3-4 on page 3-5).

f. The VOM reads Ω “open” (near infinite).

Yes **No**

↓ → Replace the cable that connects the test port (P200) (see figure 2-10 on page 2-44) to the siderail with the inoperative bed up function. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 27.

27. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative bed up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-10 on page 2-44) to the siderail with the inoperative bed up function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes **No**

- ↓ → Replace the bed up function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

28. Perform the following



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative bed up function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-10 on page 2-44) to the siderail with the inoperative bed up function at the siderail end of the cable.

- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *bed up* switch.
- g. The VOM reads 100Ω or less.

Yes **No**

↓ → Replace the bed up function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

29. The bed up function on the bed now works properly.

Yes **No**

↓ → Go to step 31.

30. Go to “Final Actions” on page 2-7.

31. Call Hill-Rom Technical Support at (800) 445-3720.

2.7 The Bed Down Function Does Not Work

1. The bed down function does not work when it is activated from either the left siderail or the right siderail.

Yes **No**
↓ → Go to step 23.

2. Press the *bed up* button. The bed moves upward.

Yes **No**
↓ → Go to step 5. After you complete this procedure, go to RAP 2.6

3. Check if the hilow drive was at the limit of its movement by pressing the *bed down* button. The bed moves downward.

Yes **No**
↓ → Go to step 5.

4. If the bed down function now operates normally, go to “Final Actions” on page 2-7. Otherwise, go to step 5.

5. Check the hilow limit switch by grasping the hilow rod and moving it back and forth approximately 3" (8 cm). You hear the hilow limit switch clicking on and off.

Yes **No**
↓ → Replace the hilow limit switch. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 6.

6. Perform the following steps:
 - a. Set your VOM to measure volts DC.

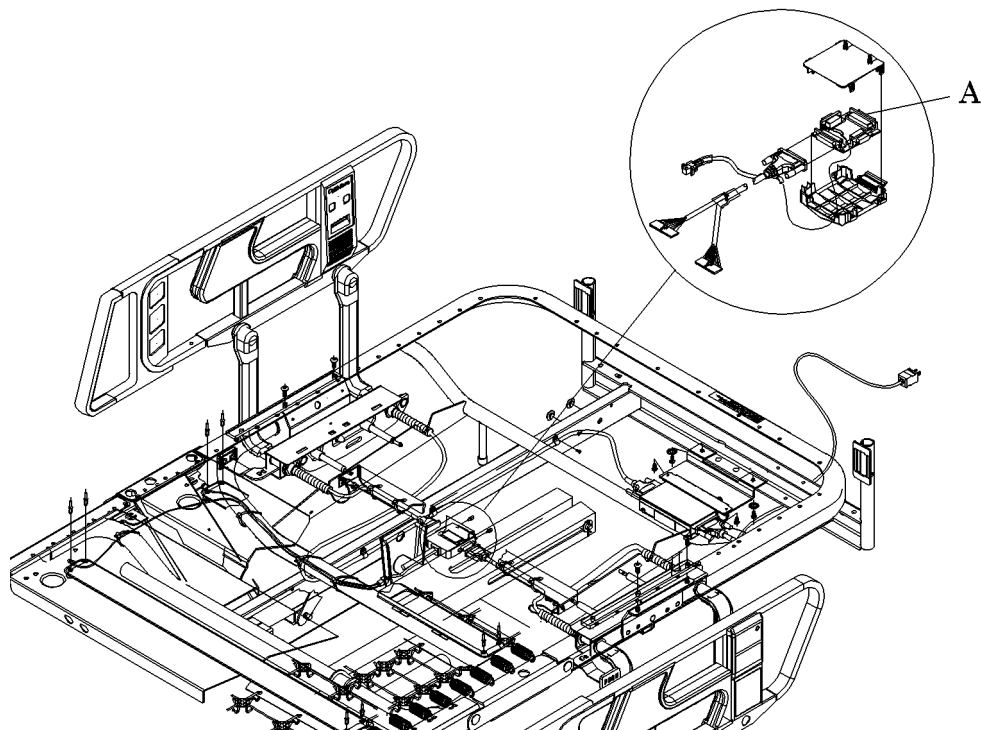


SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P200 (A) (see figure 2-12 on page 2-53), check the voltage between VSS (pin 21) and the bed down function (pin 10) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

Figure 2-12. P200 Location



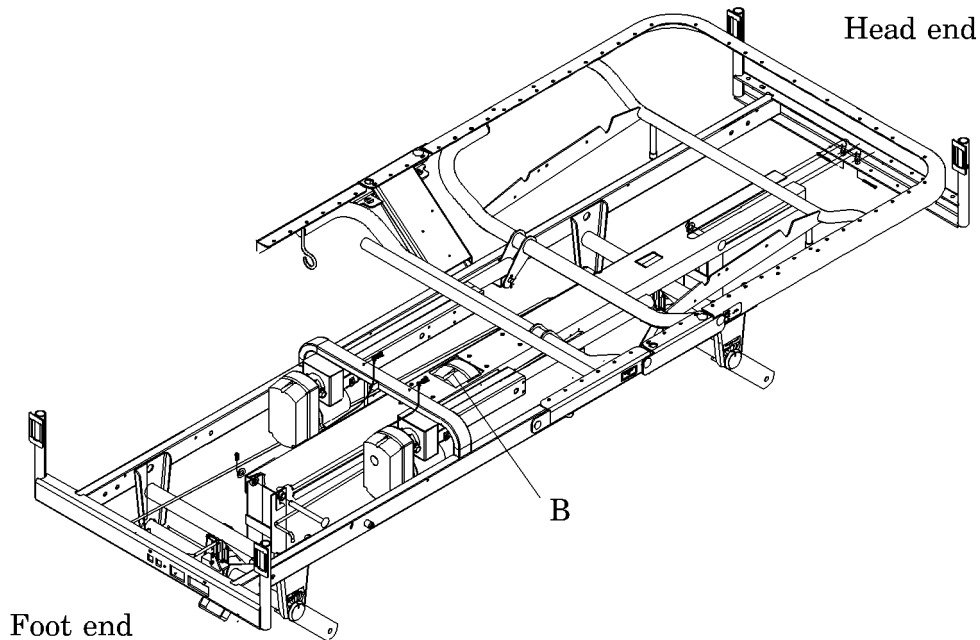
m241_111

- c. Activate the *bed down* switch.
- d. The voltage is 12V DC ($\pm 3V$).

Yes **No**
↓ → Go to step 11.

7. Perform the following:
 - a. Disconnect the power cable to the hilow motor (B) (see figure 2-13 on page 2-54).

Figure 2-13. Hilow Motor Location



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- b. Set your VOM to measure volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- c. Using the VOM, check the voltage in the power cable (see figure 3-4 on page 3-5).
 - d. The voltage is 12V DC \pm 3V.
8. Check the voltage to the hilow motor. The voltage is 24V DC \pm 3V.
- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to step 19. |
9. Replace the hilow motor (B) (see figure 2-13 on page 2-54) (see “Head or Knee Motor” on page 4-18). The bed down function now works properly.
- | | |
|------------|------------------|
| Yes | No |
| ↓ | → Go to step 31. |

10. Go to “Final Actions” on page 2-7.

11. Perform the following:

- a. Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P1, measure the voltage between common (pin 1) and 32V (pin 3) (see figure 3-4 on page 3-5).
- c. The voltage is 32V AC \pm 3V.

Yes **No**
↓ → Go to step 14.

12. Perform the following:

- a. Set your VOM to read volts AC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

- b. At P1, measure the voltage between common (pin 1) and 12V (pin 2) (see figure 3-4 on page 3-5).
- c. The voltage is 12V AC \pm 3V.

Yes **No**
↓ → Go to step 16.

13. Go to step 31.

14. Reset the circuit breaker on the transformer box. The bed down function now operates normally.

Yes **No**
↓ → Go to step 17.

15. Go to step 31.

16. Check the fuse at the power outlet (common) side in the transformer box (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Replace the fuse. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 17.

17. Check the fuse at the inlet power (primary side) (see figure 3-4 on page 3-5). The fuse is good.

Yes **No**
↓ → Go to step 21.

18. Go to step 31.

19. Perform the following:

a. Set your VOM to read volts DC.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

b. At P3, measure the voltage for the hilow motor (pins 2 and 3) (see figure 3-4 on page 3-5).

c. The voltage is 12V DC \pm 3V.

Yes **No**
↓ → Go to step 21.

20. Replace the cable from the control board to the hilow motor. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

21. Replace the control board (see “Control Board” on page 4-5) The bed down function now operates properly.

Yes **No**
↓ →

↓ → Go to step 31.

22. Go to “Final Actions” on page 2-7.

23. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-12 on page 2-53), disconnect the cable that connects test port to the siderail with the inoperative function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the bed down function (pin 2) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).
- f. The VOM ohm reading is “open” (near infinite).

Yes	No
↓	→ Go to step 26.

24. Perform the following:

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Set your VOM to measure ohms.
- d. At the test port (P200) (see figure 2-12 on page 2-53), disconnect the cable that connects to the siderail with the inoperative bed down function.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the bed down function (pin 2) (see figure 3-1 on page 3-3, and figure 3-4 on page 3-5).

- f. While holding the VOM probes in place, depress the *bed down* button.
- g. The VOM reads 100 Ω or less.

Yes **No**
↓ → Go to step 27.

25. Replace the test port. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

26. Perform the following:



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative bed down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-12 on page 2-53) to the siderail with the inoperative bed down function at the siderail end of the cable.
- e. In the cable (P17 or P18), check the resistance between VCC (common) (pin 7) and the bed down function (pin 2) (see figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes **No**
↓ → Replace the cable that connects the test port (P200) (see figure 2-12 on page 2-53) to the siderail with the inoperative bed down function. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

27. Perform the following

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
- c. Open the siderail with the inoperative bed down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-12 on page 2-53) to the siderail with the inoperative bed down function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. The VOM reads Ω “open” (near infinite).

Yes	No
------------	-----------

↓	→
---	---

→	Replace the bed down function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.
---	---

28. Perform the following

**SHOCK HAZARD:**

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

- a. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

- b. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).

- c. Open the siderail with the inoperative bed down function (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52).
- d. Disconnect the cable that connects the test port (P200) (see figure 2-12 on page 2-53) to the siderail with the inoperative bed down function at the siderail end of the cable.
- e. Check the resistance in the switch (see figure 3-3 on page 3-4, and figure 3-4 on page 3-5).
- f. While holding the VOM probes in place, depress the *bed down* switch.
- g. The VOM reads 100Ω or less.

Yes No

- ↓ → Replace the bed down function switch (see “Siderail Nurse Call, Lighting, or Bed Control Switch Assembly” on page 4-52). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, go to step 31.

29. The bed down function on the bed now works properly.

Yes No

- ↓ → Go to step 31.

30. Go to “Final Actions” on page 2-7.

31. Call Hill-Rom Technical Support at (800) 445-3720.

2.8 The Knee Section Does Not Raise (Beds with Automatic Contour Only)

The knee section will not raise when the *head up* switch is activated.

1. Check the knee up function by activating the *knee up* switch. The knee up function works normally.

Yes **No**

↓

→ Go to RAP 2.4. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, continue to step 2.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

2. Set your VOM to measure V DC. At P1, measure the voltage between pin 1 and pin 3 (see figure 3-4 on page 3-5, and figure 3-6 on page 3-6). Activate the *head up* switch. The voltage is 12V DC ($\pm 3V$).

Yes **No**

↓

→ Replace the automatic contour switch (see “Automatic Contour Assembly (Beds with Optional Automatic Contour Only)” on page 4-33). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, continue to step 3.

3. Set your VOM to measure V DC. At P4, P5, or P6, measure the voltage between VCC (common) (pin 8) and VSS (pin 9) (see figure 3-4 on page 3-5, and figure 3-6 on page 3-6). Activate the *head up* switch. The voltage is 28V DC ($\pm 4V$).

Yes **No**

↓

→ Replace the control board (see “Control Board” on page 4-5). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, continue to step 4.

4. The function is now working normally.

Yes **No**

↓

→ Call Hill-Rom Technical Support at (800) 445-3720.

5. Go to “Final Actions” on page 2-7.

2.9 The Knee Section Does Not Lower (Beds with Automatic Contour Only)

The knee section will not raise when the *head down* switch is activated.

1. Check the knee up function by activating the *knee down* switch. The knee up function works normally.

Yes **No**



→ Go to RAP 2.5. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, continue to step 2.



SHOCK HAZARD:

Use extreme care when checking live voltage. Do not touch live terminals, wires, or ground. Failure to use caution could result in serious electrical shock injury.

2. Set your VOM to measure V DC. At P1, measure the voltage between pin 2 and pin 4 (see figure 3-4 on page 3-5, and figure 3-6 on page 3-6). Activate the *head down* switch. The voltage is 12V DC ($\pm 3V$).

Yes **No**



→ Replace the automatic contour switch (see “Automatic Contour Assembly (Beds with Optional Automatic Contour Only)” on page 4-33). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, continue to step 3.

3. Set your VOM to measure V DC. At P4, P5, or P6, measure the voltage between VCC (common) (pin 8) and VSS (pin 9) (see figure 3-4 on page 3-5, and figure 3-6 on page 3-6). Activate the *head down* switch. The voltage is 28V DC ($\pm 4V$).

Yes **No**



→ Replace the control board (see “Control Board” on page 4-5). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, continue to step 4.

4. The function is now working normally.

Yes **No**



→ Call Hill-Rom Technical Support at (800) 445-3720.

5. Go to “Final Actions” on page 2-7.

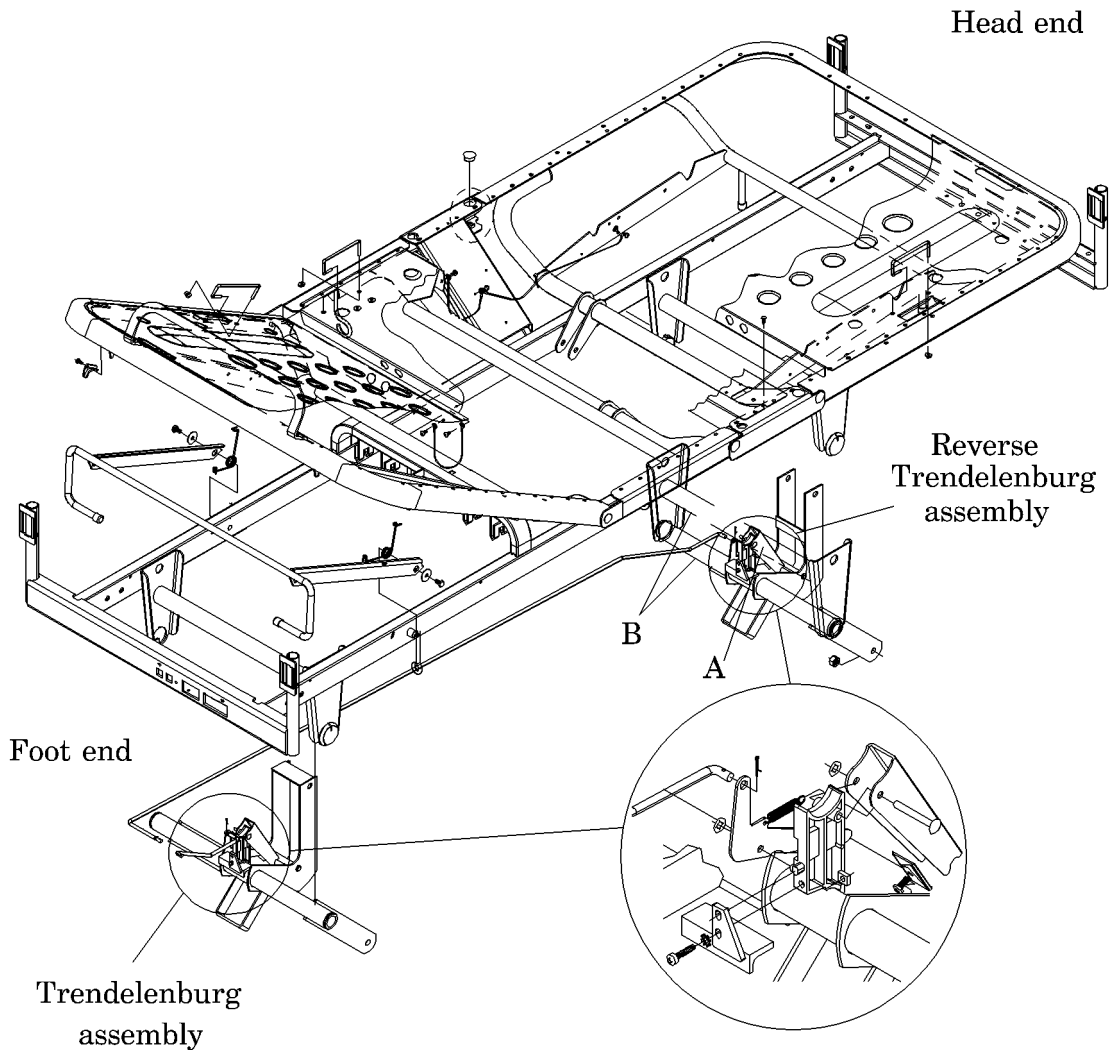
2.10 The Trendelenburg or Reverse Trendelenburg Function Does Not Work

The bed lowers completely but does not go into Trendelenburg or Reverse Trendelenburg when activated.

1. Visually inspect the Trendelenburg or Reverse Trendelenburg rods (see figure 2-14 on page 2-63). The Trendelenburg or Reverse Trendelenburg rods are bent.

Yes	No
↓	→ Go to step 4.

Figure 2-14. Trendelenburg and Reverse Trendelenburg Assemblies



m241_112

2. Straighten or replace the Trendelenburg or Reverse Trendelenburg rods, as necessary (see “Trendelenburg or Reverse Trendelenburg Assembly” on page 4-36). The Trendelenburg or Reverse Trendelenburg function now operates normally.

Yes **No**
↓ → Go to step 4.

3. Go to “Final Actions” on page 2-7.

4. Visually inspect the Trendelenburg or Reverse Trendelenburg linkages (see figure 2-14 on page 2-63). The Trendelenburg or Reverse Trendelenburg linkages are disconnected or broken.

Yes **No**
↓ → Go to step 7.

5. Connect or replace the Trendelenburg or Reverse Trendelenburg linkages, as necessary (see “Trendelenburg or Reverse Trendelenburg Assembly” on page 4-36). The Trendelenburg or Reverse Trendelenburg function now operates normally.

Yes **No**
↓ → Go to step 7.

6. Go to “Final Actions” on page 2-7.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

7. Activate either the Trendelenburg or Reverse Trendelenburg function. The plated bracket (A) is wedged in between the two torque tubes (B) (see figure 2-14 on page 2-63).

Yes **No**
↓ → Go to step 12.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Activate either the Trendelenburg or Reverse Trendelenburg function. The bed lowers 3" to 4" (8 cm to 10 cm) and stops.

Yes **No**
↓ → Go to step 14.

9. The Trendelenburg and Reverse Trendelenburg switches are binding so that activating one causes the other to be activated at the same time.

Yes **No**
↓ → Go to step 14.

NOTE:

If both the Trendelenburg and Reverse Trendelenburg functions are activated at the same time, the bed will lower 3" to 4" (8 cm to 10 cm) and stop. The hilow motor continues to run until it reaches its low limit, or until the down button is released.

10. Adjust or replace the Trendelenburg or Reverse Trendelenburg switches (or both) as necessary. The Trendelenburg or Reverse Trendelenburg now operates normally.

Yes **No**
↓ → Go to step 14.

11. Go to “Final Actions” on page 2-7.

12. Adjust or replace the mechanical linkage so that the plated bracket (A) is wedged in between the two torque tubes (B). The Trendelenburg or Reverse Trendelenburg function now operates normally.

Yes **No**
↓ → Go to step 14.

13. Go to “Final Actions” on page 2-7.

14. Call Hill-Rom Technical Support at (800) 445-3720.

2.11 The Siderail Is Hard to Rotate Up or Down

1. Raise the head section or foot section to its highest position.

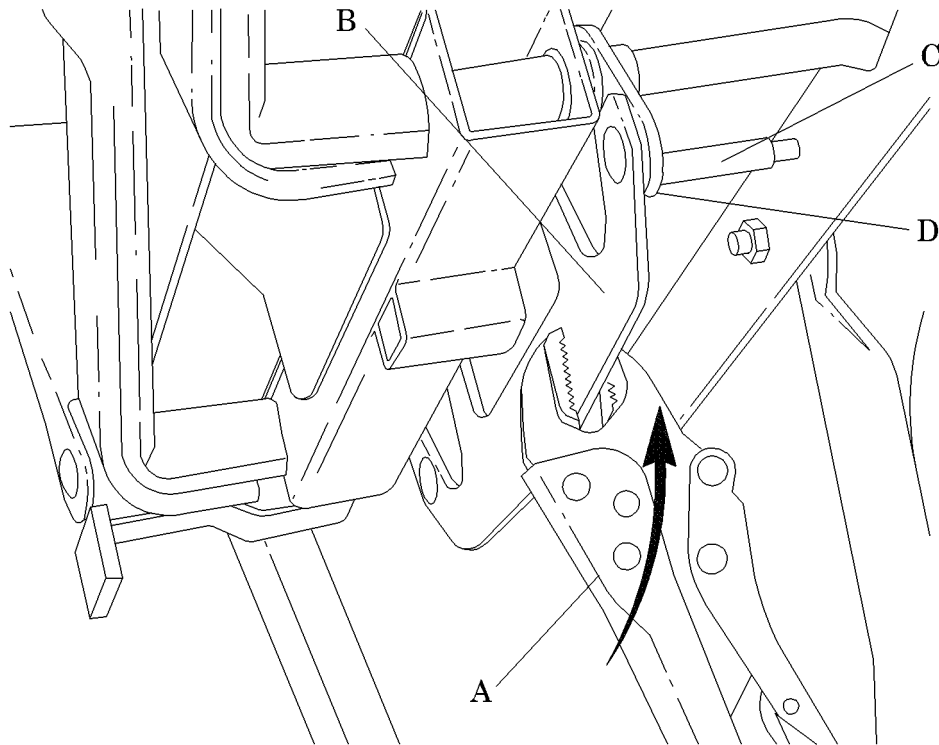


WARNING:

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.

2. Place bed stands under the upper lift arm pivots or 2 x 4s between the bed frame and lift arms.
3. Examine the siderail strap (B) (see figure 2-15 on page 2-66). The siderail strap (B) is bent.

Figure 2-15. The Siderail Is Hard to Rotate Up or Down

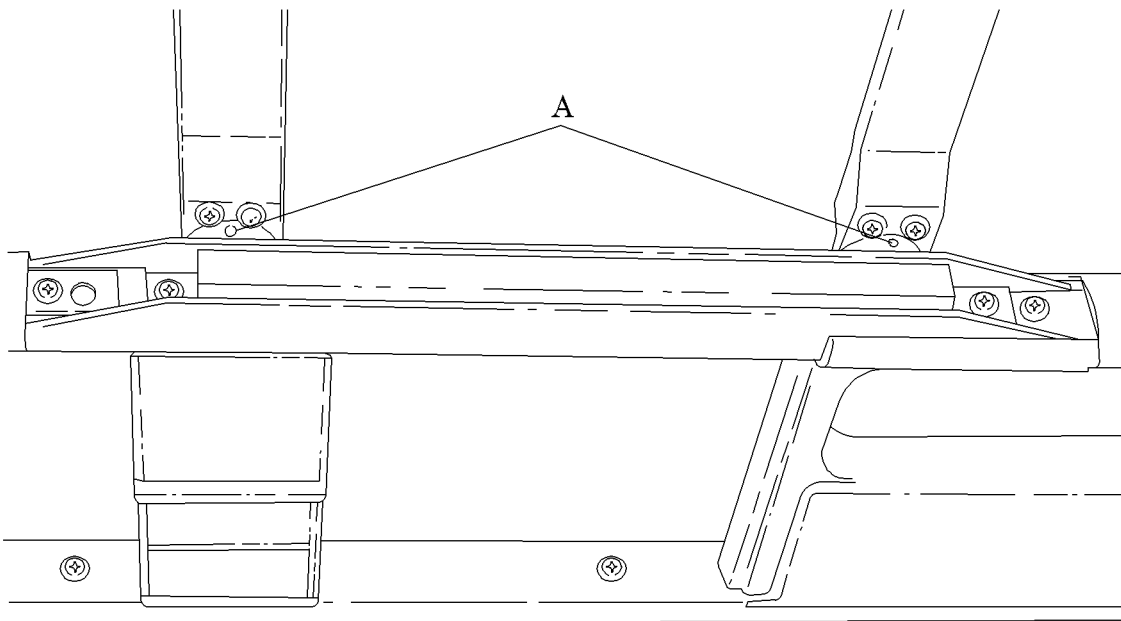


m241_056

Yes **No**
↓ → Go to step 5.

4. Using a crescent wrench or locking pliers (A), straighten the strap (B) until the slide rods (C) are parallel. If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, proceed to step 5.

5. Clean and lubricate the pivot points (D) located on the strap (B) near the slide rods (C). If this solves the problem, go to “Final Actions” on page 2-7. Otherwise, proceed to step 6.
6. Raise the siderail to the up position, and apply grease to the grease ports (A) (see figure 2-16 on page 2-67). The siderail is now fully functional.
Yes **No**
↓ → Call Hill-Rom Technical Support at (800) 445-3720.
7. Go to “Final Actions” on page 2-7.

Figure 2-16. Siderail Lubrication

m241_057

NOTES:

Chapter 3

Theory of Operation

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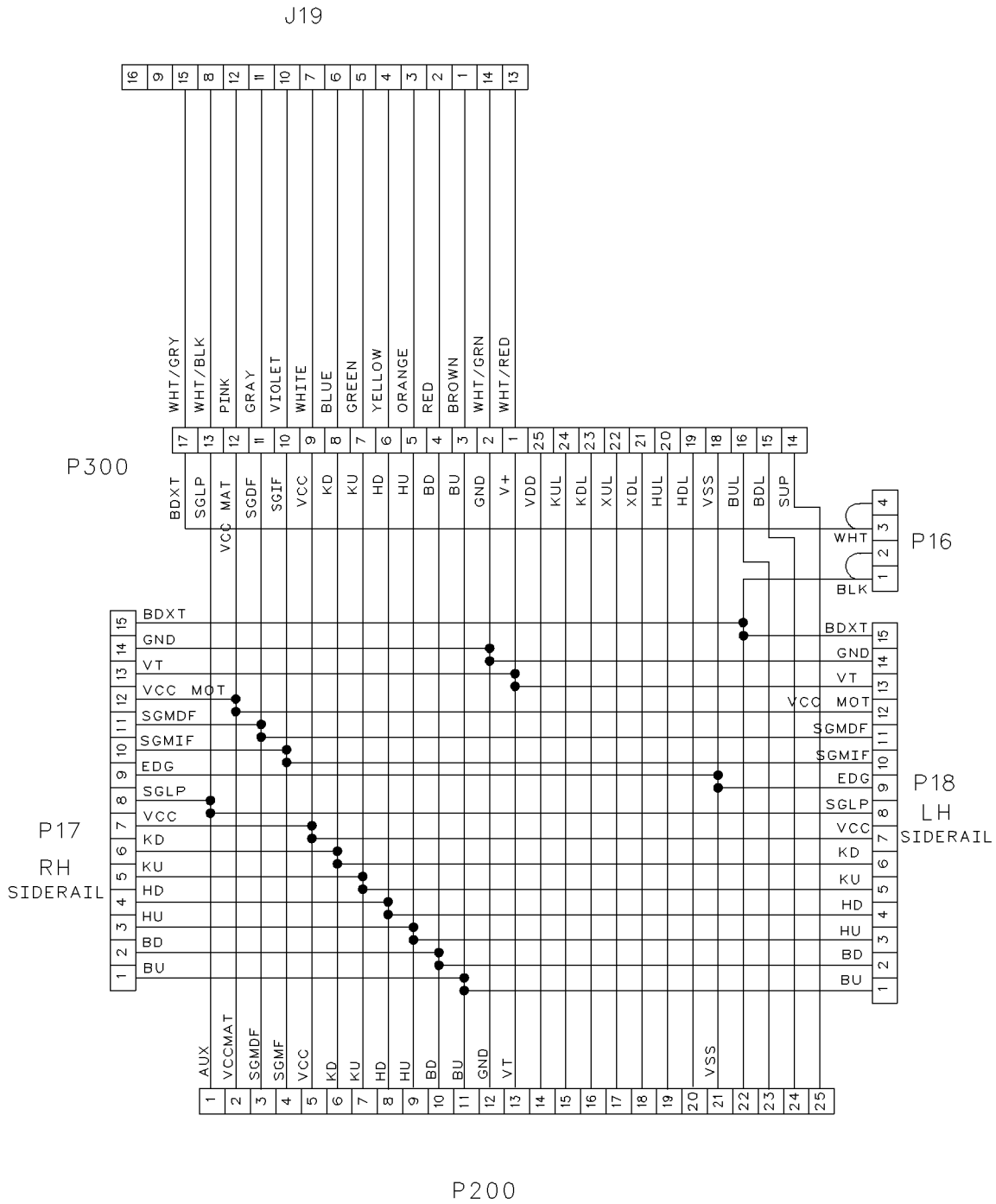
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3

NOTES:

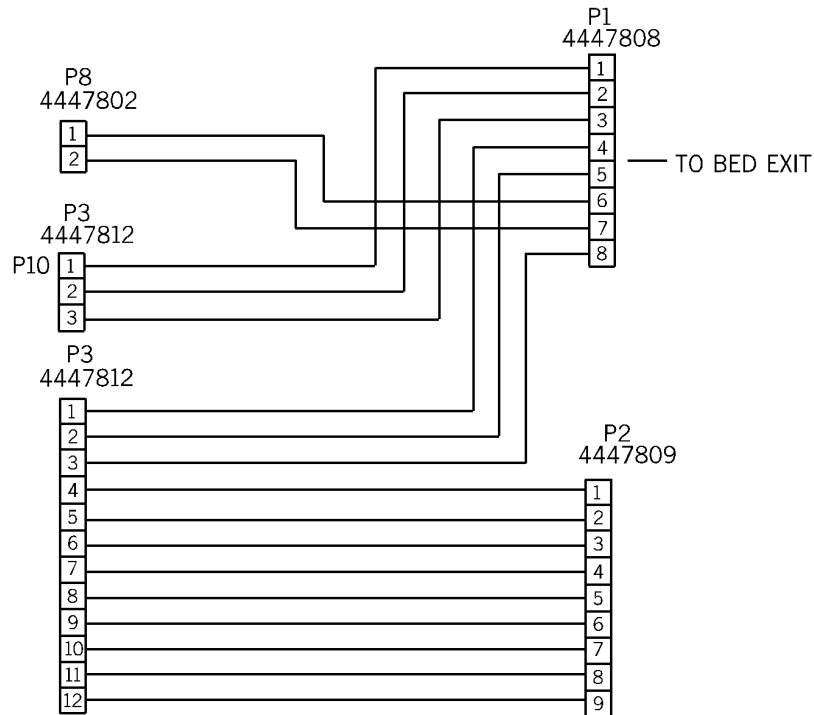
Electrical System

Figure 3-1. Test Port Cable Assembly Schematic



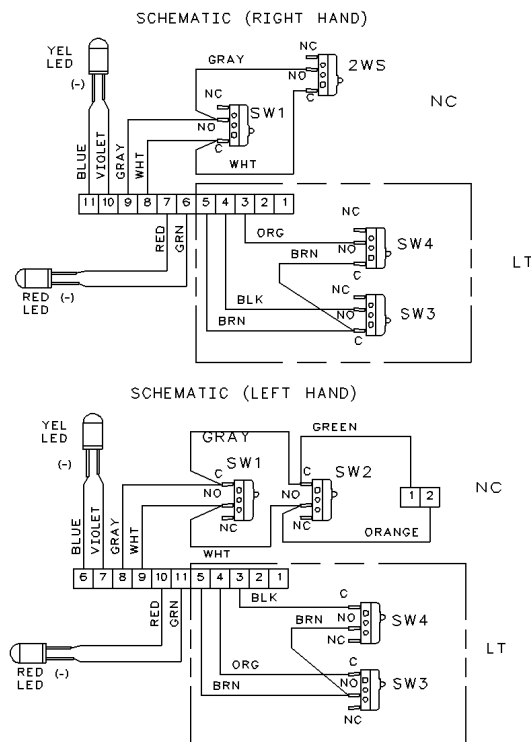
m241_030

Figure 3-2. P.C. Board Wiring Diagram—Siderail Interface Board P/N 44578



m241_035

Figure 3-3. SideCom® Communication System Siderail Bed Control Keys Schematic



m241_084

Figure 3-4. Wiring Diagram Label

Refer to fold-out FO 3-1 at the rear of this manual.

3

Figure 3-5. Bed Exit II General Schematic

Refer to fold-out FO 3-2 at the rear of this manual.

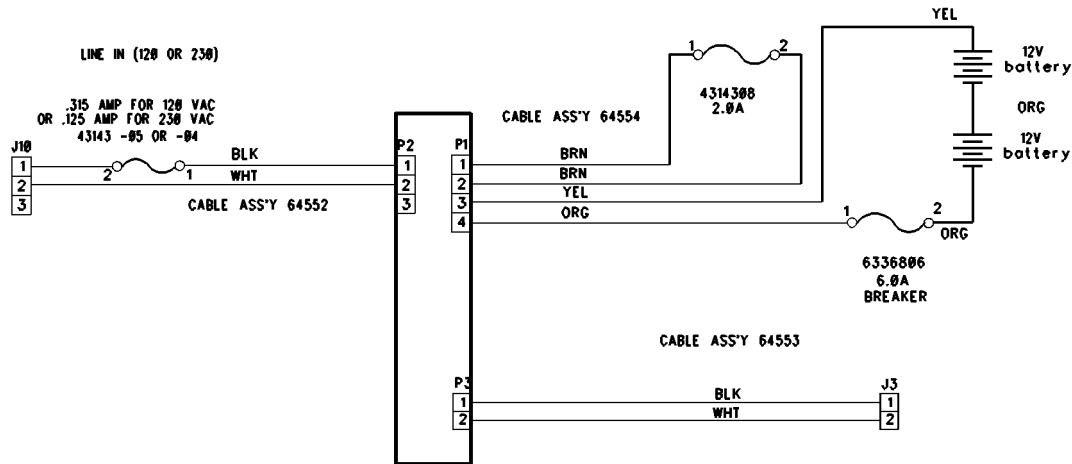
Figure 3-6. Control Board Schematic

Refer to fold-out FO 3-3 at the rear of this manual.

Figure 3-7. P.C. Board Wiring Diagram—Night Light Board P/N 43200-01

Refer to fold-out FO 3-4 at the rear of this manual.

Figure 3-8. P.C. Board Wiring Diagram Label—Battery Backup



m241_140



Theory of Operation

Electrical System

The electrical power system is mechanically insulated from the metal parts of the bed. No additional electrical components, such as isolation transformers, are required to make this bed meet applicable electrical codes.

Each bed is factory tested for complete operation with and without load. Each bed is tested for insulation integrity and micro leakage currents.

The supply cord is 18 AWG, low leakage, three conductor, type STO minimum. It extends 6' (183 cm) from the head end of the bed and can be unplugged from the transformer box on the bed. The supply cord is UL listed, and the attachment plug cap is UL listed hospital grade.

All electrical components of this bed have been UL approved for this application.

Motors

There are three individual motors to power the separate functions of the bed. These motors have the following specifications:

- 6 A
- 1/15 hp
- Permanently lubricated
- Overload protected with reset thermal
- 28 V DC

The motors have a manual crank capability which allows operation of the bed functions in the event of power failure. All of the motors are a plug-in design, and are easily and rapidly removable from the bed in the event of motor problems.

Thermal Resets

Thermals are an integrated part of the motors, protecting them in the event that an overload condition occurs. They stop the motor automatically if it heats up to a certain temperature. The motors will not run again until the thermal resets.

Patient Controls

Patient operation of the various functions of this bed are accomplished by means of low voltage finger touch switches located in a convenient fixed position at both sides of the bed. These patient controls are affixed to the movable head section to give easy access as well as visual contact with the head and knee operating button, irrespective of the position of the head section elevation. These low voltage patient controls are electronically interlocked to prevent electrical damage to the motor caused by contradictory direction signaling to the motor. The low voltage electrical controls are located within easy reach of the patient and in a position for visual contact and operation by caregivers.

Head

Head section operating controls are visually identifiable to the patient by graphic symbols. The switches are separate momentary type low voltage switches identified for elevation and down travel of the head section.

Knee

The knee lift patient controls are readily visible to the patient and likewise identified by symbols. They contain a separate momentary type switch for the up and down positioning of the knees. The patient can raise the knee section to a full 45° angle or return it to a full flat position. The flat feature is an overriding function that can be acquired even though the bed has been positioned in automatic contour.

As prescribed by the attending physician, this bed has the capability to lock out the knee lift. This lockout is located at the foot end of the bed. It prevents control of the knee from the bed patient operating control located at the side of the bed.

Hilow

The hilow controls are pictorially labeled to indicate their function and are in immediate visual contact with the patient attendant. They contain a momentary type up or down switch.

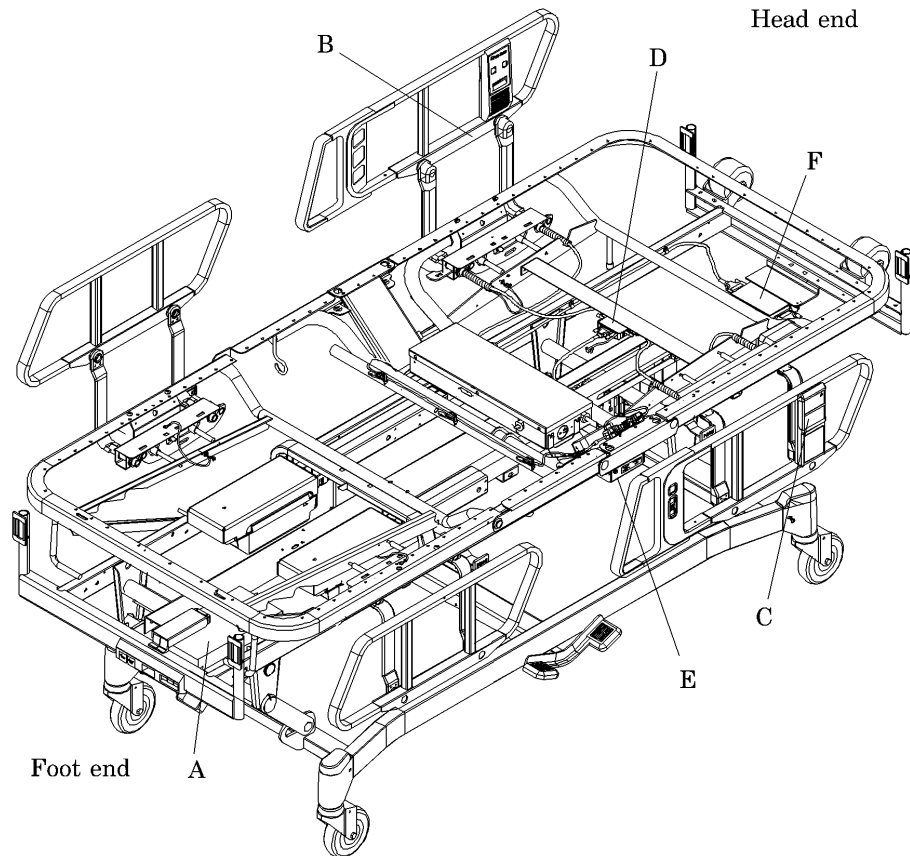
Circuit Board Locations

See table 3-1 on page 3-10 for circuit board locations. Refer to the circuit board location diagram (see figure 3-9 on page 3-10).

Table 3-1. Circuit Board Locations for Optional Functions

Symbol	Circuit Board	Circuit Board Location
A	Control board	Left foot end of the bed
B	Siderail interface board	Bottom channel of the siderails
C	Bed exit board	Outside of the left-hand siderail communication housing
D	Bed control cable board	Under the head section of the bed
E	Night light board	Under the intermediate frame on the left head end side of the bed
F	Communication junction box	At the head end of the bed

Figure 3-9. Circuit Board Locations



m241_058

Control Board Theory of Operation

The control board theory of operation is a description of the master control board assembly, which drives limit switches, siderails, attendant control console, and the Trendelenburg function.

This information will help you understand the control boards, and act as an aid in troubleshooting problems encountered with electrical functions.

A copy of the theory of operation for the Century+™ Bed is available upon request to the Hill-Rom Technical Services Department. Please specify the circuit board part number when ordering.

NOTES:

Chapter 4

Removal, Replacement, and Adjustment Procedures

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NOTES:

4.1 Control Board

Tools required: Phillips head screwdriver

Removal



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
3. If necessary, remove the mattress from the bed.

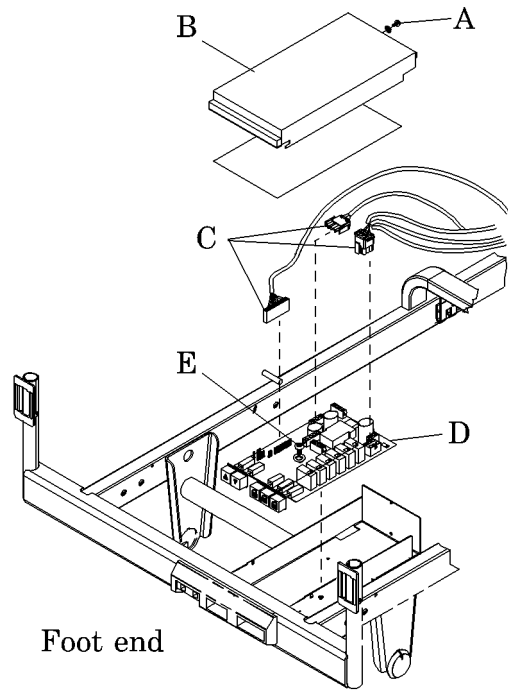


WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

4. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.
5. Using a phillips head screwdriver, remove the screw (A) (see figure 4-1 on page 4-6).

Figure 4-1. Control Board



m241_073

6. Lift the control board box cover (B) up, and slide it off the retainers.
7. Remove the connectors (C) from the control board (D).
8. Remove the screw (E), and remove the control board (D) by lifting up and pulling towards the head end of the bed.

Replacement

1. Insert the control board (D) into the control board box, and secure it with the screw (E).
2. Connect the connectors (C) to the control board (D).
3. Place the control board box cover (B) on the control board box. Slide it toward the foot end of the bed to engage the retainers in the slots.
4. Secure the control board box cover (B) with the screw (A).
5. Loosen the two screws under the frame rail, and adjust the bezel.

6. Tighten the screws after completing the adjustment.
7. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
8. Untie the foot section of the sleep surface, and carefully lower it back down.
9. If applicable, install the mattress on the bed.
10. Plug the bed into an appropriate power source.

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

11. Test the bed functions to ensure they are working properly.

Adjustment

None

4.2 Battery Backup Box

Tools required: T25 Torx® head screwdriver
Wire cutters

Removal

1. Using the *bed up* button, raise the bed to its full up position.
2. Using the *knee up* button, raise the knee section to its highest position.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.
4. If necessary, remove the mattress from the bed.

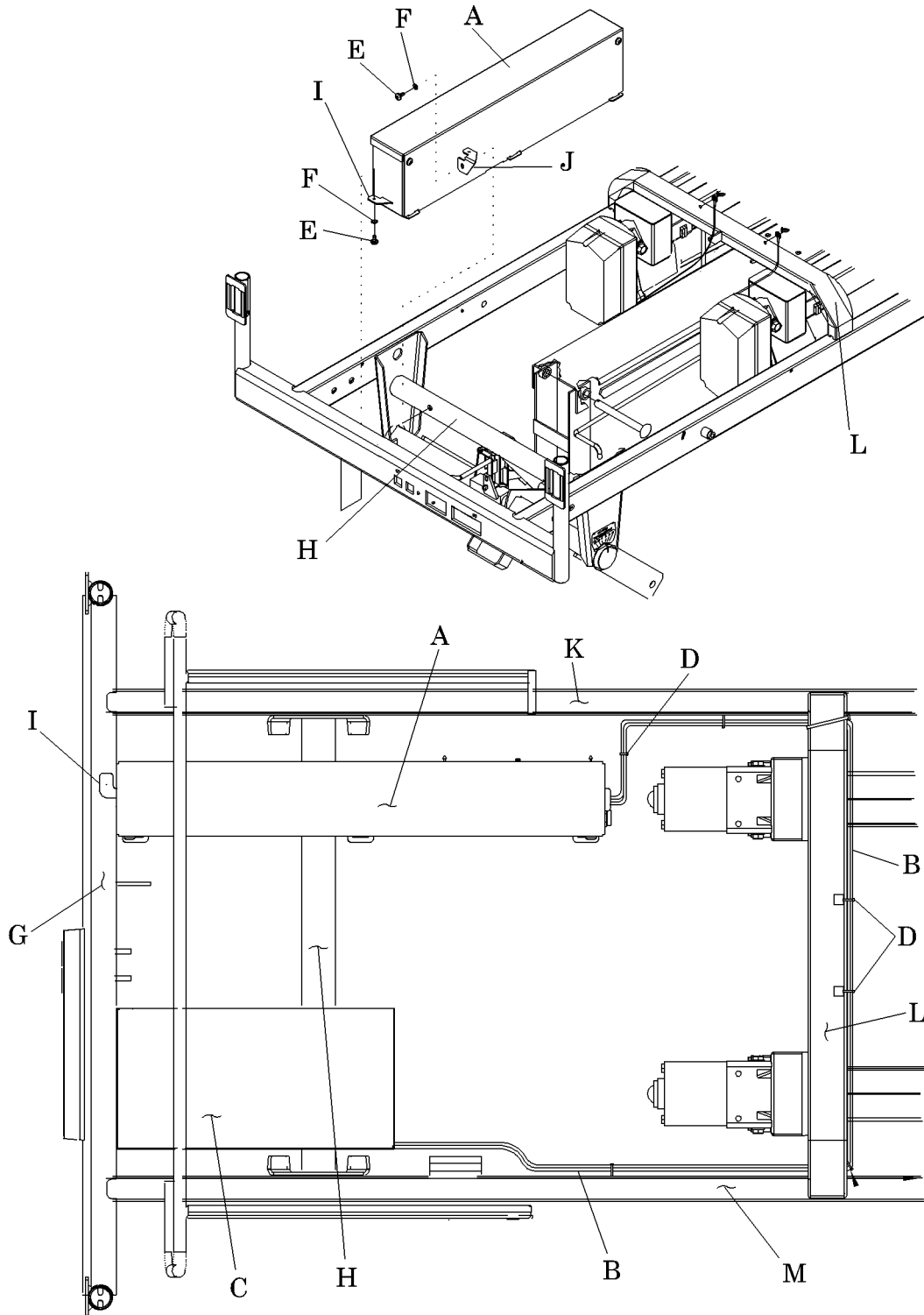


WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

5. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.
6. Remove the control board box cover (see “Control Board” on page 4-5).
7. Disconnect the battery backup box (A) by unplugging the battery cable (B) from the control board (C) (see figure 4-2 on page 4-9).

Figure 4-2. Battery Backup Box



m241_141

8. Using the wire cutters, cut the wire ties (D) that secure the battery cables (B) to the bed frame.
9. Using the T25 Torx® head screwdriver, loosen and remove the screws (E) and lockwashers (F).
10. Lift the battery backup box (A) from the bed frame.

Replacement

1. Install the battery backup box (A) in the bed so that the tab (I) is resting on the lower lip of the foot channel (G).
2. Install the first screw (E) and lockwasher (F) from underneath the foot channel (G) and into the tab (I).
3. Install the second screw (E) and lockwasher (F) through the tab (J) and into the Trendelenburg tube (H).
4. Route the power cords (B) along the right side channel (K), across the motor mount channel (L), and along the left side channel (M) to the control board (C).
5. *Loosely* install wire ties (D), and secure the power cords (B) to the bed frame.
6. Plug the power cords (B) into the matching connectors on the control board (C).
7. Pull the power cord (B) slack into the control board (C) box and tighten the wire ties (D).
8. Using the wire cutters, cut off any excess from the wire ties (D).
9. Install the control board box cover (see “Control Board” on page 4-5).
10. Untie the foot section of the sleep surface, and carefully lower it back down.
11. If applicable, install the mattress on the bed.
12. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

13. Test the bed functions to ensure they are working properly.

NOTE:

Leave the bed plugged into an appropriate power source for at least 24 hours before using the battery backup accessory.

Adjustment

None

4.3 Battery Backup Circuit Board

Tools required: T25 Torx® head screwdriver
#2 Phillips head screwdriver

Removal

1. Using the *bed up* button, raise the bed to its full up position.
2. Using the *knee up* button, raise the knee section to its highest position.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.
4. If necessary, remove the mattress from the bed.

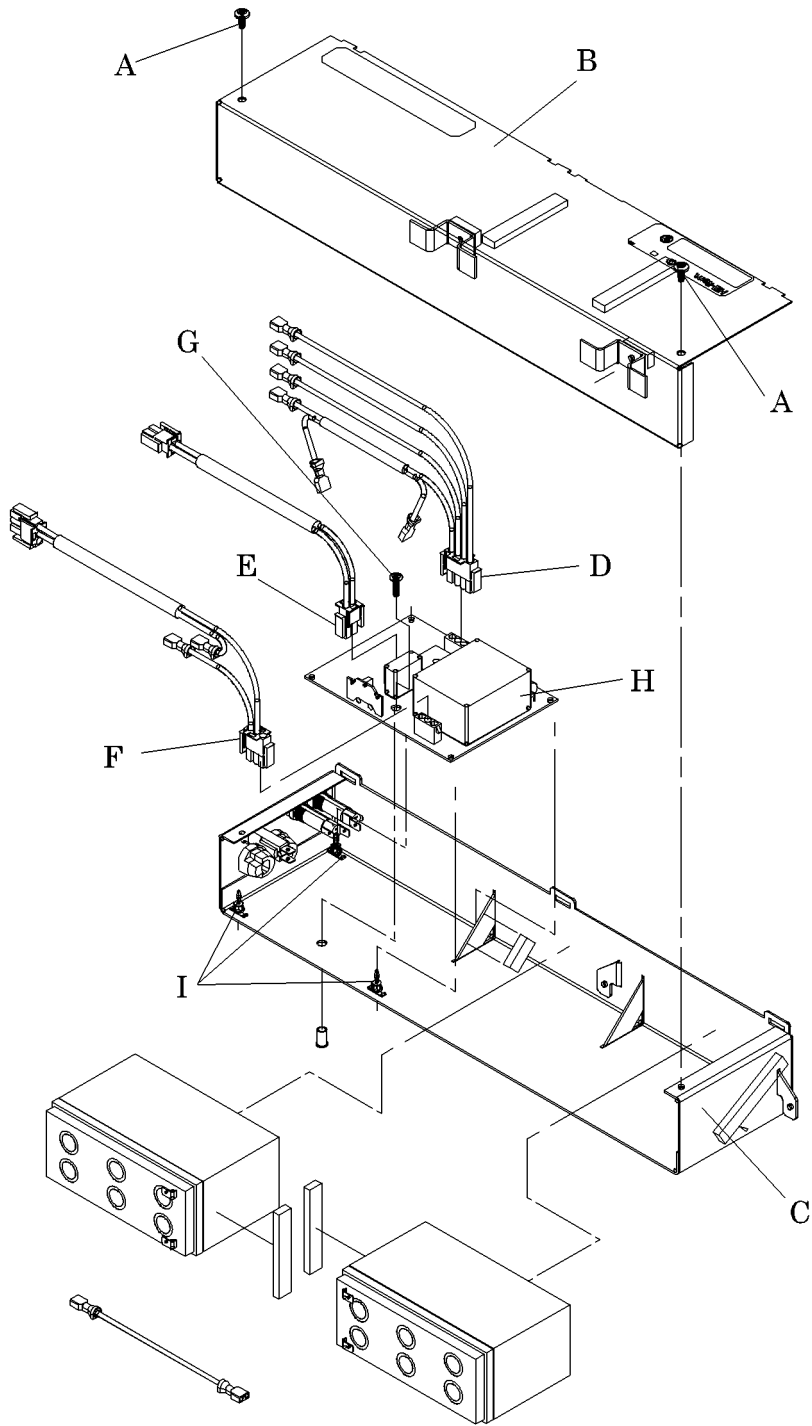


WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

5. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.
6. Remove the control board box cover (see “Control Board” on page 4-5).
7. Disconnect the battery backup box by unplugging the battery cable from the main bed control board (see “Battery Backup Box” on page 4-8).
8. Using the T25 Torx® head screwdriver, remove the screws (A), and separate the battery box cover (B) from the battery box (C) (see figure 4-3 on page 4-13).

Figure 4-3. Battery Backup Circuit Board



m241_144

9. Disconnect the battery cable (D), output cord (E), and power cord (F) from the circuit board (H).
10. Using the phillips head screwdriver, remove the screw (G) and separate the circuit board (H) from the battery box (C).

Replacement

1. Install the circuit board (H) on the circuit board supports (I) in the battery box (C), and secure it with the screw (G).
2. Connect the battery cable (D), output cord (E), and power cord (F) to the circuit board (H).
3. Install the battery box cover (B) on the battery box (C), and using the T25 Torx® head screwdriver, secure it with the screws (A).
4. Connect the battery backup box by plugging the battery cable into the main bed control board (see “Battery Backup Box” on page 4-8).
5. Install the control board box cover (see “Control Board” on page 4-5).
6. Untie the foot section of the sleep surface, and carefully lower it back down.
7. If applicable, install the mattress on the bed.
8. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

9. Test the bed functions to ensure they are working properly.

Adjustment

None

4.4 Battery Backup Cells

Tools required: T25 Torx® head screwdriver

Removal

1. Using the *bed up* button, raise the bed to its full up position.
2. Using the *knee up* button, raise the knee section to its highest position.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.
4. If necessary, remove the mattress from the bed.

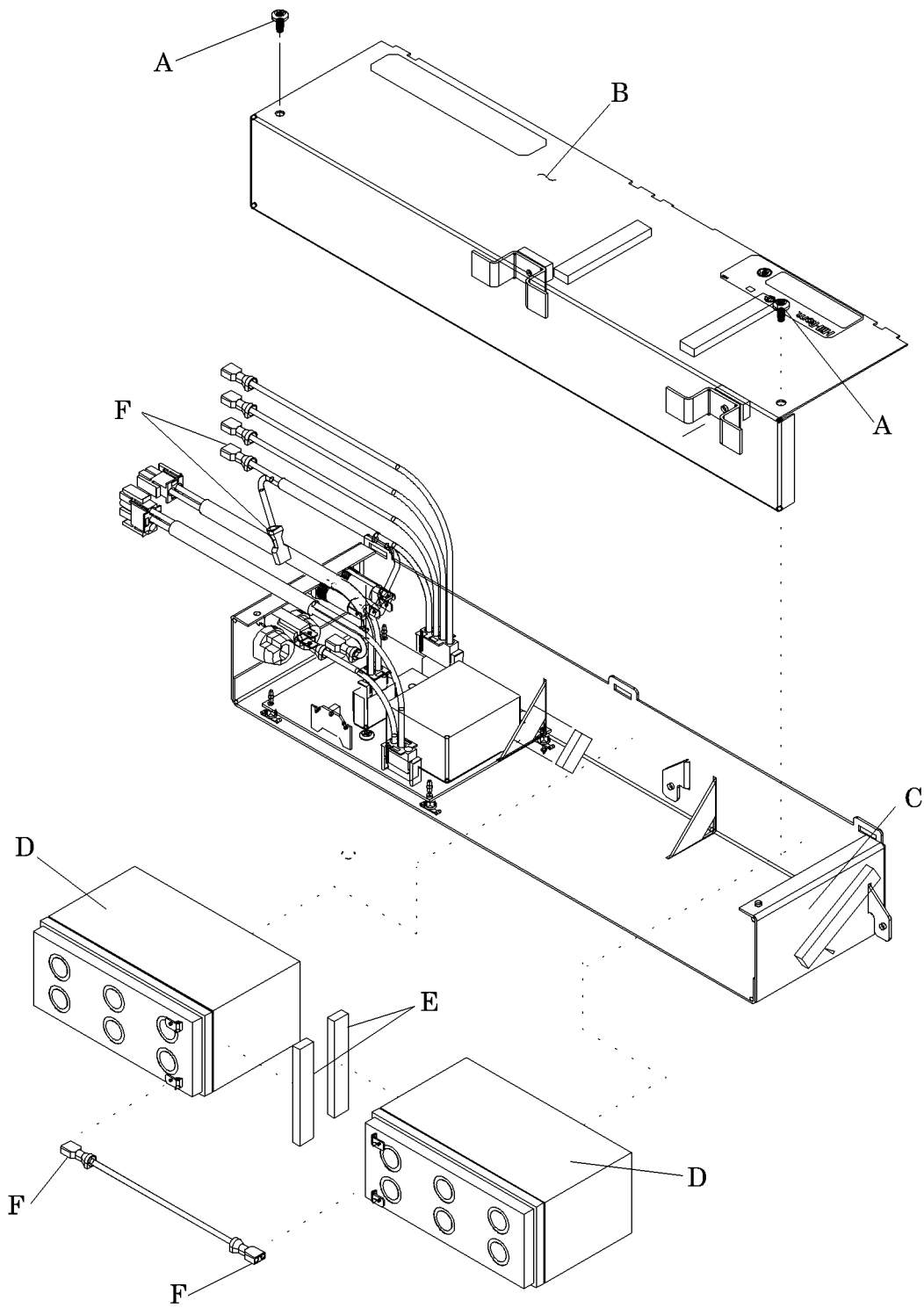


WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

5. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.
6. Remove the control board box cover (see “Control Board” on page 4-5).
7. Disconnect the battery backup box by unplugging the battery cable from the main bed control board (see “Battery Backup Box” on page 4-8).
8. Using the T25 Torx® head screwdriver, remove the screws (A), and separate the battery box cover (B) from the battery box (C) (see figure 4-4 on page 4-16).

Figure 4-4. Battery Backup Cells



m241_143

9. Label the battery cables (F), and disconnect the battery cables (F) from the battery cells (D).

NOTE:

Be sure to label the battery cables before removing them from the battery cells.

10. Lift the battery cells (D) out of the battery box (C).

Replacement

1. If you are installing new batteries, attach the gaskets (E) to the battery cells (D) by removing the adhesive-protecting paper and pressing the gaskets (E) firmly onto the sides of the battery cells (D).
2. Install the battery cells (D) in the battery box (C).
3. Attach the battery cables (F) to the battery cells (D), being sure to make the right connections.
4. Install the battery box cover (B) on the battery box (C), and using the T25 Torx® head screwdriver, secure it with the screws (A).
5. Connect the battery backup box by plugging the battery cable into the main bed control board (see “Battery Backup Box” on page 4-8).
6. Install the control board box cover (see “Control Board” on page 4-5).
7. Untie the foot section of the sleep surface, and carefully lower it back down.
8. If applicable, install the mattress on the bed.
9. Plug the bed into an appropriate power source.

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

10. Test the bed functions to ensure they are working properly.

Adjustment

None

4.5 Head or Knee Motor

Tools required: 1/2" socket and ratchet
T25 Torx® head screwdriver

Removal



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

1. Raise the bed to the high position using the hilow function.



WARNING:

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.

2. Place bed stands under the upper lift arm pivots or 2 x 4s between the bed frame and lift arms.
3. Using the *knee up* switch, raise the knee section to its highest point.
4. If necessary, remove the mattress from the bed.



WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

5. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.



SHOCK HAZARD:

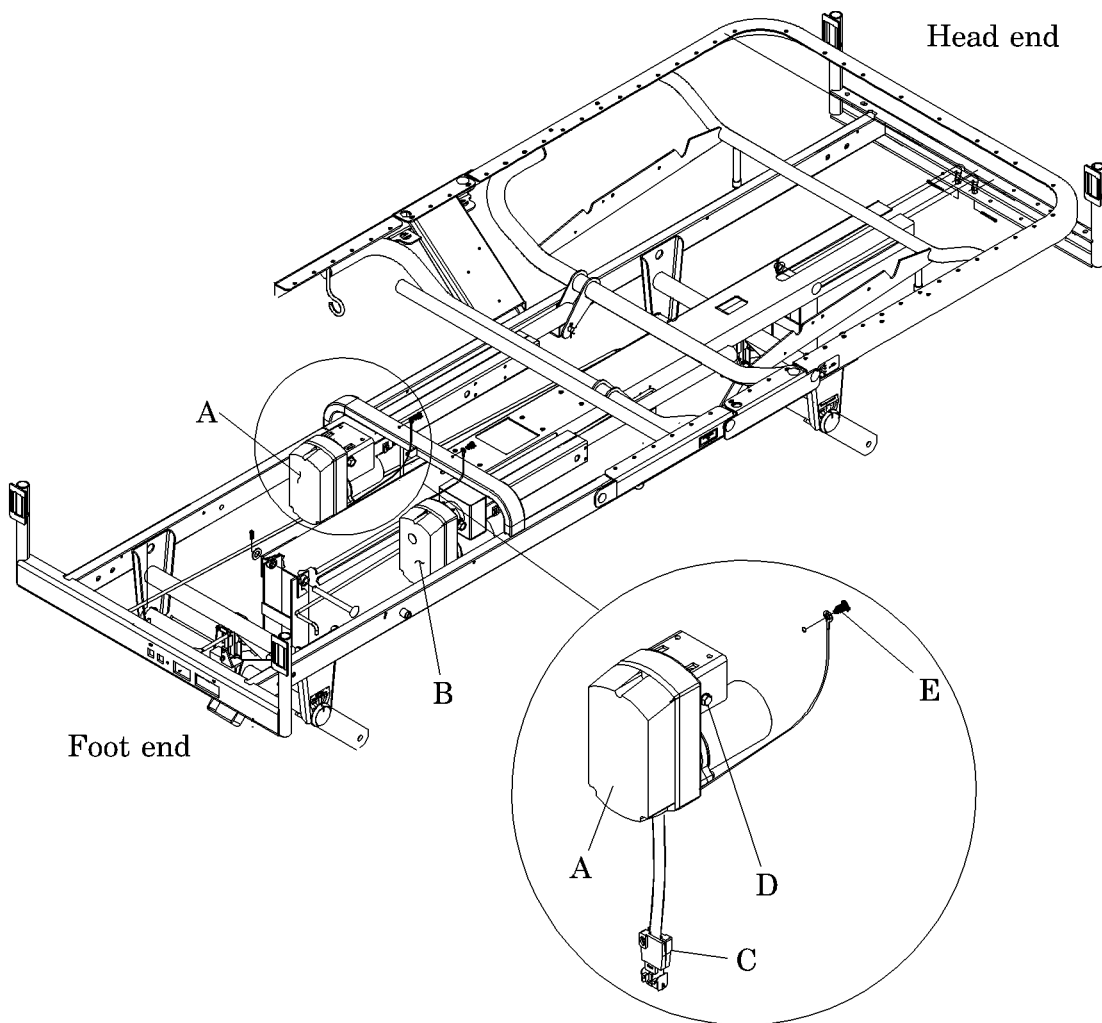
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

6. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

7. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
8. Unplug the connector (C) from the head motor (A) or knee motor (B), as applicable (see figure 4-5 on page 4-19).

Figure 4-5. Head or Knee Motor

9. Using the T25 Torx® head screwdriver, remove the screw (E) that secures the ground strap.
10. Using the 1/2" socket and ratchet, remove the two bolts (D), and separate the head motor (A) or knee motor (B) from the drive assembly.

Replacement

1. Place the head motor (A) or knee motor (B) (as applicable) on the end of the drive assembly, ensuring that it is engaging the drive shaft.
2. Secure the head motor (A) or knee motor (B) with the two bolts (D).
3. Using the T25 Torx® head screwdriver, attach the ground strap with the screw (E).
4. Attach the connector (C) to the motor.
5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Remove the bed stands or 2 x 4s from the bed frame, as applicable.
7. Untie the foot section of the bed frame, and carefully lower it back down.
8. If applicable, install the mattress on the bed.
9. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

10. Test the head motor (A) or knee motor (B) functions to ensure that the bed is working properly.

Adjustment

None

4.6 Head or Knee Drive Screw

Tools required: Needle nose pliers

Removal



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).

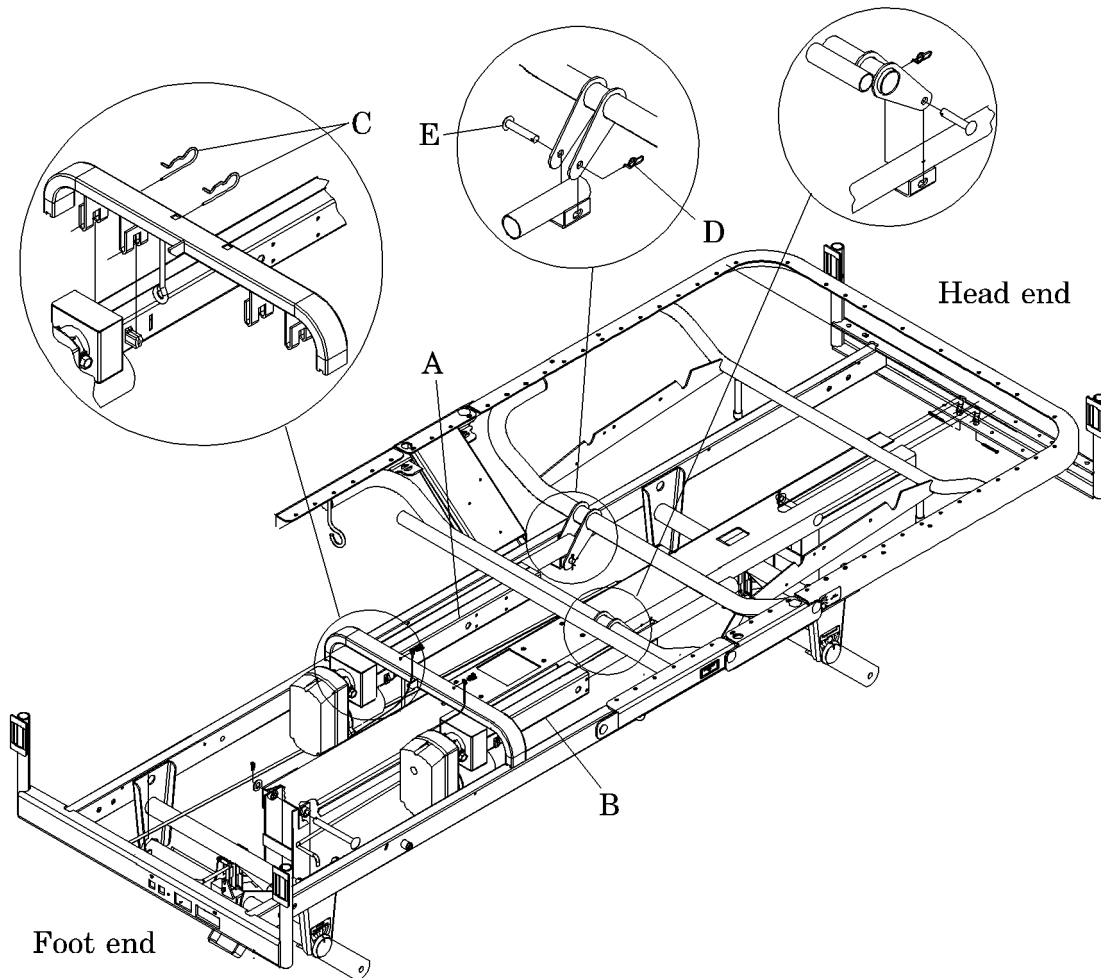


WARNING:

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.

3. Place bed stands under the upper lift arm pivots or 2 x 4s between the bed frame and lift arms.
4. Remove the two hairpins (C) from the end of the head drive screw (A) or knee drive screw (B), as applicable. (see figure 4-6 on page 4-22).

Figure 4-6. Head or Knee Drive Screw



m241_127

5. Using the needle nose pliers, remove the cotter pin (D) from the end of the drive screw.
6. Remove the clevis pin (E) from the end of the head drive screw (A) or knee drive screw (B), and remove the drive screw from the bed.

Replacement

1. Place the drive screw into position on the bed and secure the end of the drive screw with the clevis pin (E).
2. Secure the clevis pin (E) with the cotter pin (D).

3. Attach the drive screw to the bed frame with the two hairpins (C).
4. Install the head or knee motor, as applicable (see “Head or Knee Motor” on page 4-18).
5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Remove the bed stands or 2 x 4s from the bed frame, as applicable.
7. Plug the bed into an appropriate power source.

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Test the motor functions to ensure that the bed is working properly.

Adjustment

None

4.7 Hilow Motor

Tools required: 7/16" socket and ratchet
T25 Torx® head screwdriver

Removal



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

1. Using the *hilow down* switch, lower the bed to its lowest point.
2. Using the *knee up* switch, raise the knee section to its highest point.
3. If necessary, remove the mattress from the bed.



WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

4. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

5. Unplug the bed from its power source.

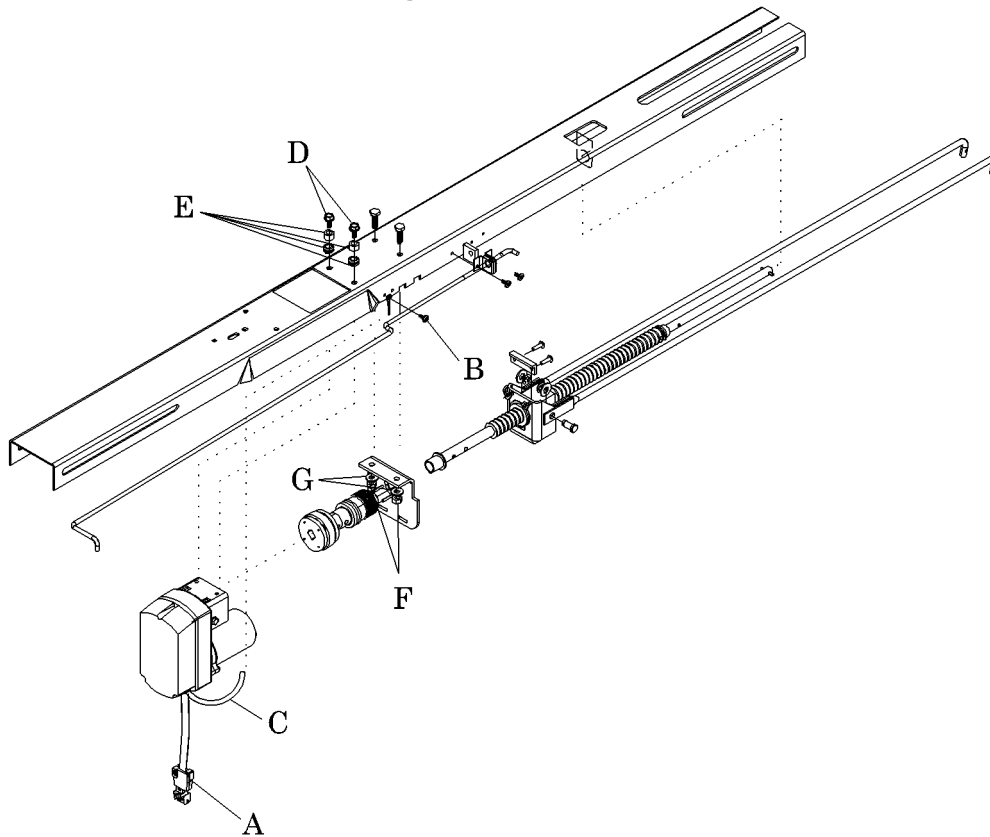


SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

6. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
7. On one side of the bed, lower the siderails to the stored position.
8. Disconnect the hilow motor power connector (A) (see figure 4-7 on page 4-25).

Figure 4-7. Hilow Motor



m241_124

9. Using the T25 Torx® head screwdriver, remove the screw (B), and disconnect the ground strap (C).
10. Using the 7/16" socket and ratchet, remove the bolts (D), nuts (F), spacers (E), and washers (G).
11. Pull the hilow motor off the end of the drive shaft, and remove it from the bed.

Replacement

1. Push the hilow motor onto the end of the drive shaft, ensuring that the drive shaft is engaged.
2. Secure the hilow motor with the bolts (D) and nuts (F), being sure to include the spacers (E), and washers (G).
3. Using the T25 Torx® head screwdriver, attach the ground strap (C) with the screw (B).

4. Connect the hilow motor power connector (A).
5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

7. Test the hilow motor functions to ensure that the bed is working properly.

Adjustment

None

4.8 Hilow Drive Screw Assembly

Tools required: Needle nose pliers
7/16" socket and ratchet
1/2" open-end wrench

Removal

1. If necessary, remove the hilow motor from the bed (see “Hilow Motor” on page 4-24).



SHOCK HAZARD:

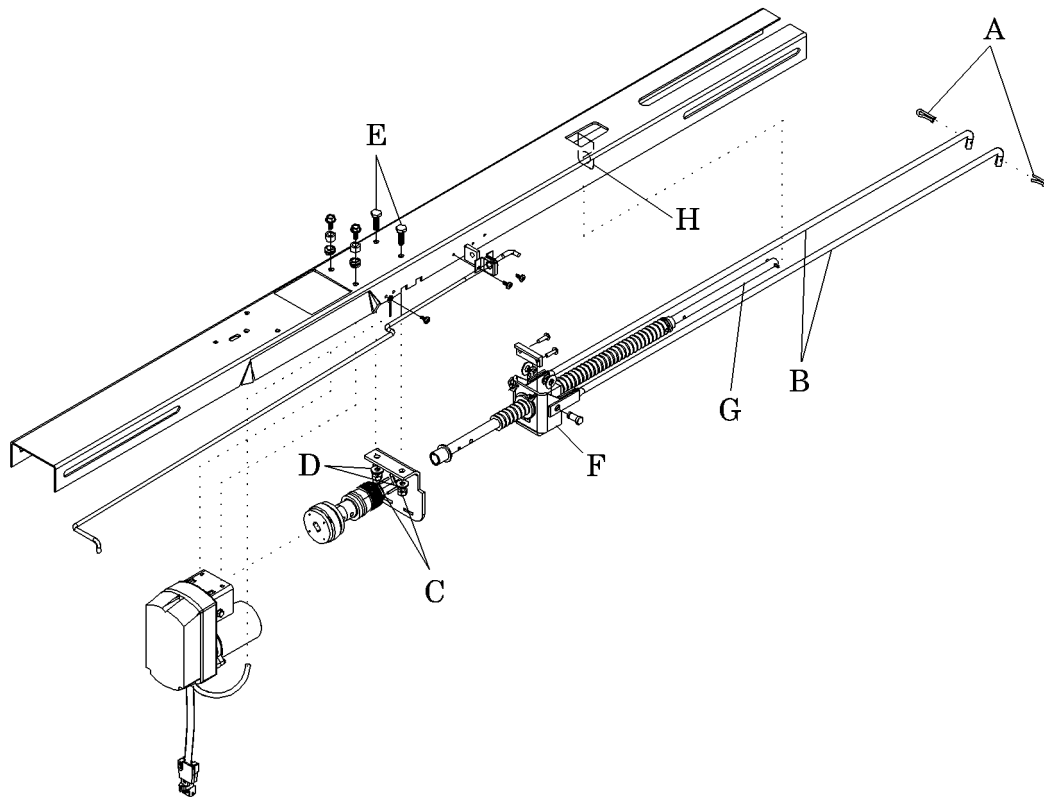
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.



SHOCK HAZARD:

Unplug the bed from its power source. Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
3. Using the needle nose pliers, remove the two cotter pins (A) from the hilow tie rods (B) at the head end of the bed (see figure 4-8 on page 4-28).

Figure 4-8. Hilow Drive Screw Assembly

m241_123

4. Push the hilow tie rods (B) out of the holes at the head end of the bed.
5. Using the 7/16" socket and ratchet, and the 1/2" open-end wrench, remove the two bolts (E), nuts (C), and washers (D).
6. Slide the hilow drive screw assembly (F) towards the foot end of the bed, so that the end of the drive screw (G) comes out of the mounting bracket hole (H).

NOTE:

You may have to angle the hilow drive screw assembly in order to get the small roll pin at the end of the drive screw to go through the mounting bracket hole.

7. Remove the hilow drive screw assembly (F) from the bed.

Replacement

1. Insert the hilow drive screw assembly (F) into the bed so that the end of the drive screw (G) goes through the mounting bracket hole (H).

2. Using the 7/16" socket and ratchet, and the 1/2" open-end wrench, secure the hilow drive screw assembly (F) with the bolts (E), nuts (C), and washers (D).
3. Insert the hilow tie rods (B) into the holes at the head end of the bed.
4. Secure the hilow tie rods (B) with the cotter pins (A).
5. If applicable, attach the hilow motor to the bed (see "Hilow Motor" on page 4-24).
6. If applicable, connect the battery backup (see "Battery Backup Box" on page 4-8).
7. Plug the bed into an appropriate power source.

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Test the hilow functions to ensure that the bed is working properly.

Adjustment

None

4.9 Hilow Limit Switch

Tools required: Phillips head screwdriver

Removal



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

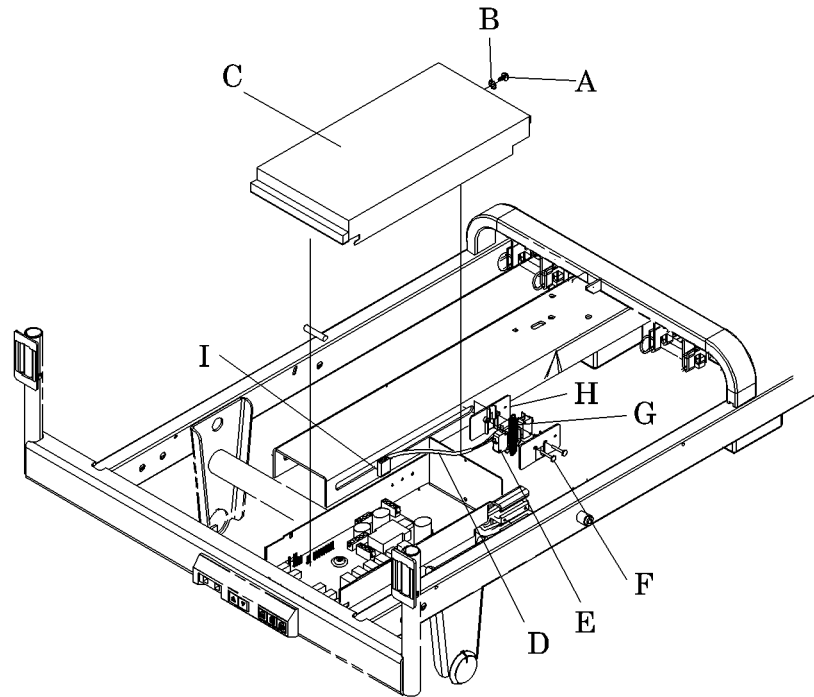
2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
3. If necessary, remove the mattress from the bed.



WARNING:

When the head or foot section is folded back, tie it securely to the bed frame before working on the bed. Failure to do so could result in personal injury or equipment damage.

4. Lift the foot section of the sleep surface, fold it back toward the head end of the bed, and tie it to the bed frame securely.
5. Using a phillips head screwdriver, loosen and remove the screw (A) and washer (B) from the control box cover (C) (see figure 4-9 on page 4-31).

Figure 4-9. Hilow Limit Switch

m241_108

6. Lift the control box cover (C) up, and slide it off the retainers.
7. Disconnect the terminals (I) and wires (D) from the old switch (E) one at a time, and place them on the appropriate contacts of the new switch. Do this until all of the terminals are changed.
8. Remove the two screws (F) and the switch bracket (H), being careful not to lose the spring (G).
9. Remove and discard the old switch (E).

Replacement

1. Insert the new switch (E) onto the switch bracket (H) with the spring (G), and secure it with the two screws (F).
2. Place the control box cover (C) on the control box. Slide it toward the foot end of the bed to engage the retainers in the slots.
3. Secure the control box cover (C) with the screw (A) and washer (B).
4. Untie the foot section of the bed frame, and carefully lower it back down.

5. If applicable, install the mattress on the bed.
6. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
7. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Test the hilow function to ensure that the bed is working properly.

Adjustment

None

4.10 Automatic Contour Assembly (Beds with Optional Automatic Contour Only)

Tools required: Phillips head screwdriver
Wire cutters

Removal



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.

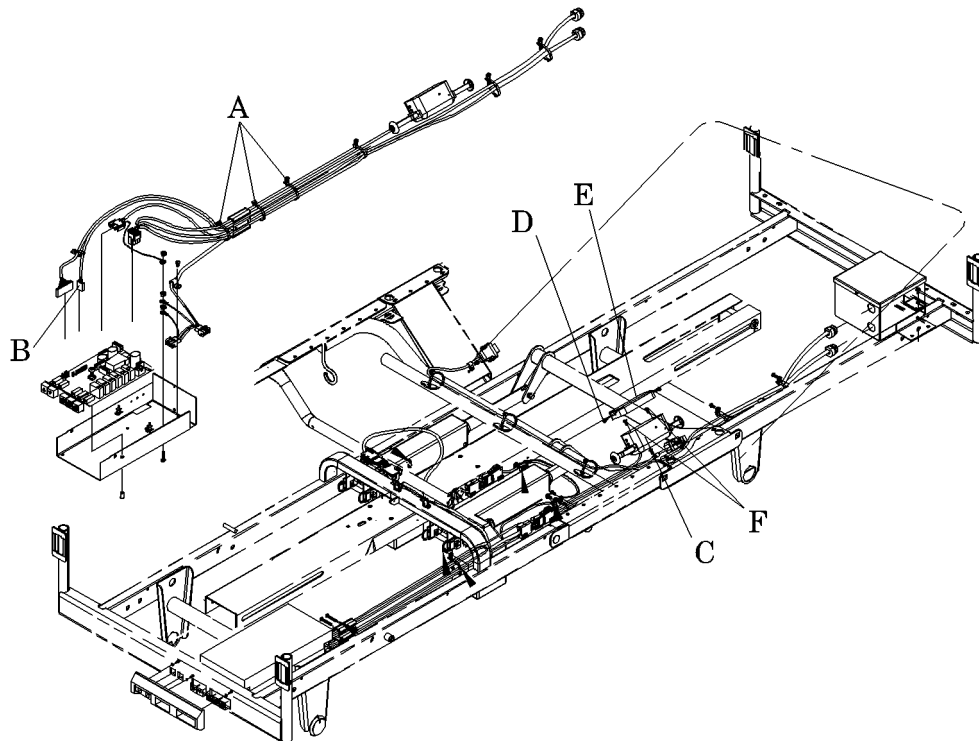


SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
3. Remove the control board box cover (see “Control Board” on page 4-5).
4. Using the wire cutters, cut the wire ties (A) (see figure 4-10 on page 4-34).

Figure 4-10. Automatic Contour Assembly



m241_134

5. Disconnect the connector (B) from the control board.
6. Using the phillips head screwdriver, loosen and remove the screws (D), and separate the automatic contour cover (E) from the automatic contour box (C).
7. Loosen and remove the screws (F) inside the automatic contour box (C), and separate the automatic contour assembly from the bed.

Replacement

1. Install the automatic contour box (C), and secure it to the bed frame with the screws (F).
2. Install the automatic contour cover (E) on the automatic contour box (C), and secure it with the screws (D).
3. Route the cable through the bed frame to the control board box with the rest of the bed wiring, and secure it with wire ties (A).
4. Attach the connector (B) to the control board.

5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Install the control board box cover (see “Control Board” on page 4-5).
7. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Test the automatic contour function to ensure the bed is working properly.

Adjustment

None

4.11 Trendelenburg or Reverse Trendelenburg Assembly

Tools required: Needle nose pliers
Phillips head screwdriver

Removal



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

1. Raise the bed to the high position using the hilow function.



WARNING:

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.

2. Place bed stands under the upper lift arm pivots or 2 x 4s between the bed frame and lift arms.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.

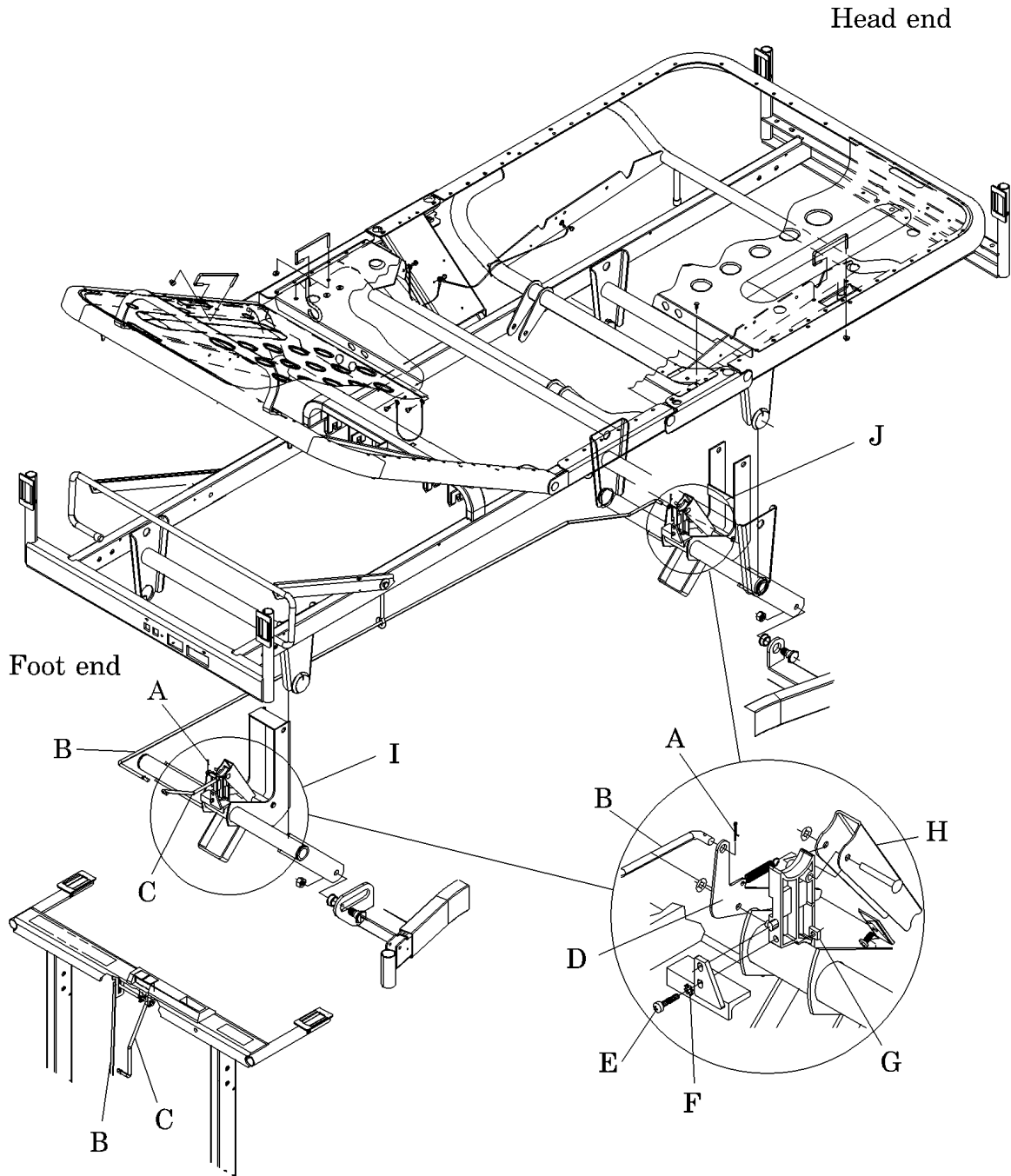


SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

4. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
5. Using the needle nose pliers, remove the cotter pin (A) from the assembly you are removing and slide the Reverse Trendelenburg rod (B) or Trendelenburg rod (C) out of the lever (D) (see figure 4-11 on page 4-37).

Figure 4-11. Trendelenburg or Reverse Trendelenburg Assembly



m241_113

6. Using the phillips head screwdriver, remove the screw (E), lockwasher (F), and nut (G).
7. Remove the Trendelenburg assembly (I), or Reverse Trendelenburg assembly (J) from the bed.

Replacement

1. Install the Trendelenburg assembly (I), or Reverse Trendelenburg assembly (J) on the bed so that the stop (H) is between the torque tubes, and secure it with the screw (E), lockwasher (F), and nut (G).

NOTE:

Look at the opposite assembly (Trendelenburg or Reverse Trendelenburg) to more easily remember how the assembly is fastened to the bed.

2. Insert the Reverse Trendelenburg rod (B) or Trendelenburg rod (C) into the lever (D).
3. Secure the Reverse Trendelenburg rod (B) or Trendelenburg rod (C) with the cotter pin (A).
4. Ensure the mechanical linkage is engaging properly.
5. Ensure the stop (H) is wedged in between the two torque tubes when either the Trendelenburg or Reverse Trendelenburg knob is activated.
6. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
7. Remove the bed stands or 2 x 4s from the bed frame, as applicable.
8. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

9. Test the Trendelenburg and Reverse Trendelenburg functions to ensure the bed is working properly.

Adjustment

None

4.12 Brake Cam Assembly (Beds with Central Brake and Steer)

Tools required: T25 Torx® head screwdriver
Punch
Hammer

Removal

1. Using the T25 Torx® head screwdriver, remove the plastic covers from the left foot end caster and the right head end caster.
2. Using the phillips head screwdriver, turn the setscrews counterclockwise to relieve the cable tension.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

3. Lower the bed to the low position using the hilow function.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

5. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
6. Store, pad, and tie the siderails on one side of the bed.



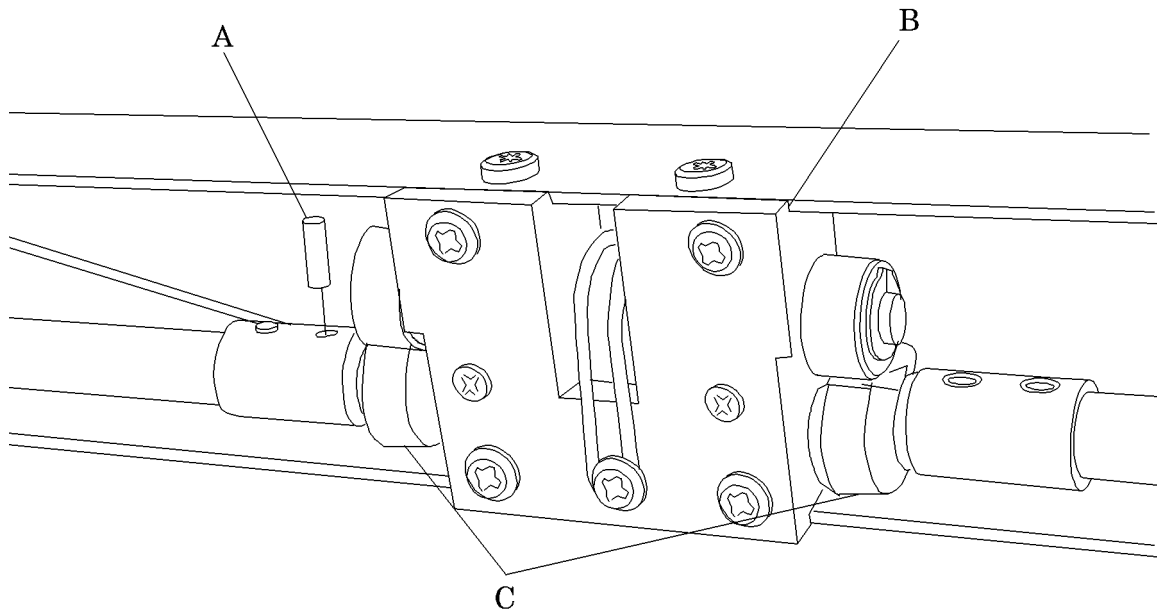
WARNING:

Get additional personnel to help you turn the bed over on the side that has the stored siderails. Failure to do so could result in personal injury or equipment damage.

7. Lay the bed on its side.

- Using the hammer and punch, remove the roll pin (A) (see figure 4-12 on page 4-40).

Figure 4-12. Brake Cam Assembly



m241_050

NOTE:

Note the orientation of the cams before removal. This will aid you during the assembly procedure.

- Pull the upper brake/steer pedal through the brake block mechanism (B) until the cams (C) fall out.

Replacement

- Install the cams (C) by pushing the brake/steer pedal rod through the brake cams (C) and brake block mechanism (B).
- Using the hammer if necessary, install the roll pin (A).
- Adjust the casters (see “Casters (Beds with Central Brake and Steer)” on page 4-45).
- If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).

5. Plug the bed into an appropriate power source.
6. Test the brakes to ensure that the bed is working properly.

Adjustment

None

4.13 Brake Block Mechanism (Beds Equipped with Central Brake and Steer)

Tools required: Phillips head screwdriver
T25 Torx® head screwdriver

Removal

1. Remove the brake cams (see “Brake Cam Assembly (Beds with Central Brake and Steer)” on page 4-39).



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

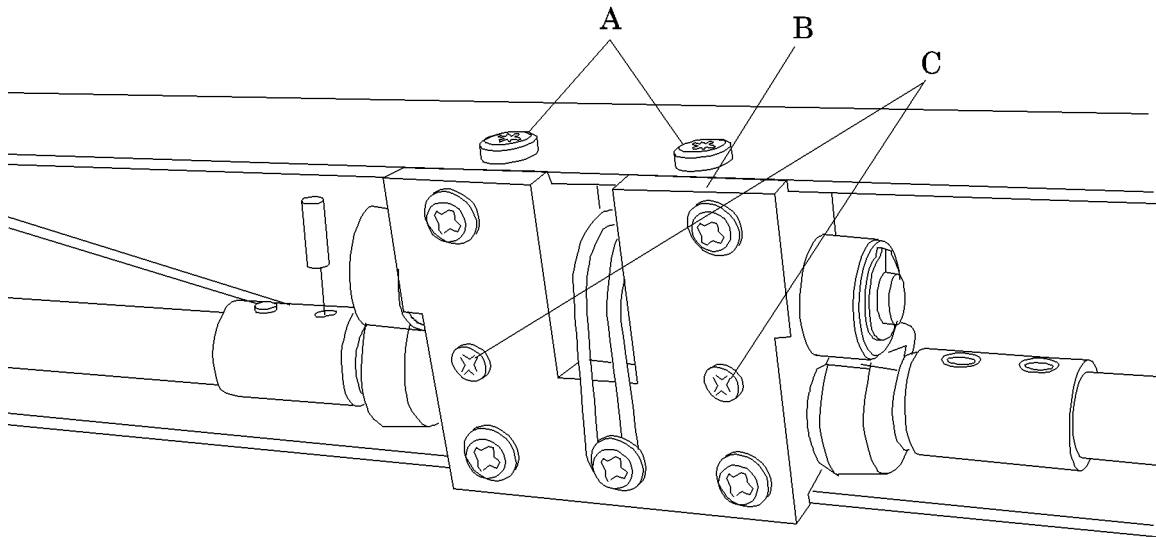


SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

3. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
4. Remove the four screws (A) that hold the brake block mechanism (B) into the channel (see figure 4-13 on page 4-43).

Figure 4-13. Brake Block Mechanism



m241_139

5. Remove the brake block mechanism (B) from the base assembly.

NOTE:

Note the orientation of the brake block mechanism and its components before removal. This will aid during assembly.

6. If necessary, remove the seven screws (C) in the bottom of the brake block mechanism (B), and disassemble the adapter plate and bearings.

Replacement

1. If applicable, assemble the adapter plate and bearings in the brake block mechanism (B), and secure it with the screws (C).
2. Install the brake block mechanism (B) in the channel, and secure it with the screws (A).
3. Install the brake cams (see “Brake Cam Assembly (Beds with Central Brake and Steer)” on page 4-39).
4. Adjust the casters (see “Casters (Beds with Central Brake and Steer)” on page 4-45).

5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Plug the bed into an appropriate power source.
7. Test the brakes to ensure that the bed is working properly.

Adjustment

None

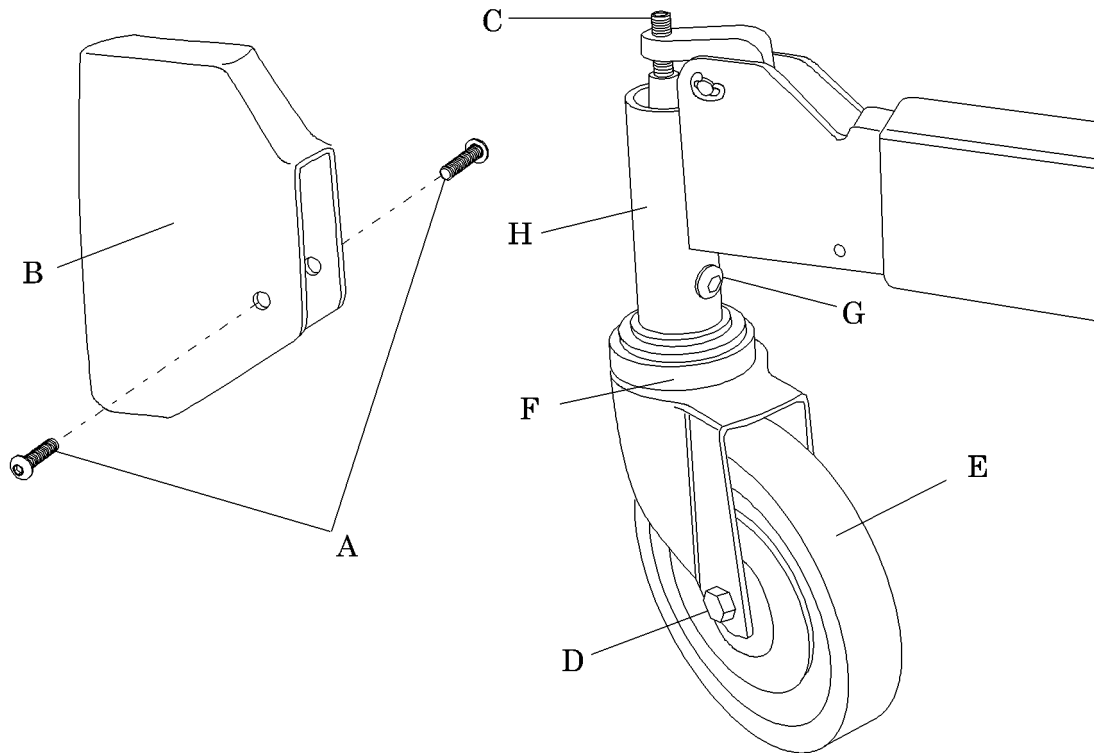
4.14 Casters (Beds with Central Brake and Steer)

Tools required: T25 Torx® head screwdriver
 Combination wrench set
 Socket wrench set
 Ratchet drive
 5/32" allen wrench
 5 mm allen wrench

Removal

1. Using the T25 Torx® head screwdriver, remove the screws (A), and separate the plastic cover (B) from the caster (see figure 4-14 on page 4-45).

Figure 4-14. Casters (Beds with Central Brake and Steer)



m241_055

2. Using the 5/32" allen wrench, turn the setscrew (C) counterclockwise, and relieve the cable tension.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

3. Lower the bed to the low position using the hilow function.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

5. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
6. Store, pad, and tie the siderails on one side of the bed.



WARNING:

Get additional personnel to help you turn the bed over on the side that has the stored siderails. Failure to do so could result in personal injury or equipment damage.

7. Lay the bed on its side.
8. To remove the wheel (E) only, use an appropriate size wrench to loosen and remove the bolt (D), and separate the wheel (E) from the caster assembly.
9. To remove the caster (F), use the 5 mm allen wrench to remove the screw (G), and separate the caster (F) from the bed frame tube (H).

Replacement

1. Insert the caster (F) into the bed frame tube (H), and secure it with the screw (G).
2. If applicable, install the wheel (E) in the caster assembly, and use an appropriate size wrench to secure it with the bolt (D).

3. Adjust the casters (see “Adjustment” on page 4-47).
4. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
5. Plug the bed into an appropriate power source.
6. Test the brake and steer functions to ensure the bed is working properly.

Adjustment

Two casters must be adjusted for proper brake/steer operation.

The first is the foot end caster on the left-hand side of the bed. This is the brake/steer caster, and it controls half of the brake feature.

The second is the head end caster on the right-hand side of the bed. It is the brake caster, and it controls the other half of the brake feature.

The other two casters are basic swivel type casters, and do not require any adjustment.

1. Using the T25 Torx® head screwdriver, remove the screws (A), and separate the plastic covers (B) from the casters (F).
2. Using the 5 mm allen wrench, tighten the screw (G).
3. Place the brake/steer pedal in the *steer* position.
4. Using the 5/32" allen wrench, turn the setscrew (C) on the brake/steer caster (F) down (clockwise) *just* until the caster (F) swivels freely.

NOTE:

Constantly check the caster to ensure that you stop turning the setscrew as soon as the caster can swivel.

5. Using the 5/32" allen wrench, turn the setscrew (C) up (counterclockwise) 1/2 turn.
6. Test the brake/steer caster (F) to ensure that:
 - It is in brake mode when the brake/steer pedal is in the *brake* position.
 - It is in steer mode when the brake/steer pedal is in the *steer* position.
 - It swivels freely when the brake/steer pedal is in the *neutral* position.

7. Place the brake/steer pedal in the steer position.
8. Using the 5 mm allen wrench, tighten the screw (G).
9. Using the 5/32" allen wrench, turn the setscrew (C) down (clockwise) on the brake caster (F) until light brake occurs.

NOTE:

Constantly check the caster to ensure that you stop turning the setscrew as soon as the caster begins to brake.

10. Turn the setscrew (C) down (clockwise) two full turns.
11. Test the brake caster (F) to ensure that:
 - It does not move when the brake/steer pedal is in the *brake* position.
 - It rolls freely when the brake/steer pedal is in the *steer* position.
 - It rolls freely when the brake/steer pedal is in the *neutral* position.
12. Install the plastic cover (B), and use the T25 Torx® head screwdriver to secure it with the screws (A).



CAUTION:

Do not use harsh cleaners, solvents, or detergents. Equipment damage could occur.

If the brakes seem to slip after adjustment, there may be floor wax build-up on the tire tread. Periodically clean the tread with the same cleaning solution used to clean the bed.

4.15 SideCom® Communication System Entertainment Control

Tools required: Phillips head screwdriver
1/4" nut driver

Removal



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

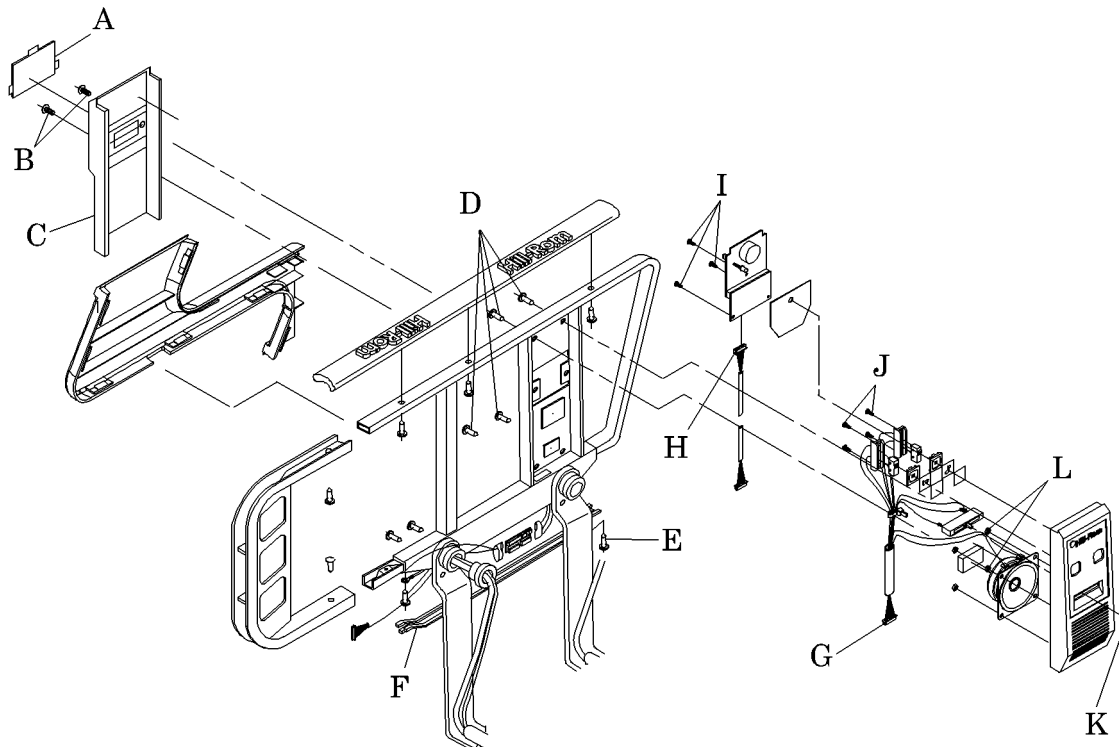
1. Unplug the bed from its power source.



SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
3. Lift the cover plate (A), and using a phillips head screwdriver, remove the screws (B). Separate the back cover (C) from the entertainment control assembly (see figure 4-15 on page 4-50).

Figure 4-15. SideCom® Communication System Entertainment Control

m241_120

4. Remove the four screws (D).
5. Remove the screw (E) and the bottom cover (F).
6. Unplug the connector (G) and the bed exit connector (H) (if applicable), and lift the entertainment control assembly out of the siderail.
7. If applicable, remove the three screws (I) holding the bed exit circuit board in place.

NOTE:

Note the orientation of all components before removing the screws holding the switch you want to replace.

8. To remove a switch, detach the connector, remove the screws (J), and separate the switch from the entertainment control assembly.
9. To remove the volume control, detach the connectors, pull the volume control knob (K) off, and separate the volume control unit from the entertainment control assembly.

10. To remove a speaker, detach the connectors. Using the 1/4" nut driver, remove the nuts (L), and separate the speaker from the entertainment control assembly.

Replacement

1. To replace a switch, attach the connector to the new switch, and use the phillips head screwdriver to secure the switch to the entertainment control assembly with the screws (J).
2. To replace the volume control, insert the new volume control unit into the entertainment control assembly, attach the volume control knob (K), and attach the connectors.
3. To replace a speaker, insert the new speaker into the entertainment control assembly. Using the 1/4" nut driver, secure it with the nuts (L), and attach the connectors.
4. If applicable, install the bed exit circuit board, and use the phillips head screwdriver to secure it to the entertainment control assembly.
5. If applicable, attach the bed exit connector (H).
6. Attach the connector (G) for the entertainment control assembly.
7. Secure the entertainment control assembly to the siderail with the screws (D).
8. Install the bottom cover (F), and secure it with the screw (E).
9. Install the back cover (C), and secure it with the screws (B).
10. Install the cover plate (A).
11. If applicable, connect the battery backup (see "Battery Backup Box" on page 4-8).
12. Plug the bed into an appropriate power source.
13. Test the entertainment controls to ensure that the SideCom® Communication System is working properly.

Adjustment

None

4.16 Siderail Nurse Call, Lighting, or Bed Control Switch Assembly

Tools required: Phillips head screwdriver
Wire cutters
Soldering iron
60/40 lead tin rosin core solder

Removal



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.

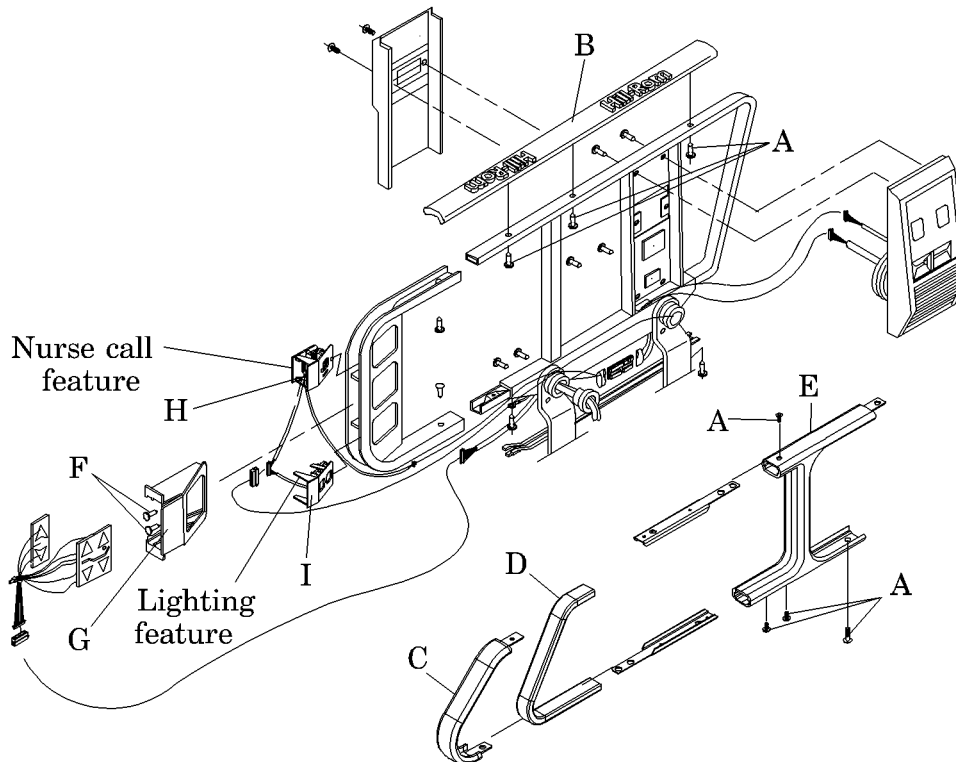


SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

2. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
3. Remove the seven screws (A) (see figure 4-16 on page 4-53).

Figure 4-16. Siderail Nurse Call, Lighting, or Bed Control Switch Assembly



m241_119

4. Remove the top cane (B), end cover (C), extension tube (D), and control housing cover (E).
5. Remove the two screws (F), and slide the switch housing (G) out of the siderail.
6. Locate the switch you want to replace. Remove the switch from the switch housing (G).
7. Compare the old switch and the new switch side by side to make sure they are the same.
8. If the new switch does not have wire leads soldered onto it, proceed as follows:
 - a. Remove the wire leads from the old switch by using a soldering iron to melt the solder connections.
 - b. Transfer the wires to the corresponding solder pads of the new switch, and solder them in place.

NOTE:

You may want to transfer the wires one at a time, to ensure they are not connected in the wrong spots.

9. If the new switch has wire leads already soldered onto it, proceed as follows:
 - a. Using the wire cutters, cut the wires attached to the old switch as close as possible to the solder pads.
 - b. Strip the ends of the wires approximately 3/16" (4.8 mm).
 - c. Push the ends into the splice terminal of the corresponding color wire on the new switch, and crimp the terminal.
10. Repeat step 8 or step 9 (as applicable) for a nurse call switch (H) or lighting switch (I).

Replacement

1. Insert the switch into the switch housing (G).
2. Install the switch housing (G) in the siderail and secure it with the screws (F).
3. Install the control housing cover (E), extension tube (D), end cover (C), and top cane (B) on the siderail, and secure them with the screws (A).
4. If applicable, connect the battery backup (see "Battery Backup Box" on page 4-8).
5. Plug the bed into an appropriate power source.
6. Test each siderail switch function to ensure they are working properly.

Adjustment

None

4.17 Siderails

Tools required: T25 Torx® head screwdriver
Wire cutters

Removal

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

1. Raise the bed to the high position using the hilow function.

**WARNING:**

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.

2. Place bed stands under the upper lift arm pivots or 2 x 4s between the bed frame and lift arms.

**SHOCK HAZARD:**

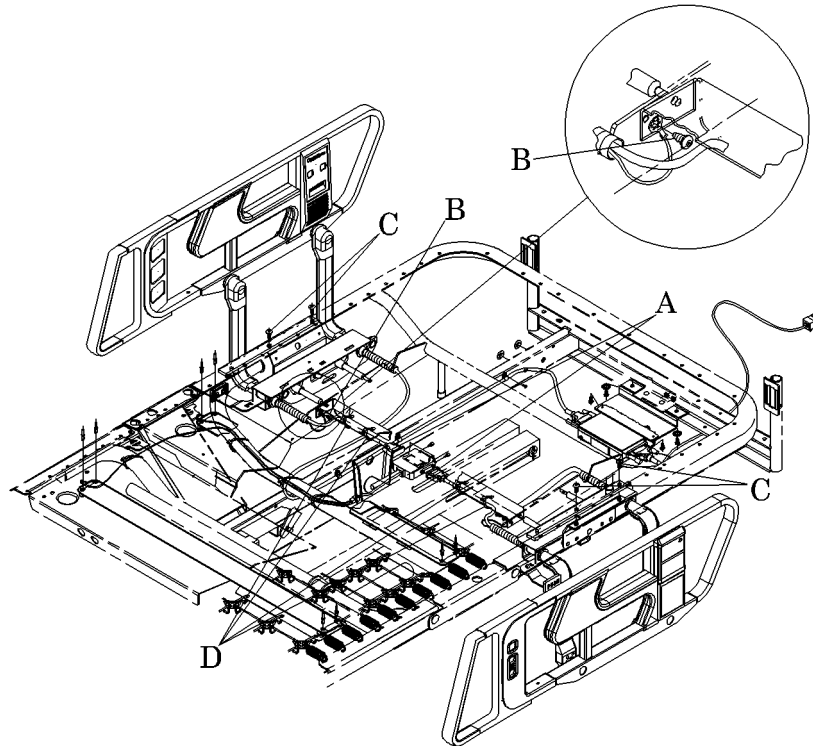
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.

**SHOCK HAZARD:**

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

4. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
5. If a foot end siderail is being removed, go to step 7. Otherwise, go to step 6.
6. Unplug the head end siderail control cable (A) connector from the bed (see figure 4-17 on page 4-56).

Figure 4-17. Siderails

m241_115

7. Using the T25 Torx® head screwdriver, remove the screw (B) securing the ground strap to the bed frame.
8. Using the wire cutters, cut the wire ties (D) securing the cable to the bed frame.
9. Using the T25 Torx® head screwdriver, remove the two screws (C), and separate the siderail from the bed.

Replacement

1. Place the siderail in the correct position on the bed, and secure it to the bed frame with the screws (C).
2. Secure the ground strap to the bed frame with the screw (B).
3. If applicable, connect the head end siderail control cable (A).
4. Secure the siderail control cable to the bed frame with the wire ties (D).

5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Remove the bed stands or 2 x 4s from the bed frame, as applicable.
7. Plug the bed into an appropriate power source.

**WARNING:**

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Test all siderail functions (as applicable) to ensure that the bed is working properly.

Adjustment

None

4.18 Pendant Control Assembly

Tools required: Wire cutters

Removal



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

1. Raise the bed to the high position using the hilow function.



WARNING:

Place bed stands under the upper lift arm pivots or 2 x 4s between the frame and lift arms before working under the bed. Failure to do so could result in personal injury.

2. Place bed stands under the upper lift arm pivots or 2 x 4s between the bed frame and lift arms.



SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.

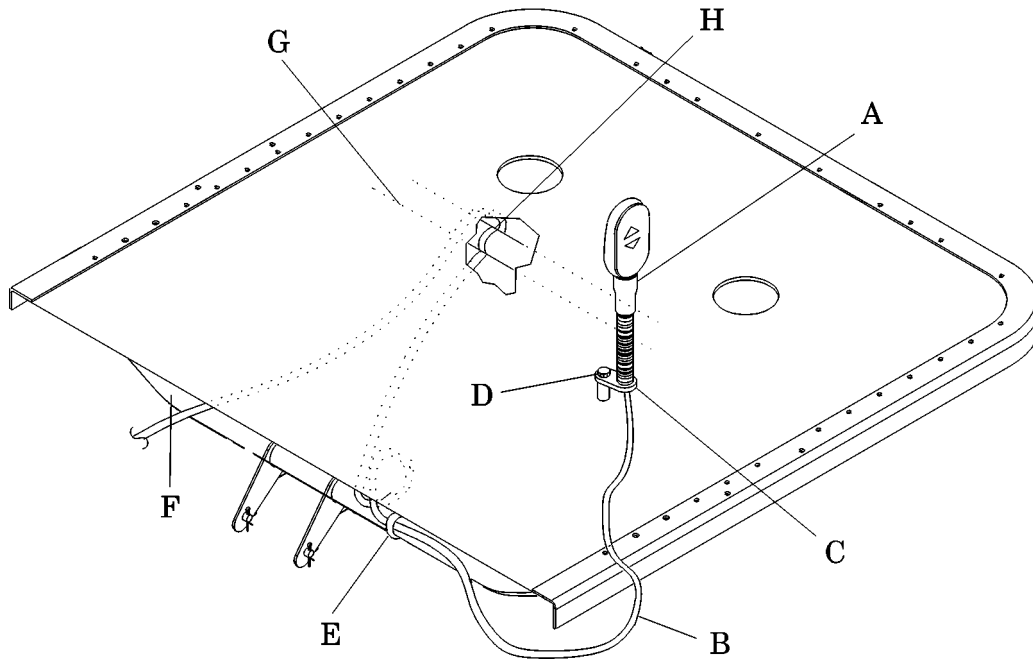


SHOCK HAZARD:

Disconnect the battery backup. Failure to do so could result in personal injury or equipment damage.

4. If applicable, disconnect the battery backup (see “Battery Backup Box” on page 4-8).
5. Using wire cutters, remove the wire tie (H) securing the control cable (B) to the crosstube (G) (see figure 4-18 on page 4-59).

Figure 4-18. Pendant Control Replacement



m241_128

4

6. Remove the Velcro® strap (E) that secures the cable to the crosstube (F).
7. Disconnect the control cable (B) from the control box.
8. Loosen the thumbscrew (D) on the pendant holder (C), and remove the pendant control (A).

Replacement

1. Mount the pendant control (A) on the pendant holder (C), and tighten the thumbscrew (D).



CAUTION:

Leave enough slack in the cable to allow the head section to move up and down without stressing the cable. Failure to do so could result in equipment damage.

2. Form a loop in the control cable (B), and secure it to the crosstube (F) with the Velcro® strap (E).

3. Secure the control cable (B) to the crosstube (G) with a wire tie (H).
4. Connect the control cable (B) to the control box.
5. If applicable, connect the battery backup (see “Battery Backup Box” on page 4-8).
6. Remove the bed stands or 2 x 4s from the bed frame, as applicable.
7. Plug the bed into an appropriate power source.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

8. Test all the pendant control (A) functions to ensure they are working properly.

Adjustment

None

4.19 Trendelenburg and Reverse Trendelenburg Indicator

Tools required: Channellock® pliers

Removal

None

Replacement

None

Adjustment

It may be necessary to adjust the indicator knobs for Trendelenburg and Reverse Trendelenburg to ensure proper readings for inches and degrees. Follow these steps to adjust the indicators:

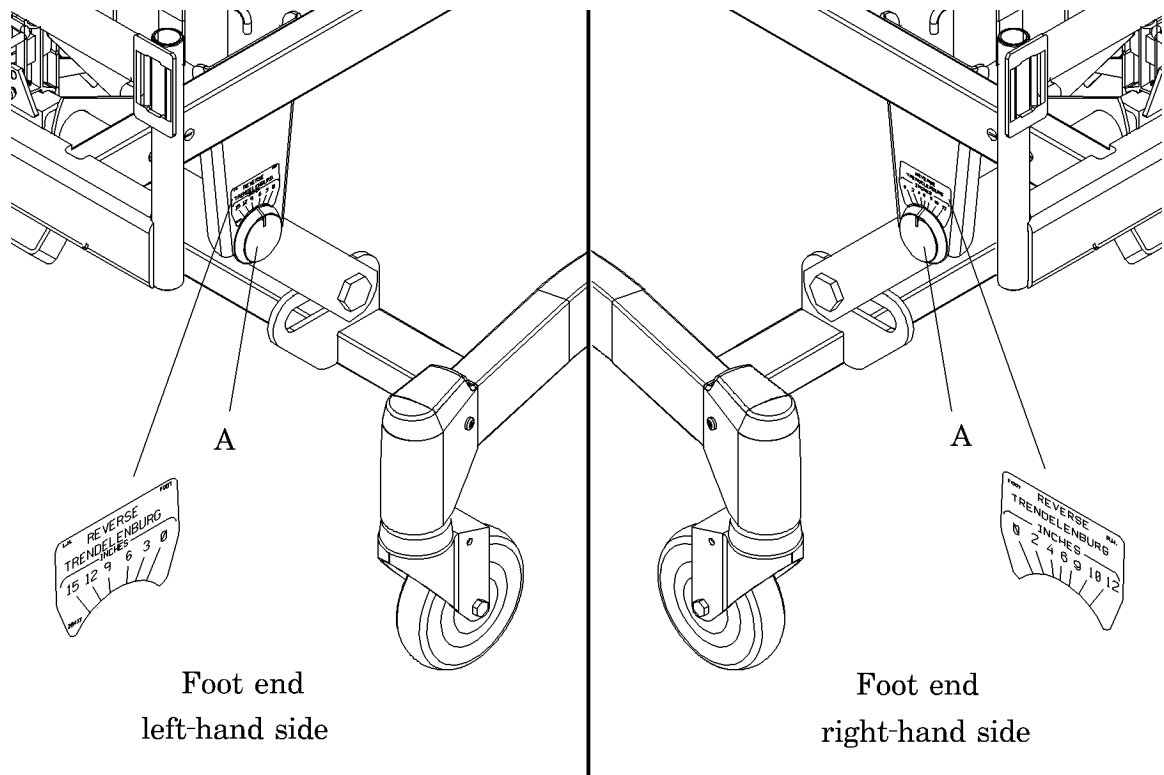


WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

1. Raise the bed to the high position using the hilow function.
2. Activate both the Trendelenburg and Reverse Trendelenburg knobs at the same time.
3. Lower the bed to the low position using the hilow function.
4. Using the Channellock® pliers, turn the four indicator knobs (A) until their arrows point to zero (0) on the corresponding labels (see figure 4-19 on page 4-62).
5. Raise the bed to the high position using the hilow function. Your indicators are now set.

Figure 4-19. Trendelenburg and Reverse Trendelenburg Indicator



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Chapter 5

Parts List

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Warranty

HILL-ROM, INC. LIMITED WARRANTY

Hill-Rom, Inc. (Hill-Rom) has a long tradition of providing superior products and service to our customer. Our goal is "Total Customer Satisfaction". In that spirit, Hill-Rom is proud to offer the following warranty.

GENERAL WARRANTY (APPLICABLE UNLESS A SPECIFIC WARRANTY IS LISTED)

Hill-Rom warrants to the original purchaser that its products and replacement parts shall be free from defects in material and workmanship for a period of one (1) year from date of delivery. Hill-Rom's obligation under this warranty is expressly limited to supplying replacement parts and/or service for, or replacing, at its option, any product which is, in the sole discretion of Hill-Rom, found to be defective. In addition to the foregoing one year warranty, Hill-Rom warrants to the original purchaser that the frame and welds on its products will be free from structural defects for the life of the product. Any product upgrade or modification initiated by Hill-Rom does not affect the original product warranty.

SPECIFIC WARRANTIES

MATTRESS WARRANTIES

Hill-Rom warrants to the original purchaser that its mattress product shall be free from defects in material and workmanship for a period of two (2) years from date of delivery. However, electro mechanical mattress components (compressors, valves, printed circuit boards, hoses, and couplers) are covered by the general one (1) year warranty.

EXPENDABLES WARRANTIES

A sixty (60) day limited warranty from date of delivery applies to expendable parts such as cushions, coverlets, software diskettes, locator badge batteries, dome light incandescent bulbs, overhead fluorescent tubes, heating elements, temperature probes, filter sheets, and microspheres. This warranty is limited to replacement of the parts covered.

TO OBTAIN PARTS AND SERVICE

In the United States, call Hill-Rom Technical Support Department at (800) 445-3720, Monday through Friday. In Canada, call Hill-Rom Technical Support Department at (800) 267-2337, Monday through Friday. Outside the United States and Canada, call your authorized Hill-Rom Distributor. In order to expedite service, we request you furnish the following information: customer identification number, product model number, serial number, and description of problem. A qualified specialist will provide, via telephone (United States and Canada), or FAX (Outside the United States and Canada), troubleshooting assistance for facility personnel and provide necessary parts to make repairs. If troubleshooting determines the need for on-site technical service, a qualified service representative will be dispatched. Replacement of non-technical items will be the responsibility of the customer. If requested by Hill-Rom, products or parts for which a warranty claim is made shall be returned prepaid to Hill-Rom's factory.

OUT OF WARRANTY EXCHANGE POLICY

After the expiration of the original warranty, upon request, Hill-Rom will ship as a replacement, components such as selected: motors and printed circuit boards, for like units returned to Hill-Rom by the original purchaser at a substantial savings. Please call Hill-Rom Technical Support Department for current pricing.

PARTS AVAILABILITY POLICY

Hill-Rom will offer parts for new and remanufactured products for ten (10) years from date of sale; for communications products for five (5) years from date of sale.

Note: Some original component parts and assemblies may not be available; functional equivalents may be substituted.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE. HILL-ROM'S OBLIGATION UNDER THESE WARRANTIES SHALL NOT INCLUDE ANY LIABILITY FOR LOSS OF PROFITS, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES OR DELAYS.

Some states, provinces, or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply. Any improper or negligent use, any alterations or repairs not in accordance with Hill-Rom's manuals or performed by others in such manner as in Hill-Rom's sole judgment affects the product materially and adversely, shall void these warranties. These warranties do not cover failures due to misuse, abuse, neglect, or lack of routine maintenance. No employee or representative of Hill-Rom is authorized to change these warranties in any way or grant any other warranty unless in writing and signed by a Hill-Rom officer. These warranties provide specific legal rights; but, there may be other available rights, which vary from state to state, province to province, or country to country.

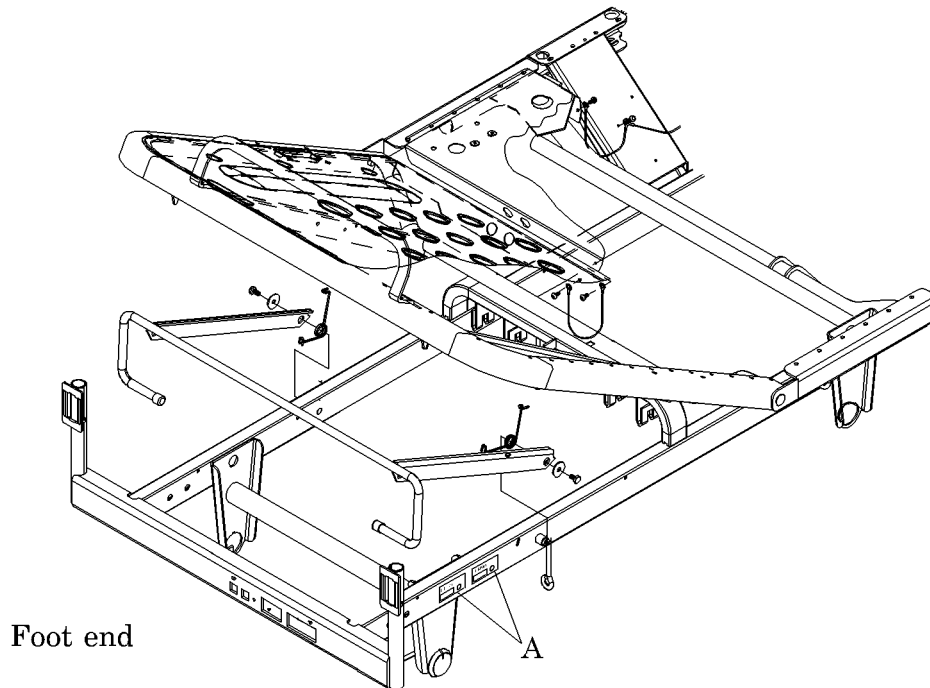
Revised October 20, 1998

NOTES:

Service Parts Ordering

Using the parts lists in this manual, identify the part number(s) you require. Find the product number and serial number on the product identification label (A) (see figure 5-1 on page 5-5).

Figure 5-1. Product Identification Label Location



m241_121

Call Hill-Rom Technical Support at (800) 445-3720 with the following information:

- Six-digit customer account number
- Purchase order number
- Product number
- Serial number
- Part number(s)

Hill-Rom also provides a fax number to promptly order parts, request part prices and availability, or follow up on a service order. The fax number is (812) 934-8472.

To order parts, a \$40.00 minimum will prevent a charge for processing your order.

Terms:

- Net 30 days
- F.O.B. Batesville, IN
- Prepaid shipping charges added to invoice
- All orders shipped UPS ground unless specified

Address all inquiries to:

ATTN TECHNICAL SUPPORT—PARTS
HILL-ROM, INC.
1069 STATE ROUTE 46 E
BATESVILLE IN 47006-9167

Address all return goods to:

ATTN SERVICE STORES
DISTRIBUTION CENTER DOOR D23
HILL-ROM, INC.
COUNTY ROAD 300E
BATESVILLE IN 47006-9167

NOTE:

To eliminate possible delays or incorrect billings, **do not** return any items without a Return Material Authorization (RMA) number. When a return is requested, an RMA packet is included with each order. This packet includes an RMA number, instructions, and a shipping label. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720.

Exchange Policy

The following are policies for in-warranty and out-of-warranty exchanges from Hill-Rom.

In-Warranty Exchanges

In some cases, Hill-Rom will request that parts/products be returned for inspection. When this occurs, you are expected to return parts/products within 30 days of receipt of the exchange part. If you fail to return the inoperative parts/products within the 30 day period, Hill-Rom will invoice your facility for the full selling price of the parts/products.

NOTE:

The preceding billing procedure pertains **only** to parts/products that Hill-Rom requests to be returned.

In some cases, the invoice accompanying the parts will show the full selling price (only for internal use at Hill-Rom). Do not confuse this price with your price.

Do not return any parts without an RMA number. When parts/products have been requested to be returned, Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720.

Out-of-Warranty Exchanges

You are expected to return the inoperative parts/products within 30 days of receipt of the exchange part. Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720. If you fail to return the equipment within 30 days, Hill-Rom will invoice your facility for **the difference between the exchange price and the new price of the part.**

NOTES:

Recommended Spare Parts

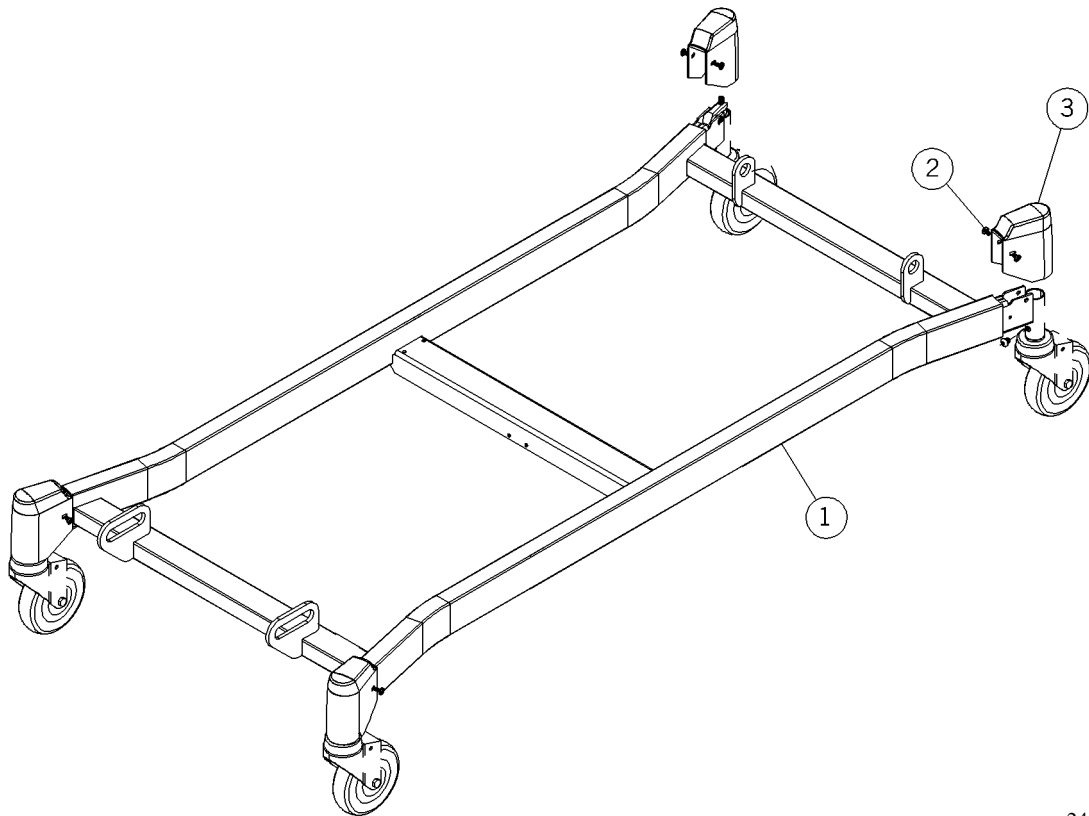
See table 5-1 on page 5-9 for a recommended spare parts list to service five units or more.

Table 5-1. Recommended Spare Parts

Part Number	Quantity	Description
4314308 (1400)	10	2 amp fuse (as applicable)
4314311 (1400)	10	1 amp fuse (as applicable)
4314312 (1400)	10	0.5 amp fuse
6336806 (1400)	2	6 amp circuit breaker
6340101 (1400)	2	DC motor, head
6340102 (1400)	2	DC motor, knee
6340103 (1400)	2	DC motor, hilow
6219002 (1400)	2	Hilow drive
6219102 (1400)	2	Head linear drive
6219202 (1400)	2	Knee linear drive
6317001 (1400)	2	Control board assembly
6342201 (1400)	5	Power cord 110V (USA)
6342202 (1400)	5	Power cord 220V (Australian)
2470901 (1400)	10	Trendelenburg knob
2471001 (1400)	10	Reverse Trendelenburg knob
3300602 (1400)	10	Lockout button
3300603 (1400)	10	Lockout button

Base Module

Figure 5-2. Base Module



m241_096

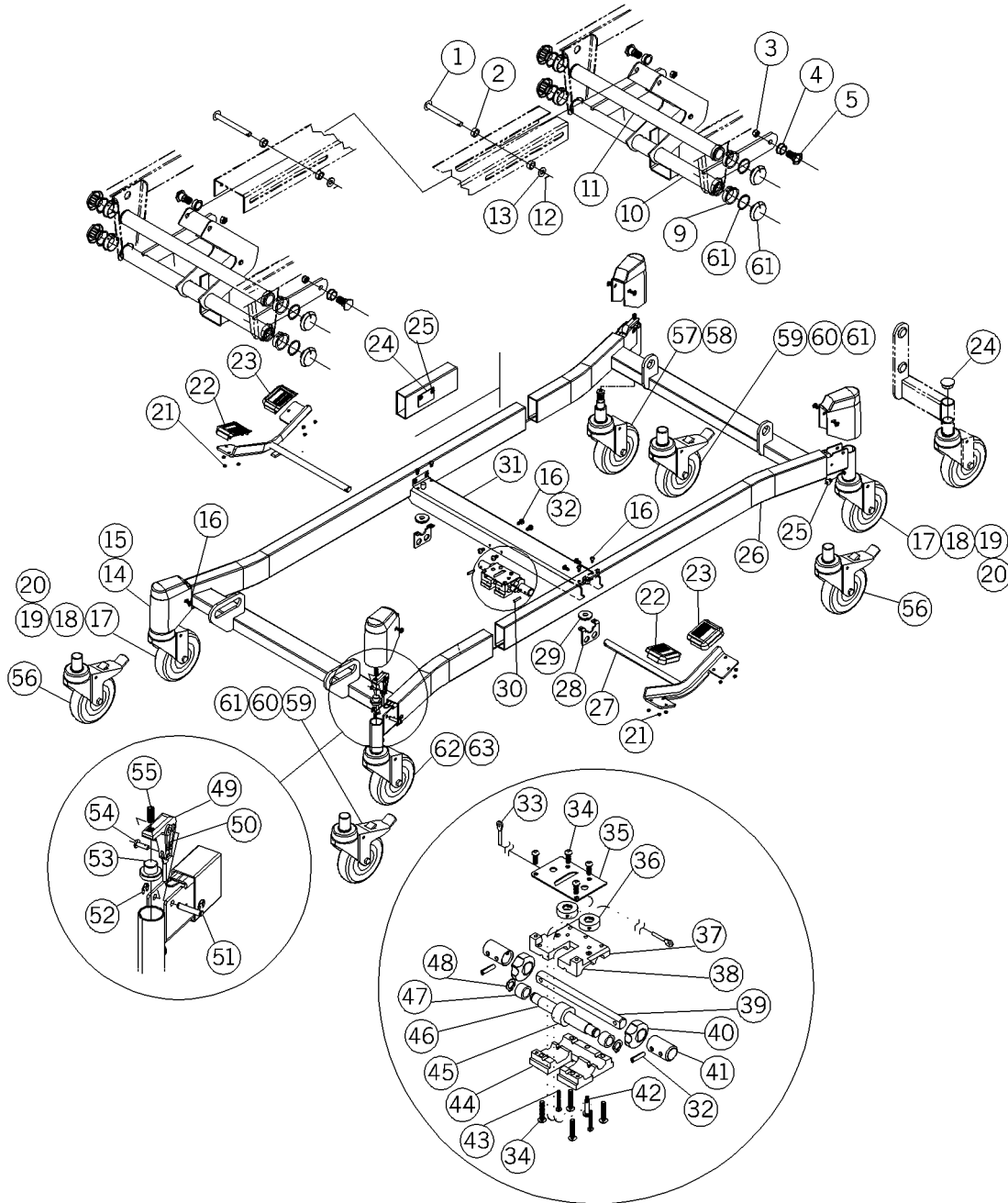
Table 5-2. Base Module

Item Number	Part Number	Quantity	Description
1	44299 (1400)	1	Base weldment
2	43878 (1400)	8	Torx® button head screw
3	44100 (1400)	4	Leg cover

NOTES:

Base Module—Units With Central Brake and Steer

Figure 5-3. Base Module—Units With Central Brake and Steer



m241_060

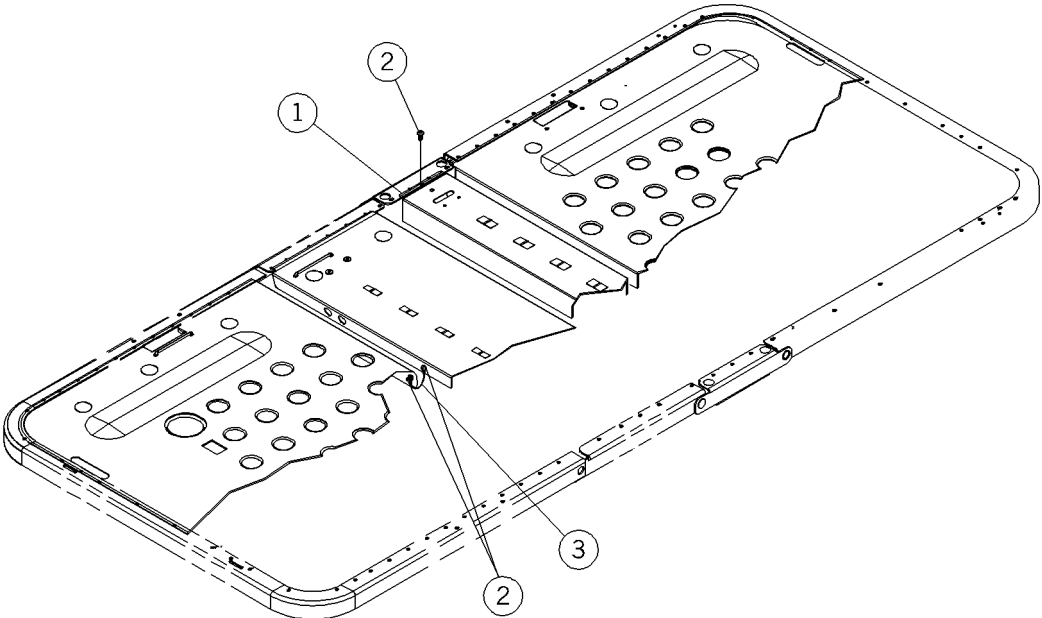
Table 5-3. Base Module—Units With Central Brake and Steer

Item Number	Part Number	Quantity	Description
1	24496 (1400)	2	Clevis pin
2	24497 (1400)	4	Spacer
3	2332 (1400)	4	Stopnut
4	34349 (1400)	4	Bushing
5	19274 (1400)	4	Bolt
6	33355 (1400)	8	Pointer
7	24785 (1400)	8	Pointer cap
8	24449 (1400)	8	Retaining ring
9	24452 (1400)	8	Bushing
10	32621 (1400)	2	Lower lift arm assembly
11	33562 (1400)	2	Torque tube
12	11093 (1400)	2	Cotter pin
13	10902 (1400)	2	Washer
14	31113 (1400)	0 or 4	Leg cover
15	44100 (1400)	0 or 4	Leg cover
16	43878 (1400)	8	Torx® button head screw
17	4384 (1400)	2	5" caster without brake
18	79X035 (1400)	2	3" caster without brake
19	45084-40 (1400)	2	Caster swivel (4")
20	43841 (1400)	2	Caster—swivel
21	17291 (1400)	12	Pushnut
22	32575 (1400)	2	Steer pedal (gray)
23	35642 (1400)	2	Brake pedal (red)
24	24771 (1400)	4	Leg plug
25	32572 (1400)	4	Screw
26	44299 (1400)	1	Base weldment
27	32583 (1400)	2	Pedal assembly
28	18944 (1400)	2	Pedal bracket
29	18864 (1400)	2	Sheave
30	9685 (1400)	4	Roll pin
31	32640 (1400)	1	Mechanism support assembly

Item Number	Part Number	Quantity	Description
32	43389 (1400)	4	Hilow Torx® screw
33	32585 (1400)	1	Cable assembly
34	42142 (1400)	4	Pan head screw
35	34516 (1400)	1	Stiffener plate
36	18887 (1400)	2	Bearing
37	SA1157 (1400)	1	Block top, adapter, screw
38	SA3351 (1400)	As required	Lithium grease
39	33360 (1400)	1	Cam shaft
40	43805 (1400)	2	Brake/steer cam
41	18859 (1400)	2	Coupling
42	43879 (1400)	5	Torx® button head screw
43	42141 (1400)	2	Hilow screw
44	42247 (1400)	1	Mechanism block—bottom
45	18863 (1400)	1	Roller
46	43854 (1400)	1	Follower shaft
47	43844 (1400)	2	Bearing
48	12220 (1400)	2	Tru-arc ring
49	34715 (1400)	2	Rocker arm assembly
50	11094 (1400)	2	Cotter pin
51	18862 (1400)	2	Pin
52	18890 (1400)	4	Tru-arc ring
53	44116 (1400)	2	Spacer
54	757 (1400)	2	Connector pin
55	32425 (1400)	2	Setscrew
56	SA1220 (1400)	2	Steer lock caster, screw
57	45084-44 (1400)	1	Caster, brake/steer (4")
58	43842 (1400)	1	Brake caster
59	27449 (1400)	2	Treadlock caster—5"—black
60	79X034 (1400)	1	3" caster with brake
61	SA1219 (1400)	2	Total lock caster, screw
62	45084-46 (1400)	1	Caster, brake (4")
63	43843 (1400)	1	Brake/steer caster

Surface Module

Figure 5-4. Surface Module



m241_099

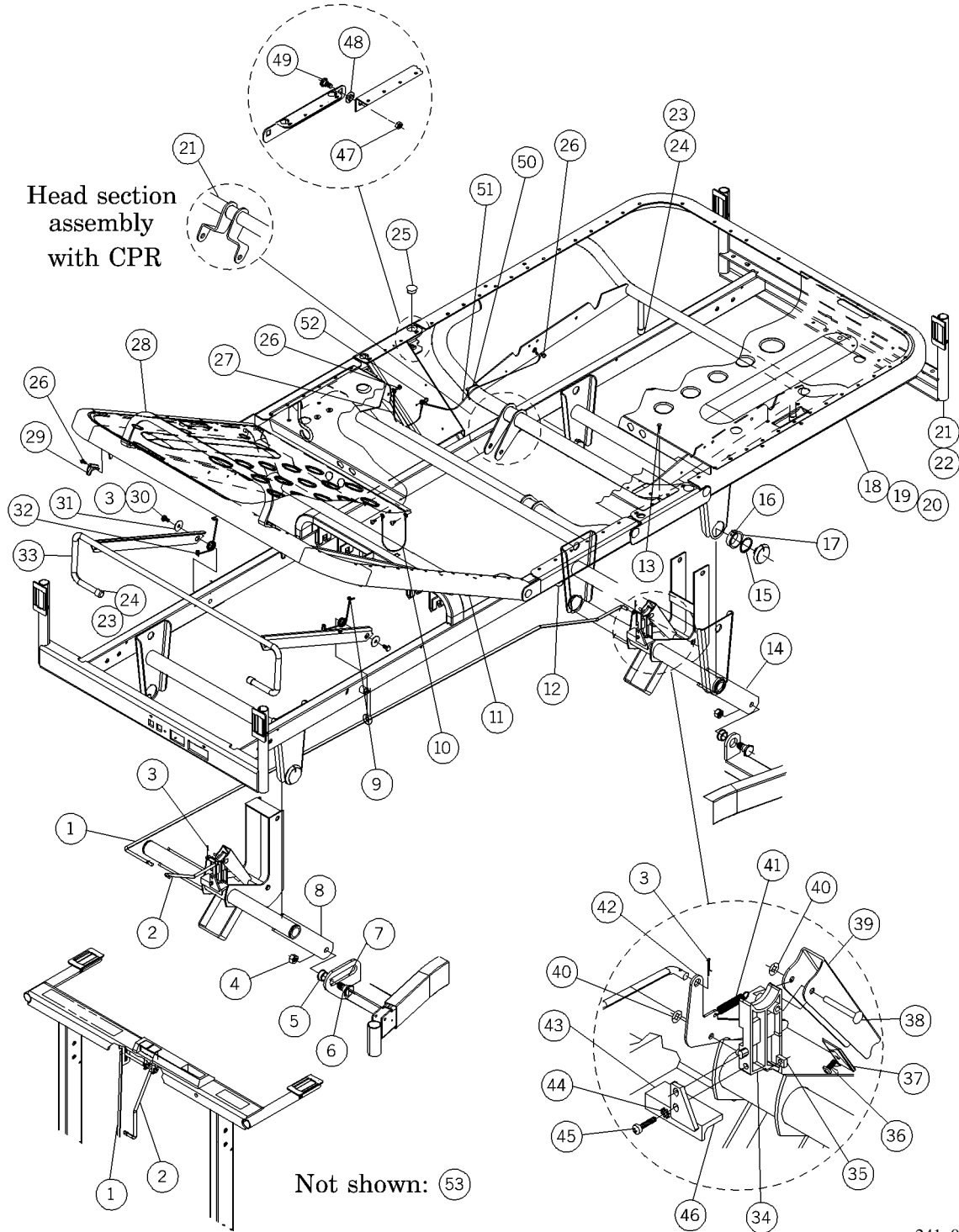
Table 5-4. Surface Module

Item Number	Part Number	Quantity	Description
1	45884 (1400)	1	Seat pan
2	43878 (1400)	2	Torx® button head screw
3	4565805 (1400)	1	Ground strap assembly



Frame/Surface Module

Figure 5-5. Frame/Surface Module



m241_004

Table 5-5. Frame/Surface Module

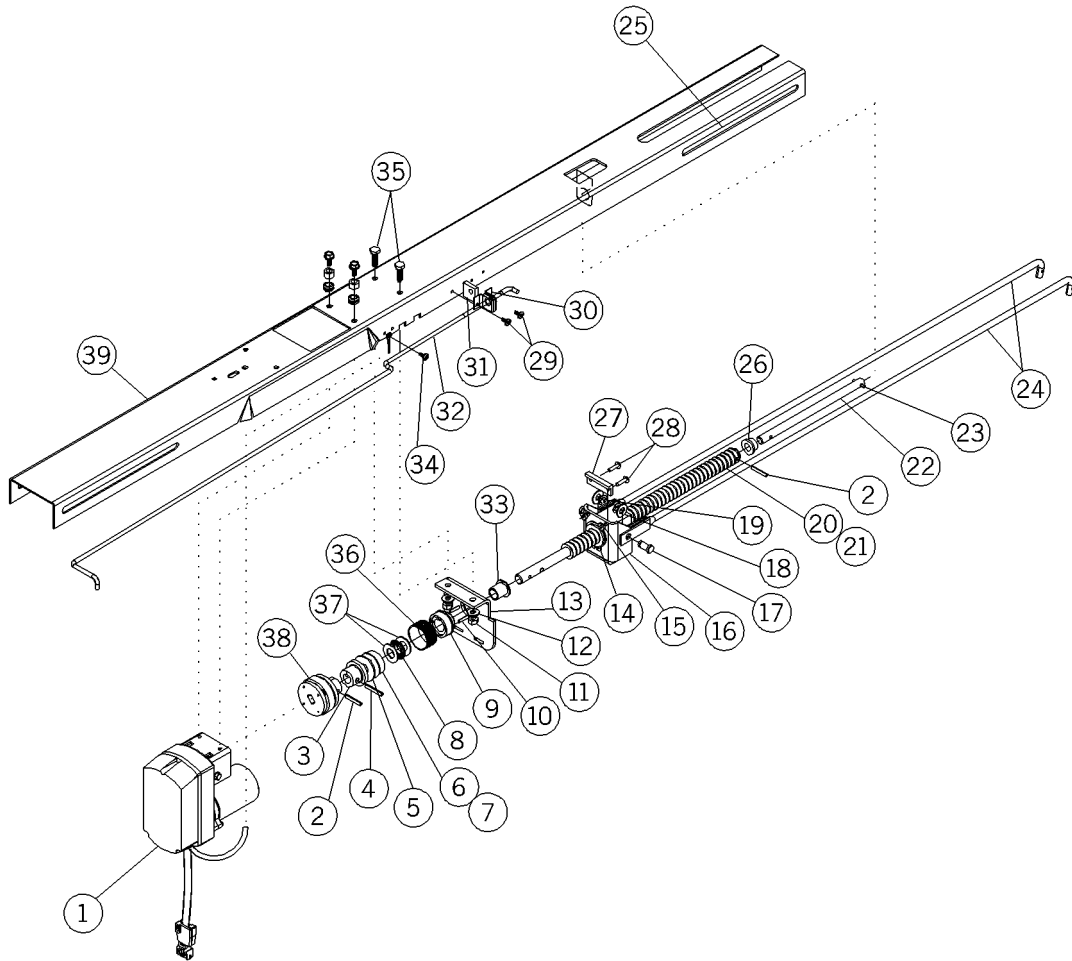
Item Number	Part Number	Quantity	Description
1	27802 (1400)	1	Reverse Trendelenburg rod
2	27803 (1400)	1	Trendelenburg rod
3	11094 (1400)	2	Cotter pin
4	2332 (1400)	4	Stopnut
5	34349 (1400)	4	Bushing
6	19274 (1400)	4	Bolt
7	SA3351 (1400)	As required	Lithium grease
8	3262101 (1400)	1	Lower lift arm assembly
9	33047 (1400)	1	Spring, left-hand
10	4565805 (1400)	1	Ground strap assembly
11	4895402 (1400)	1	Foot section assembly
12	4895502 (1400)	1	Thigh section assembly
13	45884 (1400)	1	Seat pan
14	32621 (1400)	1	Lower lift arm assembly
15	24449 (1400)	4	Retaining ring
16	8252 (1400)	As required	Oil, M-1, 2 ounce
17	24452 (1400)	4	Bushing
18	6016101 (1400)	1	Head section assembly (80" bed)
19	6016106 (1400)	0 or 1	Head section assembly (72" bed)
20	6016103 (1400)	0 or 1	Head section assembly (CPR bed)
21	6343501 (1400)	0 or 1	Lower frame assembly (80" and CPR bed)
22	6343502 (1400)	0 or 1	Lower frame assembly (72" bed)
23	25329 (1400)	As required	Adhesive
24	34838 (1400)	4	Vinyl cap
25	38156 (1400)	2	3/4" hole plug
26	43878 (1400)	8	Torx® button head screw
27	4565815 (1400)	1	Ground strap assembly
28	39901 (1400)	1	Mattress stop
29	19887 (1400)	2	Foot rack insert
30	9936 (1400)	2	Hex bolt
31	3869 (1400)	2	Washer

Item Number	Part Number	Quantity	Description
32	19528 (1400)	1	Spring, right-hand
33	32616 (1400)	1	Foot rack assembly
34	SA1372 (1400)	2	Trendelenburg mount and retainer
35	77 (1400)	2	Nut
36	4759 (1400)	2	Screw
37	26143 (1400)	2	Tip
38	24544 (1400)	2	Rivet
39	SA1371 (1400)	2	Trendelenburg assembly
40	17291 (1400)	4	Fastener
41	24798 (1400)	2	Spring
42	27804 (1400)	2	Trip lever
43	SA1372 (1400)	2	Trendelenburg mount and retainer
44	3844 (1400)	2	Washer
45	451 (1400)	2	Screw
46	SA3351 (1400)	As required	Lithium grease
47	43926 (1400)	6	Flange nut
48	44092 (1400)	6	Oilite® bushing
49	37104 (1400)	6	Shoulder screw
50	19124 (1400)	1	Large cable tie
51	4565818 (1400)	1	Ground strap assembly
52	18252 (1400)	1	Screw
53	SA4841 (1400)	As required	Loctite®

NOTES:

Hilow Drive Assembly

Figure 5-6. Hilow Drive Assembly



m241_001

Table 5-6. Hilow Drive Assembly

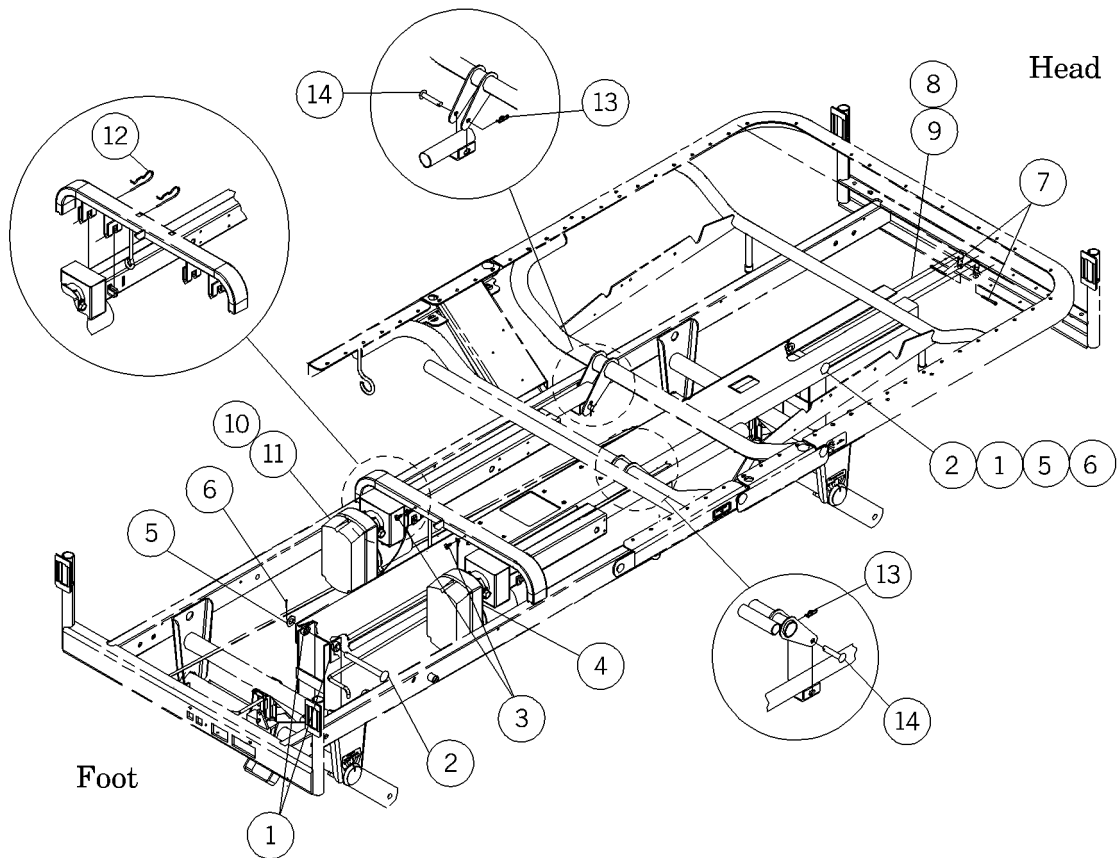
Item Number	Part Number	Quantity	Description
1	6340103 (1400)	1	Motor, DC hilow
2	3517 (1400)	2	Spring pin
3	39837 (1400)	1	Fixed brake
4	24633 (1400)	1	Pin
5	45994 (1400)	1	Brake washer
6	39247 (1400)	1	Floating brake drum
7	39651 (1400)	1	Bushing
8	11578 (1400)	1	Thrust bearing
9	39813 (1400)	1	Brake block
10	124 (1400)	2	Roll pin
11	831 (1400)	2	Locknut
12	35667 (1400)	2	Washer
13	39812 (1400)	1	Brake bracket
14	39315 (1400)	1	Retaining ring
15	755 (1400)	2	Locknut
16	39811 (1400)	1	Nut bracket
17	39315 (1400)	1	Retaining ring
18	4540 (1400)	2	Washer
19	35326 (1400)	2	E-ring
20	39594 (1400)	1	Hilow ball screw
21	SA3351 (1400)	As required	Lithium grease
22	32963 (1400)	1	Extension shaft
23	142 (1400)	1	Roll pin
24	39938 (1400)	0 or 2	Tie rod assembly (80" bed)
25	SA3351 (1400)	As required	Lithium grease
26	39653 (1400)	1	Bushing
27	39654 (1400)	1	Slider
28	100 (1400)	2	Screw
29	9023606 (1400)	2	Screw
30	25211 (1400)	1	Bracket
31	25212 (1400)	1	Pad

Item Number	Part Number	Quantity	Description
32	33030 (1400)	1	Hilow limit rod
33	39652 (1400)	1	Bushing
34	43878 (1400)	1	Torx® button head screw
35	42889 (1400)	2	Hex bolt
36	28082 (1400)	1	Brake spring
37	40741 (1400)	2	Thrust race
38	36250 (1400)	1	Coupling assembly
39	63363 (1400)	1	Hilow drive channel

NOTES:

DC Drive Module

Figure 5-7. DC Drive Module



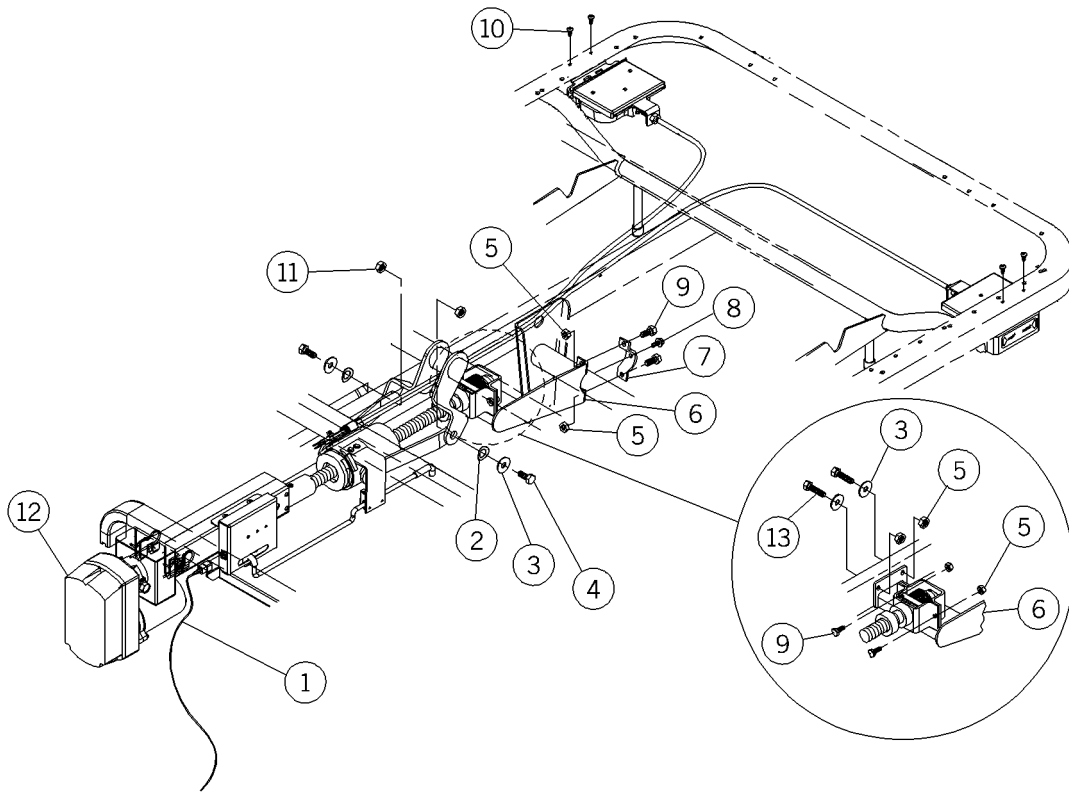
m241_003

Table 5-7. DC Drive Module

Item Number	Part Number	Quantity	Description
1	24497 (1400)	4	Spacer
2	24496 (1400)	2	Clevis pin
3	43878 (1400)	2	Torx® button head screw
4	6340803 (1400)	1	Knee drive assembly without CPR
5	10902 (1400)	2	Washer
6	11093 (1400)	2	Cotter pin
7	17405 (1400)	2	Cotter pin
8	6340901 (1400)	0 or 1	Hilow drive (80" bed) standard
9	6340902 (1400)	0 or 1	Hilow drive (76" bed) short
10	6340802 (1400)	0 or 1	Head drive assembly (non-CPR bed)
11	6340804 (1400)	0 or 1	Head drive assembly (CPR bed)
12	24556 (1400)	4	Hair pin
13	61615 (1400)	2	Rue ring cotter
14	4453 (1400)	2	Pin

DC Head Drive Module with CPR Release

Figure 5-8. DC Head Drive Module with CPR Release



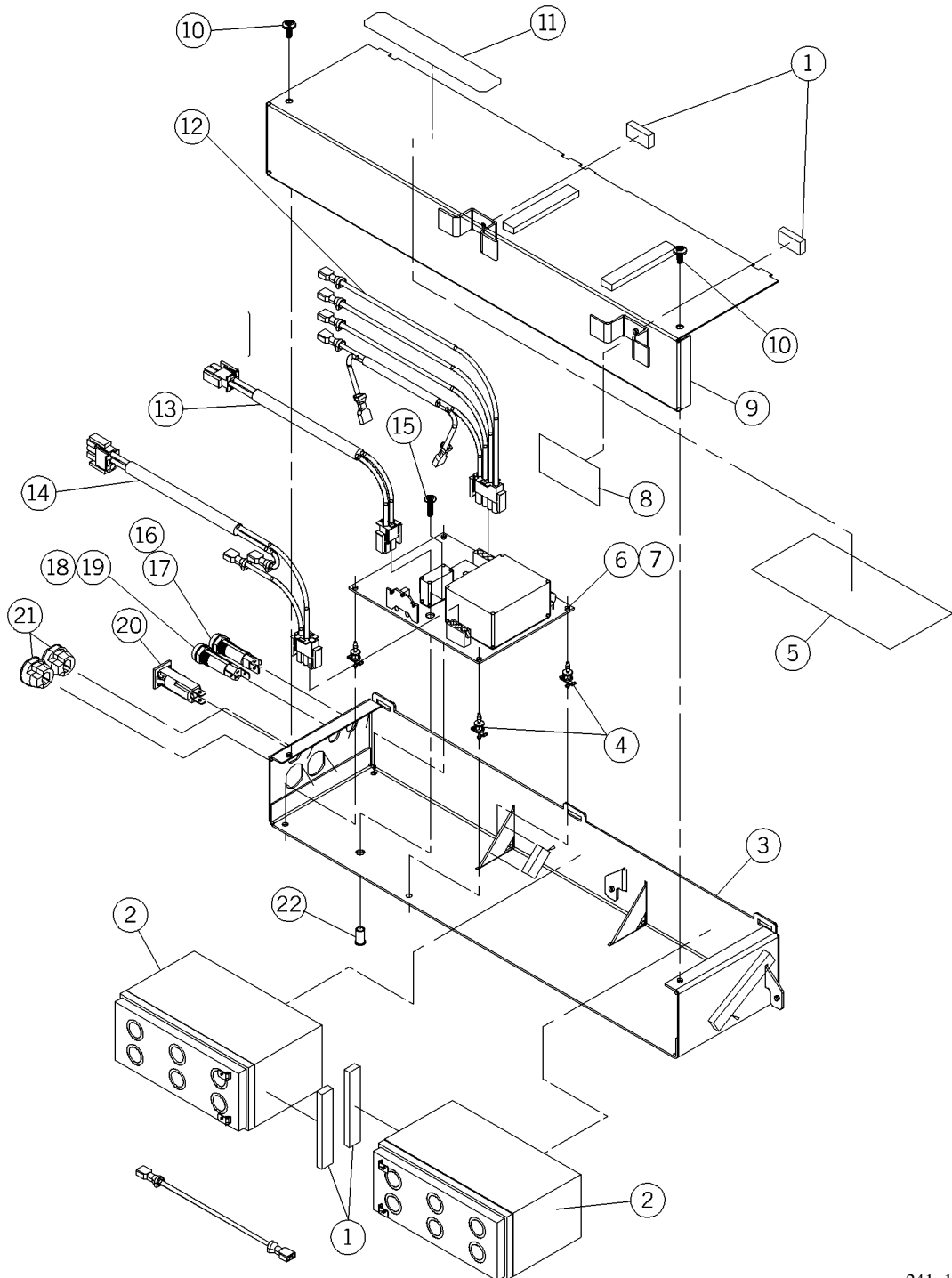
m241_002

Table 5-8. Head Drive Module with CPR Release

Item Number	Part Number	Quantity	Description
1	60158 (1400)	1	Head limit cable/CPR
2	22322 (1400)	2	Lock washer
3	35112 (1400)	2	Flat washer
4	43090 (1400)	2	Shoulder bolt, hex
5	20802 (1400)	6	KEPS nut
6	49287 (1400)	1	Head screw mounting bracket
7	49285 (1400)	1	Head screw strap clamp
8	21913 (1400)	1	Screw, hex washer head
9	9001810 (1400)	4	Hex head cap screw
10	44489 (1400)	4	Six lobe pan head screw
11	831 (1400)	2	Locknut
12	6340804 (1400)	1	Head drive assembly with CPR
13	9001828 (1400)	2	Cap screw, hex head

Battery Backup Assembly

Figure 5-9. Battery Backup Assembly



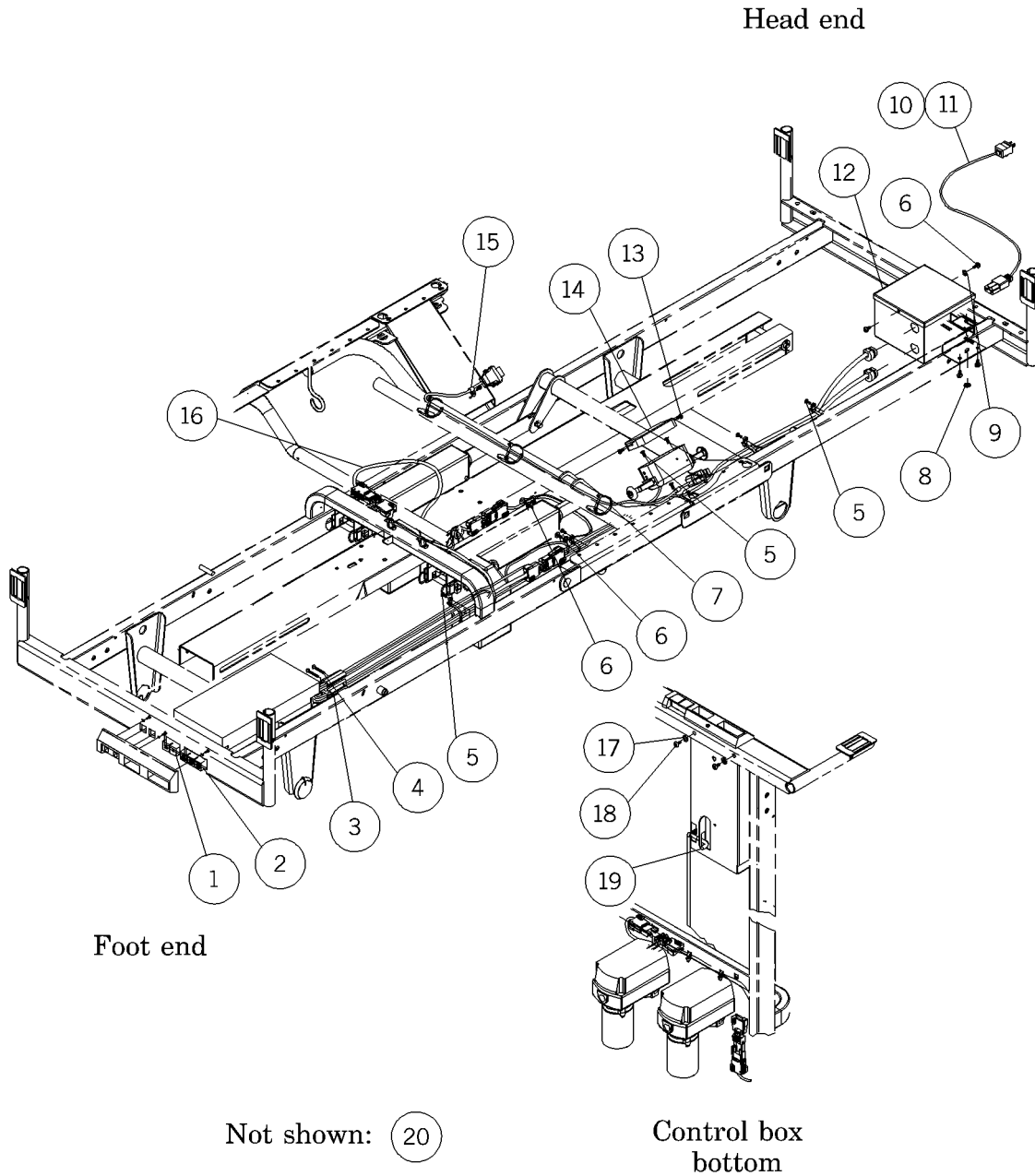
m241_142

Table 5-9. Battery Backup Assembly

Item Number	Part Number	Quantity	Description
1	44113 (1400)	1.25 lft	Gasket
2	4840501 (1400)	2	Battery, lead acid, sealed
3	64069 (1400)	1	Battery box weldment
4	35663 (1400)	4	Standoff
5	64600 (1400)	1	Wiring diagram
6	6381401 (1400)	0 or 1	PCB assembly, 120V
7	6381402 (1400)	0 or 1	PCB assembly, 230V
8	6469803 (1400)	1	Serial number label
9	64519 (1400)	1	Battery box lid weldment
10	43878 (1400)	2	Torx® button head screw
11	6469802 (1400)	1	Warning label
12	64554 (1400)	1	Battery cable
13	64553 (1400)	1	Output cord assembly
14	64552 (1400)	1	Power cord assembly
15	9006810 (1400)	1	Screw
16	4302402 (1400)	2	Fuse holder
17	4314308 (1400)	1	2A fuse
18	4314305 (1400)	0 or 1	Fuse, 15 x 20 mm, 2A
19	4314304 (1400)	0 or 1	Fuse, 125mA, 250V sloblo, 5 x 20 mm
20	6336806 (1400)	1	6A circuit breaker
21	35773 (1400)	2	Strain relief
22	3306702 (1400)	1	Threaded spacer

Automatic Contour Cable Routing

Figure 5-10. Automatic Contour Cable Routing



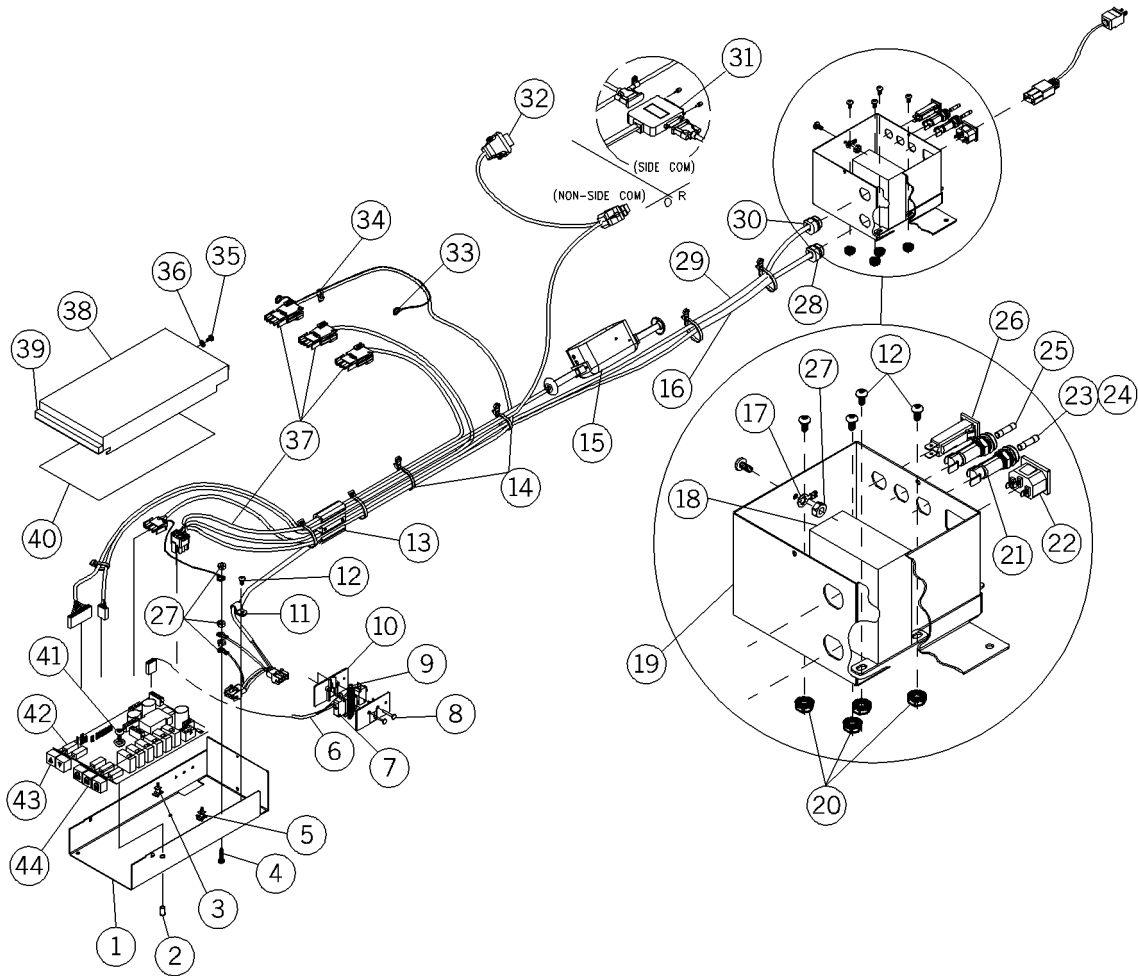
m241_006

Table 5-10. Automatic Contour Cable Routing

Item Number	Part Number	Quantity	Description
1	3300603 (1400)	2	Lockout button
2	3300602 (1400)	3	Lockout button (w/lock)
3	34422 (1400)	1	Cable retainer
4	33058 (1400)	2	Screw
5	18252 (1400)	4	Screw
6	43878 (1400)	13	Torx® button head screw
7	19124 (1400)	5	Large cable tie
8	40497 (1400)	5	KEPS nut
9	23208 (1400)	2	Washer
10	6342201 (1400)	0 or 1	Power cord 110V (domestic)
11	6342202 (1400)	0 or 1	Power cord 220V (Australian)
12	63371 (1400)	1	Transformer box cover
13	9023506 (1400)	1	Screw
14	2231901 (1400)	0 or 1	Automatic contour cover
15	17292 (1400)	0 or 2	Cable clamp
16	63485 (1400)	1	Motor control cable assembly
17	23208 (1400)	2	Washer
18	44489 (1400)	2	Six lobe pan head screw
19	34323 (1400)	1	Vinyl sleeve
20	32741 (1400)	0 or 1	Wire joint

Automatic Contour Module

Figure 5-11. Automatic Contour Module



m241_005

Table 5-11. Automatic Contour Module

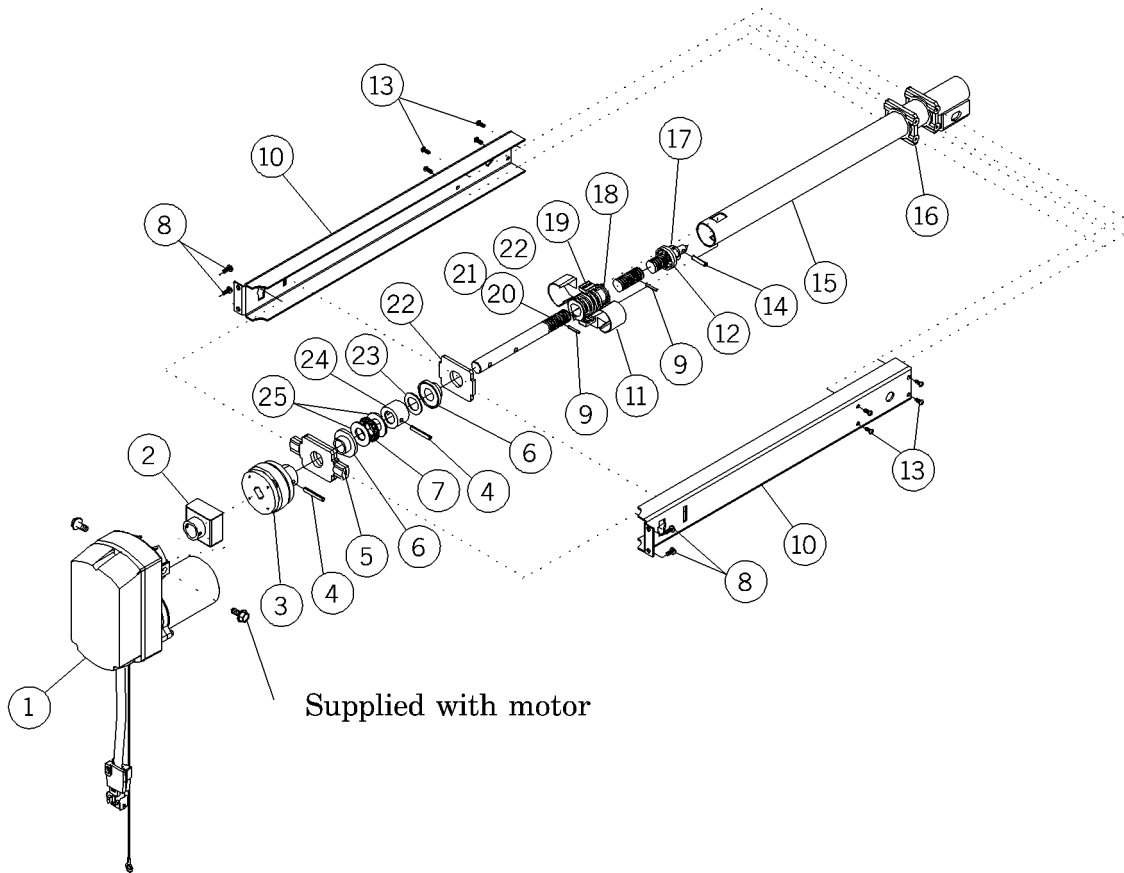
Item Number	Part Number	Quantity	Description
1	63476 (1400)	1	Control box weldment
2	3306702 (1400)	3	Threaded spacer
3	35663 (1400)	1	Circuit board support
4	43879 (1400)	1	Torx® button head screw
5	3697302 (1400)	2	Standoff, PCB screw
6	3297101 (1400)	1	Hilow limit cable assembly
7	33060 (1400)	2	Switch
8	15380 (1400)	2	Screw
9	24817 (1400)	1	Spring
10	24557 (1400)	2	Switch bracket
11	20312 (1400)	1	Cable clamp
12	43878 (1400)	13	Torx® button head screw
13	34422 (1400)	1	Cable retainer
14	14451 (1400)	4	Cable clamp
15	3302002 (1400)	0 or 1	Automatic contour assembly
16	63505 (1400)	1	Power cable (low voltage)
17	25647 (1400)	1	Terminal
18	6337001 (1400)	1	Transformer, 110V
19	63405 (1400)	1	Box, electronics
20	40497 (1400)	5	KEPS nut
21	4302402 (1400)	2	Fuse holder
22	63359 (1400)	1	Power inlet
23	4314308 (1400)	0 or 1	Fuse (2 amp)
24	4314311 (1400)	0 or 1	Fuse (1 amp)
25	9000204 (1400)	0.416 lft	Tubing blank
26	6336806 (1400)	1	Circuit breaker (6 amp)
27	28837 (1400)	4	Hex nut
28	16145 (1400)	1	Strain relief
29	63504 (1400)	1	Power cable assembly (high voltage)
30	35773 (1400)	1	Strain relief
31	6016002 (1400)	0 or 1	SideCom® Communication System test port cable assembly (w/CPR)

Item Number	Part Number	Quantity	Description
32	6015901 (1400)	0 or 1	Bed function control cable (w/o CPR)
33	4565818 (1400)	1	Ground strap assembly
34	14450 (1400)	1	Small cable tie
35	9023506 (1400)	1	Screw
36	31236 (1400)	1	Lockwasher
37	63485 (1400)	1	Motor harness
38	3292101 (1400)	1	Control box cover
39	35186 (1400)	1	Sound dampening foam
40	63421 (1400)	1	Wiring diagram label
41	9006810 (1400)	1	Screw
42	6317001 (1400)	1	Control board assembly
43	3300603 (1400)	2	Hilow button
44	3300602 (1400)	3	Lockout button (w/lock)

NOTES:

Head Drive Assembly—P/N 6340802

Figure 5-12. Head Drive Assembly—P/N 6340802



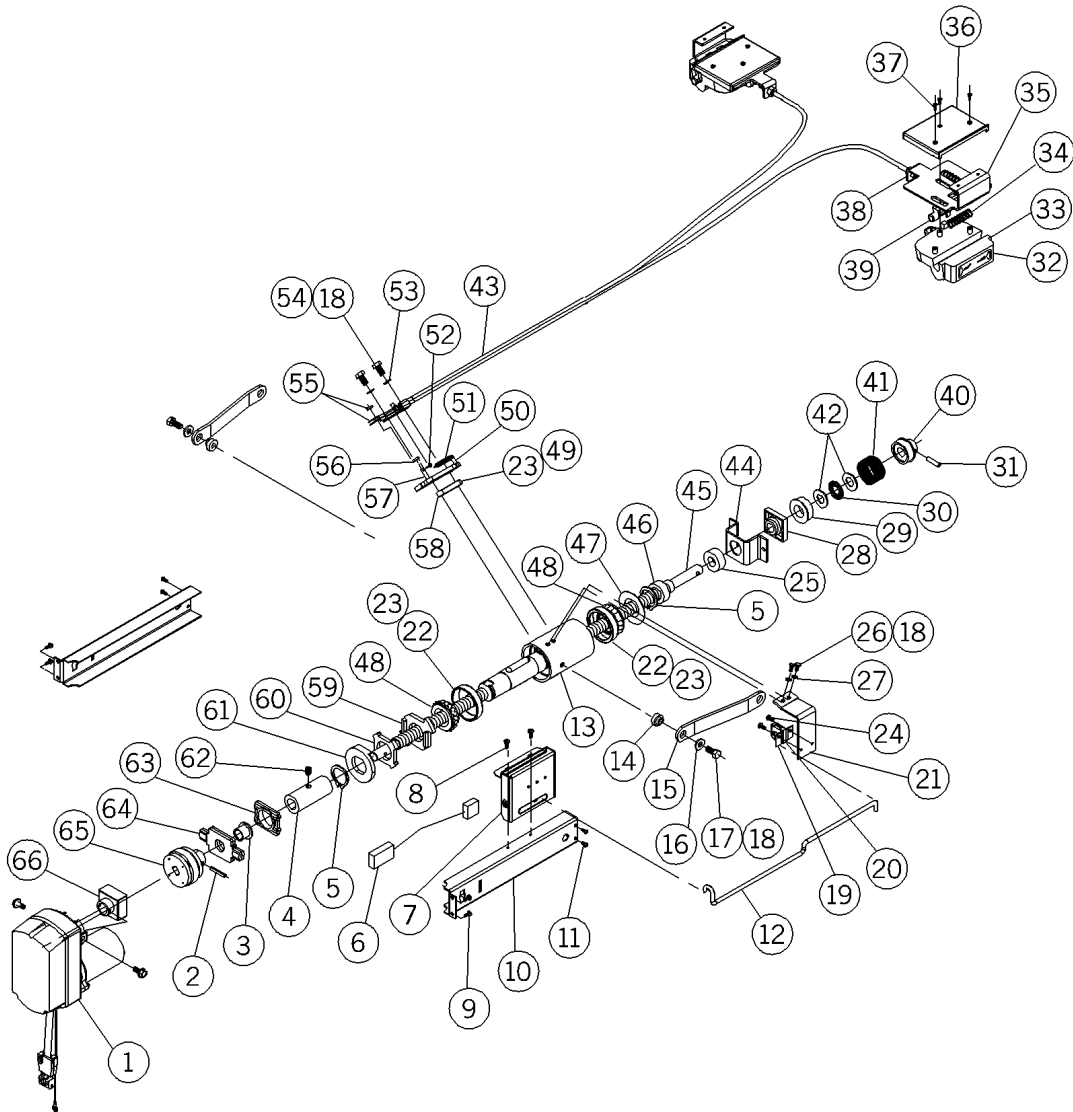
m241_069

Table 5-12. Head Drive Assembly—P/N 6340802

Item Number	Part Number	Quantity	Description
1	6340101 (1400)	1	DC motor, head
2	63464 (1400)	1	Motor mount weldment
3	36250 (1400)	1	Coupling assembly
4	3517 (1400)	2	Spring pin
5	32589 (1400)	2	Mounting plate
6	34613 (1400)	2	Bearing
7	11578 (1400)	1	Thrust bearing
8	43878 (1400)	4	Torx® button head screw
9	10640 (1400)	1	Roll pin
10	63477 (1400)	2	Head screw cover
11	27717 (1400)	2	Clip
12	32638 (1400)	1	Roller
13	34680 (1400)	8	Screw
14	128 (1400)	1	Roll pin
15	38564 (1400)	1	Head tube assembly
16	32591 (1400)	2	Tube guide
17	32960 (1400)	1	Push nut
18	37938 (1400)	1	Drive nut
19	37947 (1400)	2	Iron dog
20	42246 (1400)	1	Head screw
21	SA3351 (1400)	As required	Lithium grease
22	32590 (1400)	1	Bearing brace
23	31556 (1400)	1	Wave washer
24	32596 (1400)	1	Spacer
25	11579 (1400)	2	Thrust washer

Head Drive Assembly with CPR Module—P/N 6340804

Figure 5-13. Head Drive Assembly with CPR Module—P/N 6340804



m241_007

Table 5-13. Head Drive Assembly with CPR Module—P/N 6340804

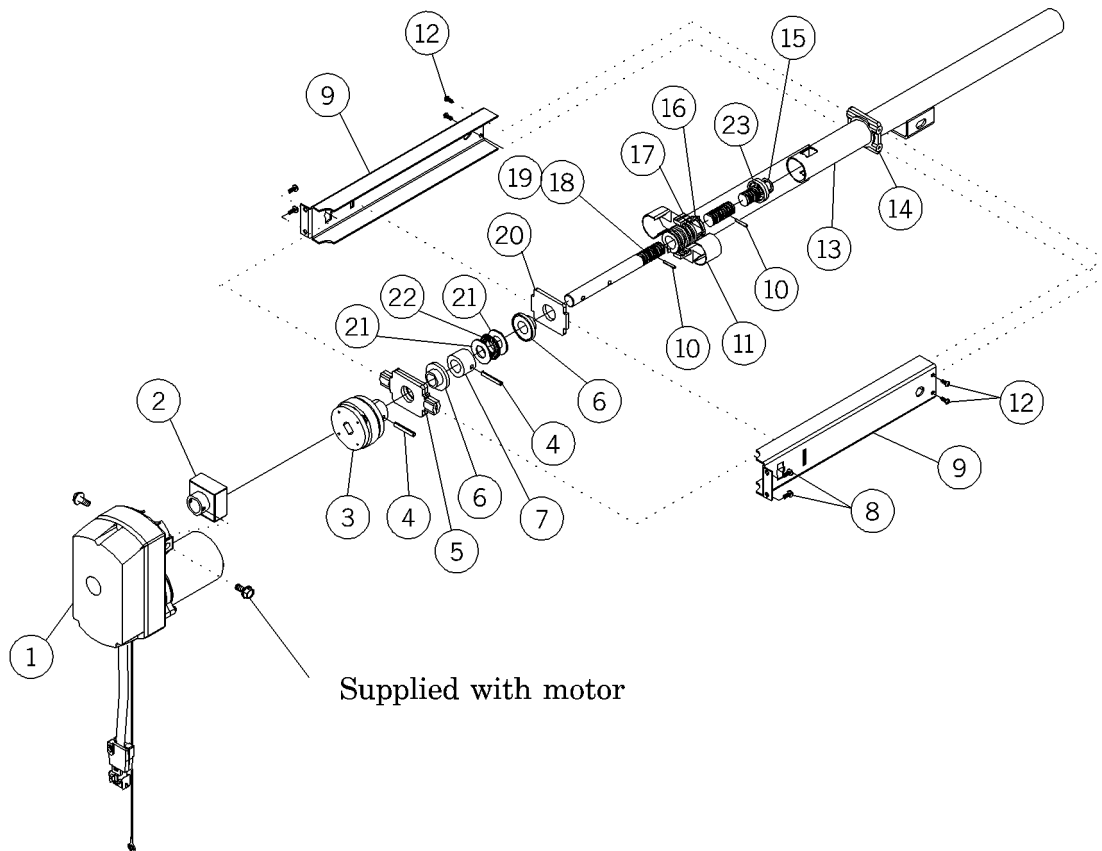
Item Number	Part Number	Quantity	Description
1	6340101 (1400)	1	DC motor, head
2	3517 (1400)	1	Spring pin
3	38436 (1400)	1	Bushing
4	40524 (1400)	1	Head screw bearing collar
5	34326 (1400)	2	Retaining ring
6	60158 (1400)	1	Head limit cable/CPR
7	41374 (1400)	1	Head limit assembly
8	18252 (1400)	2	Screw
9	43878 (1400)	4	Torx® button head screw
10	63492 (1400)	2	Screw cover
11	34680 (1400)	4	Screw
12	38429 (1400)	1	Head limit rod
13	38122 (1400)	1	Bearing housing
14	33615 (1400)	2	Spacer
15	33621 (1400)	2	Head strap
16	35667 (1400)	2	Washer
17	9033212 (1400)	2	Screw
18	SA4841 (1400)	As required	Loctite®
19	25211 (1400)	1	Bracket
20	25212 (1400)	1	Pad
21	63492 (1400)	1	Head screw cover
22	38069 (1400)	2	Bearing cup
23	SA3351 (1400)	As required	Lithium grease
24	4759 (1400)	2	Screw
25	40671 (1400)	1	Spacer head screw
26	15463 (1400)	2	Bolt
27	23208 (1400)	2	Washer
28	37862 (1400)	1	Bearing end
29	42447 (1400)	1	Floating brake drum
30	11578 (1400)	1	Thrust bearing
31	12434 (1400)	1	Roll pin

Item Number	Part Number	Quantity	Description
32	43338 (1400)	2	Label, CPR release
33	43318 (1400)	2	Handle, CPR release
34	34418 (1400)	4	Compression spring
35	43320 (1400)	2	Mounting plate, CPR release
36	43319 (1400)	2	Top cover, CPR release
37	43389 (1400)	6	Torx® hilow screw
38	37232 (1400)	2	Nut, hex
39	43317 (1400)	2	Button, CPR release
40	33316 (1400)	1	Fixed brake block
41	28082 (1400)	1	Brake spring
42	11579 (1400)	2	Thrust washer
43	45713 (1400)	1	CPR release cable assembly
44	33279 (1400)	1	Head screw bracket
45	39237 (1400)	1	Head flat ball screw
46	40672 (1400)	1	Stop head screw
47	33622 (1400)	1	Bearing spacer
48	38070 (1400)	2	Bearing cone
49	33836 (1400)	1	Latch
50	34638 (1400)	1	Groove pin
51	33618 (1400)	1	Spring extension
52	20517 (1400)	1	Cotter pin
53	42066 (1400)	2	Safety washer
54	9033210 (1400)	2	Bolt
55	2449 (1400)	2	Washer
56	10714 (1400)	1	Washer
57	34639 (1400)	1	Pin
58	33835 (1400)	1	Latch guide
59	35504 (1400)	1	Lock hub
60	33613 (1400)	1	Lock pad
61	33611 (1400)	1	Hub
62	18917 (1400)	1	Setscrew
63	32591 (1400)	1	Tube guide

Item Number	Part Number	Quantity	Description
64	32589 (1400)	2	Mounting plate
65	36250 (1400)	1	Coupling assembly
66	63464 (1400)	1	Motor mount weldment

Knee Drive Assembly—P/N 6340803

Figure 5-14. Knee Drive Assembly—P/N 6340803



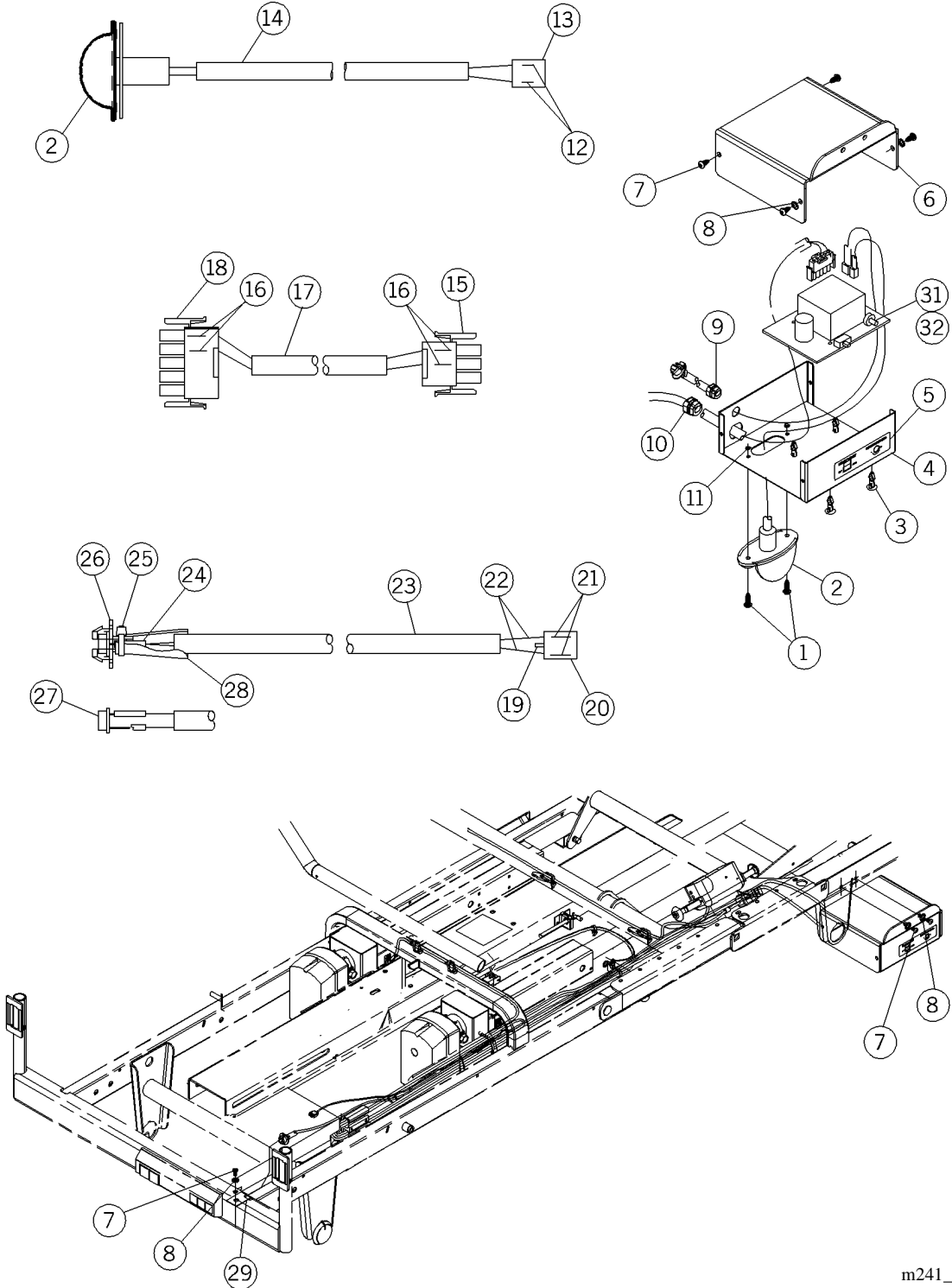
m241_068

Table 5-14. Knee Drive Assembly—P/N 6340803

Item Number	Part Number	Quantity	Description
1	6340102 (1400)	1	DC motor, knee
2	63464 (1400)	1	Motor mount weldment
3	36250 (1400)	1	Coupling assembly
4	3517 (1400)	2	Spring pin
5	32589 (1400)	2	Mounting plate
6	34613 (1400)	2	Bearing
7	32596 (1400)	1	Spacer
8	43878 (1400)	4	Torx® button head screw
9	63491 (1400)	2	Knee screw cover
10	10640 (1400)	1	Roll pin
11	27717 (1400)	2	Clip
12	34680 (1400)	8	Screw
13	38565 (1400)	1	Knee tube assembly
14	32591 (1400)	1	Tube guide
15	32960 (1400)	1	Push nut
16	37938 (1400)	1	Drive nut
17	37947 (1400)	2	Iron dog
18	63489 (1400)	1	Knee screw
19	SA3351 (1400)	As required	Lithium grease
20	32590 (1400)	1	Bearing brace
21	11579 (1400)	2	Thrust washer
22	11578 (1400)	1	Thrust bearing
23	32638 (1400)	1	Roller

Night Light Assembly—P/N 4578201

Figure 5-15. Night Light Assembly—P/N 4578201



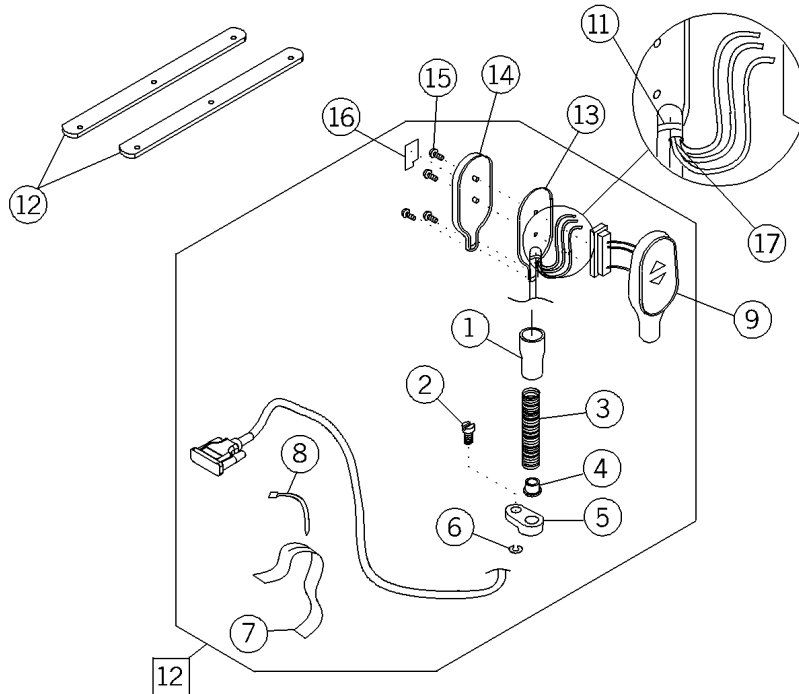
m241_130

Table 5-15. Night Light Assembly—P/N 4578201

Item Number	Part Number	Quantity	Description
1	43879 (1400)	2	Torx® button head screw
2	3438001 (1400)	1	Lamp, guarded
3	39763-02 (1400)	4	Standoff
4	45779 (1400)	1	Night light bottom cover
5	43412 (1400)	1	Night light label
6	45780 (1400)	1	Night light top cover
7	43878 (1400)	7	Torx® button head screw
8	23208 (1400)	5	Washer
9	32037 (1400)	1	Strain relief
10	16145 (1400)	1	Strain relief
11	28837 (1400)	2	Hex nut
12	29975 (1400)	2	Pin receptacle
13	3091002 (1400)	1	Plug housing
14	9000201 (1400)	0.66 lft	Tubing, blank
15	3091301 (1400)	1	Plug housing socket (3 position)
16	30950 (1400)	4	Terminal (female)
17	15962 (1400)	4.83 lft	2 x 18 conductor cable
18	30966 (1400)	1	Plug housing socket
19	21492 (1400)	1	Key plug
20	3091003 (1400)	1	Connector
21	36342 (1400)	2	Pin receptacle
22	3451506 (1400)	6.66 lft	Wire (2 x 40.0 dark blue)
23	34395 (1400)	5.0 lft	Cable blank, 2 conductor
24	30928 (1400)	2	Splice terminal
25	14450 (1400)	1	Small cable tie
26	43977 (1400)	1	Night light sensor holder
27	30025 (1400)	1	Resistor, photo sensitive
28	9000204 (1400)	0.33 lft	Tubing blank
29	46244 (1400)	1	Night light sensor bracket

Pendant Control Assembly—P729

Figure 5-16. Pendant Control Assembly—P729



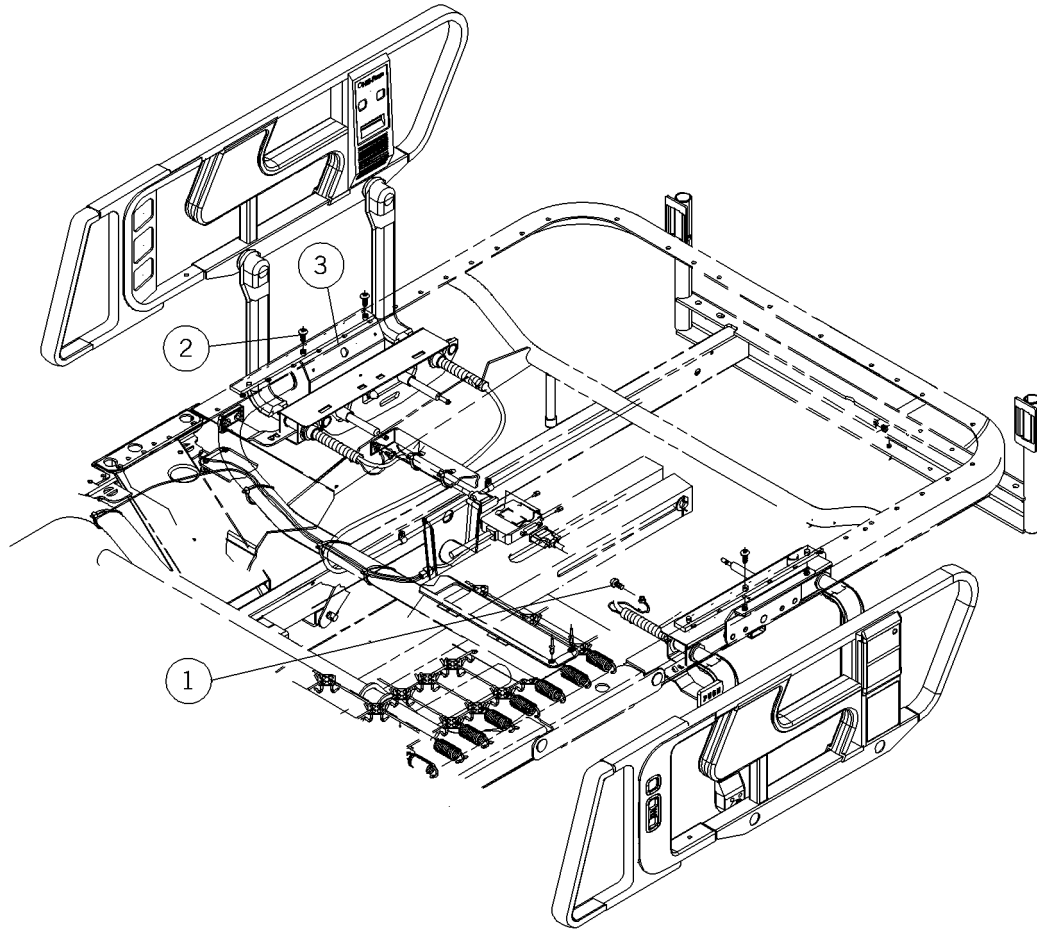
m241_131

Table 5-16. Pendant Control Assembly—P729

Item Number	Part Number	Quantity	Description
1	SA4519 (1400)	1	Pendant holder top
2	SA7087 (1400)	1	Thumbscrew
3	SA4516 (1400)	1	Pendant sleeve
4	SA7089 (1400)	1	Rubber grommet
5	SA7088 (1400)	1	Pendant holder
6	SA7091(1400)	1	C-ring
7	43615 (1400)	1	Velcro® strap
8	19124 (1400)	1	Large cable tie
9	SA7346 (1400)	1	Pendant control front
10	SA7347 (1400)	1	Cable tie
11	44566 (1400)	2	Pendant mount
12	SA7337 (1400)	1	Compression boot
13	SA7338 (1400)	1	Pendant control—back
14	SA7339 (1400)	4	Screw
15	SA7340 (1400)	1	Label
16	SA7341 (1400)	1	Cable tie

Head Siderail—Mounting Parts

Figure 5-17. Head Siderail—Mounting Parts



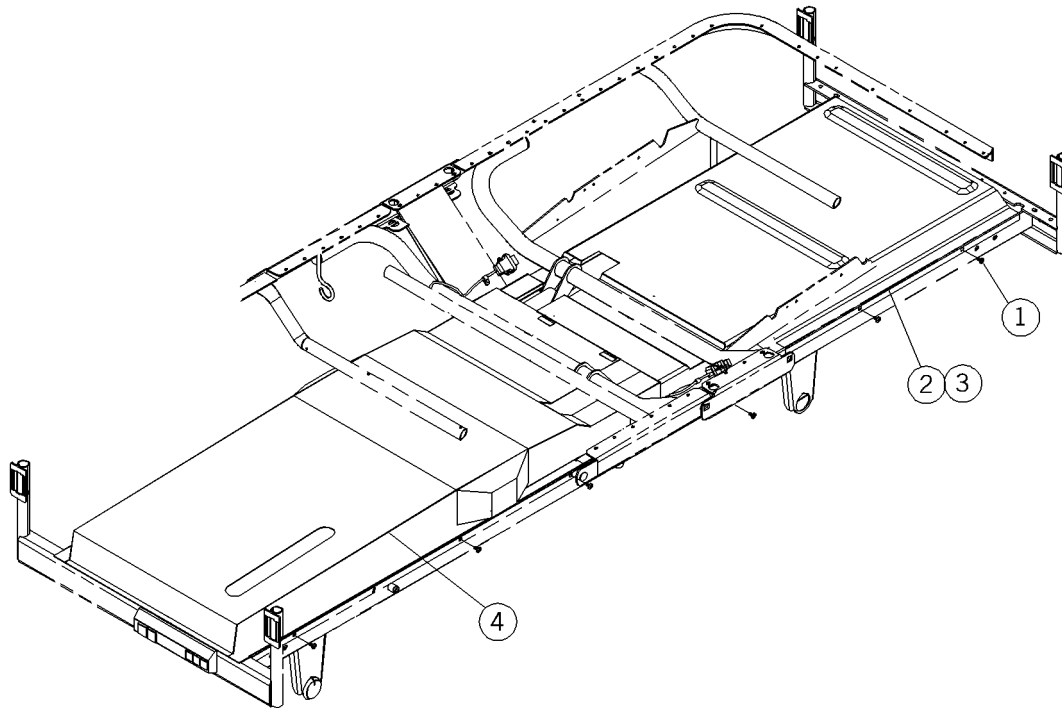
m241_103

Table 5-17. Head Siderail—Mounting Parts

Item Number	Part Number	Quantity	Description
1	43878 (1400)	10	Torx® button head screw
2	SA1672 (1400)	2	Slide bracket screws
3	SA1672 (1400)	2	Slide bracket screws

Dust Cover Module

Figure 5-18. Dust Cover Module



m241_094

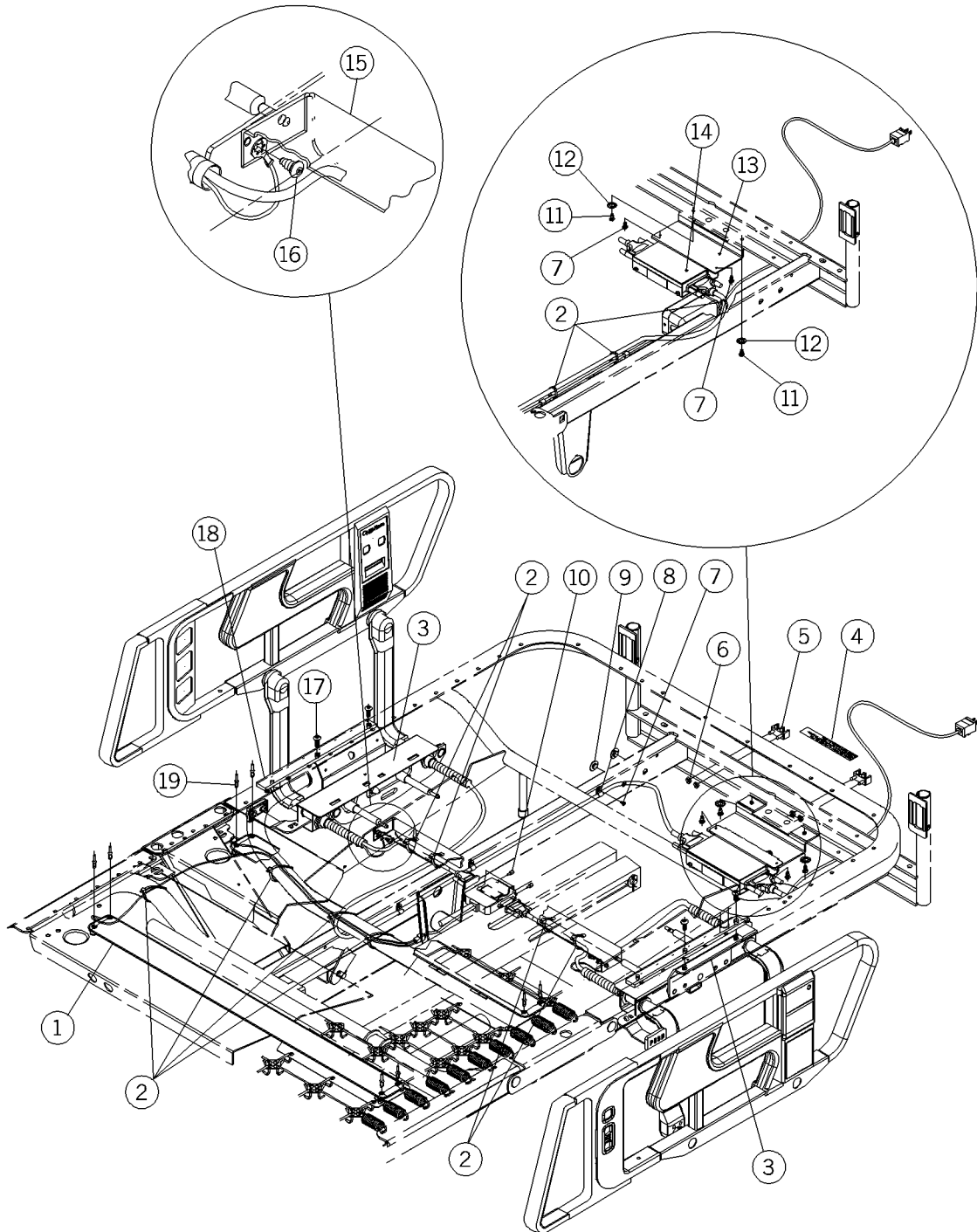
Table 5-18. Dust Cover Module

Item Number	Part Number	Quantity	Description
1	44489 (1400)	12	Six lobe pan head screw
2	32967 (1400)	0 or 1	Head end cover, 80"
3	32967-01 (1400)	0 or 1	Head end cover, 76"
4	63425 (1400)	1	Foot cover



SideCom® Communication System Head Siderails—Cable Routing

Figure 5-19. SideCom® Communication System Head Siderails—Cable Routing



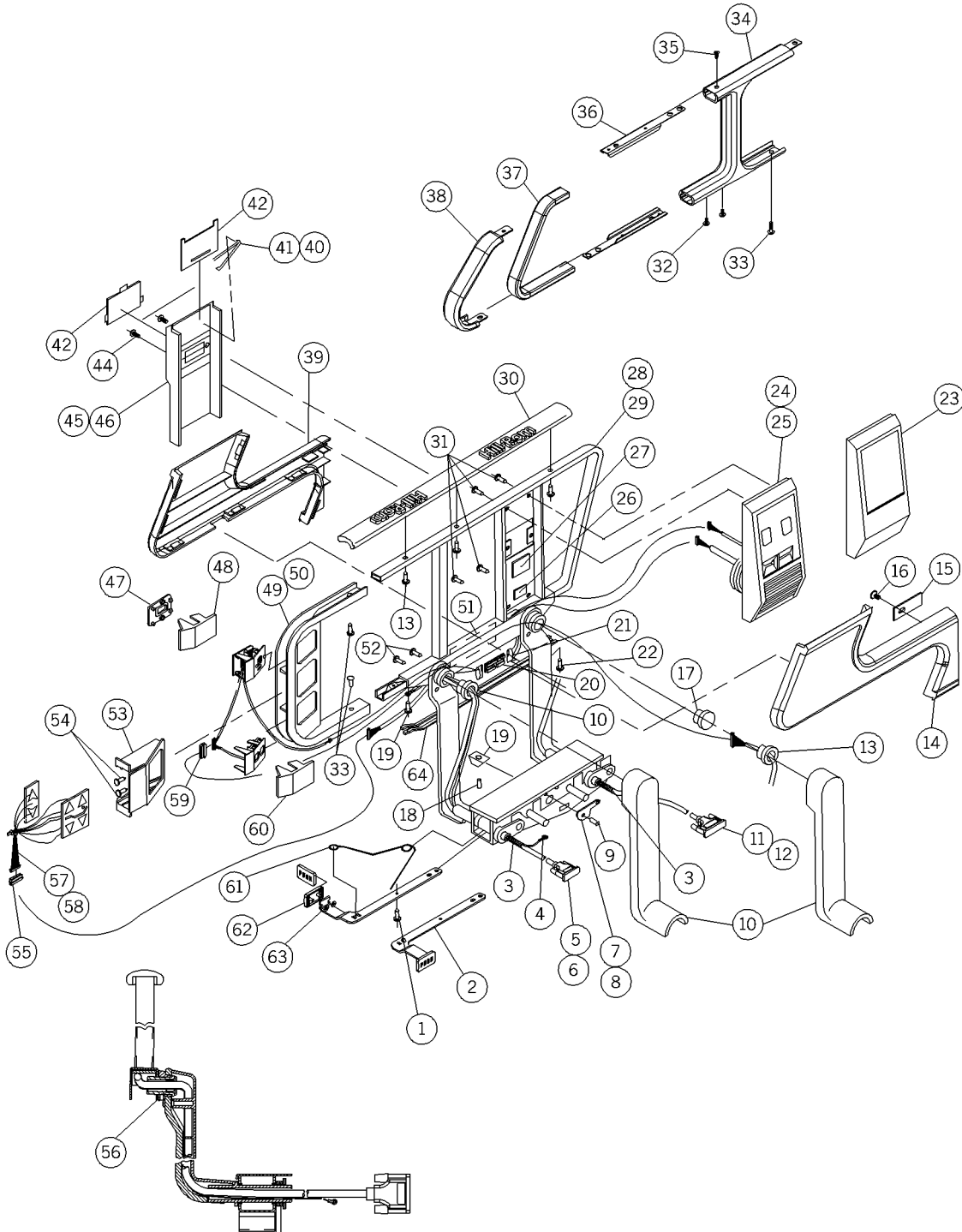
m241_083

Table 5-19. SideCom® Communication System Head Siderails—Cable Routing

Item Number	Part Number	Quantity	Description
1	SA1481 (1400)	1	Tape switch kit
2	19124 (1400)	12	Large cable tie
3	SA1672 (1400)	2	Slide bracket screws
4	34778 (1400)	1	Caution label
5	21341 (1400)	2	Cord holder
6	29788 (1400)	4	Twist nut
7	4759 (1400)	5	Screw
8	20312 (1400)	3	Cable clamp
9	33358 (1400)	8	Plug button
10	42006 (1400)	2	Screw lock
11	44489 (1400)	2	Six lobe pan head screw
12	15907 (1400)	2	Lockwasher
13	28815 (1400)	1	Junction box bracket
14	45591 (1400)	1	Junction box assembly
15	45669 (1400)	1	Test port bracket
16	43878 (1400)	8	Torx® button head screw
17	43880 (1400)	4	Torx® pan head screw
18	44566 (1400)	2	Pendant mount
19	36790 (1400)	8	Drive rivet

SideCom® Communication System Head Siderail Assembly

Figure 5-20. SideCom® Communication System Head Siderail Assembly



m241_085

Table 5-20. SideCom® Communication System Head Siderail Assembly

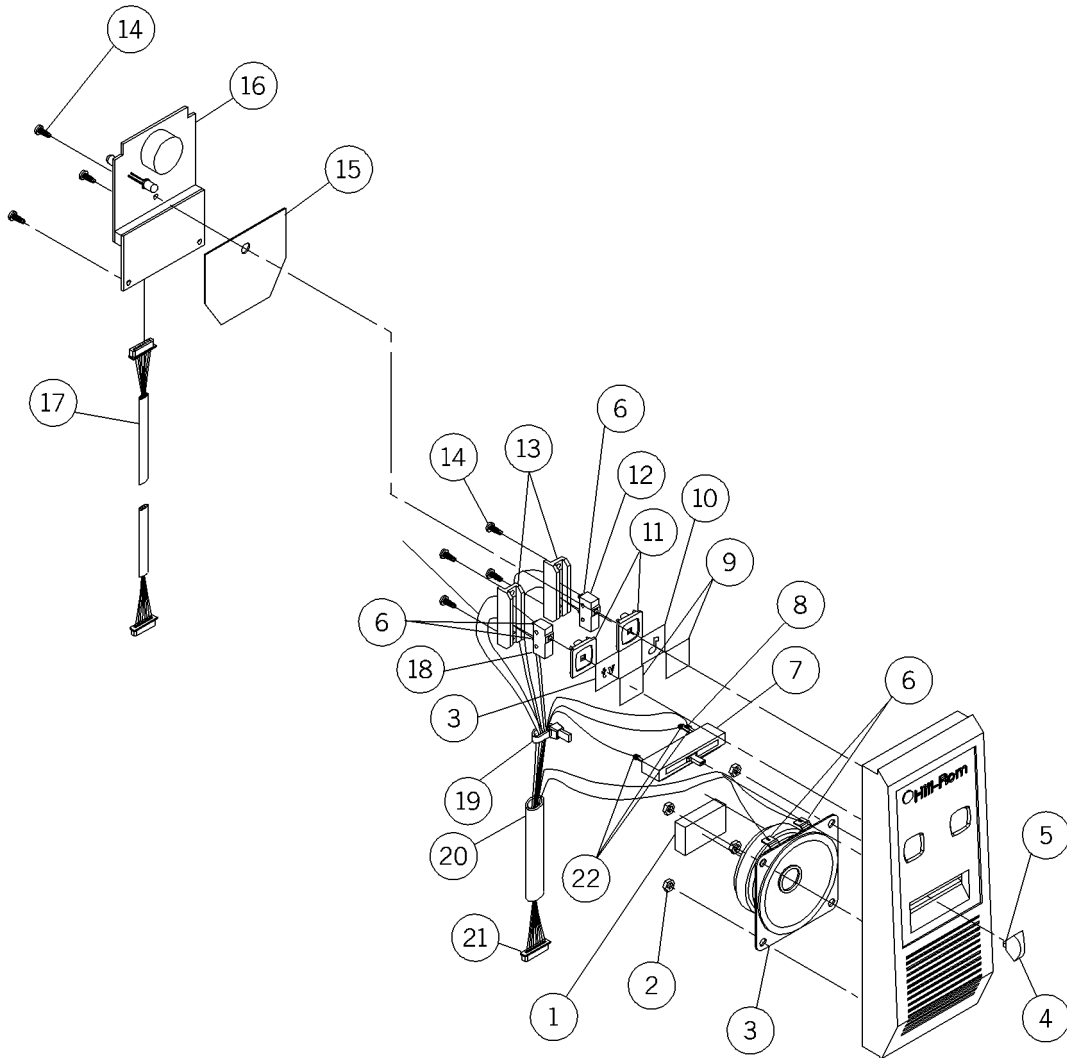
Item Number	Part Number	Quantity	Description
1	37387 (1400)	2	Shoulder screw
2	39412 (1400)	2	Release arm
3	31544 (1400)	4	Spring
4	28867 (1400)	2	Ground strap assembly
5	4455404 (1400)	1	Bed function cable assembly (rh)
6	4455403 (1400)	1	Bed function cable assembly (lh)
7	39713 (1400)	1	Key latch (lh)
8	39714 (1400)	1	Key latch (rh)
9	35072 (1400)	2	Shoulder screw
10	19833 (1400)	4	Wire cover
11	4455504 (1400)	1	Siderail communication cable assembly (rh)
12	4455503 (1400)	1	Siderail communication cable assembly (lh)
13	28717 (1400)	4	Bushing
14	48887 (1400)	2	Siderail insert, female
15	49223 (1400)	2	Locking plate
16	9018808 (1400)	8	Screw, hilow
17	29457 (1400)	0 or 2	Hole plug
18	44328 (1400)	2	Spiral pin
19	26078 (1400)	2	Latch block
20	44578 (1400)	1	Interface board
21	9000206 (1400)	2	Tubing, blank
22	9003702 (1400)	4	Screw
23	34454 (1400)	0 or 2	Communication housing, blank
24	3444902 (1400)	0 or 1	Communication housing front (rh)
25	3444901 (1400)	0 or 1	Communication housing front (lh)
26	28579 (1400)	0.166 lft	Tape
27	40721 (1400)	2	Sound dampening spacer
28	41372 (1400)	1	Head siderail frame weldment (rh)
29	41371 (1400)	1	Head siderail frame weldment (lh)
30	32612 (1400)	2	Top cane
31	34684 (1400)	8	Screw
32	18921 (1400)	4	Screw

Item Number	Part Number	Quantity	Description
33	43878 (1400)	8	Torx® button head screw
34	35206 (1400)	2	Control housing cover
35	9005608 (1400)	2	Screw
36	40747 (1400)	4	Siderail extender assembly
37	40732 (1400)	2	Siderail extension
38	35207 (1400)	2	End cane
39	48886 (1400)	2	Siderail insert, male
40	25329 (1400)	As required	Adhesive
41	34409 (1400)	1	Spring
42	38513 (1400)	1	Sliding door
43	34408 (1400)	1	Cover plate (rh, lh)
44	34457 (1400)	4	Screw
45	4460601 (1400)	1	Communication housing back (rh)
46	4446501 (1400)	1	Communication housing back (lh)
47	31273 (1400)	0 or 2	Nurse call insert, blank
48	31274 (1400)	0 or 2	Nurse call insert, blank
49	31652 (1400)	1	Control housing (rh)
50	31653 (1400)	1	Control housing (lh)
51	4169601 (1400)	2	Warning/caution label
52	9016601 (1400)	8	Screw
53	61959 (1400)	2	Head/knee insert
54	18516 (1400)	4	Screw
55	4467812 (1400)	2	Transition connector
56	SA3351 (1400)	As required	Lithium grease
57	6244801 (1400)	1	Bed function switch assembly (rh)
58	6244802 (1400)	1	Bed function switch assembly (lh)
59	4467811 (1400)	2	Transition connector
60	28328 (1400)	2	Lighting insert blank
61	35261 (1400)	2	Spring
62	19562 (1400)	2	Latch cover
63	17291 (1400)	4	Push nut
64	28816 (1400)	2	Bottom cover

NOTES:

SideCom® Communication System Head Siderail Entertainment Controls

Figure 5-21. SideCom® Communication System Head Siderail Entertainment Controls



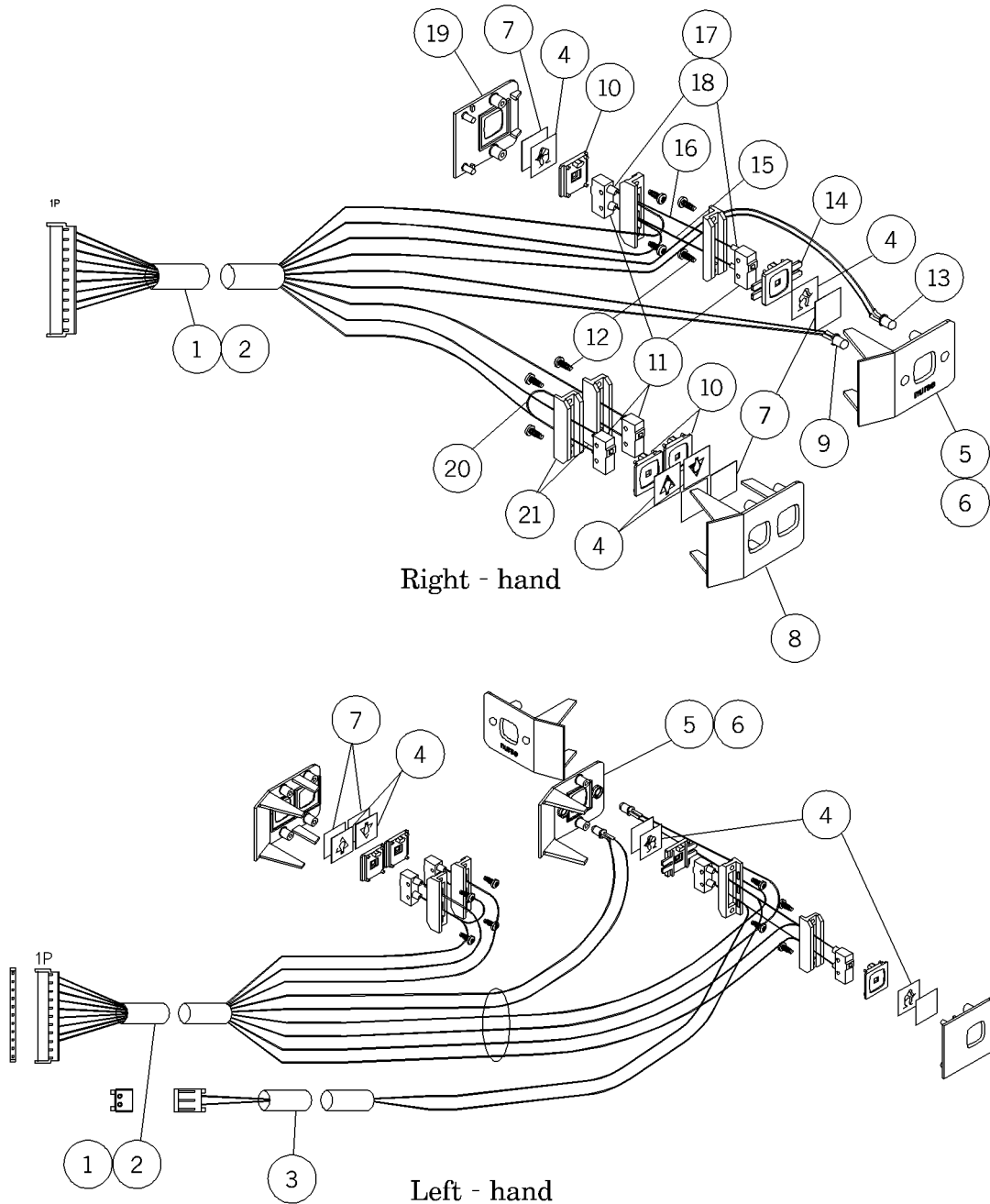
m241_082

Table 5-21. SideCom® Communication System Head Siderail Entertainment Controls

Item Number	Part Number	Quantity	Description
1	38260 (1400)	0 or 2	Foam tape
2	28562 (1400)	8	Palnut
3	28550 (1400)	2	Speaker
4	36196 (1400)	2	Volume knob
5	35404 (1400)	As required	Adhesive
6	22602 (1400)	As required	Solder
7	35290 (1400)	2	Volume control switch
8	35171 (1400)	6	Shrink tubing
9	63496 (1400)	2	Label, switch overlay
10	63494 (1400)	2	Label, SideCom® Communication System switches
11	28286 (1400)	4	Switch back
12	28502 (1400)	2	Switch
13	28752 (1400)	4	Switch mount
14	28623 (1400)	11	Screw
15	34991 (1400)	1	Insulator
16	4448201 (1400)	1	Bed exit P.C. board assembly
17	44551 (1400)	1	8 conductor bed exit cable
18	33344 (1400)	2	Switch, TV
19	14450 (1400)	2	Small cable tie
20	42078 (1400)	2	Communication housing tubing, blank
21	44552 (1400)	2	Entertainment housing cable assembly
22	4467812 (1400)	2	Transition connector

SideCom® Communication System Head Siderail Bed Controls

Figure 5-22. SideCom® Communication System Head Siderail Bed Controls



m241_081

Table 5-22. SideCom® Communication System Head Siderail Bed Controls

Item Number	Part Number	Quantity	Description
1	4460702 (1400)	1	Entertainment cable assembly (rh)
2	4460701 (1400)	1	Entertainment cable assembly (lh)
3	44631 (1400)	1	Nurse call cable
4	63494 (1400)	2	Label, SideCom® Communication System switches
5	31659 (1400)	1	Nurse call insert (rh)
6	31660 (1400)	1	Nurse call insert (lh)
7	63496 (1400)	2	Label, switch overlay
8	31661 (1400)	2	Light insert
9	28493 (1400)	2	LED (yellow)
10	28286 (1400)	2	Switch back
11	28502 (1400)	4	Switch
12	28623 (1400)	11	Screw
13	28494 (1400)	2	LED (red)
14	28795 (1400)	2	Switch back
15	2867709 (1400)	0.66 lft	Wire (white)
16	2867708 (1400)	0.66 lft	Wire (gray)
17	22602 (1400)	As required	Solder
18	35171 (1400)	8	Shrink tubing
19	31662-48 (1400)	2	Nurse call insert, outer complete
20	2867701 (1400)	2	Wire blank (brown)
21	28752 (1400)	4	Switch mount

NOTES:

Chapter 6

General Procedures

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NOTES:

Cleaning and Care

**WARNING:**

Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

**SHOCK HAZARD:**

Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

**SHOCK HAZARD:**

Do not expose the unit to excessive moisture. Personal injury or equipment damage could occur.

**CAUTION:**

Do not use harsh cleaners, solvents, or detergents. Equipment damage could occur.

General Cleaning

Clean the unit with a lightly dampened cloth and ordinary disinfectants. Do not use excessive liquid.

Steam Cleaning

Do not use any steam cleaning device on the Century+™ Bed. Excessive moisture can damage mechanisms and components in this unit.

Hard to Clean Spots

To remove difficult spots or 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.

Disinfection

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

Component Handling



CAUTION:

Ensure that your hands are clean, and **only** handle the P.C. boards by their edges to prevent component damage.



CAUTION:

Wear an antistatic strap when handling electronic components. Failure to do so could result in component damage.



CAUTION:

Place the removed P.C. boards in antistatic protective bags for shipping and storage. Equipment damage can occur.

P.C. Boards

Good handling practices must be followed when servicing P.C. boards. Mishandling can cause damage to the P.C. boards, shorten their service life, and result in bed malfunctions. The following rules for handling should always be observed:

- Wear an appropriate antistatic (electrostatic discharge) strap, and ensure it is properly grounded when working with electronics.
- Ensure that hands are clean and free of moisture or oily liquids (etc.).
- Only handle the P.C. boards by their outer edges. Do not touch the components on the P.C. board. Finger contact with the board surface and/or with its components can leave a deposit which will result in board (and component) deterioration.
- Service the removed P.C. boards at a static-free workstation which is properly grounded.
- Place the removed P.C. boards in antistatic protective bags for shipping and storage.

Lubrication Requirements



WARNING:

Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.



CAUTION:

Do not use silicone-based lubricants. Equipment damage could occur.

Oilite® bearings and bushings are utilized in several places on the system. By retaining oil, the pores give a self-lubricating quality to the bearings and bushings. If any silicone-based lubricant is applied to the bearings and bushings or anywhere else on the system, this self-lubricating quality is neutralized.

It is safe to apply the following lubricants to the system:

- P/N 8252 M-1 penetrating oil (small bottle—apply to the Oilite® bearings and bushings)
- P/N SA3351 lithium grease (small tube)
- P/N SA3352 gear grease (small tube—use on motor gears only)
- P/N SA0646 Teflon® spray lubricant (dry) (aerosol spray can—use anywhere else the bed needs lubrication)

Preventive Maintenance



WARNING:

Only facility-authorized maintenance personnel should perform preventive maintenance on the Century+™ Bed. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

The Century+™ Bed requires an effective maintenance program. We recommend that you perform annual preventive maintenance (PM) and testing for Joint Commission on Accreditation of Healthcare Organizations (JCAHO). PM and testing not only meet JCAHO requirements but will help ensure a long, operative life for the Century+™ Bed. PM will minimize downtime due to excessive wear.

The following PM schedule guides the technician through a normal PM procedure on the Century+™ Bed. During this PM process, check each item on the schedule, and make the necessary adjustments.

Follow the PM schedule with the corresponding PM checklist. This checklist is designed to keep a running maintenance history and subsequent repair costs for one Century+™ Bed. However, your facility can modify this checklist or design another to fit your needs. Keeping close records and maintaining the Century+™ Bed are two effective ways to reduce downtime and ensure the patient remains comfortable.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of mechanisms.

Preventive Maintenance Schedule

Table 6-1. Preventive Maintenance Schedule

Function	Procedure
Hilow limits	Run the hilow function to the upper and lower limits to ensure proper function of the limit switches.
Automatic contour limits	Check that when the head section is activated from the flat position, the knee will raise to 15° to form a contour position. Ensure that the function is defeated by the knee lockout switch.
Trendelenburg	Run the bed into both the Trendelenburg and Reverse Trendelenburg positions to ensure proper operation of the mechanisms.
Drive screws	Inspect, clean, and lubricate the head, knee, and hilow drive screws.
Lockout switches	Test each lockout individually to ensure proper operation.
Brake and steer	Ensure the bed does not move when the brakes are activated. Adjust the brakes if necessary. Inspect and adjust the steering mechanism if necessary.
Caster tires	Check the caster tires for cuts, wear, tread, etc. Replace if necessary.
Siderail controls	Test the switches in the siderails for proper operation.
Siderail frame	Check the siderail, and ensure that it latches properly. Adjust if necessary.
Pivot points	Lubricate all pivot points on the bed.
Power cord and plug	Inspect the power cord and plug for cuts, breaks, and pin retention. Replace if necessary.
Head and foot panels	Check for looseness and general appearance.
CPR release	Test the CPR release for proper operation.
Communications	Inspect and test the communication junction box. Test all SideCom® Communication System features for proper function. Inspect the communication cable, including the male and female pins in the plug.
Electrical	Test the bed for electrical leakage.
General appearance	Touch up the paint where necessary. Inspect the labels, and replace them if necessary.

Preventive Maintenance Checklist

Table 6-2. Preventive Maintenance Checklist

Date														Function		
Hill-Rom, Inc.	Manufacturer														Hilow limits	
																Automatic contour limits
																Trendelenburg
																Drive screws
																Lockout switches
																Brake and steer
																Caster tires
																Siderail controls
	Model Number														Siderail frame	
															Pivot points	
																Power cord and plug
																Head and foot panels
																CPR release
																Communications
																Electrical
																General appearance
	Serial Number															
Total Cost for This Page															Labor Time:	
															Repair Cost:	
															Inspected By:	
															<p>Legend L=Lube C=Clean A=Adjust R=Repair or Replace O=Okay N=Not Applicable Remarks:</p>	

Tool and Supply Requirements

The following tools and supplies are required to service the Century+™ Bed:

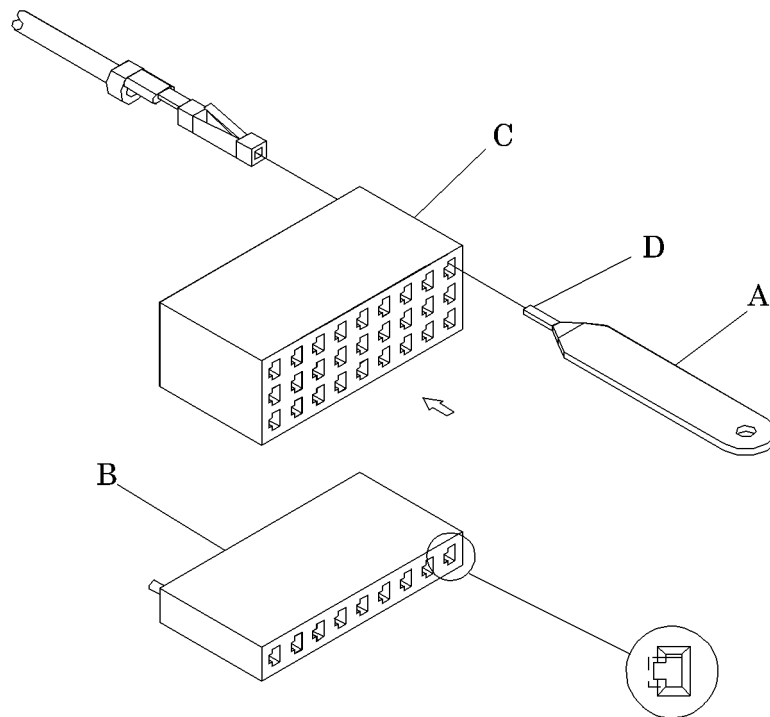
- Phillips head screwdriver
- T25 Torx® head screwdriver
- 1/4" nut driver
- Ratchet drive
- Socket wrench set
- 1/2" socket and ratchet
- 7/16" socket and ratchet
- 1/2" open-end wrench
- Combination wrench set
- Wire cutters
- Needle nose pliers
- Channellock® pliers
- 5 mm allen wrench
- 5/32" allen wrench
- Punch
- Hammer
- Soldering iron
- 60/40 lead tin rosin core solder
- (2) 2" x 4" x 30" wood pieces
- P/N 8252 M-1 penetrating oil
- P/N SA3351 lithium grease
- P/N SA3352 gear grease
- P/N SA0646 Teflon® spray lubricant (dry)

6.1 Extraction Tool P/N 91065-1

This tool is used to extract terminals from the connectors that connect to P3, P4, P5 and P7 on the printed circuit board.

The AMP extraction tool 91065-1 (A) is recommended for removing crimp snap-in contacts from the Mod I (B) and Mod IV (C) receptacle connectors (see figure 6-1 on page 6-10).

Figure 6-1. Extraction Tool P/N 91065-1



m241_087

The extraction tool tip (D) is designed to enter the lance recess in the front of the housing and depress the locking lance of the contact.

1. Determine which connector contains the contact to be removed.
2. Insert the tool straight into the lance recess until it bottoms on the locking edge.
3. Holding the tool and connector in one hand, grip the contact wire with the other hand, and pull the contact out of the back of the connector.

NOTE:

The connector includes both the housing and the contacts, while the housing is the material which encapsulates the contacts.

The lance recess is the cavity located between the contact and the connector housing.

A solid rib (locking edge) at the rear of the lance recess cavity provides a stop for the extraction tool. The housings are designed to prevent improper insertion of the contacts, which are inserted into the rear of the housing.

A lug is located on the side of the Mod I housing which contains the contact locking edge.

6.2 Extraction Tool P/N 429022 (Blue Plastic Handle)

This tool is used to extract terminals from the connectors that connect to P1 and P2 on the printed circuit board.

The extraction tool tip is designed to enter the contact cavity in the front of the connector and depress the locking lance of the contact.

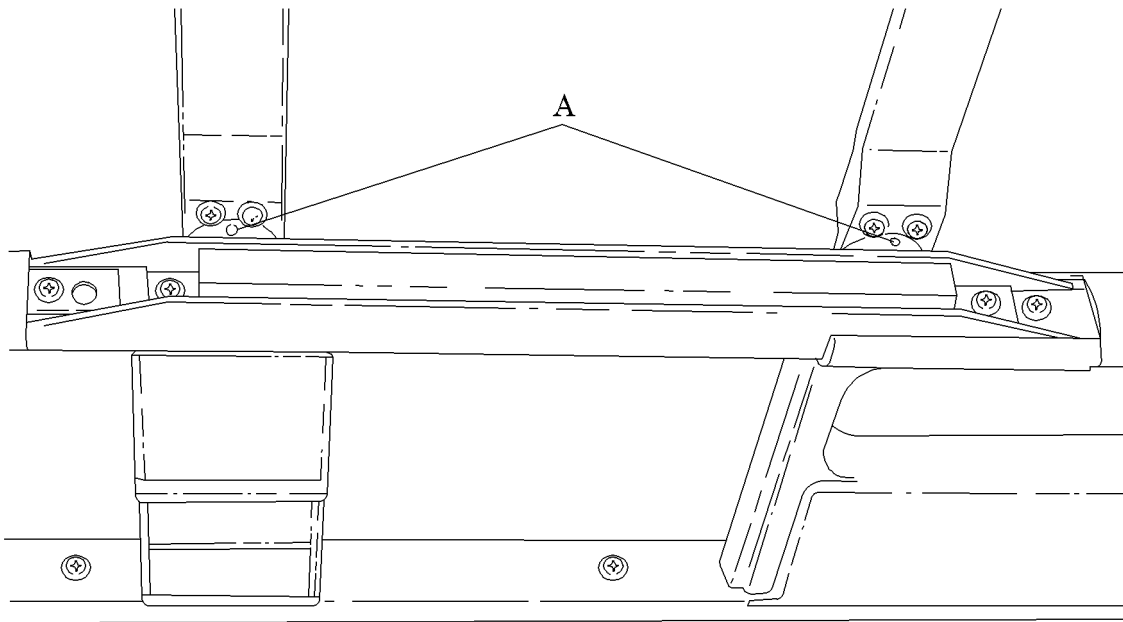
The extraction tip, located at the front of the tool, fits over the pin and socket contacts. When the tip is bottomed in the contact cavity, the contact locking lances are forced together, allowing the contact to slide free from the housing when the spring-loaded handle is depressed fully.

1. Holding the connector firmly with one hand, slide the extraction tool tip over either the pin contact or socket contact.
2. Insert the tip over the contact until it bottoms in the contact cavity, causing the locking lances of the contact to close.
3. Depress the extraction tool handle **fully** until the contact is pushed part way out of the contact cavity. Remove the contact by pulling the wire attached to the contact.

6.3 Siderail Lubrication

1. Raise the siderail to the fully upright position.
2. Apply grease to the grease ports (A) (see figure 6-2 on page 6-13).

Figure 6-2. Siderail Lubrication



m241_057

NOTES:

Chapter 7

Accessories

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NOTES:

Accessories

See table 7-1 on page 7-3 for Century+™ accessories.

Table 7-1. Accessories List

Part Number	Description
P818C08	Roller bumpers
P818C09-2	Roller bumpers
P819	Architectural bumper assembly
P4039HE	International end panel
P2217	IV rod
P846	Trapeze support
P846D	Trapeze support (Canada)
P9912A	Bed extender
P721E	Four function pendant control
P442	Battery pack
P944C1A	Comfortline® mattress
P944EA	Comfortline® mattress with 4 magnets
P944E1A	Comfortline® mattress
P807F	Surerest® III mattress 80"
P847B	Fracture frame adapter set—3/4" pin
P847C	Fracture frame adapter set—1/2" pin

7.1 Roller Bumpers—P818C08

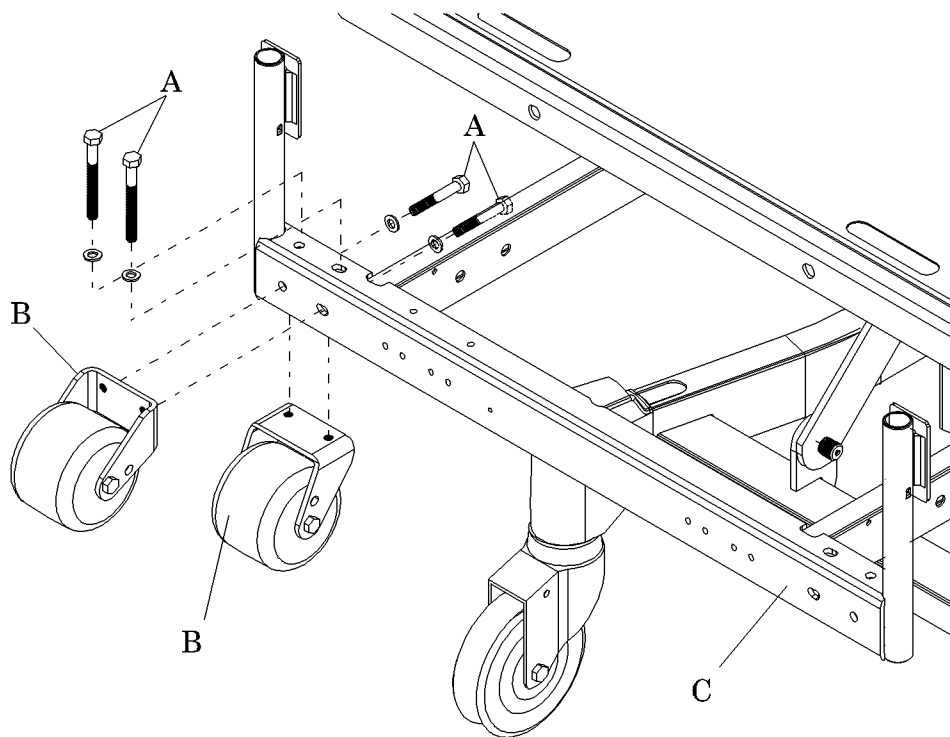
Tools required: Crescent wrench

Hill-Rom provides docking and wall protection features. The Century+™ Bed can be equipped (retrofitted) with wall protecting roller bumpers.

Installation

Using the crescent wrench, install the two bolts (A) to secure the roller bumper (B) to the bed frame (C) (see figure 7-1 on page 7-4).

Figure 7-1. Roller Bumpers



m241_088

NOTE:

Use only one pair of roller bumpers per bed. Use either top, bottom, or face mounted roller bumpers.

Removal

Remove the two bolts (A), and remove the roller bumper (B) from the bed frame (C).

Adjustment

None

7.2 Architectural Bumpers—P819

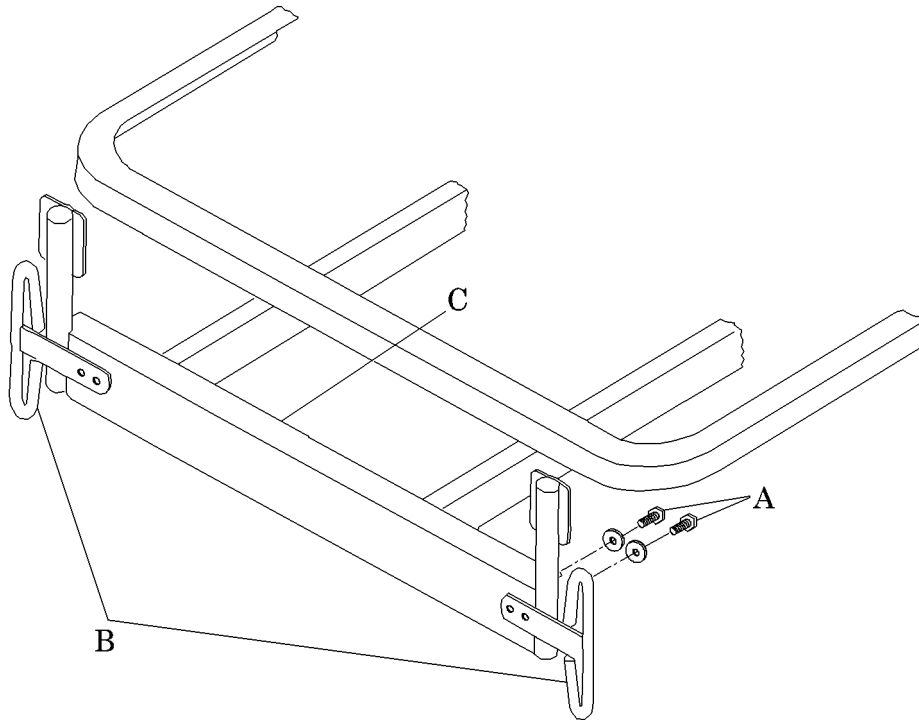
Tools required: Crescent wrench

Hill-Rom provides docking and wall protection features. The Century+™ Bed can be equipped with wall protecting architectural bumpers.

Installation

Using the crescent wrench, install the two bolts (A), and secure the architectural bumper (B) to the bed frame (C) (see figure 7-2 on page 7-6).

Figure 7-2. Architectural Bumpers



m241_089

Removal

Remove the two bolts (A), and remove the architectural bumper (B) from the bed frame (C).

Adjustment

None

7.3 IV Rod—P2217

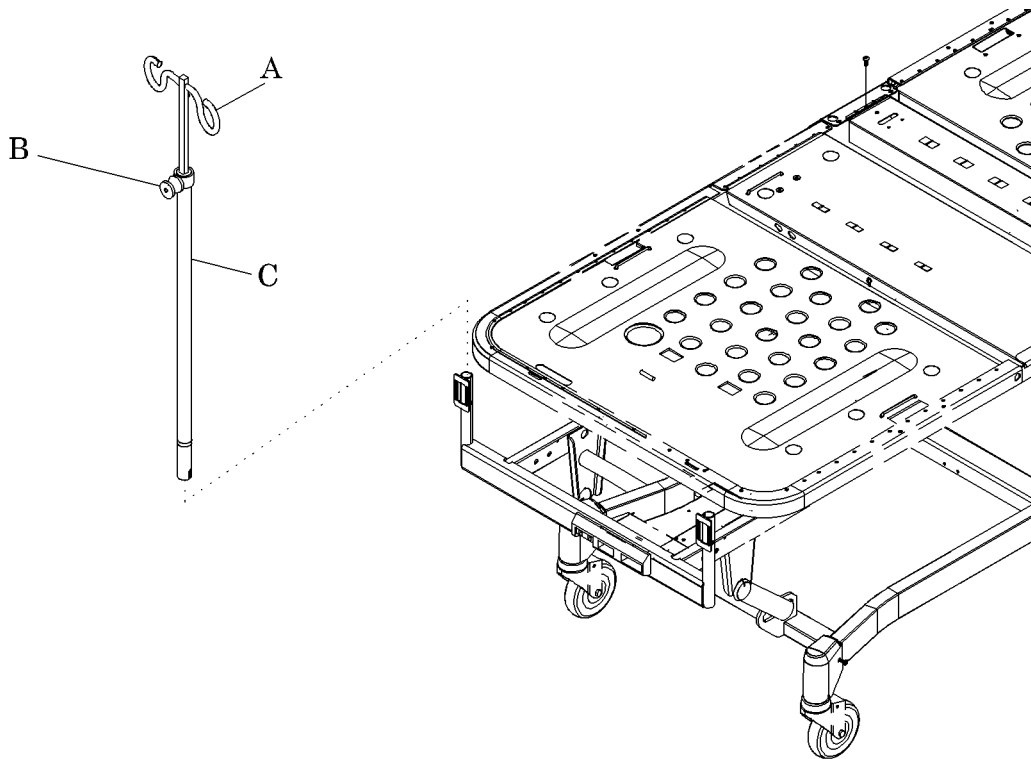
Tools required: None

The two-sectioned, telescopic IV rod mounts in any of the six sockets located on the bed—two at the head end, two in the seat section, and two at the foot end. The height of the IV rod is easily adjustable.

Installation

Insert the IV rod into the desired socket. Twist the lower section (C) clockwise to lock the IV rod in place (see figure 7-3 on page 7-7).

Figure 7-3. IV Rod—P2217



m241_090

Removal

To remove the IV rod, twist the lower section (C) counterclockwise, and lift it from the socket.

Adjustment

1. To extend the IV rod, pull upward on the upper section (A) to the desired height.
2. To lower the IV rod, pull outward on the release knob (B), and manually lower the upper section (A) into the lower section (C).

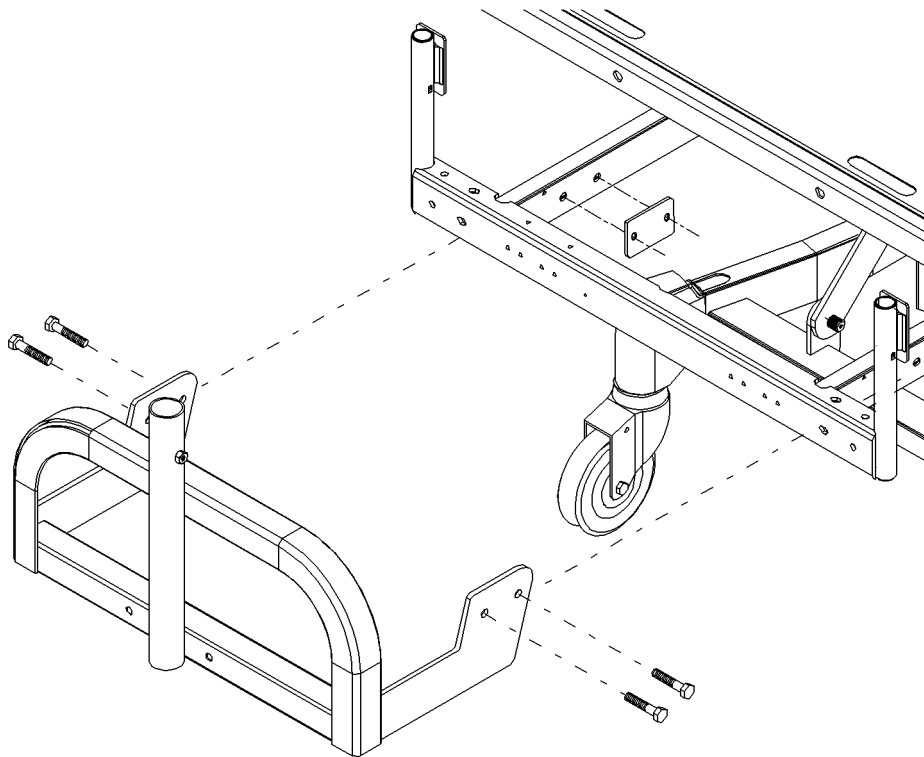
7.4 Trapeze Support—P846 or P846D

Tools required: 3/8" socket
Drive ratchet
3/8" wrench

Installation

1. Remove the hole plugs from the bed frame at the end of bed where the trapeze support is to be installed.
2. Position the trapeze support (A) and backing plates (D) on the bed frame (B) (see figure 7-4 on page 7-9).

Figure 7-4. Trapeze Support—P846 or P846D



m241_091

3. Using the 3/8" socket and ratchet, and the 3/8" wrench, secure the trapeze support (A) to the bed frame (B) with the bolts (C) and locknuts.



CAUTION:

Do not lower the bed frame while the trapeze support assembly is attached to the bed. Use the control box lockout to deactivate the hilow function. Equipment damage could occur.

Removal

1. Loosen and remove the bolts (C) and locknuts, and remove the trapeze support (A) and backing plates (D) from the bed frame (B).
2. Install the hole plugs into the bed frame (B) holes.

Adjustment

None

7.5 Fracture Frame Adapter—P847B and P847C

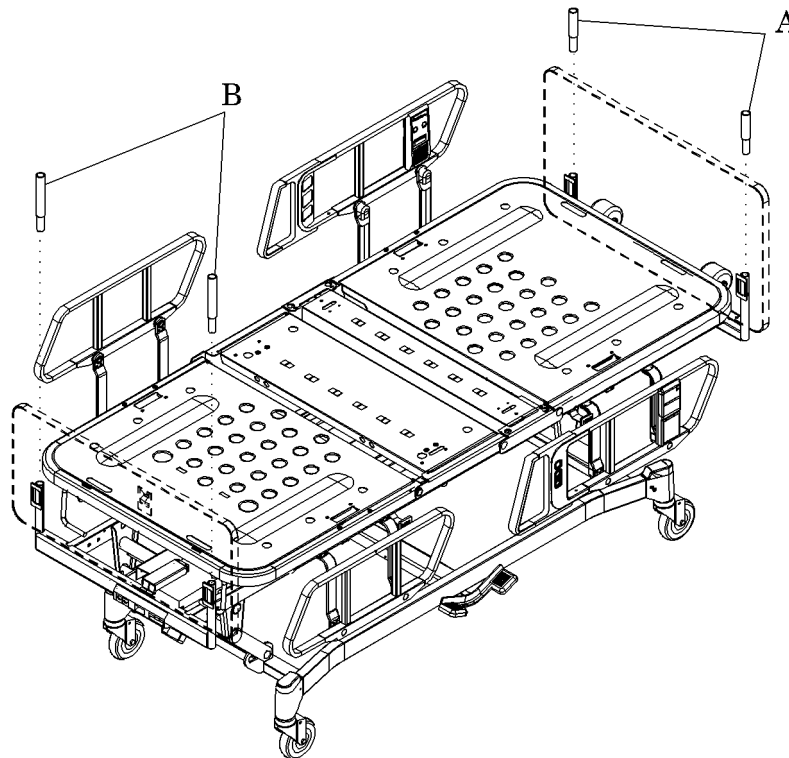
Tools required: None

Hill-Rom has two different fracture frame adapters available to handle most fracture frame equipment. The model P847B sockets have a 3/4" inside diameter, while the P847C sockets have a 1/2" inside diameter. Please specify which size is needed when ordering.

Installation

1. Insert the short adapter tubes (A) into the IV sockets at the head end of the bed (see figure 7-5 on page 7-11).

Figure 7-5. Fracture Frame Adapter—P847B and P847C



2. Insert the long adapter tubes (B) into the IV sockets at the foot end of the bed.

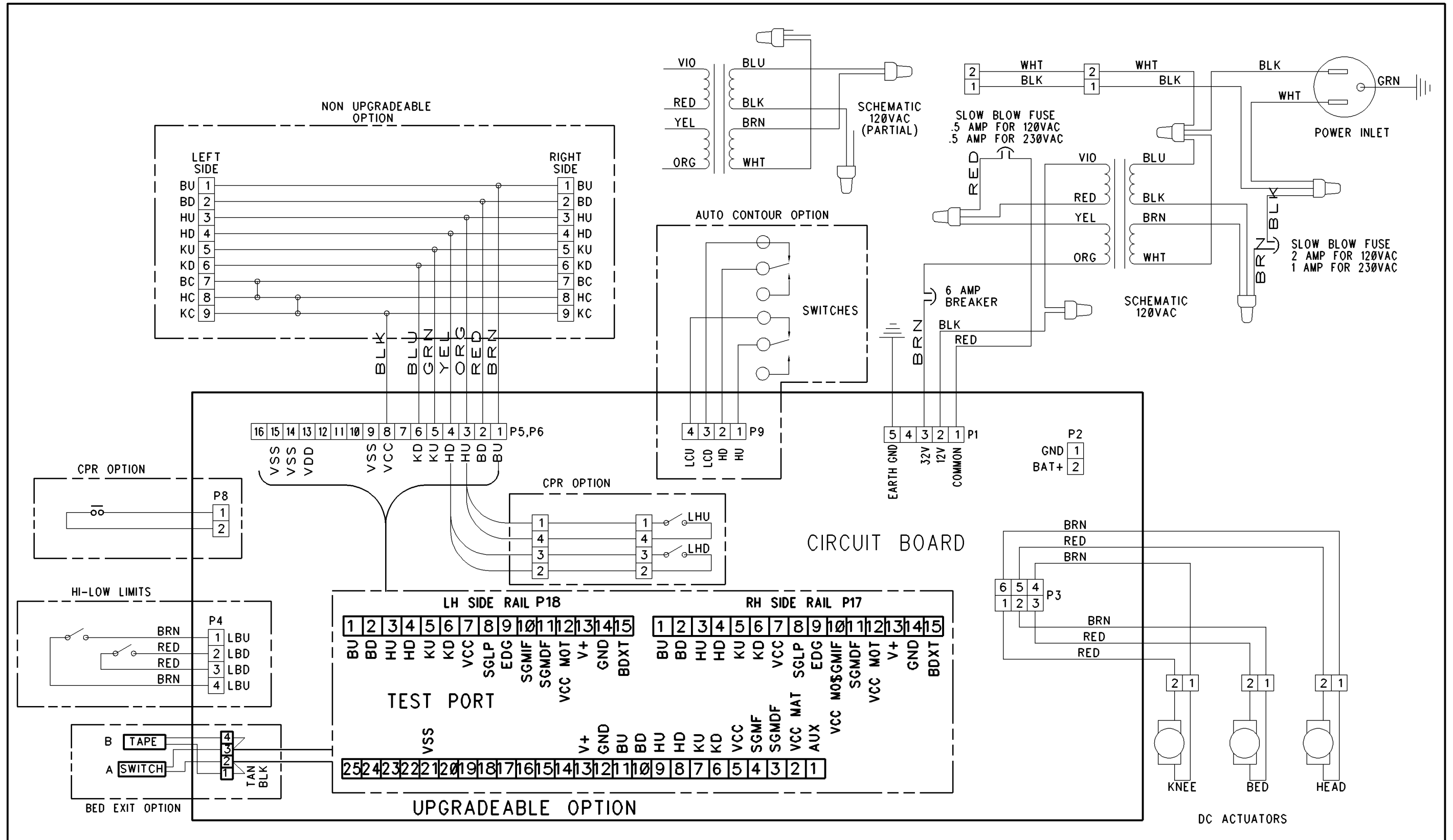
Removal

1. Remove the short adapter tubes (A) from the IV sockets at the head end of the bed by lifting upward.

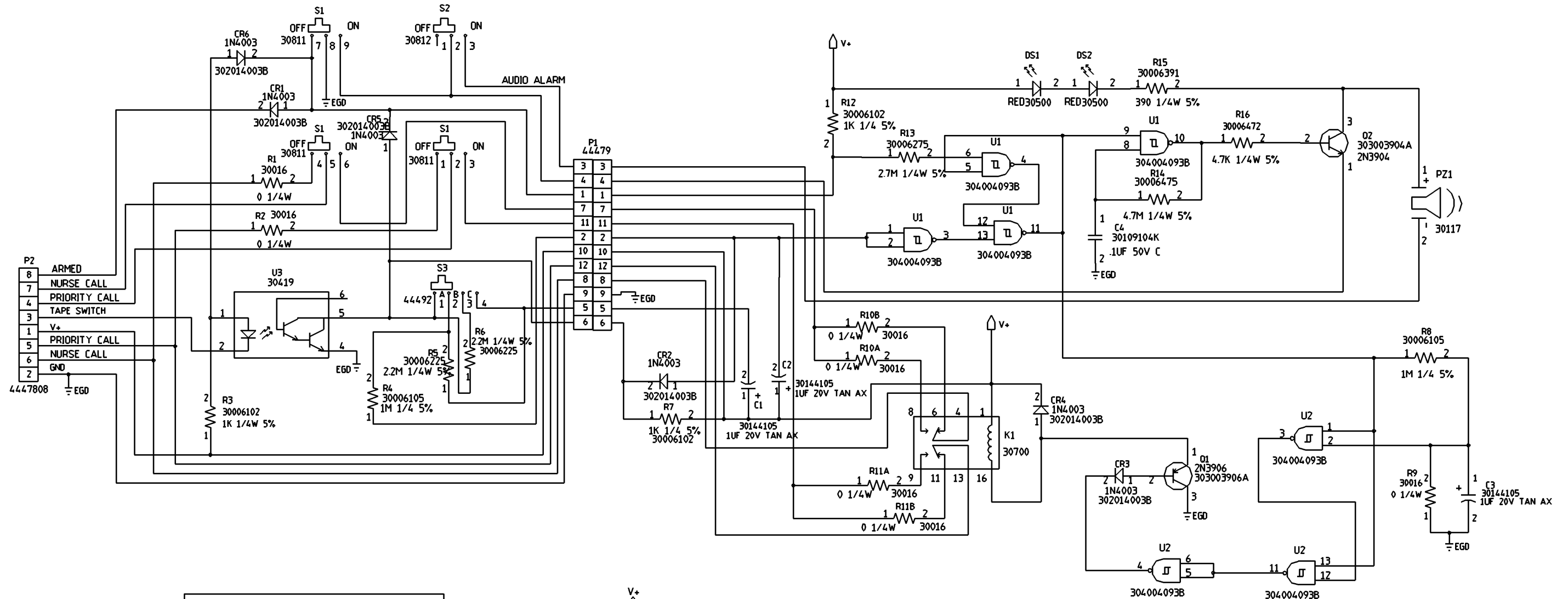
2. Remove the long adapter tubes (B) from the IV sockets at the foot end of the bed by lifting upward.

Adjustment

None



NOTE: CR6 IS USED TO SIGNAL CAPACITANCE
BED EXIT SYSTEM WHEN S1 (EXIT JAMMED)
IS OFF.



BED EXIT MODELS			
ACTION	STANDARD 01	BUNTING 02	MOMENTARY 03
DELETE	R10A, R11A R1, R2, C1	R10B, R11B, C1	R9, R10A, R11A, R1, R2, C1

