

SERVICE MANUAL

OSPREY™ LTC Bed From Hill-Rom



For Parts Or Technical Assistance
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man169

OSPREY™ LTC Bed Service Manual

Revisions

Revision Letter	Pages Affected	Date
Preliminary Issue		November, 1998
Original Issue	All	March, 1999

man169

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First Edition

First Printing 1998

Printed in the USA

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Chapter 1

Introduction

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Purpose

This manual provides requirements for the OSPREY™ LTC Bed normal operation and maintenance. It also includes a parts list (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, electrical, or hydraulic 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 Hill-Rom's 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 OSPREY™ LTC 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

The OSPREY™ LTC Bed provides an improved environment for both residents and caregivers in long term care facilities.

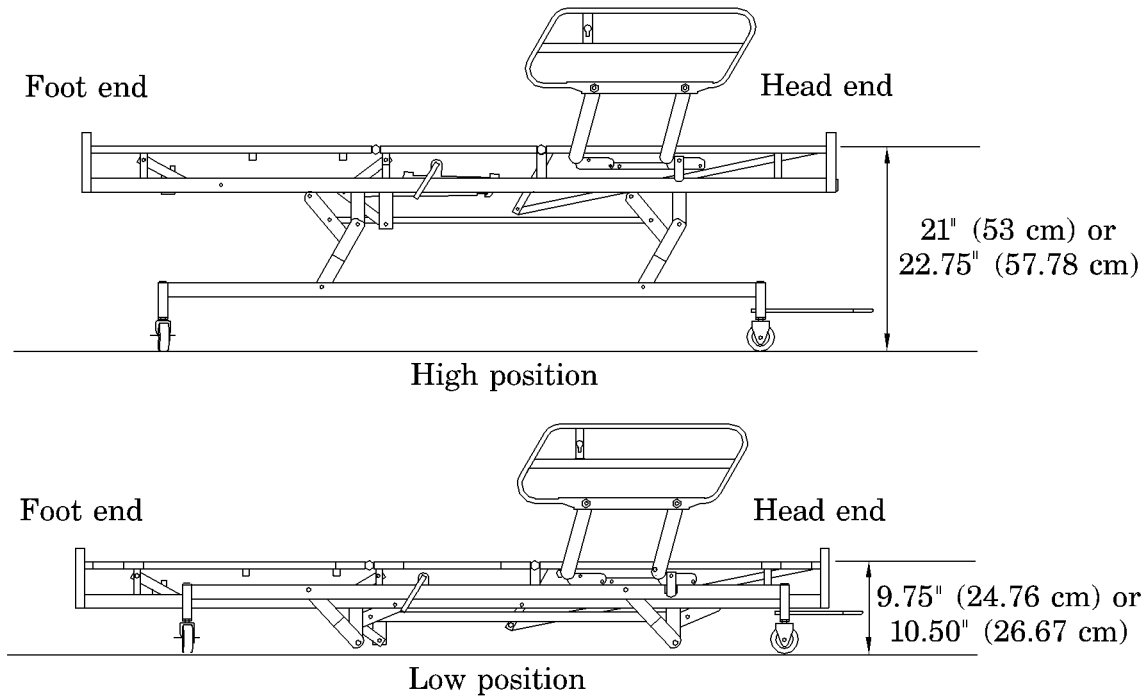
For the resident, the OSPREY™ LTC Bed provides easy, personal control over their positioning for greater independence and improved self-esteem. Bed height can be lowered to within 15" (38 cm) of the floor (with a 5" (13 cm) deep sleep surface) to help with ingress or egress, or raised to 26" (66 cm) above the floor. Head and knee positions move together in an automatic contour design that prevents the resident from sliding down an elevated head section. Positioning controls are large, high in contrast, and provide positive tactile feedback to confirm actuation.

For the caregiver, the OSPREY™ LTC Bed provides several advantages. Hilow positioning and low siderail parking provide improved access to the resident when needed for bedside activities. With the resident off the unit, the bed moves easily for cleaning or positioning within the room. The surfaces are durable and easily cleaned. (An individual without special skills can restore the bed to a clean condition in 15 minutes using common cleaning tools and supplies.)

Bed Positions

The OSPREY™ LTC Bed will lower until the deck is 9.75" (24.76 cm) or 10.50" (26.67 cm) from the floor depending on the caster installed. It will raise until the deck is 21" (53 cm) or 22.75" (57.78 cm) above the floor depending on the caster installed. The hilow positions are shown in figure 1-5 on page 1-7.

Figure 1-5. Hilow Positions



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The OSPREY™ LTC Bed has three articulating sections: head, seat, and foot. When operated in the auto-contour mode, the head, seat, and foot sections operate together to help the resident maintain their position in the bed. When the auto-contour mode is disabled, the head section can be raised independently. The auto-contour position is shown in figure 1-6 on page 1-8. The head up position is shown in figure 1-7 on page 1-8.

Figure 1-6. Auto-Contour Position

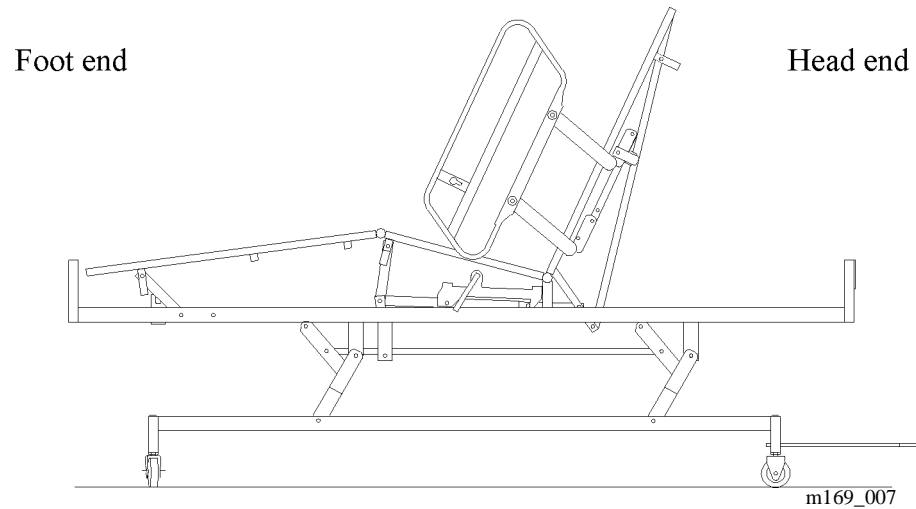
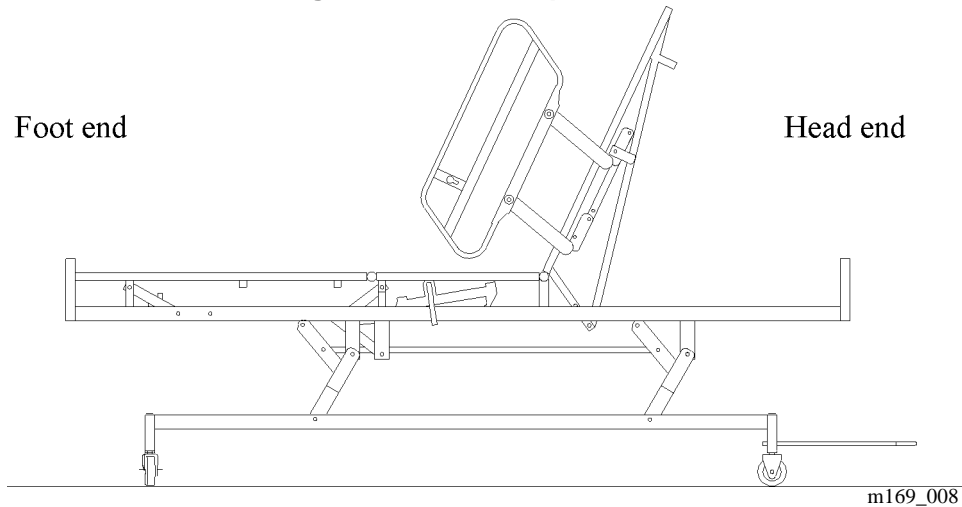


Figure 1-7. Head Up Position



The head section will incline a maximum of $65^{\circ} (\pm 2^{\circ})$.

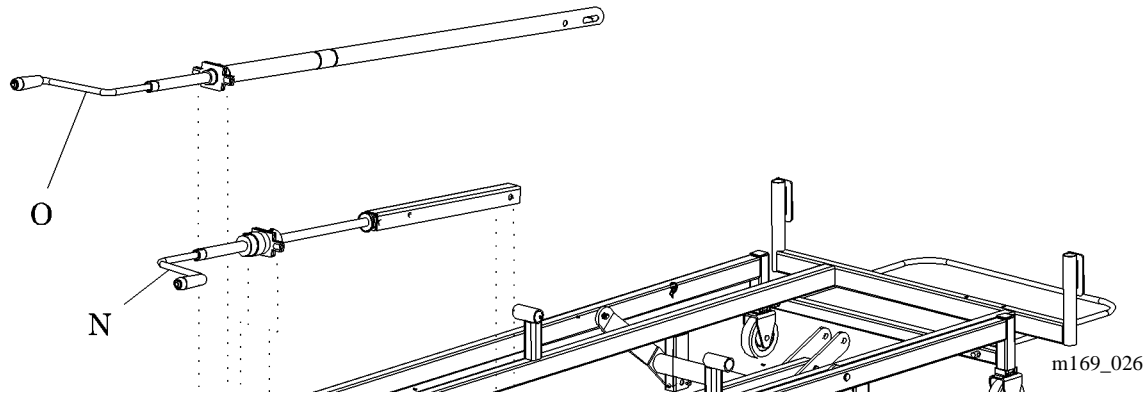
The knee section will articulate a maximum of $15^{\circ} (\pm 2^{\circ})$.

Bed Position Controls

Manually Operated Beds

Manually operated beds use hand cranks located at the foot end to adjust the position of the sleep deck. A crank on the resident left (A) operates the hilow positioning (see figure 1-8 on page 1-9). A crank on the resident right (B) operates the head positioning.

Figure 1-8. Manual Operation Controls



Both cranks rest on the frame out of the way when not in use. When needed, they pull into position and lock into place.

Hilow movement requires only 15 lb (7 kg) of force throughout the range of movement.

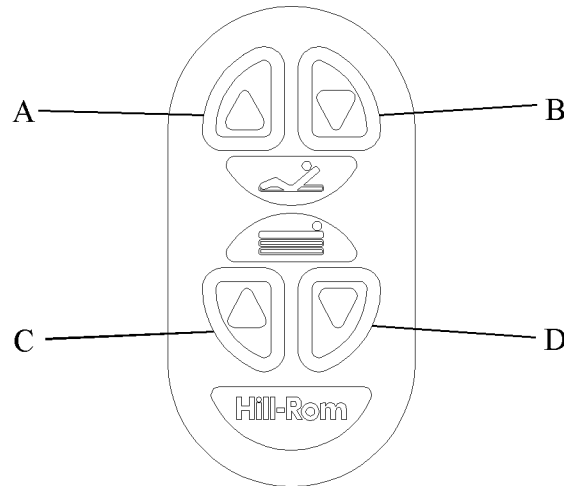
Head contour articulation requires only 10 lb (5 kg) of force throughout the range of movement.

Both manual mechanisms (hilow and head) are self-braking: the bed or bed sections will not drift down once the desired position is set.

Electrically Operated Beds

Electrically operated beds are controlled through a pendant that is typically stationed on one of the side rails. Only the following four buttons are needed to control all operations (see figure 1-9 on page 1-10):

- Head up (A)
- Head down (B)
- Hilow up (C)
- Hilow down (D)

Figure 1-9. Electrical Operation Pendant Controls

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All buttons are large and have high contrast icon graphics to indicate their function. Buttons are generously spaced to help the resident select the individual function they want to operate.

An optional lockout box at the foot of the bed has two switches that allow the caregiver to disable the hilow and head functions when necessary.

In the event of a power failure, an optional hand crank can be attached to the ends of the actuator motor shafts to operate the bed manually.

Head (Only) Contour Control

Normal operation of the OSPREY™ LTC Bed provides automatic contour control. In this mode, once the head raises above 15°, the knee hinge (between the seat and foot sections) contour also begins to raise. This approach not only provides a more comfortable posture, it also prevents the resident from sliding down the raised head section.

If desired, the automatic contour function can be turned off by moving the automatic contour lever under the knee section to the off position. (A lever is located on each side of the bed.) When automatic contour is turned off, using the head manual or pendant controls will move only the head section up or down.

Siderails

Standard siderails are located on both sides of the head section. Optional siderails are available for both sides of the foot section. The siderails are not restraint devices; they are intended as reminders of the proximity of the edge of

the sleep surface when the bed is occupied. When not in use, the siderails pivot down for storage in their lowered position. In the lowered position, the top of the siderails are only 2.5" (6.3 cm) above the top of the deck. This position will be well below the top of any sleep surface used and out of the way of a resident who is exiting or entering the bed.

Head and Foot Panels

The head and foot panels are finished with a rich woodgrain pattern for a pleasing residential furnishing appearance. Both the head and foot panels are held in place by gravity for easy removal during cleaning procedures. If desired, the head and foot panels can be permanently attached to the frame by installing screws through predrilled holes in the mounting slots.

Casters

Head end casters are fixed position, 3" (8 cm) models without brakes. Foot end casters are free-swivel 3" (8 cm) models with brakes. This allows easy movement of the bed for cleaning or positioning in the room (the bed should **not** be used for patient transport). The locking foot-end casters prevent bed movement during resident ingress, occupancy, or egress.

A central brake caster locking system is also available as an option.

Mattresses

The OSPREY™ LTC Bed deck will accept any standard sized mattress, such as the Comfortline®, the ZoneAire® Sleep Surface, and the PRIME•AIRE™ Therapy Surface from Hill-Rom.

Sleep surfaces from Hill-Rom are designed considering various resident and equipment combinations. Therefore, when selecting a sleep surface, the caregiver should evaluate the resident's needs, and ensure that the most appropriate surface is selected for that resident.

After placing the resident on that surface, the caregiver should inspect to ensure that the gaps between the mattress and siderails do not present an unreasonable risk to that patient. Carefully follow facility protocols for assessing patients at risk for entrapment.

Accessory Ready

The OSPREY™ LTC Bed comes factory equipped to accept the most common accessories required by long term residents. These include IV pole holders, a

trapeze holder, foot section siderail mounts, and a bed extender mounting. All of these accessories, including their installation, are described in chapter 7 of this manual.

Operating Precautions



WARNING:

The OSPREY™ LTC Bed is intended to be used only in long term care environments. Avoid attempting Trendelenburg functions on the OSPREY™ LTC Bed. The bed is not intended for acute therapy. Equipment damage or personal injury could result.



WARNING:

The OSPREY™ LTC Bed is not intended to be used as a resident transport device. Equipment damage or personal injury could result.



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only when persons are clear of the mechanisms. Failure to do so could result in personal injury.



WARNING:

Ensure the pendant control is securely stored when not in use. Failure to do so could result in inadvertent operation and personal injury.



WARNING:

Ensure the manual crank controls are securely stored when not in use. Failure to do so could result in personal injury.



WARNING:

Use caution when IV poles are installed. Ensure the IV poles do not contact light or headwall fixtures. Equipment damage or personal injury could result.

**WARNING:**

The actuators should only be opened by authorized personnel. Improper use of an actuator may result in equipment damage or personal injury.

**WARNING:**

Siderails are intended as a reminder, and are not intended for use as patient restraints. Appropriate medical personnel must determine whether restraints are medically necessary to ensure the resident will remain safely in bed. Failure to do so could result in personal injury.

**WARNING:**

Use caution when raising and lowering the siderails. Ensure extremities and appendages do not get caught. Failure to do so could result in personal injury.

**WARNING:**

Engage the caster brakes at all times, except when bed movement is necessary. Failure to do so could result in personal injury.

**WARNING:**

Only accessories specifically identified below are recommend for use with the OSPREY™ LTC Bed. Failure to do so could result in personal injury or equipment damage.

**WARNING:**

Do not lower the bed frame while the trapeze support is attached to the bed. Equipment damage or personal injury could result.

**SHOCK HAZARD:**

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

**CAUTION:**

Avoid using an excessive amount of liquid. Wipe up any excess standing liquid. Equipment damage could result.



CAUTION:

Repeated soaking of mattress materials will accelerate wear. Mattress damage caused by improper cleaning procedures is not covered by the warranty. Equipment damage could result.



CAUTION:

Many disinfectant cleaners, if used in high concentrations, have a softening effect on any painted or finished surface. Equipment damage could result.



CAUTION:

The OSPREY™ LTC Bed meets classification IPX0 ordinary equipment (enclosed equipment without protection against ingress of water).



CAUTION:

This product is designed for intermittent operation (duty cycle 1 minute on, 5 minutes off).

Function Operation



WARNING:

Engage the caster brakes at all times except when bed movement is necessary. Failure to do so could result in personal injury.

Siderail Operation



WARNING:

Siderails are intended as a reminder, and are not intended for use as patient restraints. Appropriate medical personnel must determine whether restraints are medically necessary to ensure the resident will remain safely in bed. Failure to do so could result in personal injury.



WARNING:

Use caution when raising and lowering the siderails. Ensure extremities and appendages do not get caught. Failure to do so could result in personal injury.

Raise the Siderail

- Lift and rotate the siderail toward closest end of the bed.
- An audible click indicates that the siderail is fully raised and locked into place.
- Confirm that the siderail is locked in place by attempting to rotate it toward the opposite end of the bed.

Lower the Siderail

- Grasp the top siderail with one hand, and pull outward on the release latch with the other.
- Rotate the siderail down and toward the middle of the bed. It is not necessary to hold the release latch after initial movement has begun.
- Continue to rotate the siderail downward until it rests in its lowest position.

Hilow Operation



WARNING:

Powered bed mechanisms can cause serious injury. Operate the bed only when persons are clear of the mechanisms. Failure to do so could result in personal injury.

Manual Operation



WARNING:

Ensure the manual crank controls are securely stored when not in use. Failure to do so could result in personal injury.

- Pull the hand crank at the patient left foot end into the extended position, and rotate slowly while pulling, until it locks in place.
- Turn the handle clockwise to raise the sleep deck.
- Turn the handle counterclockwise to lower the sleep deck.
- When the sleep deck is at the desired height, push the hand crank toward the head into its stored position.

Electrical Operation



WARNING:

Ensure the pendant control is securely stored when not in use. Failure to do so could result in inadvertent operation and personal injury.

- Push the hilow up button on the pendant to raise the sleep deck.
- Push the hilow down button on the pendant to lower the sleep deck.
- Store the pendant on the siderail when not in use.

Automatic Contour Operation

Automatic contour operation is enabled or disabled by a lever under the seat/foot joint. Levers are located on both sides of the bed.

In order to enable or disable the automatic contour operation, the bed must be in the full flat position before moving the lever up or down:

- Rotate the automatic contour lever toward the head to disable automatic contour operation.
- Rotate the automatic contour lever towards the foot to enable automatic contour operation.

Manual Operation



WARNING:

Ensure the manual crank controls are securely stored when not in use. Failure to do so could result in personal injury.

- Pull the hand crank at the patient right foot end into the extended position, and rotate slowly while pulling, until it locks in place.
- Turn the handle clockwise to raise the head and knee sections simultaneously.
- Turn the handle counterclockwise to lower the head and knee sections simultaneously.
- When the head positions are at the desired angle, push the hand crank toward the head into its stored position.

Electrical Operation



WARNING:

Ensure the pendant control is securely stored when not in use. Failure to do so could result in inadvertent operation and personal injury.

- Push the head up button on the pendant to raise the head and knee sections simultaneously.
- Push the head down button on the pendant to lower the head and knee sections simultaneously.
- Store the pendant on the siderail when not in use.

Head Section Only Operation

- Lower the head sections to the full flat position.
- Move the automatic contour lever on either side of the bed to the “off” position.
- Operate the appropriate manual or electrical head control to raise the head section to the desired angle (the knee section will not move with automatic contour operation disabled).
- Operate the appropriate manual or electrical head control to lower the head section.
- To restore automatic contour control, lower the head section to the full flat position, and move the automatic contour lever to the “on” position.

Specifications

Physical Description

See table 1-1 on page 1-18 for OSPREY™ LTC Bed physical specifications.

Table 1-1. Specifications

Feature	Dimension
Overall length (without bumper) 76" (193.04 cm) deck 80" (203.2 cm) deck	80" (203 cm) 84" (213 cm)
Sleep deck length	76" (193 cm) or 80" (203 cm)
Overall width With or without accessories	41.5" (105.4 cm) maximum
Sleep deck width	34.5" (87.6 cm)
Height (floor to deck)	9.75" (24.77 cm) or 10.50" (26.67 cm) low 21" (53 cm) or 22.5" (57.2 cm) high
Minimum floor to base clearance	5" (13 cm) (except when in the low position)
Maximum angle of inclination Head Knee	65° ± 2° 15° ± 2°
Weight (without siderails or accessories)	165 lb (75 kg)
Caster wheel size	3" ± 0.25" (8 cm ± 0.64 cm)
Caster spacing Longitudinally Laterally	65" (165 cm) 23" (58 cm)
Maximum safe working load	400 lb (181 kg)
Operating force (manual option) Head Hilow	10 lb (5 kg) 15 lb (7 kg)
Excursion time (electric option) Flat to head up position Flat to knee up position Lo to high position	20 to 35 seconds 6 to 10 seconds 45 to 55 seconds

Feature	Dimension
Operating environment Temperature Relative humidity Noise level	50°F to 110°F (10°C to 43°C) 30% to 75% <65 dBA 1 meter from the resident's ear
Storage and shipping environment Temperature Relative humidity Atmospheric pressure	-40°F to 150°F (-41°C to 65°C) 20% to 95% 500 hPa to 1060 hPa

Electrical Description

Electrically operated models are designed to run off of a standard power supply.

Voltage

115V AC, 60 Hz

Regulations, Standards, and Codes

The electrically operated OSPREY™ LTC Bed is UL Classified per UL 2601-1, IEC 601-1 Clause 6.

The electrically operated OSPREY™ LTC Bed is CSA Classified CAN/CSA C22.2 No. 601.

Model Identification

See table 1-2 on page 1-19 for OSPREY™ LTC Bed model identification.

Table 1-2. Model Identification

Model Number	Description
P871	OSPREY™ LTC Bed

Safety Tips



WARNING:

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



WARNING:

Only facility-authorized maintenance personnel should perform preventive maintenance on the OSPREY™ LTC Bed. Preventive maintenance performed by unauthorized personnel 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:

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



WARNING:

The OSPREY™ LTC Bed is intended to be used only in long term care environments. Avoid attempting Trendelenburg functions on the OSPREY™ LTC Bed. The bed is not intended for acute therapy. Equipment damage or personal injury could result.



WARNING:

The OSPREY™ LTC Bed is not intended to be used as a resident transport device. Equipment damage or personal injury could result.



WARNING:

Ensure the pendant control is securely stored when not in use. Failure to do so could result in inadvertent operation and personal injury.

**WARNING:**

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

**WARNING:**

Ensure the manual crank controls are securely stored when not in use. Failure to do so could result in personal injury.

**WARNING:**

If the bed cannot be lowered to the lowest position, brace the upper frame sections so they do not collapse suddenly when the support of the actuator is removed. Failure to do so could result in personal injury.

**WARNING:**

If the bed cannot be lowered to the full flat position, brace the head, seat, and foot sections so they do not collapse suddenly when the support of the actuator is removed. Failure to do so could result in personal injury.

**WARNING:**

Use caution when IV poles are installed. Ensure the IV poles do not contact light or headwall fixtures. Failure to do so could result in personal injury or equipment damage.

**WARNING:**

Route the pendant cable to avoid any pinch points in the articulating frame and deck members. Failure to do so could result in personal injury or equipment damage.

**WARNING:**

The actuators should only be opened by authorized personnel. Improper use may result in equipment damage or personal injury.



WARNING:

Engage the caster brakes at all times, except for when bed movement is necessary. Failure to do so could result in personal injury.



WARNING:

Siderails are intended as a reminder, and are not intended for use as patient restraints. Appropriate medical personnel must determine whether restraints are medically necessary to ensure the resident will remain safely in bed. Failure to do so could result in personal injury.



WARNING:

Route the control cable to avoid any pinch points in the articulating frame and deck members. Failure to do so could result in personal injury or equipment damage.



WARNING:

Use caution when raising and lowering the siderails. Ensure extremities and appendages do not get caught or injured. Failure to do so could result in personal injury.



WARNING:

Only accessories specifically identified below are recommend for use with the OSPREY™ LTC Bed. Failure to do so could result in personal injury or equipment damage.



WARNING:

Do not lower the bed frame while the trapeze support is attached to the bed. Personal injury or equipment damage could result.



WARNING:

Use a new nylon insert nut. Installation of used nylon insert nuts could result in personal injury or equipment damage.



WARNING:

Assemble the central brake mechanism in the “neutral” position. Ensure the components are properly aligned during assembly. 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:**

Examine the caster socket for cracks or breaks. Installing a new caster in a defective caster socket will lead to early failure of the new caster. Equipment damage could result.

**CAUTION:**

Avoid using an excessive amount of liquid. Wipe up any excess standing liquid. Failure to do so could result in equipment damage.

**CAUTION:**

Repeated soaking of mattress materials will accelerate wear. Mattress damage caused by improper cleaning procedures is not covered by the warranty. Equipment damage could result.

**CAUTION:**

Many disinfectant cleaners, if used in high concentrations, have a softening effect on any painted or finished surface. Equipment damage could result.

**CAUTION:**

The OSPREY™ LTC Bed meets classification IPX0 ordinary equipment (enclosed equipment without protection against ingress of water).

**CAUTION:**

This product is designed for intermittent operation (duty cycle 1 minute on, 5 minutes off).



CAUTION:

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

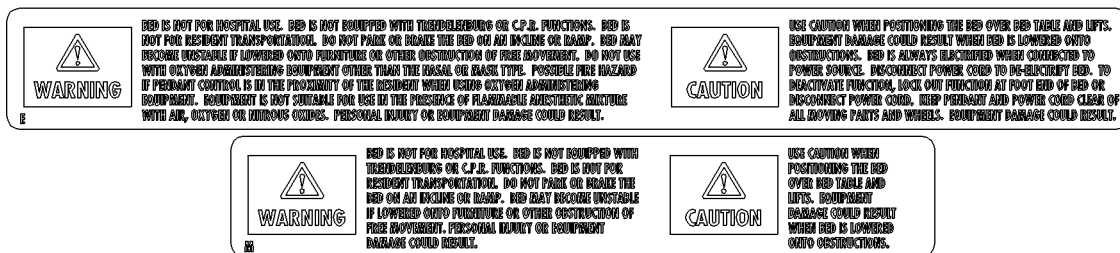


CAUTION:

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

Warning and Caution Labels

Figure 1-10. Warning and Caution Labels



m169_019

NOTES:

Chapter 2

Troubleshooting Procedures

2

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NOTES:

Getting Started

**WARNING:**

Only facility-authorized maintenance personnel should troubleshoot the OSPREY™ LTC 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.

Initial Actions

Use Initial Actions to gather information from operators concerning problems with the OSPREY™ LTC 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 2-4.

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

Yes No



→ Go to “Function Checks” on page 2-4.

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

Yes No



→ Go to “Function Checks” on page 2-4.

4. Instruct the operator to refer to the procedures in the *OSPREY™ LTC Bed User Manual*. Perform the “Function Checks” on page 2-4 to ensure proper operation of the OSPREY™ LTC Bed.

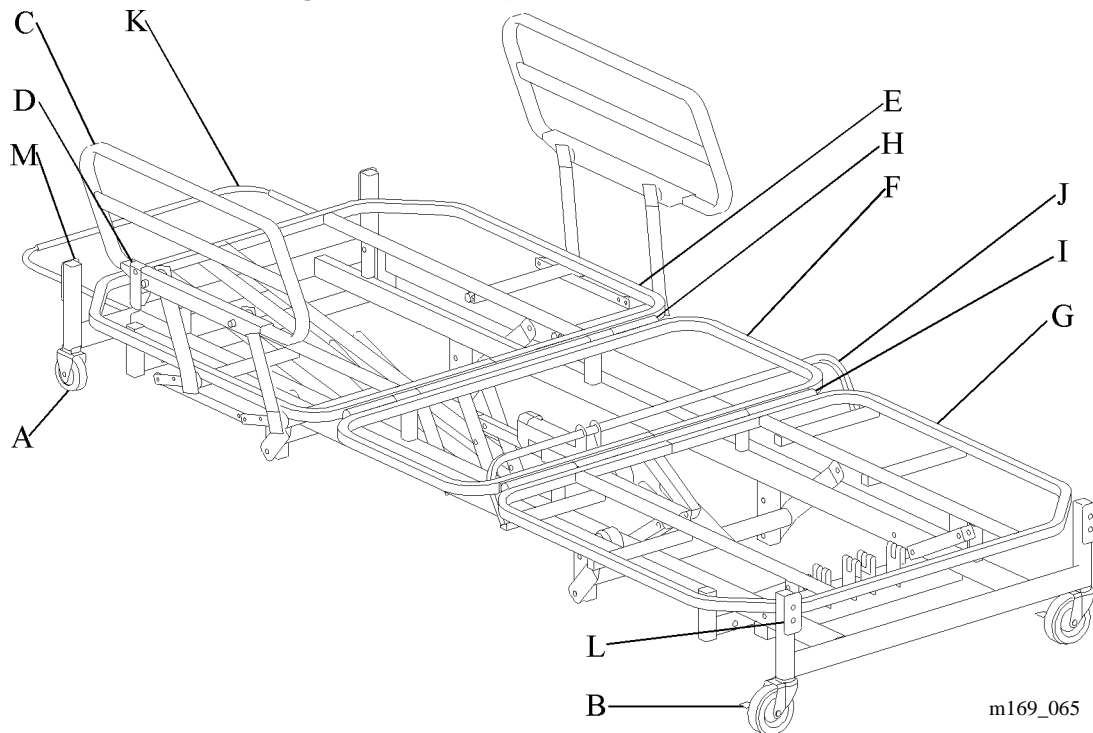
Function Checks

NOTE:

These function checks cover all operations of the manual version of the OSPREY™ LTC Bed. Except for the use of hand cranks, the electrically operated version uses the same components and operates in the same manner. The procedures for troubleshooting all electrical malfunctions begin with RAP 2.1.

The major components and subsystems discussed in these function checks include the following (see figure 2-1 on page 2-5):

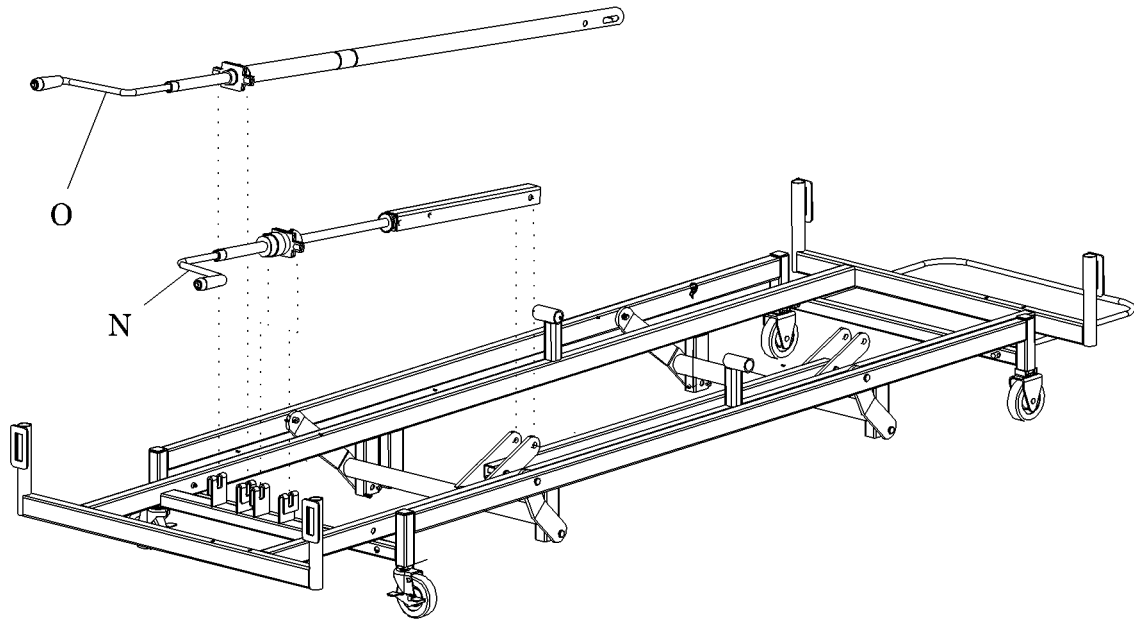
- Fixed caster (A)
- Locking caster (B)
- Siderail (C)
- Siderail release (D)
- Head section (deck removed) (E)
- Seat section (deck removed) (F)
- Foot section (deck removed) (G)
- Head/seat hinge (H)
- Seat/foot hinge (I)
- Automatic contour lockout (J)
- Bumper (K)
- Foot panel support (L)
- Head panel support (M)

Figure 2-1. Component Identification

Manually operated models also contain the following components (see figure 2-2 on page 2-6):

- Hilow actuator with pull out crank handle (N)
- Head actuator with pull out crank handle (O)

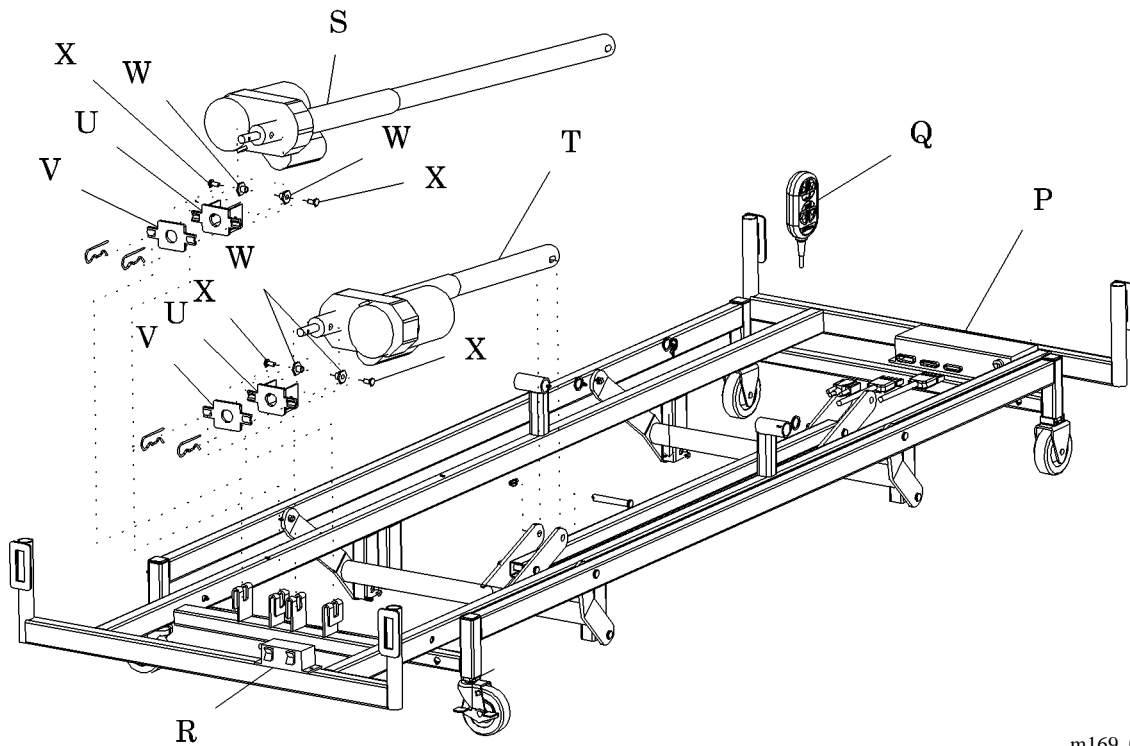
Figure 2-2. Manual Operation Components



m169_026

Electrically operated models substitute the following components for the manual controls (see figure 2-3 on page 2-7):

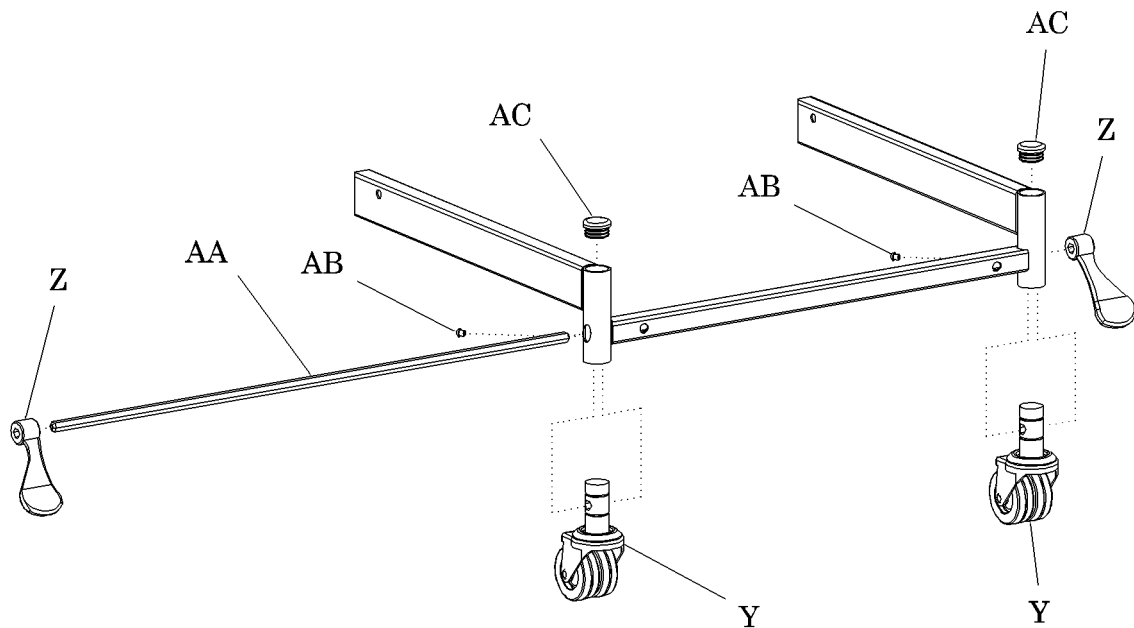
- Electrical control box with power cord (P)
- Pendant (Q)
- Lockout control box with control cable (optional) (R)
- Head actuator motor with power cable (S)
- Hilow actuator motor with power cable (T)
- Adapter bracket (U)
- Spacer plate (V)
- Flanged nut (W)
- Bolt (X)

Figure 2-3. Electrical Operation Components

m169_066

Central brake option models substitute the following components for the locking casters (see figure 2-4 on page 2-8):

- Central brake casters (Y)
- Brake pedals (Z)
- Hex rod (AA)
- Button socket cap screws (AB)
- Round tube plugs (AC)

Figure 2-4. Central Brake Option Components

m169_081

1. Initial Actions have been performed.

Yes No



→ Go to “Initial Actions” on page 2-3.

2. Remove any mattress that may be on the unit.
3. Visually inspect the unit for damaged or missing components.

All components are present and in good condition.

Yes No



→ Repair or replace any damaged or missing component, then continue with these function checks.

4. Release the caster brakes, and move the bed to a convenient working location (i.e., the center of the room where there is room to move completely around the bed).

The bed rolls easily, and none of the casters wobble or limp.

Yes No



→ Replace any damaged fixed or swivel caster (refer to procedure 4.1) or central brake caster (refer to procedure 4.3).

5. Lock all the caster brakes, and try to move the bed.

The caster brakes lock with minimal effort, and the bed will not move with the brakes the engaged.

Yes No

↓

→ If any caster brake does not lock or is difficult to lock, or if the bed moves when the caster brakes are engaged, replace the swivel caster with brake (refer to procedure 4.1). For the central brake option model, go to RAP 2.5.

6. Extend the hilow crank handle (N), and raise the bed to its highest position (see figure 2-2 on page 2-6).

The hilow crank handle (N) extends freely from its storage position and engages the hilow actuator easily and positively.

Yes No

↓

→ Repair or replace the hilow actuator (refer to procedure 4.5).

7. The bed deck rises easily and does not bind or hang up at any point.

Yes No

↓

→ Replace the hilow actuator (refer to procedure 4.5).

8. The bed deck rises level to its highest position approximately 20.5" (52.1 cm) above the floor.

Yes No

↓

→ Check the support members under the deck for bent or broken components. Replace any that are found (refer to procedure 4.10). If this solves the problem, continue with the Function Checks. If not, replace the hilow actuator (refer to procedure 4.5).

9. Extend the head crank handle (O), and turn it slowly clockwise.

The head crank handle (O) extends freely from its storage position and engages the head actuator easily and positively.

Yes No

↓

→ Repair or replace the head actuator (refer to procedure 4.6).

10. Observe the action of the bed sections as you continue to turn the head crank handle (O) clockwise.

As the head section raises above 15°, the knee joint (between the seat and foot sections) begin to raise.

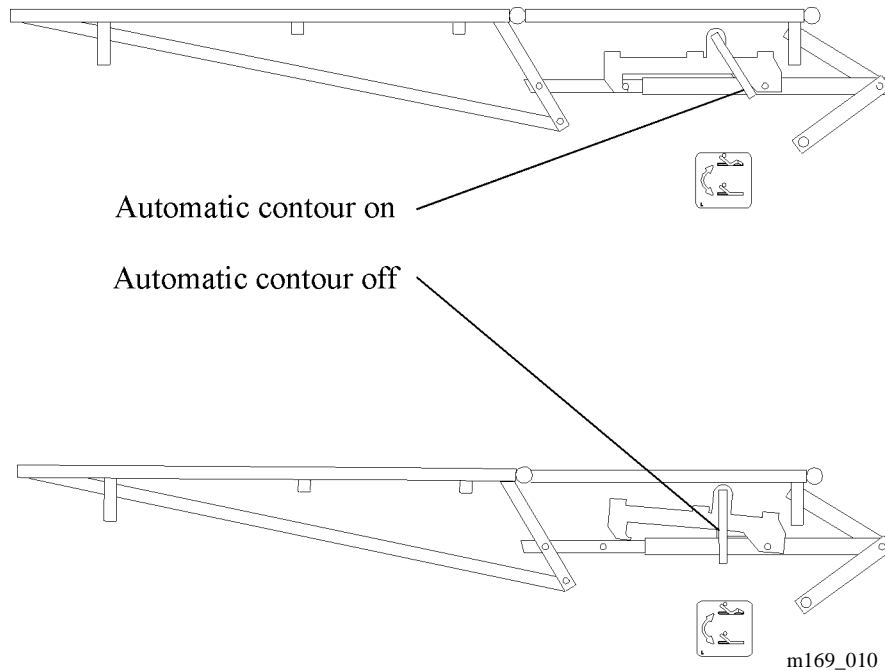
Yes No

↓

→ Check to see that the automatic contour lockout is engaged (see figure 2-5 on page 2-10). If not, engage the automatic contour

lockout, and repeat this step. If the automatic contour lockout is engaged and the knee joint does not move, repair or replace the automatic contour control (refer to procedure 4.14).

Figure 2-5. Automatic Contour Lockout



11. Continue to turn the head crank handle (O) clockwise until the head section is fully raised (see figure 2-2 on page 2-6).

The head section raises to approximately 65°, and the knee joint is at approximately 15°.

Yes No



→ Inspect the connections and components for the section that does not raise adequately. Repair or replace any damaged connections or components (refer to procedure 4.10). If all connections and components are sound, replace the head actuator (refer to procedure 4.6).

12. Turn the head crank handle (O) counterclockwise, and lower the deck to the full flat position.
 13. Disengage the automatic contour lockout (see figure 2-5 on page 2-10).
 14. Turn the head crank handle (O) clockwise (see figure 2-2 on page 2-6).
- The head section begins to raise, and the seat and foot sections remain flat.

Yes No



→ Repair or replace the automatic contour control (refer to procedure 4.14).

15. Turn the head crank handle (O) counterclockwise, and lower the head section to the full flat position.

16. If the siderails (C) are in their stored position, raise each one until an audible locking click is heard (see figure 2-1 on page 2-5).

Each siderail (C) raises smoothly and locks into the raised position with an audible click.

Yes No



→ If the siderail (C) sticks or binds, replace the siderail (C) (refer to procedure 4.12). If the siderail (C) does not lock into the raised position with an audible click, replace the siderail latch (D) (refer to procedure 4.13).

17. Release each siderail latch (D), and lower the siderail (C) to the stored position.

The siderail latches (D) release with minimal effort.

Yes No



→ Replace the damaged siderail latch (D) (refer to procedure 4.13).

18. Each siderail (C) lowers until the top is parallel to the deck and approximately 2.5" (6.4 cm) above the deck.

Yes No



→ Replace the siderail (C) (refer to procedure 4.12).

19. Remove the clevis pins at the foot end connecting the foot section (G) to the midframe. Lift the foot section (G) deck, and lay it back against the seat section (F) and head section (E).

The foot section (G) deck moves easily (i.e., the hinge does not bind), and lays flat on the seat section (F) and head section (E).

Yes No



→ If the foot section (G) deck binds during movement, replace the seat/foot hinge (I) (refer to procedure 4.2). If the foot section (G) deck does not lay flat, determine whether the foot section (G) or seat section (F) is warped, and replace the warped section. To replace the foot section (G) deck, refer to procedure 4.7. To replace the seat section (F) deck, refer to procedure 4.8.

20. The bed is equipped with electric actuators.

Yes	No
↓	→ Go to “Final Actions” on page 2-12.

21. Go to RAP 2.1.

Final Actions

1. Complete the required preventive maintenance procedures. See “Tool and Supply Requirements” on page 6-9.
2. Complete all required administration tasks.

2.1 Hilow Electrical Malfunctions (Electric Drive Model Only)

1. 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 2-12. If not, continue with this RAP.

2. If the bed is equipped with a lockout control box, both control switches are in the unlocked position.

Yes **No**



→ Move the lockout switches to the unlocked position. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with this RAP.

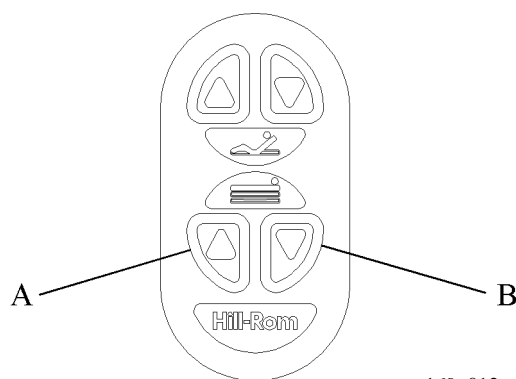


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

3. Listen for a click as you press the pendant hilow up button (A) and hilow down button (B) sequentially (see figure 2-6 on page 2-13).

Figure 2-6. Pendant



Each time you press the hilow up button (A) or hilow down button (B), you hear an audible click from a relay in the midframe head end electrical control box.

Yes **No**



→ If a click is heard only when one button is pushed, go to RAP 2.4. If there is no click when either button is pushed, go to RAP 2.3.

4. Check the following:

- Hilow cable connection at the electrical control box
- Cord condition between the electrical control box and hilow actuator motor.
- Cable condition between the electrical control box and lockout control box, if present.

All connections are sound, and the cables show no signs of damage.

Yes No

↓

→ Insert any loose plugs firmly into their mating sockets. If the control cable is damaged, replace the lockout control box (refer to procedure 4.19). If these actions solve the problem, go to “Final Actions” on page 2-12. If not, replace the hilow actuator motor (refer to procedure 4.17). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 5.

5. Press and hold the hilow up button (A).

The entire bed deck rises level and stops approximately 20.5" (52.1 cm) above the floor.

Yes No

↓

→ Check for interference from another part of the bed. If interference is found, correct it. If no interference is found, replace the hilow actuator motor (refer to procedure 4.17). If this solves the problem, go to “Final Actions” on page 2-12. If not, call Hill-Rom Technical Support at (800) 445-3720.

6. Press and hold the hilow down button (B).

The bed lowers level, and stops when it is approximately 9.75" (24.77 cm) above the floor.

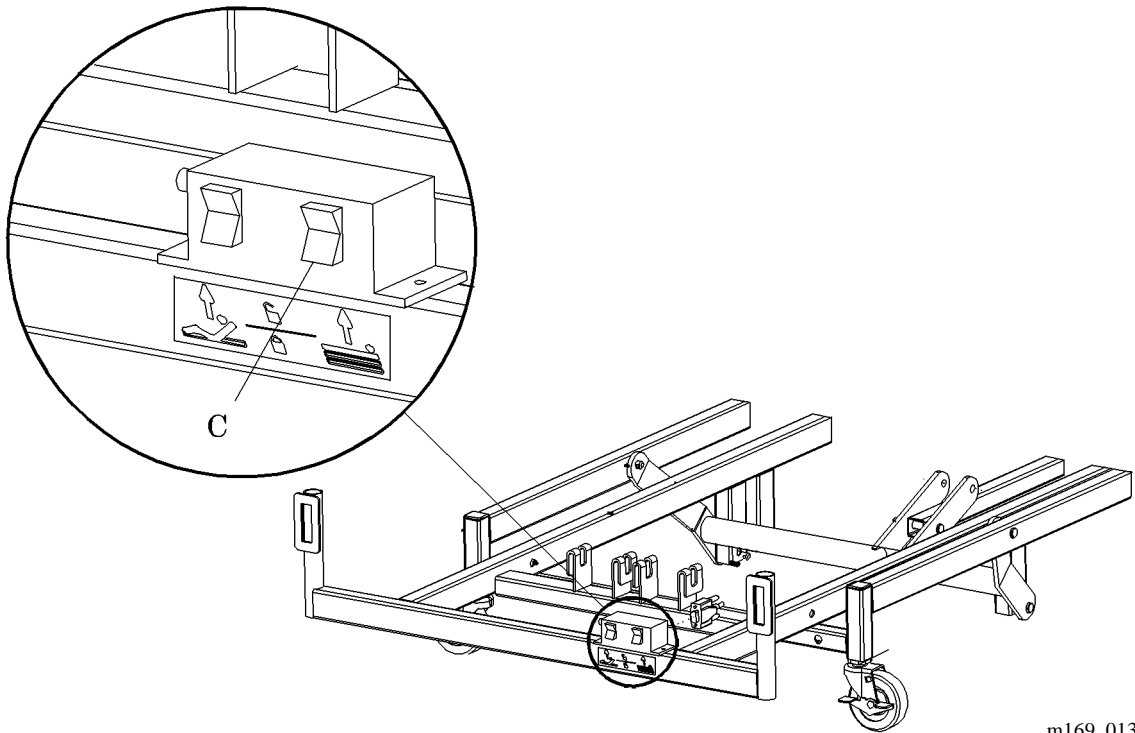
Yes No

↓

→ Check for interference from another part of the bed. If interference is found, correct it. If no interference is found, replace the hilow actuator motor (refer to procedure 4.17). If this solves the problem, go to “Final Actions” on page 2-12. If not, call Hill-Rom Technical Support at (800) 445-3720.

7. If the bed is equipped with a lockout control box, move the hilow lockout switch (C) to the locked position (see figure 2-7 on page 2-15).

Figure 2-7. Lockout Control Switches



m169_013

8. Press the hilow up and hilow down buttons on the pendant.
The bed does not move.

Yes	No
↓	→ Replace the lockout control box (refer to procedure 4.19).
9. Move the hilow lockout switch (C) on the lockout control box to the unlocked position.
10. Press the hilow up button (A) and hilow down button (B) on the pendant (see figure 2-6 on page 2-13).
The bed moves in the direction indicated by the button.

Yes	No
↓	→ Go to RAP 2.3.
11. Go to “Final Actions” on page 2-12.

2.2 Head and Automatic Contour Electrical Malfunctions (Electric Drive Model Only)

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

Yes **No**



→ Plug the be into an appropriate power source. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with this RAP.

2. All the caregiver lockout controls are in the unlocked position.

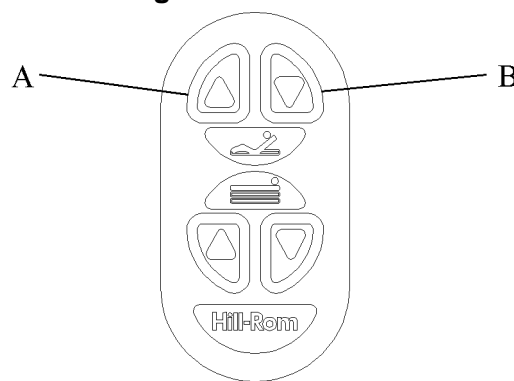
Yes **No**



→ Move all the caregiver lockout controls to the unlocked position. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with this RAP.

3. Listen for a click as you press the pendant head up button (A) and head down button (B) sequentially (see figure 2-8 on page 2-16).

Figure 2-8. Pendant



m169_011

Each time you press the head up button (A) or head down button (B), you hear an audible click from a relay in the bed midframe head end electrical control box.

Yes **No**



→ If a click is heard only when one button is pushed, go to RAP 2.4. If there is no click when either button is pushed, go to RAP 2.3.

**WARNING:**

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

2

4. Check the following:

- Head actuator motor cable connection at the electrical control box
- Cord condition between the electrical control box and the head actuator motor.
- Lockout control box cable connections at the electrical control box, if equipped.
- Cable condition between the electrical control box and the lockout control box.

All connections are sound, and the cables show no signs of damage.

Yes No

- ↓ → Insert any loose plugs firmly into their mating sockets. If the control cable is damaged, replace the lockout control box (refer to procedure 4.19). If these actions solve the problem, go to “Final Actions” on page 2-12. If not, replace the head actuator motor (refer to procedure 4.18). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 5.

5. Press and hold the head up button (A).

The head section begins to elevate. When the head section angle passes 15°, the seat/foot joint begins to raise.

Yes No

- ↓ → Check for interference from other parts of the bed. If interference is found, correct it. If no interference is found, replace the head actuator motor (refer to procedure 4.18). If this solves the problem, go to “Final Actions” on page 2-12. If not, call Hill-Rom Technical Support at (800) 445-3720.

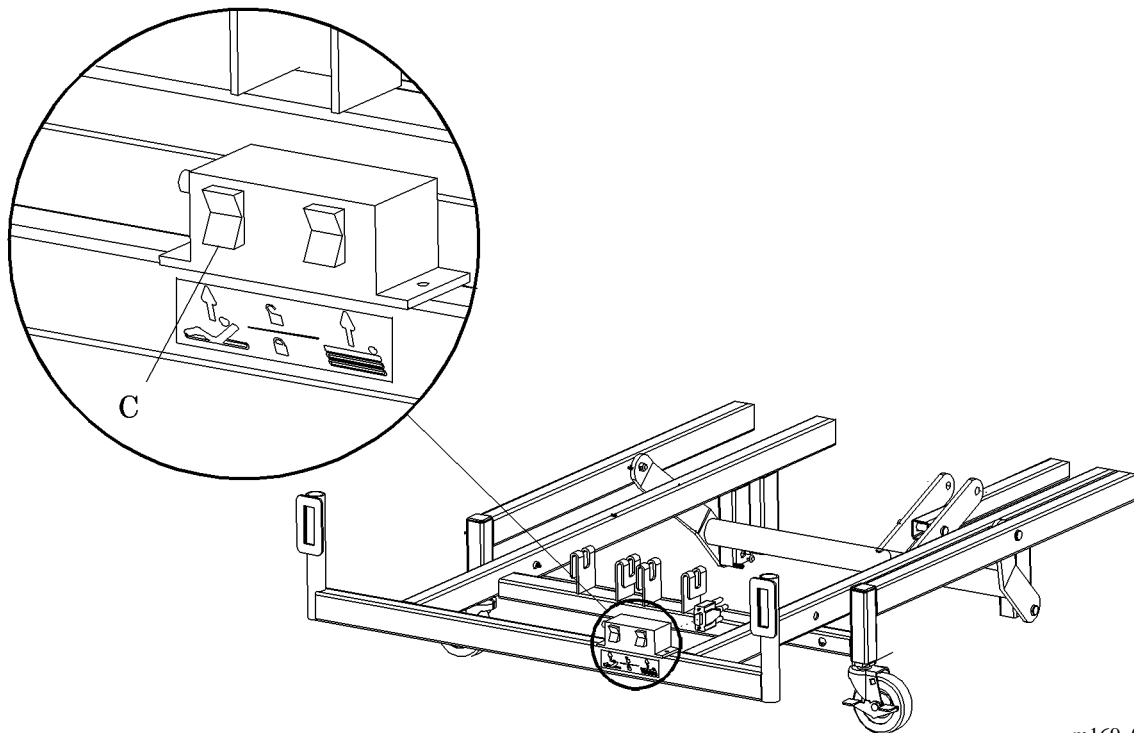
6. Press and hold the head down button (B).

All sections of the bed begin to lower. When the head section is at a 15° angle, the seat and foot sections are flat. The head section continues to lower smoothly until it is flat.

- | | |
|------------|-----------|
| Yes | No |
| ↓ | → |
- Check for interference from another part of the bed. If interference is found, correct it. If no interference is found, replace the head actuator motor (refer to procedure 4.18). If this solves the problem, go to “Final Actions” on page 2-12. If not, call Hill-Rom Technical Support at (800) 445-3720.

7. Move the head lockout switch (C) on the lockout control box to the locked position (see figure 2-9 on page 2-18).

Figure 2-9. Lockout Control Switches



m169_014

8. Press the head up button (A) and head down button (B) (see figure 2-8 on page 2-16).

The bed does not move.

- | | |
|------------|-----------|
| Yes | No |
| ↓ | → |
- Replace the lockout control box (refer to procedure 4.19).

9. Move the head lockout switch (C) on the lockout control box to the unlocked position (see figure 2-9 on page 2-18).
10. Press the head up button (A) and head down button (B) (see figure 2-8 on page 2-16).

The bed sections move in the direction indicated by the button.

Yes **No**

↓

→ Go to RAP 2.3.

11. Go to “Final Actions” on page 2-12.

2

2.3 Electrical Control Lockout Malfunctions (Electric Drive Model Only)

1. 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 2-12. If not, continue with this RAP.

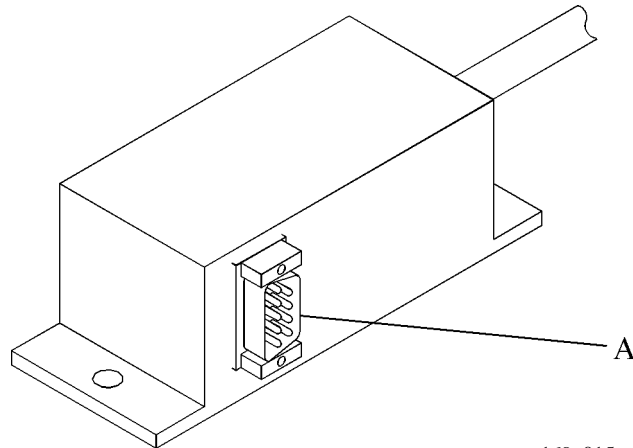


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

2. The pendant is securely plugged into the lockout control box (A) (see figure 2-10 on page 2-20).

Figure 2-10. Lockout Box Pendant Cable Connection



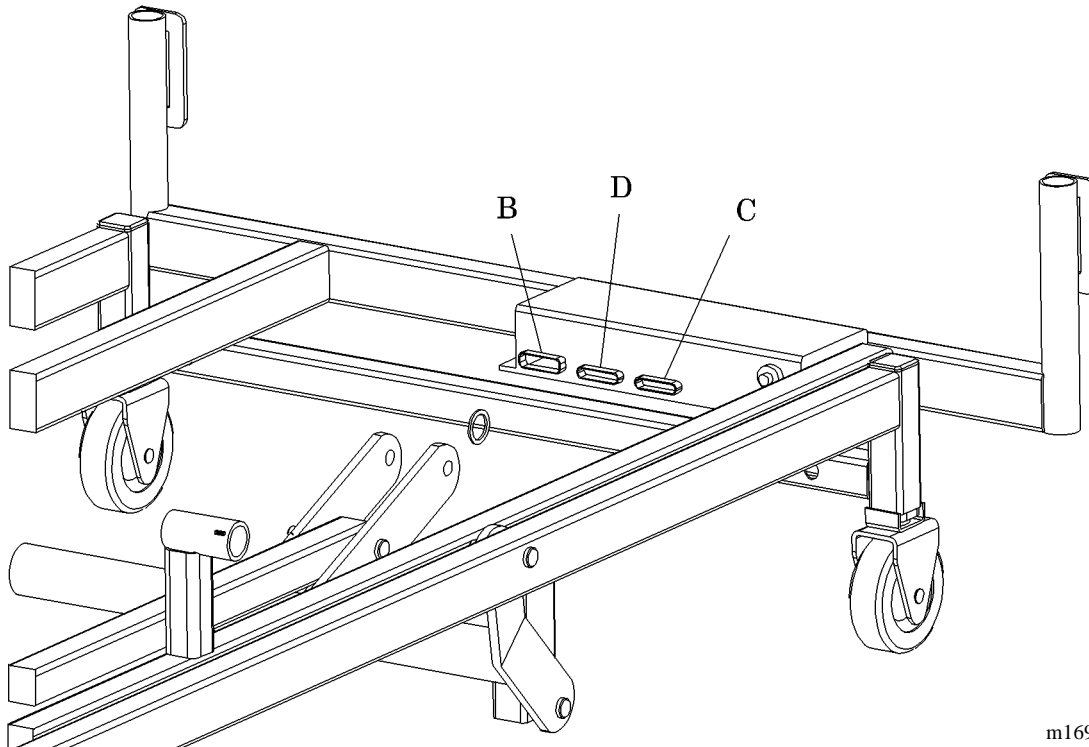
m169_015

Yes **No**



→ Plug the pendant securely into the lockout box, and tighten the side screws. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 3.

3. The lockout control box cable is securely plugged into its receptacle (B) on the electrical control box, and the cable shows no signs of damage (see figure 2-11 on page 2-21).

Figure 2-11. Electrical Control Box Connections

m169_016

Yes **No**
 ↓

→ If the control cable is damaged, replace the lockout box (refer to procedure 4.19). If the plug on the control cable is loose, attach it securely to the receptacle (B) on the electrical control box, and tighten the side screws. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 4.

4. The hilow actuator cable is securely plugged into its receptacle (C) on the electrical control box, and the cable shows no signs of damage.

Yes **No**
 ↓

→ If the hilow actuator plug connection to the electrical control box is loose, attach it securely to the receptacle (C) on the electrical control box. If the hilow actuator cable is damaged, replace the hilow actuator motor (refer to procedure 4.17). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 5.

5. The head actuator cable is securely plugged into its receptacle (D) on the electrical control box, and the cable shows no signs of damage.

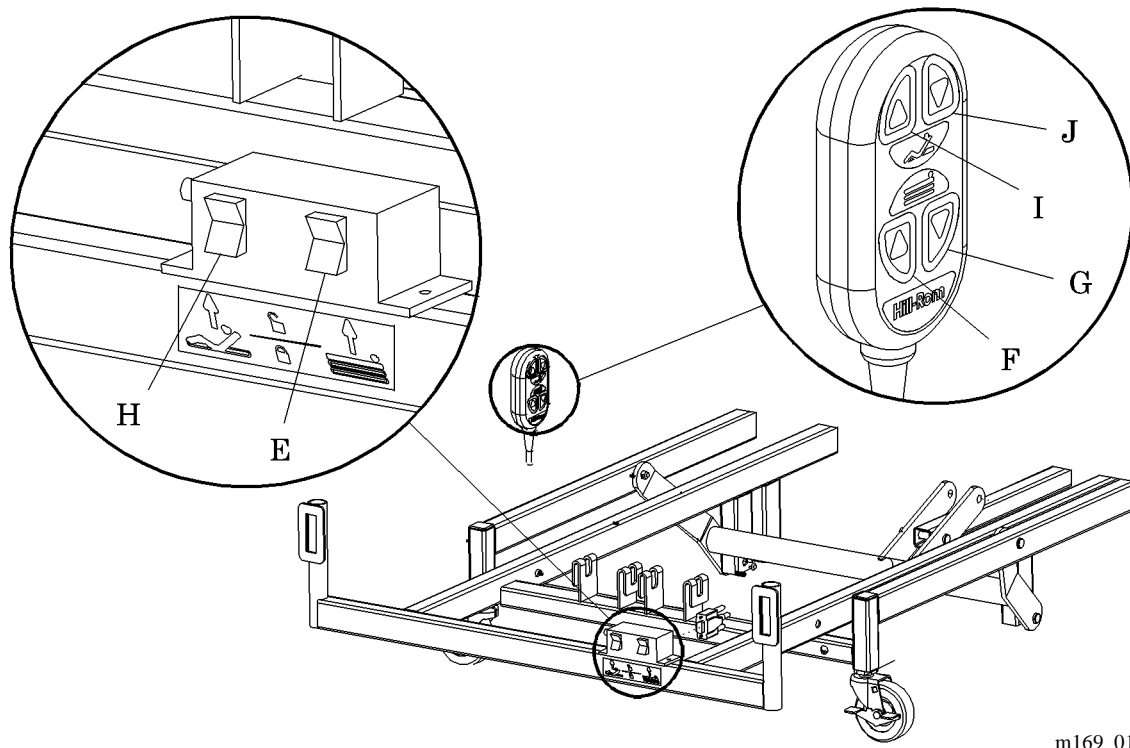
Yes **No**
 ↓

→ If the plug on the head actuator cable is loose, attach it securely to the receptacle (D) on the electrical control box. If the head

actuator cable is damaged, replace it the head actuator motor (refer to procedure 4.18). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 6.

6. Move the hilow switch (E) on the lockout control box to the locked position, and push the hilow up button (F) and hilow down button (G) on the pendant sequentially (see figure 2-12 on page 2-22).

Figure 2-12. Hilow Controls



m169_017

The bed does not move in either direction.

Yes No



→ If the bed does move, replace the lockout control box (refer to procedure 4.19). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 7.

7. Move the hilow switch (E) on the lockout control box to the unlocked position, and push the hilow up button (F) and hilow down button (G) on the pendant.

The bed moves in the appropriate direction when a button is pushed.

Yes No



→ Replace the pendant with a working model, and repeat the test. If the bed still does not move, go to step 11.

8. Move the head switch (H) on the lockout control box to the locked position, and push the head up button (I) and head down button (J) buttons on the pendant.

The bed does not move in either direction.

Yes No



→ If the bed does move, replace the lockout control box (refer to procedure 4.19). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 9.

9. Move the head switch (H) on the lockout control box to the unlocked position, and push the head up (I) and head down (J) buttons on the pendant.

The bed moves in the appropriate direction when a button is pushed.

Yes No



→ Replace the pendant with a working model, and repeat the test. If the bed still does not move, go to step 11.

10. Go to “Final Actions” on page 2-12.

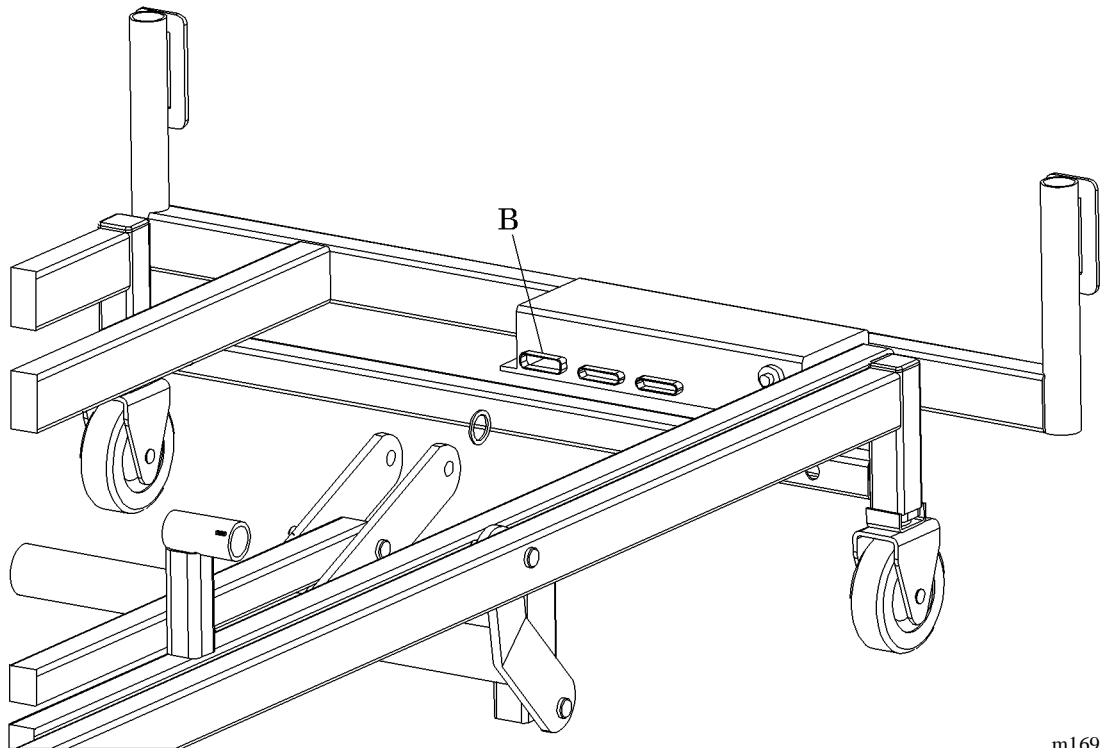


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

11. Unplug the bed from its power source.
12. Unplug the lockout control box cable from its receptacle (B) on the electrical control box (see figure 2-13 on page 2-24).

Figure 2-13. Electrical Control Box Connections



13. Plug a working pendant into the lockout control cable receptacle (B) on the electrical control box, and tighten the side screws.

14. Plug the bed into an appropriate power supply.

NOTE:

In the following test, the function that operates may not be the function indicated on the pendant. This is normal for this situation.

15. Press each of the pendant buttons, and observe the bed functions.

As each button is pushed, one of the bed functions operates.

Yes No

↓

→ If one or more of the functions do not operate, replace the electrical control box (refer to procedure 4.16). If this solves the problem, go to “Final Actions” on page 2-12. If not, call Hill-Rom Technical Support at (800) 445-3720.

16. Go to “Final Actions” on page 2-12.

2.4 Pendant Control Malfunctions (Electric Drive Model Only)

1. 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 2-12. If not, continue with this RAP.



WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

NOTE:

If the bed is equipped with a lockout control box, ensure that the lockout switches are in the unlocked position.

2. The pendant is securely plugged into its receptacle (A) on the lockout control box (see figure 2-14 on page 2-25) or electrical control box (see figure 2-15 on page 2-26).

Figure 2-14. Lockout Control Box Cable Connection

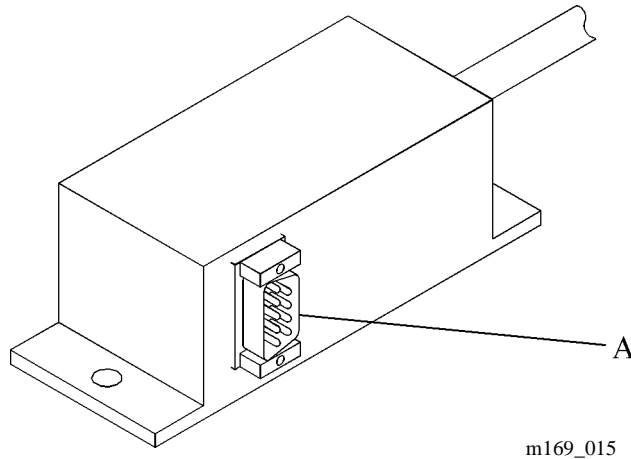
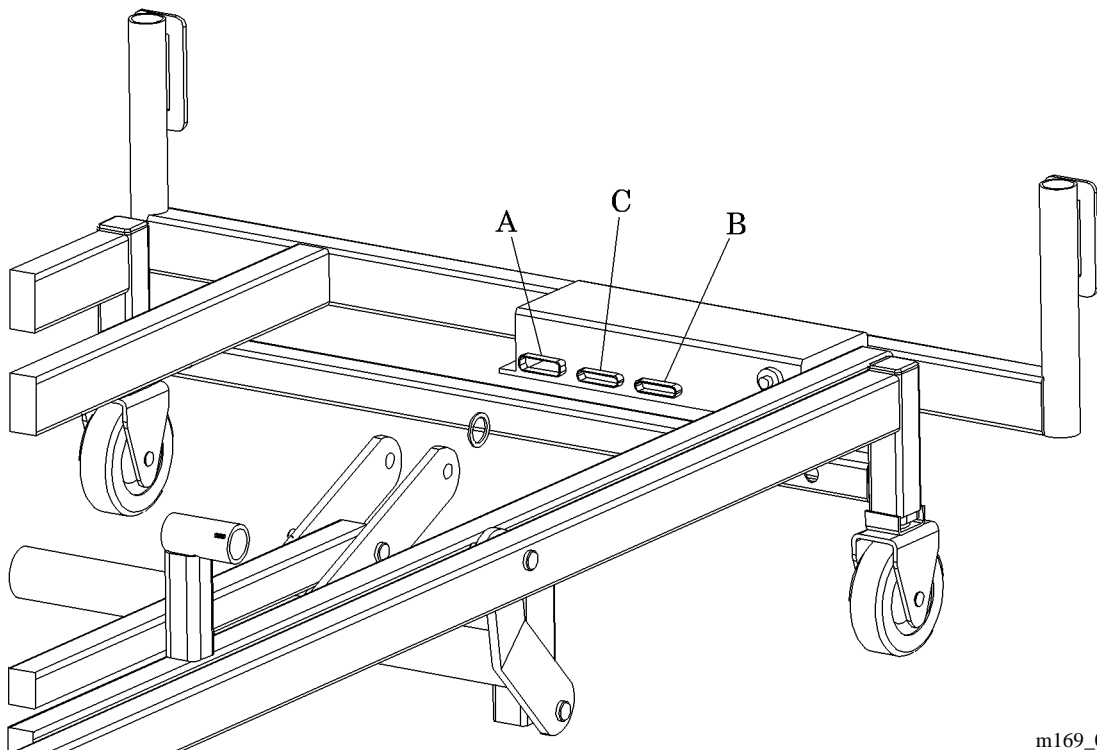


Figure 2-15. Electrical Control Box Connections



m169_086

Yes **No**
↓

→ Plug the pendant securely into the receptacle (A) on the lockout control box or electrical control box. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 3.

3. If the bed is equipped with a lockout control box, the lockout control box cable is securely plugged into its receptacle (A) on the electrical control box, and the cable shows no signs of damage (see figure 2-15 on page 2-26).

Yes **No**
↓

→ If the control cable is damaged, replace the lockout control box (refer to procedure 4.19). If the plug on the control cable is loose, attach it securely to its receptacle (A) on the electrical control box and tighten the side screws. If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 4.

4. The hilow actuator cable is securely plugged into its receptacle (B) on the electrical control box, and the cable shows no signs of damage.

Yes **No**
↓

→ If the plug on the hilow actuator cable is loose, attach it securely to its receptacle (B) on the electrical control box. If the hilow actuator cable is damaged, replace the hilow actuator motor

(refer to procedure 4.17). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 5.

5. The head actuator cable is securely plugged into its receptacle (C) on the electrical control box, and the cable shows no signs of damage.

Yes No

↓

→ If the plug on the head actuator cable is loose, attach it securely to its receptacle (C) on the electrical control box. If the head actuator cable is damaged, replace the head tractor motor (refer to procedure 4.18). If this solves the problem, go to “Final Actions” on page 2-12. If not, continue with step 6.

6. Listen as you press each button on the pendant.

As you press each button, an audible click is heard from the electrical control box.

Yes No

↓

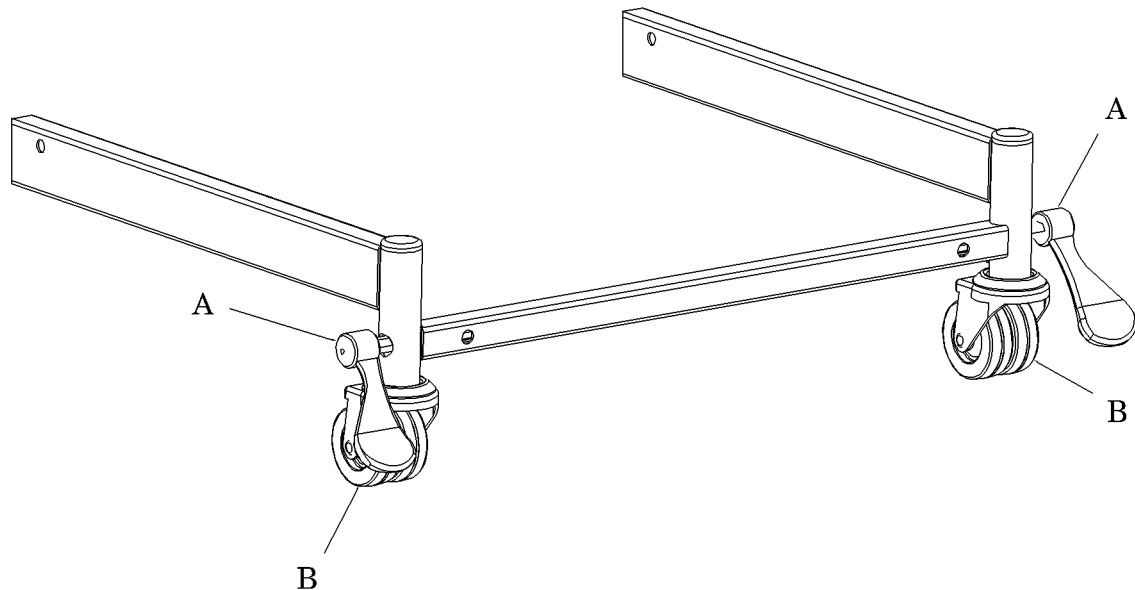
→ If none of the buttons produces a click, replace the electrical control box (refer to procedure 4.16). If only some of the buttons produce a click, replace the pendant with a working model and repeat the test. If this solves the problem, go to “Final Actions” on page 2-12. If not, call Hill-Rom Technical Support at (800) 445-3720.

7. The pendant is functioning normally. Go to “Final Actions” on page 2-12.

2.5 Central Brake Malfunction (Central Brake Option Only)

1. Inspect the brake pedals (A) (see figure 2-16 on page 2-28).

Figure 2-16. Central Brake Components



m169_082

Both brake pedals (A) are whole and in good condition.

Yes	No
↓	→ Replace the damaged brake pedal (A) (refer to procedure 4.2).

2. The brake pedals (A) move with only slight resistance to the “brake” position.

Yes	No
↓	→ Repair or replace the damaged central brake caster (B) (refer to procedure 4.3).

3. Pressing on one brake pedal (A) causes the other to move in the same direction.

Yes	No
↓	→ Repair or replace the damaged central brake caster (B) (refer to procedure 4.3).

4. Both central brake casters (B) lock when the brake pedals (A) are in the “brake” position.

Yes **No**

↓

→ If a central brake caster (B) rolls, replace the damaged central brake caster (B) (refer to procedure 4.3).

5. The central brake option is performing properly. Go to “Final Actions” on page 2-12.

2

NOTES:

Chapter 3

Theory of Operation

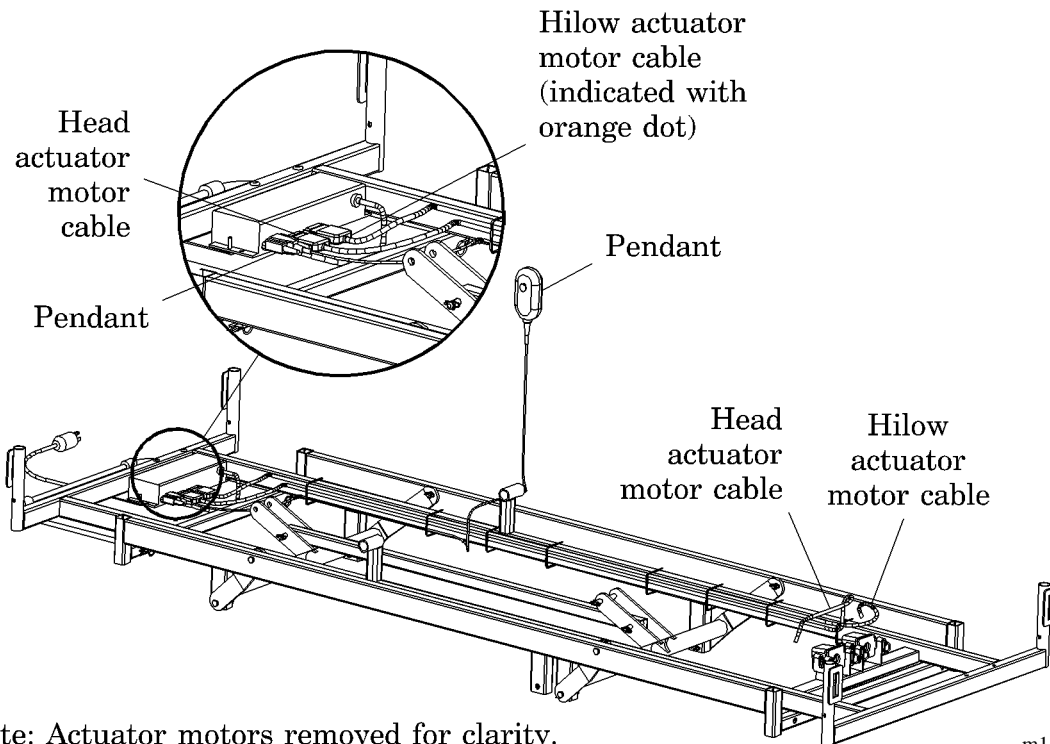
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Electrical Control Box	3 - 4
Lockout Box	3 - 5
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NOTES:

Cable Routing (Electric Drive Model Only)

Figure 3-1. Cable Routing



Theory of Operation

The OSPREY™ LTC Bed is available as a manual drive model or an electric drive model. Except for the operational controls, all components are identical and interchangeable.

The overall design of the bed promotes fast and simplified maintenance and service. Most connectors are clevis pin types with rue ring or cotter pin fasteners. All of the complex systems (such as the actuator screws, and electrical components) are replaced as complete subassemblies that require little effort and few steps to remove and install.

Electrical System (Electric Drive Model Only)

The Repair Analysis Procedures (RAPs) for the OSPREY™ LTC Bed are designed to identify each electrical component as working or not working. No voltage readings or continuity checks are required to make this determination. A component that is diagnosed as not working is removed and replaced with a known working model.

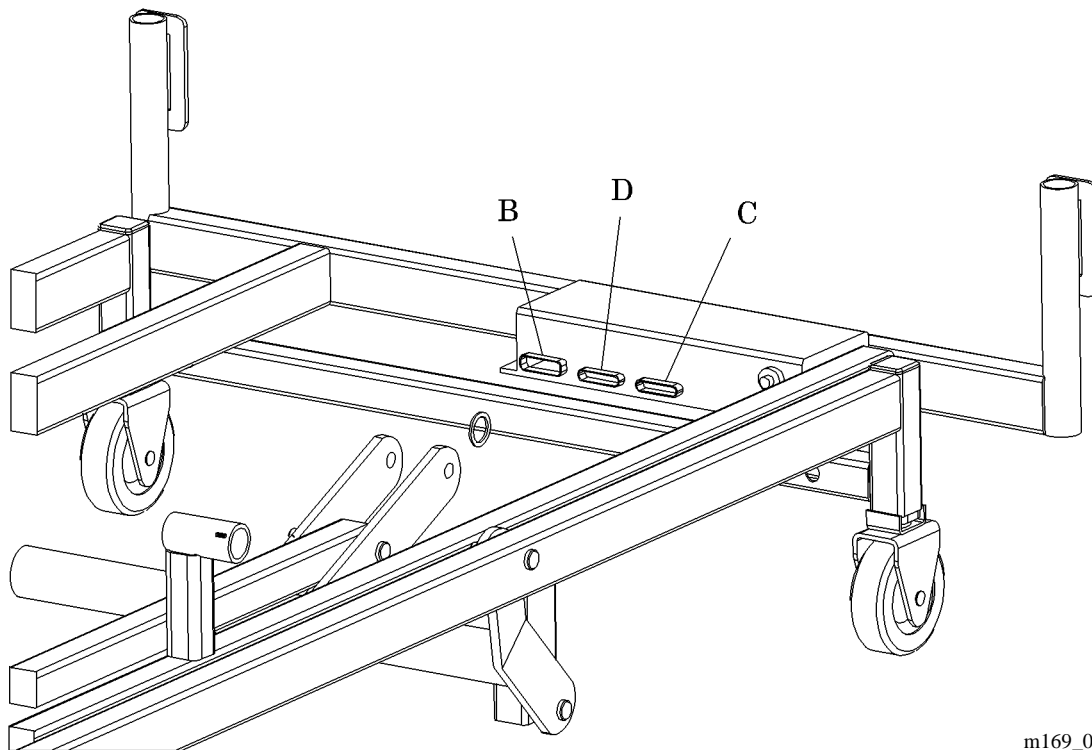
There are five replaceable electrical components on the electrically operated OSPREY™ LTC Bed: the electrical control box, the lockout control box, the hilow actuator motor, the head actuator motor, and the pendant. Each component is described below.

Electrical Control Box

The electrical control box is located at the head end of the bed. There are no user serviceable parts associated with the electrical control box, and it is pop riveted closed.

A power cord (A) brings 120V AC power from the power supply into the unit (see figure 3-2 on page 3-5). The bed is always energized when the power cord is connected to a 120V AC power supply.

Figure 3-2. Electrical Control Box Connections



m169_016

3

The input power is split within the electrical control box. One branch of the AC power is routed through a series of relays to control the actuator motors. A second branch is converted to 24V AC, then rectified to 24V DC and output to the lockout box for the controls.

Multipin receptacles on the electrical control box provide for the attachment of signal/power cables from the pendant or lockout control box (D), and each of the (hilow and head) actuator motors (C and B).

Lockout Box

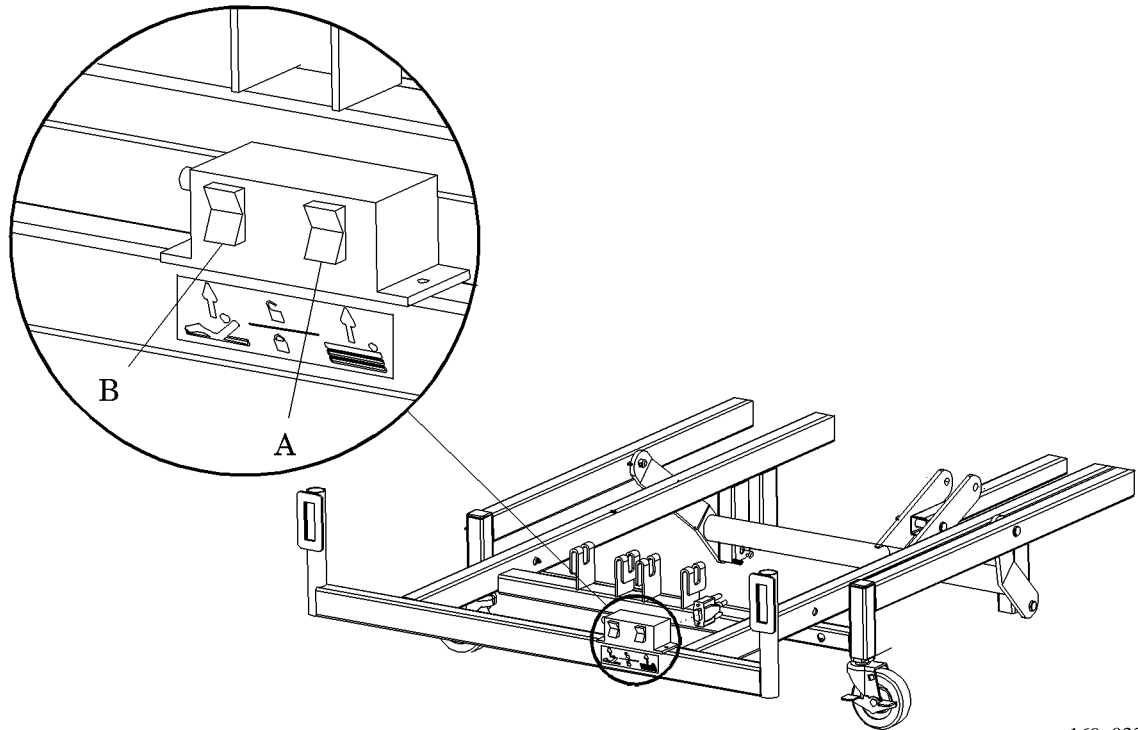
When used, the optional lockout control box is located on the lower bed frame at the foot end of the bed. There are no user serviceable parts associated with the lockout box, and it is pop riveted shut.

The lockout control box connects to the electrical control box through a multipin cable that delivers DC power from the electric control box and returns signals to activate the actuator motors.

The lockout box connects to the pendant through the pendant cable. The pendant provides input on the function to operate and the direction to move.

The lockout box provides the caregiver with the option to disable the hilow function (A), the head function (B), or both (see figure 3-3 on page 3-6). (Automatic contour operation is a mechanical function and is controlled by physically moving a control lever below the seat section.)

Figure 3-3. Lockout Box Controls



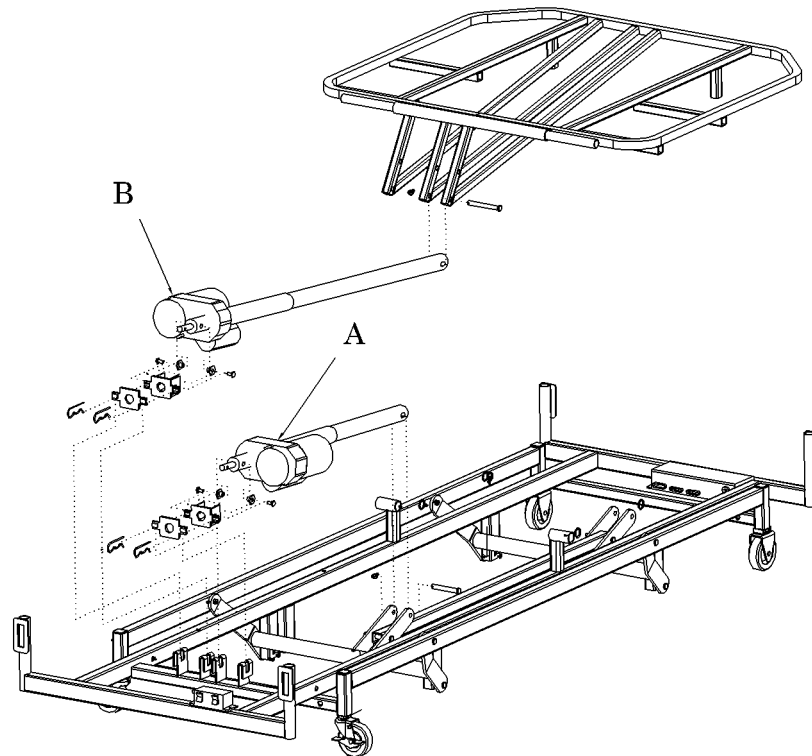
m169_033

Either function is disabled by pushing the bottom of the switch in or enabled by pushing the top of the switch in.

Hilow and Head Actuator Motors

The hilow actuator motor (A) is mounted at the foot end of the hilow actuator subassembly on the resident left side of the OSPREY™ LTC Bed (see figure 3-4 on page 3-7).

Figure 3-4. Hilow and Automatic Contour Actuators



m169_034

The head actuator motor (B) is mounted at the foot end of the head actuator subassembly on the resident right side of the OSPREY™ LTC Bed.

A cable connects the individual actuator motors to the electrical control box. The power cable delivers 120V AC power from the electrical control box to the actuator motor.

Each actuator motor is permanently lubricated and has electronic overload protection, thermal overload protection, as well as limit switches for motor cut off determining its retracted and extended position.

There are no serviceable parts in the actuator motors and no electrical measurements are made to diagnose problems with them. If diagnostic procedures indicate a problem in any part of the actuator circuit (connectors, cords, motors, or mechanical components), the actuator assembly is replaced by a new unit.

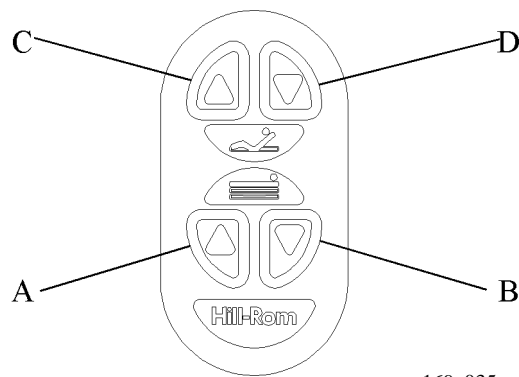
Pendant

The pendant is connected to the lockout box by the pendant cable. The pendant is typically hung on the siderail for convenient access by the resident and caregiver.

The following four graphically identified buttons on the pendant provide control over all of the electrically operated functions (see figure 3-5 on page 3-8):

- Hilow up (A)
- Hilow down (B)
- Head up (C)
- Head down (D)

Figure 3-5. Pendant Controls



m169_035

The caregiver can disable any of the pendant commands through the lockout box (optional).

Chapter 4

Removal, Replacement, and Adjustment Procedures

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NOTES:

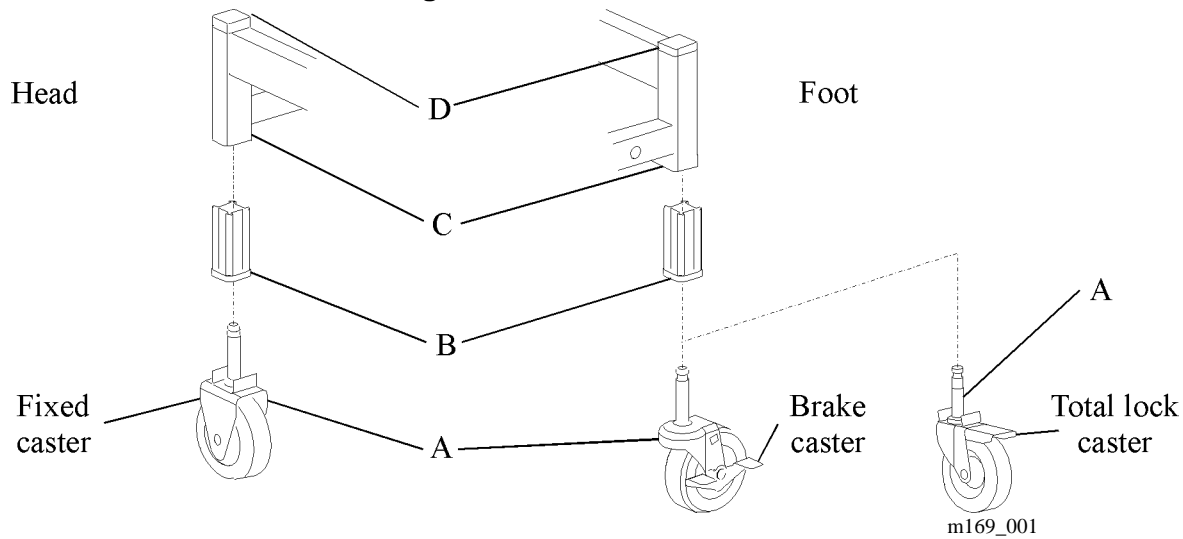
4.1 Casters

Tools required: Screwdriver
 Hammer
 Jack stand

Removal

1. Move the bed to a convenient working location.
2. Using the jack stand, raise the bed frame high enough to remove the caster.
3. Pull down on the caster (A) to remove it from the caster socket (B) (see figure 4-1 on page 4-5).

Figure 4-1. Standard Casters



CAUTION:

Examine the caster socket for cracks or breaks. Installing a new caster in a defective caster socket will lead to early failure of the new caster. Equipment damage could result.

4. Remove the tube cap (D). Using a hammer and screwdriver, push the caster socket (B) out of the frame leg (C).
5. Examine the caster socket (B), and discard it if it shows evidence of cracks or breaks. If the caster socket is sound, retain it.

Replacement

1. Push a caster socket (B) into the frame leg (C) until the flange seats against the metal (see figure 4-1 on page 4-5). Use a hammer, if necessary (this should be a tight fit).
2. Select the appropriate caster for the position:
 - Install fixed, free wheeling casters at the head end.
 - Install brake or (optional) total lock casters at the foot end.
3. Insert the caster (A) completely into the caster socket (B).

4.2 Central Brake Pedal (Central Brake Option Only)

Tools required: #3 allen wrench

Removal

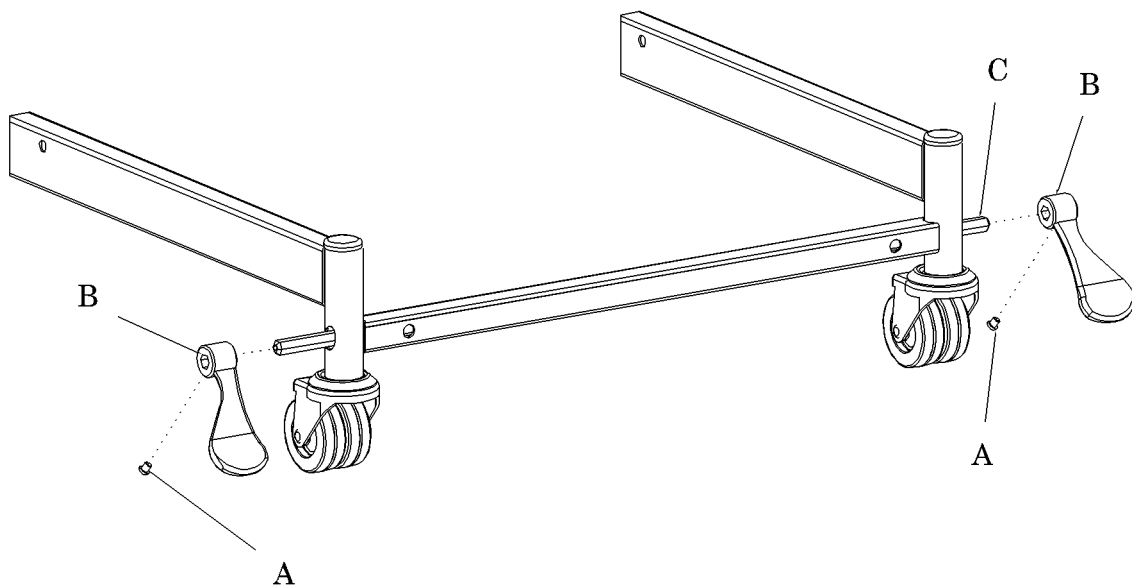


WARNING:

Set the brakes before working on the bed. Failure to do so could result in personal injury or equipment damage.

1. Position the bed to provide easy access to the foot end, and set the brakes.
2. Using a #3 allen wrench, remove the setscrew (A) securing the brake pedal (B) to the hex rod (C) (see figure 4-2 on page 4-7).

Figure 4-2. Central Brake Pedal



m169_083

3. Remove the brake pedal (B) from the hex rod (C).

Replacement



WARNING:

Assemble the central brake mechanism in the “neutral” position. Ensure the components are properly aligned during assembly. Failure to do so could result in personal injury or equipment damage.

1. Set the central brake mechanism to the “neutral” position.
2. Align the brake pedal (B) so it is parallel to the ground, and assemble it onto the hex rod (C).
3. Using a #3 allen wrench, install the setscrew (A) to secure the brake pedal (B) to the hex rod (C).

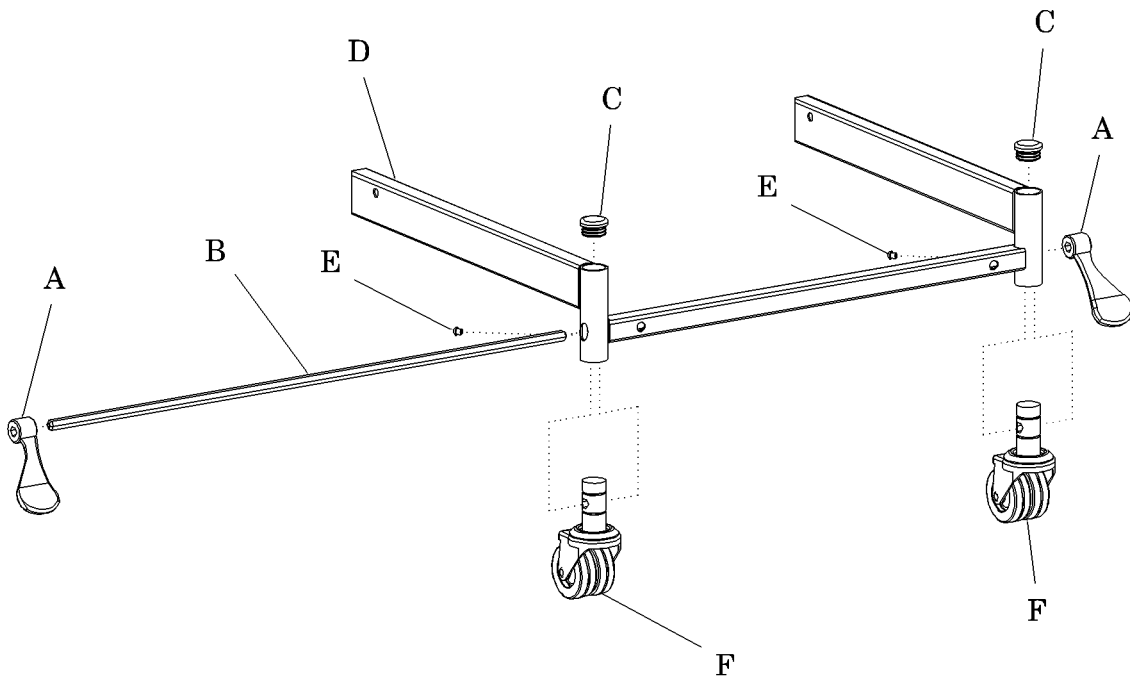
4.3 Central Brake Caster (Central Brake Option Only)

Tools required: Allen wrench
Screwdriver
Jack stand

Removal

1. Position the bed to provide easy access to the foot end.
2. Using a jack stand, raise the bed frame high enough to remove the caster.
3. Remove the brake pedal (A) from the hex rod (B) (refer to procedure 4.2) (see figure 4-3 on page 4-9).

Figure 4-3. Central Brake Caster



m169_084

4. Set the brake mechanism to the “neutral” position.
5. Using a screwdriver, remove the round tube plug (C) from the base frame assembly (D).
6. Using an allen wrench, remove the button socket cap screw (E) securing the central brake caster (F) to the base frame assembly (D).

7. Pull the hex rod (B) from the opposite end of the base frame assembly (D) until it is free of the central brake caster (F).
8. Remove the central brake caster (F) from the base frame assembly (D).

Replacement



WARNING:

Assemble the central brake mechanism in the “neutral” position. Ensure the components are properly aligned during assembly. Failure to do so could result in personal injury or equipment damage.

1. Ensure the central brake mechanism is set to the “neutral” position.
2. Align the central brake caster (F) holes with the base frame assembly (D) holes, and install the central brake caster (F) to the base frame assembly (D).
3. Using an allen wrench, install the button socket cap screw (E) securing the central brake caster (F) to the base frame assembly (D).
4. Install the hex rod (B) through the base frame assembly (D) and the central brake caster (F).
5. Install the brake pedal (A) to the hex rod (B) (refer to procedure 4.2).
6. Install the round tube plug (C) to the base frame assembly (D).
7. Lower the bed, and remove the jack stand.

4.4 Deck Hinge

Tools required: Drill
 1/4" drill bit
 Screwdriver
 Pop rivet gun

Removal

**WARNING:**

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Use the hilow control to raise the bed to its highest position.

**WARNING:**

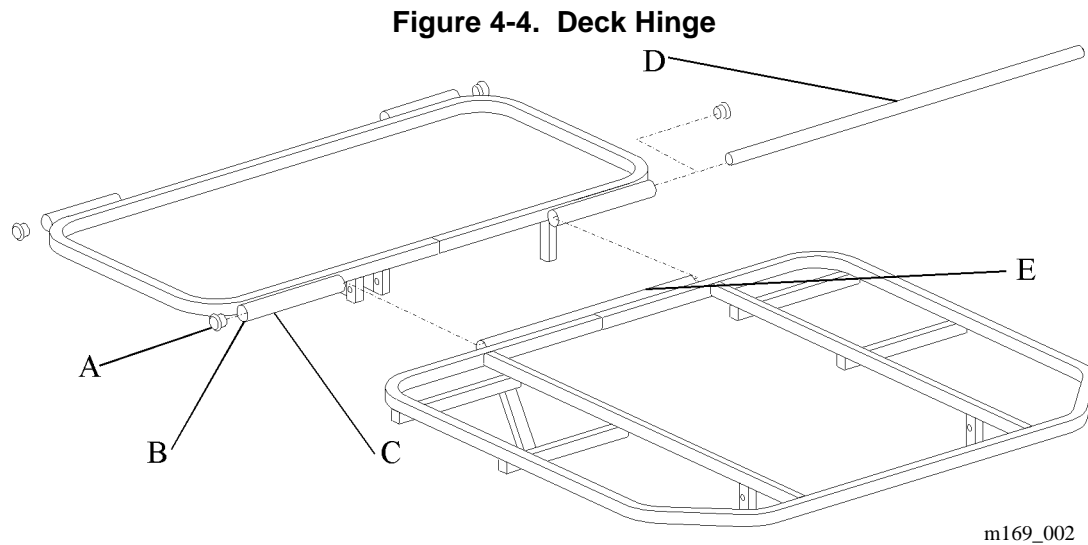
The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

3. **Electric drive model only**—Unplug the bed from its power source.

NOTE:

The figure in this procedure shows the removal and replacement of the deck hinge between the seat section and the foot section. The procedure for the removal and replacement of the deck hinge between the seat section and the head section is identical.

4. Using a screwdriver, carefully remove the plugs (A) from both outside ends of the seat section hinge bracket (B) (see figure 4-4 on page 4-12).



5. Drill out the pop rivets (C) on the underside of each seat section hinge bracket (B).
6. Slide the deck hinge (D) out of the seat section hinge bracket (B).

Replacement

1. Place the foot (or head) deck section on the frame, and align the foot (or head) section hinge bracket (E) between the seat section hinge brackets (B).
2. Slide the deck hinge (D) through the hinge brackets (B and E).
3. Align the holes in the deck hinge (D) with the holes in the underside of the seat section hinge brackets (B).
4. Install a pop rivet (C) through both seat section hinge brackets (bottom side only) (B) into the deck hinge.
5. Install the end caps (A).

4.5 Hilow Actuator (Manual Drive Model Only)

Tools required: Pliers

Removal

**WARNING:**

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

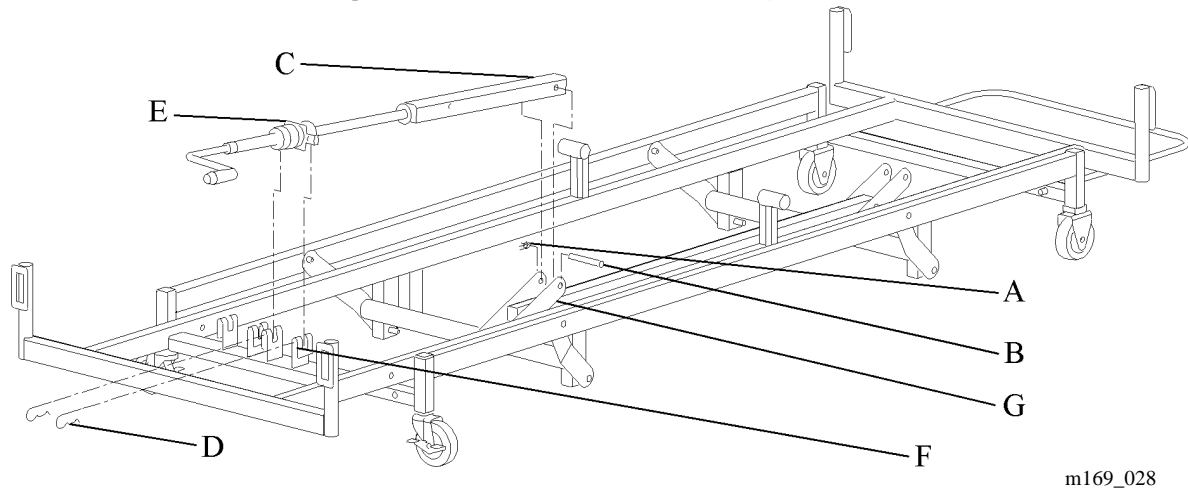
1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove any mattress from the bed.

**WARNING:**

If the bed cannot be lowered to the lowest position, brace the upper frame sections so they do not collapse suddenly when the support of the actuator is removed. Failure to do so could result in personal injury.

3. If possible, lower the bed to the full down position. If the bed cannot be lowered, brace the upper frame sections securely.
4. Remove the pins at the foot end of the end frame holding the foot section down.
5. Lay the foot section deck back on the knee and head section.
6. Remove the rue ring (A) from the clevis pin (B) at the head end of the hilow actuator extension (C), and pull the clevis pin (B) off (see figure 4-5 on page 4-14).

Figure 4-5. Hilow Actuator Components



m169_028

7. Remove the cotter pins (D) securing the hilow actuator mounting plates (E) to the mounting brackets (F) at the foot of the bed.
8. Lift the head actuator out of the mounting brackets (F).
9. If braces were installed, support the upper frame, remove the braces, and lower the upper frame to the full down position.

Replacement

1. Align the holes in the hilow actuator extension (C) with the holes in the front of the pivot connector (G).
2. Install a clevis pin (B) through the aligned holes, and secure it with a rue ring (A).
3. Pivot the actuator mounting plate (E) into the openings on the top of the mounting brackets (F).
4. Install a cotter pin (D) through each wing of the mounting plate (E).

4.6 Head Actuator (Manual Drive Bed Only)

Tools required: Pliers

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove any mattress from the bed.

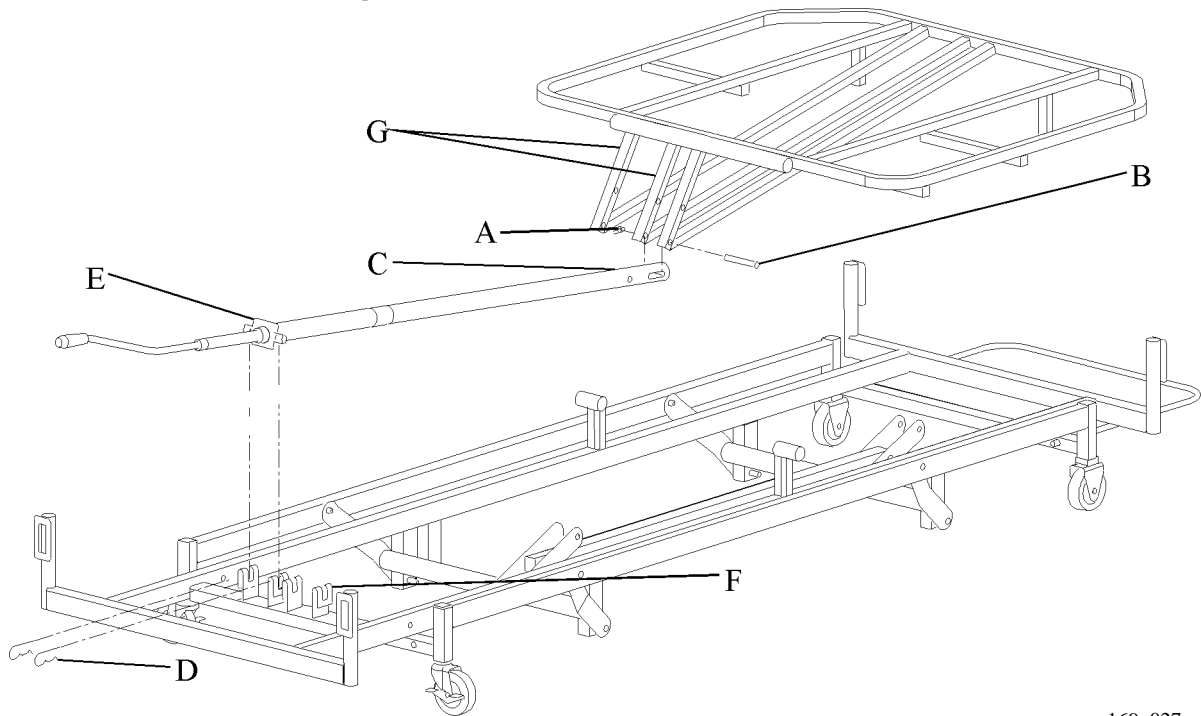


WARNING:

If the bed cannot be lowered to the full flat position, brace the head, seat, and foot sections so they do not collapse suddenly when the support of the actuator is removed. Failure to do so could result in personal injury.

3. If possible, lower the bed to the full flat position. If the bed cannot be lowered, brace the head, seat, and foot sections securely
4. Remove the pins at the foot end of the midframe holding the foot section down.
5. Lay the foot section deck back on the knee and head section.
6. Remove the rue ring (A) from the clevis pin (B) at the head end of the head actuator extension (C), and pull the clevis pin (B) (see figure 4-6 on page 4-16).

Figure 4-6. Head Actuator Components



m169_027

7. Remove the cotter pins (D) securing the head actuator mounting plates (E) to the mounting brackets (F) at the foot of the bed.
8. Lift the head actuator out of the mounting brackets (F).
9. If braces were installed, support the upper frame members, remove the braces, and lower frame members to the full flat position.

Replacement

1. Align the holes in the head actuator extension (C) with the holes in the outside and center head section supports (G).
2. Install a clevis pin (B) through the aligned holes, and secure it with a rue ring (A).
3. Pivot the actuator mounting plate (E) into the openings on the top of the mounting brackets (F).
4. Install a cotter pin (D) through each wing of the mounting plate (E).

4.7 Foot Section Deck

Tools required: Pliers



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove any mattress from the bed.
3. Use the hilow control to lower the bed to its lowest position.
4. Use the head control to lower the bed to its full flat position.

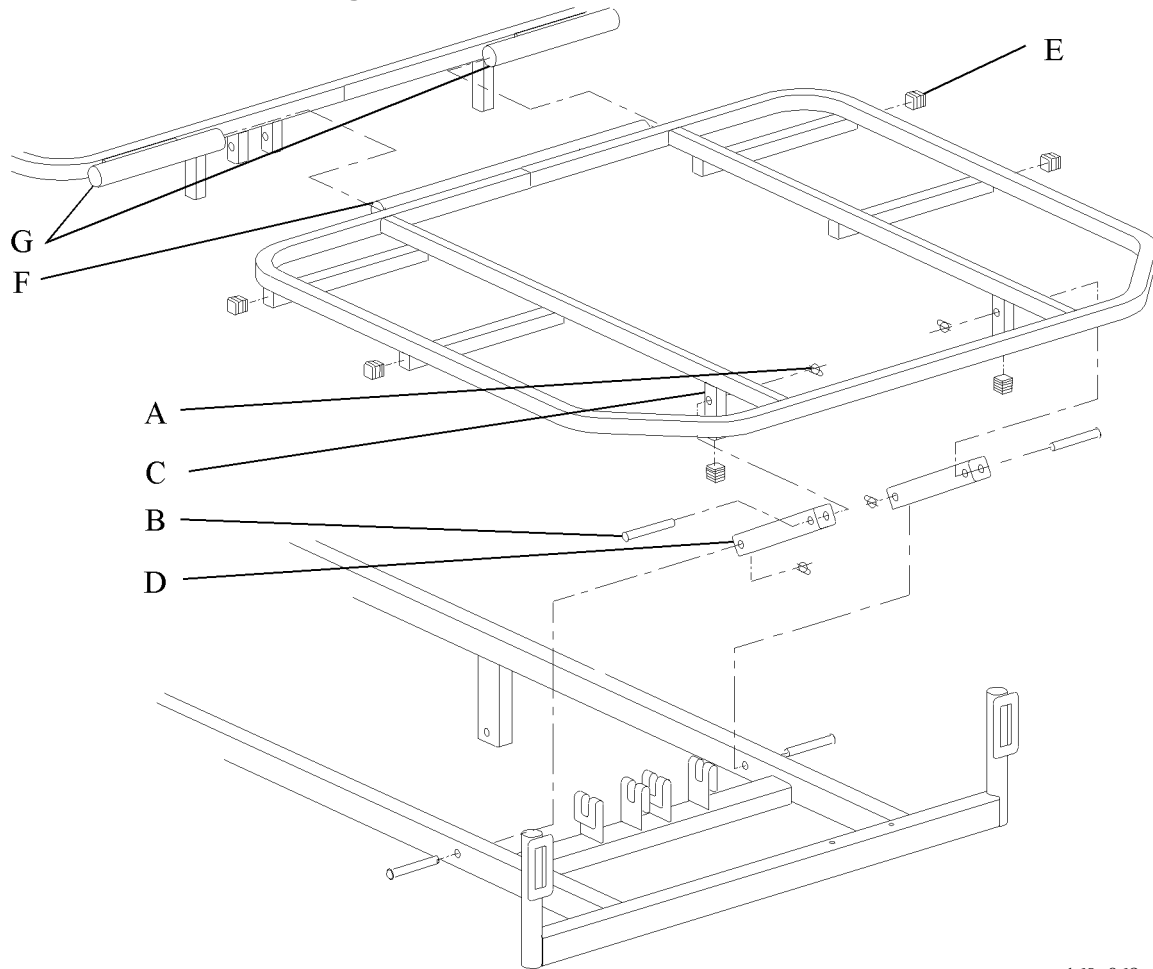


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

5. **Electric drive model only**—Unplug the bed from its power source.
6. If the bed is equipped with optional foot end siderails, remove them (refer to procedure 4.12).
7. Remove the hinge between the foot and seat sections (refer to procedure 4.2).
8. Remove the rue ring (A) from the clevis pin (B) that connects the foot section upright (C) from the pivot connector (D) (see figure 4-7 on page 4-18).

Figure 4-7. Foot Section Connections



m169_068

9. Lift the foot section off the bed.
10. Remove and inspect all caps (E). If the caps (E) are in good condition, reuse them.

Replacement

1. Place foot section deck the hinge tube (F) between the seat section hinge tubes (G).
2. Install the hinge (refer to procedure 4.2).
3. Align the hole in bottom of the foot section upright (C) with the hole in the top of the pivot support (D).

4. Install a clevis pin (B) through the aligned holes, and secure it with a rue ring (A).
5. Install the foot end siderails, if equipped (refer to procedure 4.12).
6. Install the caps (E) in the bottom of the support legs and in all siderail mounting tubes if the bed is not equipped with optional food end siderails.

4.8 Seat Section Deck

Tools required: Pliers



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

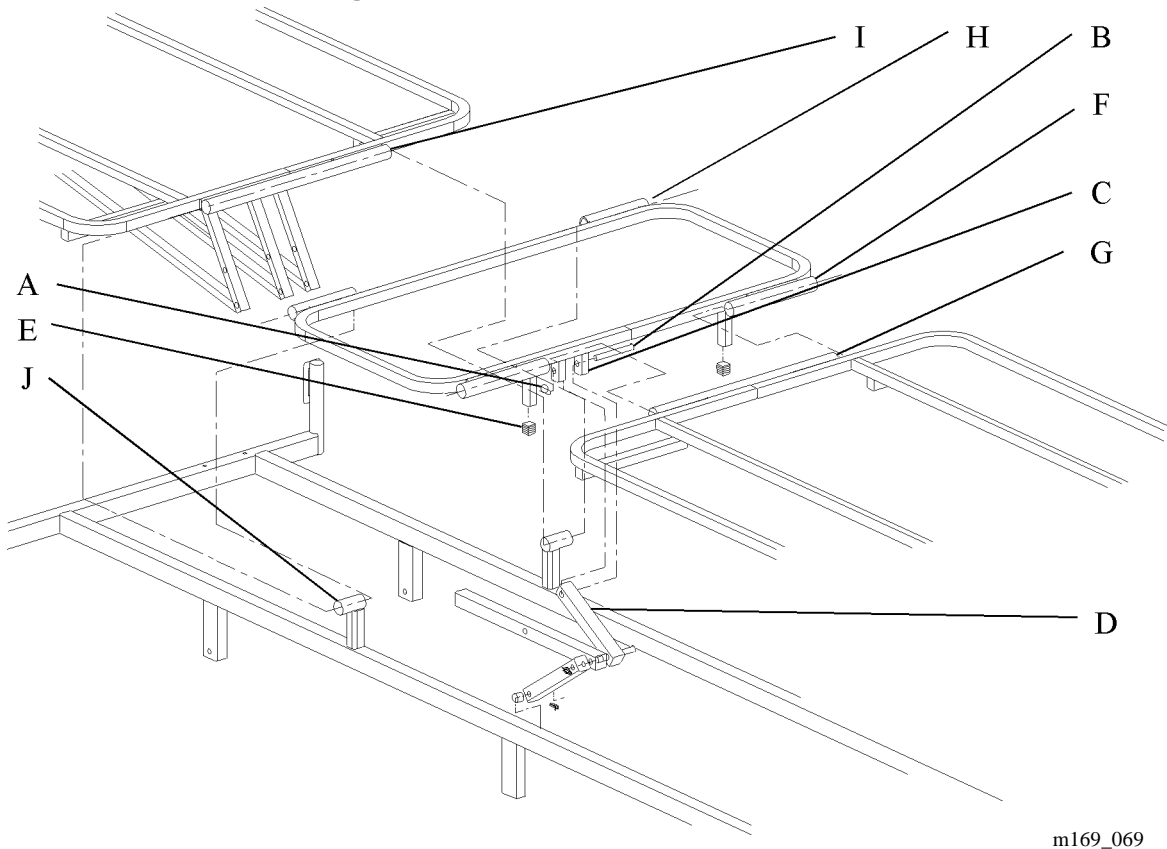
1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove any mattress from the bed.
3. Use the hilow control to lower the bed to its lowest position.
4. Use the head control to lower the bed to its full flat position.



WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

5. **Electric drive model only**—Unplug the bed from its power source.
6. Remove the hinge between the foot and seat sections (refer to procedure 4.2).
7. Remove the rue ring (A) securing the clevis pin (B) through the supports (C) and pivot connector (D) at the foot end of the seat section (see figure 4-8 on page 4-21).

Figure 4-8. Seat Section Connections

m169_069

NOTE:

Support the head end of the seat section as you pull the seat/head hinge rod.

8. Remove the hinge between the seat and head sections (refer to procedure 4.2).
9. Lift the seat section out of the bed.
10. Remove and inspect all caps (E). If the caps (E) are in good condition, reuse them.

Replacement

1. Install the caps (E) in both support legs.
2. Align the hinge tube (H) at the head end of the seat section with the hinge tube on the midframe (J) and the hinge tube (I) on the head section.
3. Install the seat/head hinge rod (refer to procedure 4.2).

4. Align the hinge tube (F) at the foot end of the seat section with the hinge tube (G) on the seat section.
5. Install the seat/foot hinge rod (refer to procedure 4.2).
6. Align the hole at the top of the pivot connector (D) with the holes in the supports (C) at the foot end of the seat section.
7. Install a clevis pin (B) through the aligned holes, and secure it with a rue ring (A).

4.9 Head Section Deck

Tools required: Pliers



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove any mattress from the bed.
3. Use the hilow control to lower the bed to its lowest position.
4. Use the head control to lower the bed to its full flat position.

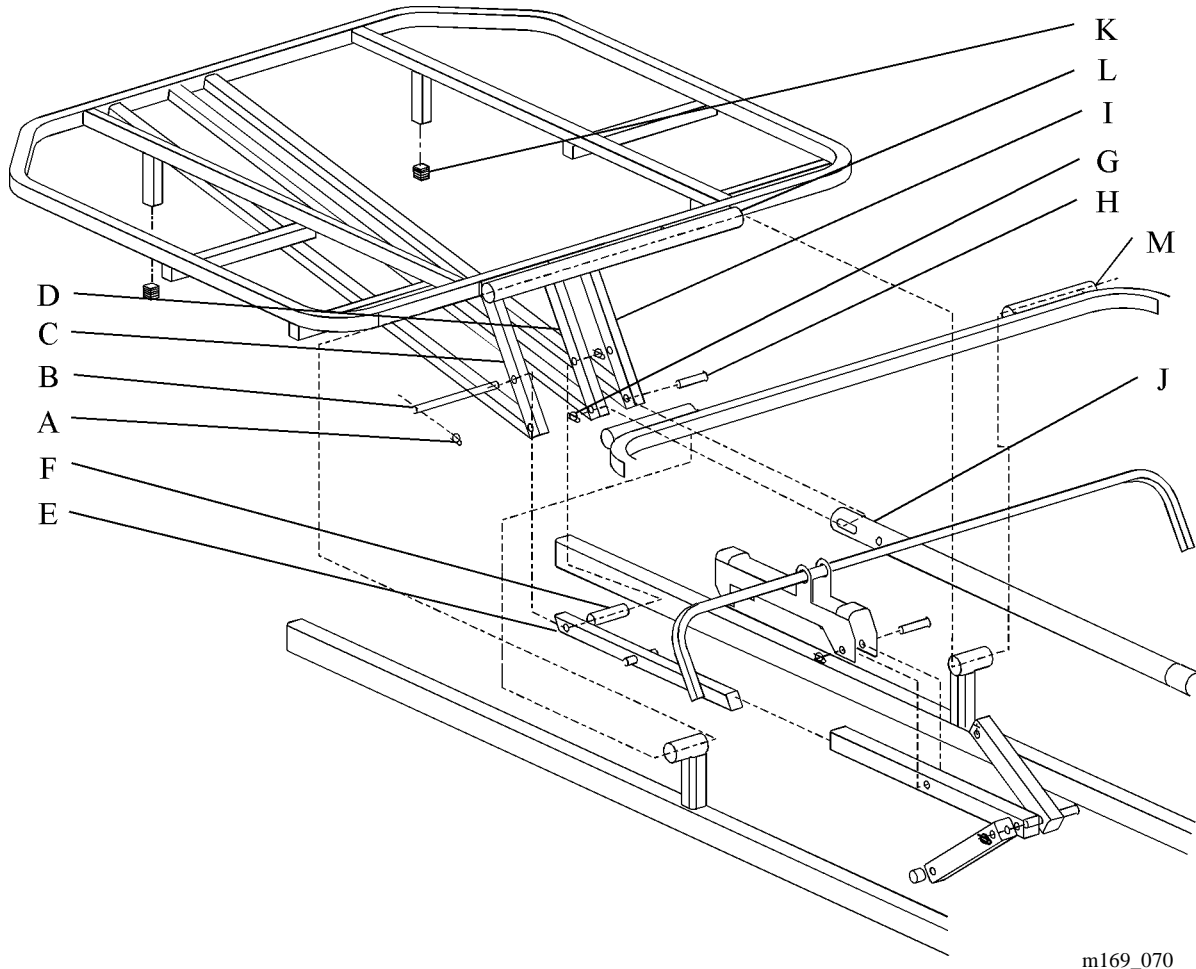


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

5. **Electric drive model only**—Unplug the bed from its power source.
6. Remove the siderails (refer to procedure 4.12).
7. Remove the hinge between the seat and head sections (refer to procedure 4.2).
8. Remove the rue rings (A) securing the headless clevis pin (B) through right (C) and center (D) support members and head lockout inner tube (E) (see figure 4-9 on page 4-24).

Figure 4-9. Head Section Connections



m169_070

9. Remove the clevis pin (B) and spacer (F).
10. Remove the ring (G) securing the clevis pin (H) through the center (D) and left (I) support members and the head actuator extension tube (J).
11. Lift the head section off the bed.
12. Remove and inspect the caps (K) in the bottom of the support legs. If the caps (K) are in good condition, retain them.

Replacement

1. Install the caps (K) in both support legs.
2. Align the head section hinge tube (L) between the seat section hinge tubes (M).

3. Install the seat/head hinge rod (refer to procedure 4.2).
4. Align the hole at the head end of the head actuator extension tube (J) with the bottom holes in the left (I) and center (D) support members.
5. Install a clevis pin (H) through the aligned holes, and secure it with a rue ring (G).
6. Align the hole at the head end of the head lockout inner tube (E) with the top holes in the right (C) and center (D) support members.
7. Place a spacer (F) between the head lockout inner tube (E) and the center (D) support member.
8. Install a headless clevis pin (B) through the aligned holes, and secure it with rue rings (A) on both sides.

4.10 Support Members

Tools required: Pliers

NOTE:

The removal and replacement steps in this procedure cover only the support members not discussed in other procedures. Refer to the Chapter 4 Table of Contents to find specific procedures for subassemblies and subsystems.

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove any mattress from the bed.



WARNING:

If the bed cannot be lowered to the lowest position, brace the upper frame sections so they do not collapse suddenly when the support member is removed. Failure to do so could result in personal injury.

3. If possible, lower the bed to the full down position. If the bed cannot be lowered, brace the upper and intermediate frame sections securely.



WARNING:

If the bed cannot be lowered to the full flat position, brace the head, seat, and foot sections so they do not collapse suddenly when the support member is removed. Failure to do so could result in personal injury.

4. If possible, lower the bed to the full flat position. If the bed cannot be lowered, brace the head, seat, and foot sections securely.

**WARNING:**

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

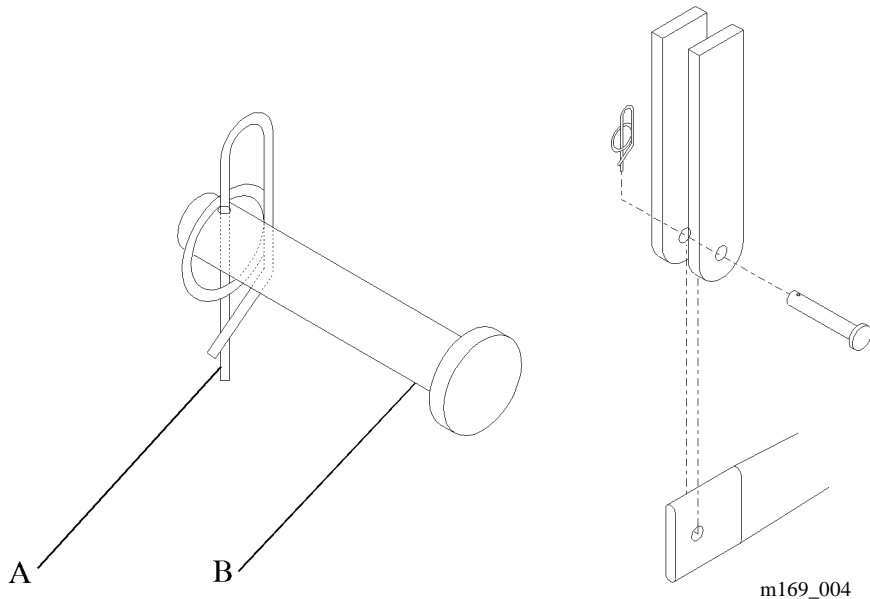
5. **Electric drive model only**—Unplug the bed from its power source.

6. Lay the foot deck back on the seat and head sections.

NOTE:

All support members are secured to one or more of the frame sections with a rue ring (A) and clevis pin (B) (see figure 4-10 on page 4-27). All rue rings are the same size. Clevis pin lengths vary.

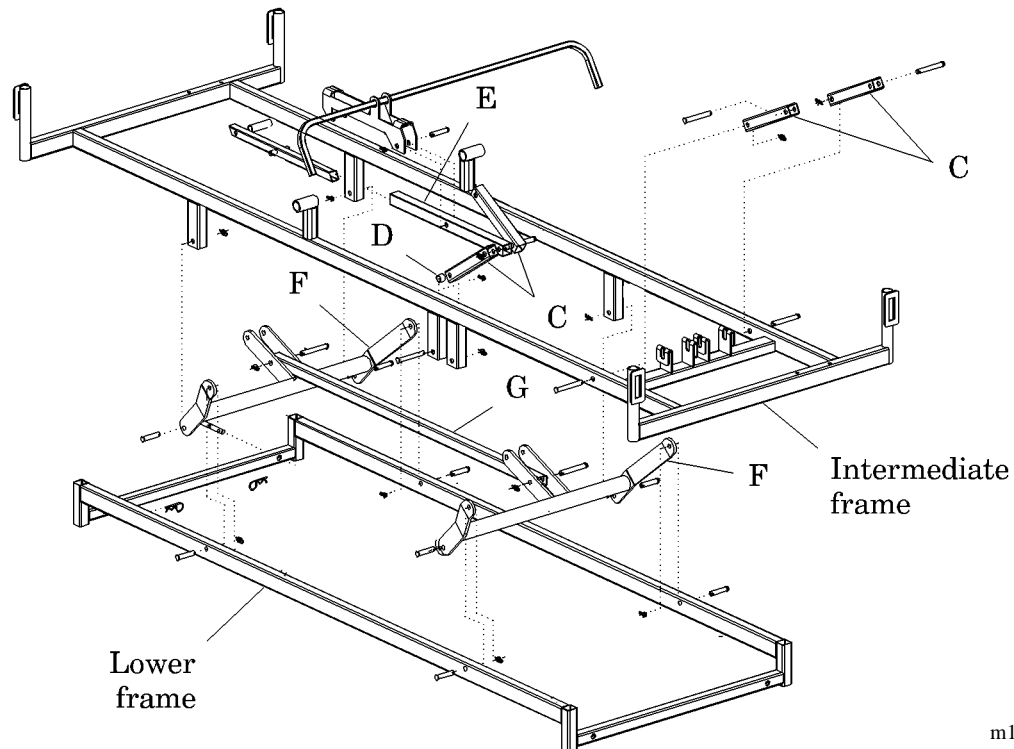
Figure 4-10. Support Member Connectors



7. Remove the rue ring, and pull the clevis pin that connects the support member to the following components (see figure 4-11 on page 4-28):

- Knee linkage (C)
- Spacer (D)
- Head lockout outer tube (E)
- Hilow weldment (F)
- Pivot connector (G)

Figure 4-11. Support Member Locations



m169_071

Replacement

1. Align the holes in the support member with the matching hole on the frame or neighboring support member.

NOTE:

When installing the right knee linkage (C) on the head lockout outer tube (E), install a spacer (D) between the knee linkage (C) and the intermediate frame.

2. Install a clevis pin (B) through the aligned holes, and secure it with a ring (A) (see figure 4-10 on page 4-27).

4.11 Bumper

Tools required: Pliers

Removal

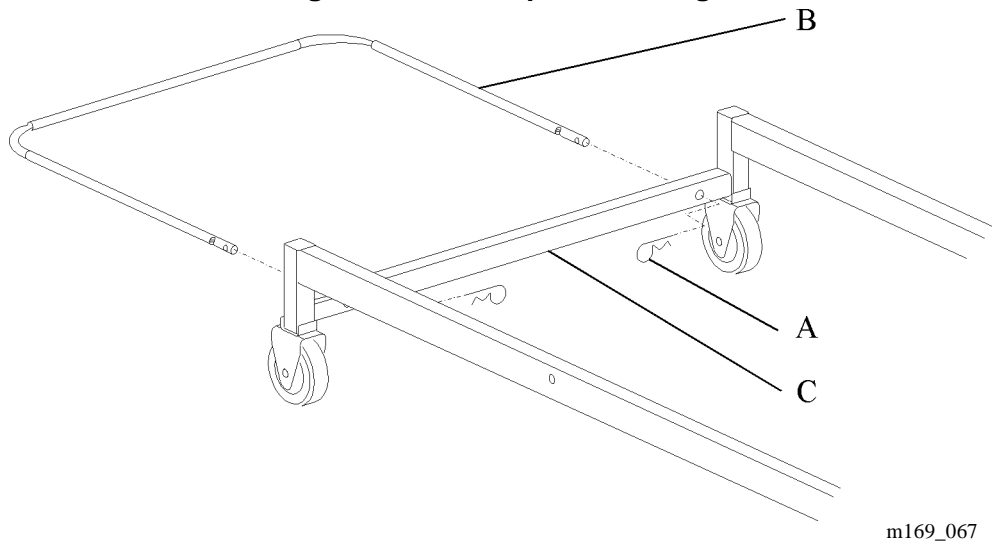


WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove the cotter pins (A) bumper legs (see figure 4-12 on page 4-29).

Figure 4-12. Bumper Mounting



3. Pull the bumper (B) out of the base frame head member (C).

Replacement

1. Insert the bumper (B) into the base frame head member (C). Ensure that the stops rest against the base frame head member (C).
2. Install a cotter pin (A) through the hole in the end of each leg of the bumper.

4.12 Siderail

Tools required: Pliers

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

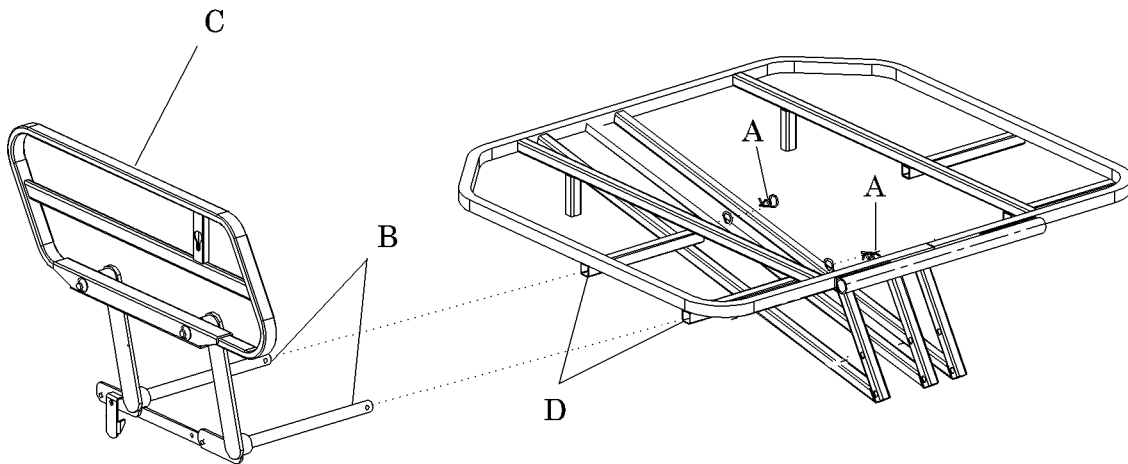
1. Move the bed to a convenient working location, and lock all caster brakes.
2. Raise the head to gain access to the underside of the deck.



WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

3. **Electric drive model only**—Unplug the bed from its power source.
4. Remove the two pins (A) from the siderail mounting bars (B) (see figure 4-13 on page 4-31).

Figure 4-13. Siderail Connection Locations

Note: Head end siderail shown.

m169_003

5. Pull the siderail assembly (C) outward from the mounting tubes (D).

Replacement

NOTE:

Siderails are available as left and right head end models and right and left foot end models. Ensure that you have the correct siderail model for the application.

1. Align the siderail mounting bars (B) with the mounting tubes (D) beneath the deck frame assembly.
2. Slide the siderail mounting bars (B) into the mounting tubes (D).
3. Install a pin (A) in each siderail mounting bar (B).
4. Raise and lower the siderail assembly (C), and ensure it functions correctly.

4.13 Siderail Latch

Tools required: 1/8" allen wrench
3/8" open end wrench

Removal

**WARNING:**

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

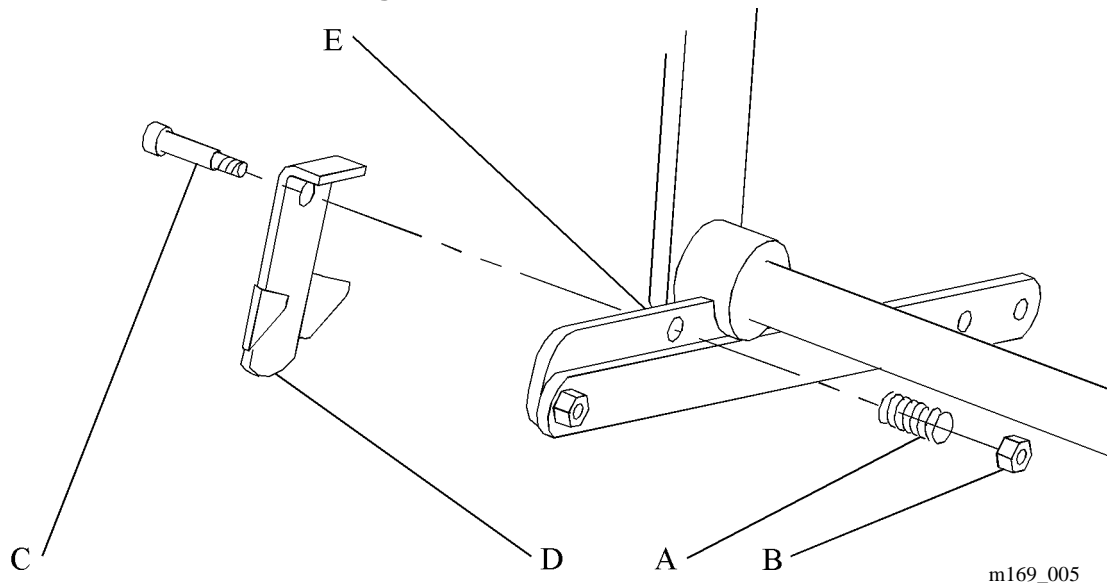
1. Move the bed to a convenient working location, and lock all caster brakes.
2. Lower the siderail.

NOTE:

As you remove the nut from the siderail latch bolt, keep pressure on the latch to prevent the spring from expanding suddenly.

3. Secure the latch spring (A) as you remove the nylon insert nut (B) that secures the shoulder screw (C) (see figure 4-14 on page 4-32). Discard the nylon insert nut (B).

Figure 4-14. Siderail Latch



4. Remove the shoulder screw (C) and latch (D) from the siderail.

Replacement

1. Place the latch (D) on the siderail mounting plate (E), and align the holes.
2. Install a shoulder screw (C) through the latch (D), and siderail mounting plate (E).

**WARNING:**

Use a new nylon insert nut. Installation of used nylon insert nuts could result in personal injury or equipment damage.

3. From the back of the rear siderail mounting plate (E), install the latch spring (A) and a new nylon insert nut (B) on the shoulder screw (C).
4. Perform an operational check of siderail latch.

4.14 Automatic Contour Control

Tools required: Pliers

Removal



WARNING:

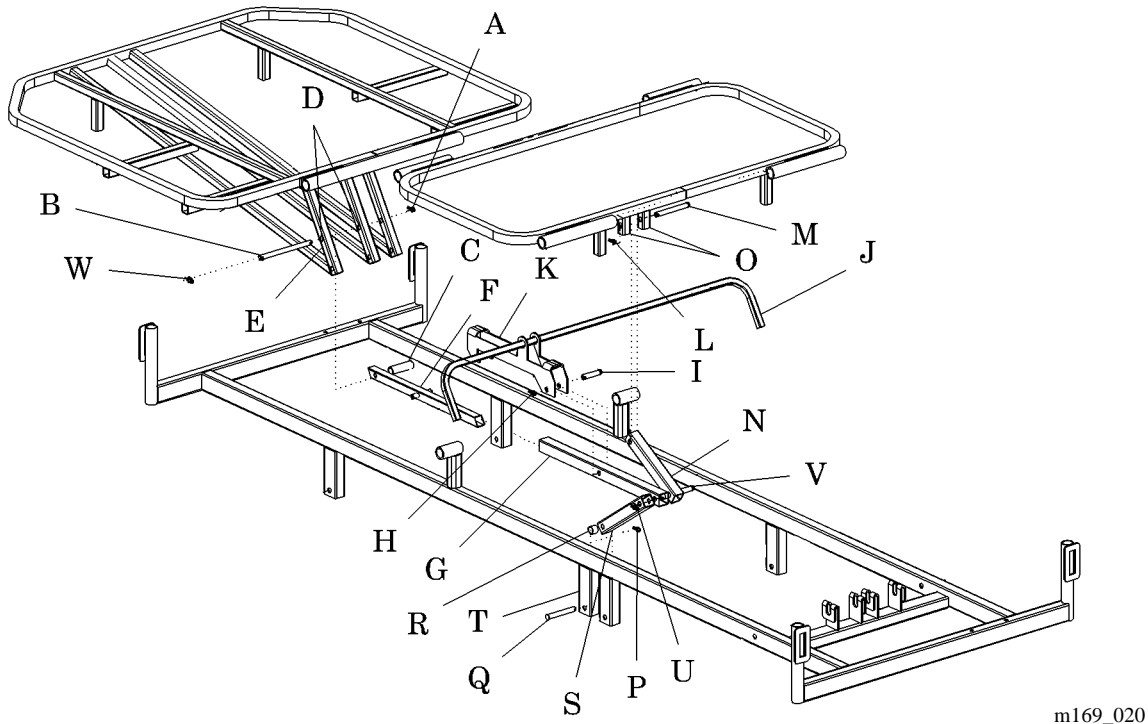
Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Lower the head, seat, and thigh sections to the full flat position.
3. Raise the deck to its highest position.

NOTE:

As you remove the straight pin, be prepared to catch the spacer between the internal tube and head section supports.

4. Remove the rue ring (A) from the straight pin (B) under the head section (see figure 4-15 on page 4-35).

Figure 4-15. Automatic Contour Control Components

5. Secure the spacer (C) as you remove the straight pin (B) through the upper holes (D) in the head section supports (E).
6. Pull the internal tube (F) toward the head end to remove it from the external tube (G).
7. Remove the rue ring (H) from the clevis pin (I).
8. Hold the automatic contour engagement lever (J) as you remove the clevis pin (I) from the external tube (G).
9. Pull the automatic contour engagement lever (J) and automatic contour lock (K) from under the bed.
10. Pull the rue ring (L) from the clevis pin (M).
11. Support the left connector tube (N) as you pull the clevis pin (M) from the mounting tubes (O) under the left side head section.
12. Pull the rue ring (P) from the clevis pin (Q).

13. Support the spacer (R) as you remove the clevis pin from the right connector tube (S) and intermediate frame support leg (T).
14. Remove the rue ring (U) from the clevis pin (V).
15. Pull the clevis pin (V) from the right connector tube (S), external tube (G), and left connector tube (N).

Replacement

1. Align the holes in the ends of the right connector tube (S), external tube (G), and left connector tube (N).
2. Install a clevis pin (V) through the aligned holes, and secure it with a rue ring (U).
3. Place a spacer (R) between the intermediate frame support leg (T) and the right connector tube (S), and align the holes.
4. Install a clevis pin (Q) through the aligned holes, and secure it with a rue ring (P).
5. Place the head end of the left connector tube (N) between the mounting tubes (O) under the left head section, and align the holes.
6. Install a clevis pin (M) through the aligned holes, and secure it with a rue ring (L).
7. Insert the automatic contour engagement lever (J) into the automatic contour lock (K).
8. Position the holes in the end of the automatic contour lock (K) on the external tube (G), and align the holes.
9. Install a clevis pin (I) through the aligned holes, and secure it with a rue ring (H).
10. Slide the end of the internal tube (F) without a hole into the external tube (G).
11. Align the hole on the head end of the internal tube (F) with the top hole (D) on the right head section support (E).
12. Place a spacer (C) between the internal tube (F) and the center head section support (E).

13. Install a straight pin (B) through the aligned holes, and secure it with a ring (A).

4.15 Pendant (Electric Drive Model Only)

Tools required: Scissors or utility knife
 Ty-wraps
 Ty-wrap tool

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.



WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

2. Unplug the bed from its power source.

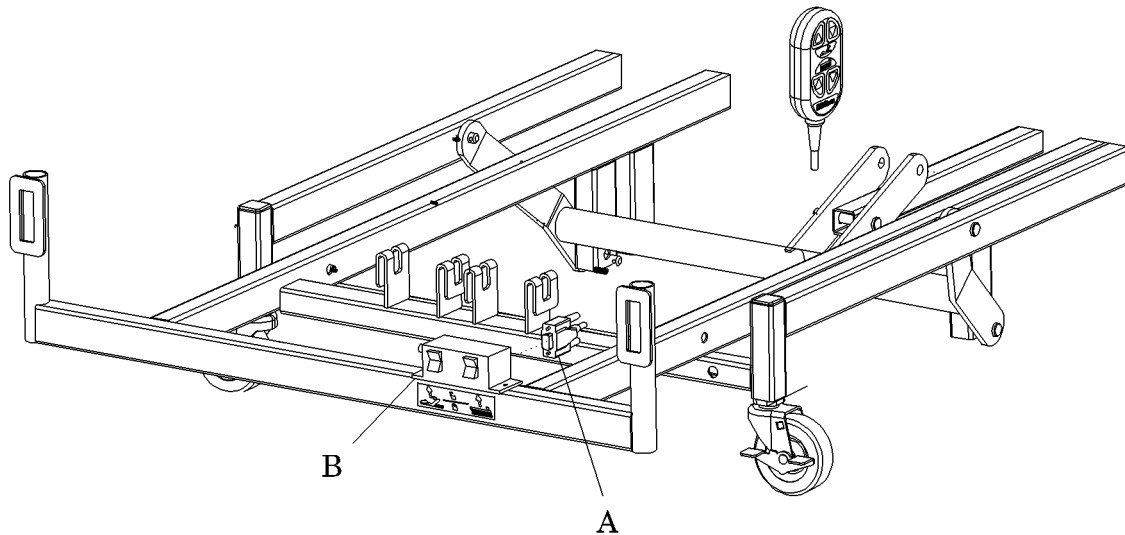
NOTE:

If the bed is not equipped with the lockout control box option, the pendant plugs into the electrical control box. If the bed is equipped with the lockout out control box option, the pendant plugs into the lockout control box. A control cable carries the command signals between the control lockout box and the electrical control box.

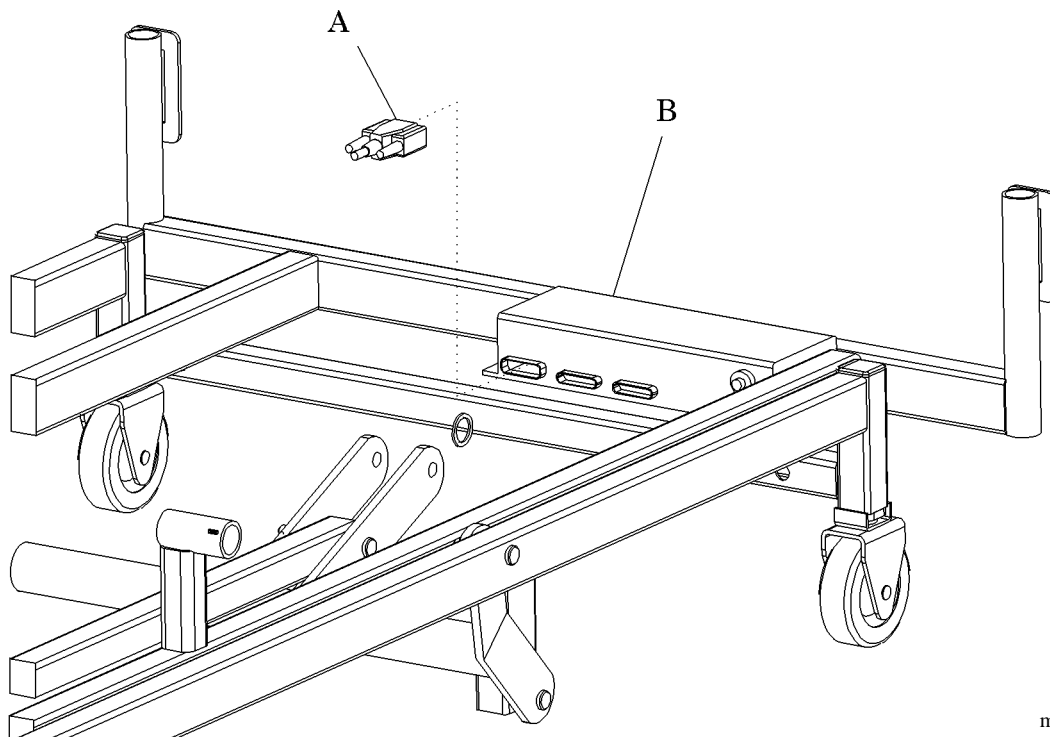
3. Unplug the pendant cable (A) from its receptacle in the lockout control box (B) (see figure 4-16 on page 4-39) or electrical control box (B) (see figure 4-17 on page 4-39).

Figure 4-16. Pendant Connection to the Lockout Control Box

Note: Head and hilow drives removed for clarity.



m169_022

Figure 4-17. Pendant Connection to the Electrical Control Box

m169_021

NOTE:

Map the pendant cable routing before removing the ty-wraps. You will need to route the cable for the replacement pendant along the identical path.

4. Remove the ty-wraps securing the pendant cable (A) to the frame members.

Replacement

1. Hang the pendant in its holder on the siderail.



WARNING:

Route the pendant cable to avoid any pinch points in the articulating frame and deck members. Failure to properly route the pendant cable could result in personal injury or damage to the cable and equipment failure.

2. Route the pendant cable (A) to the lockout control box (B) (see figure 4-16 on page 4-39) or the electrical control box (B) (see figure 4-17 on page 4-39).
3. Using ty-wraps, secure the pendant cable (A) to the bed frame members.
4. Plug the pendant cable (A) into its receptacle on the lockout control box (B) (see figure 4-16 on page 4-39) or the electrical control box (B) (see figure 4-17 on page 4-39).
5. Plug the bed into an appropriate power source.
6. Test the hilow and head functions to ensure that the pendant operates properly.

4.16 Electrical Control Box (Electric Drive Model Only)

Tools required: 7/16" wrench
Phillips head screwdriver

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Press and hold the hilow down button on the pendant until the bed deck is in its lowest position.
3. Press and hold the head up button on the pendant until the head section is at its maximum inclination.

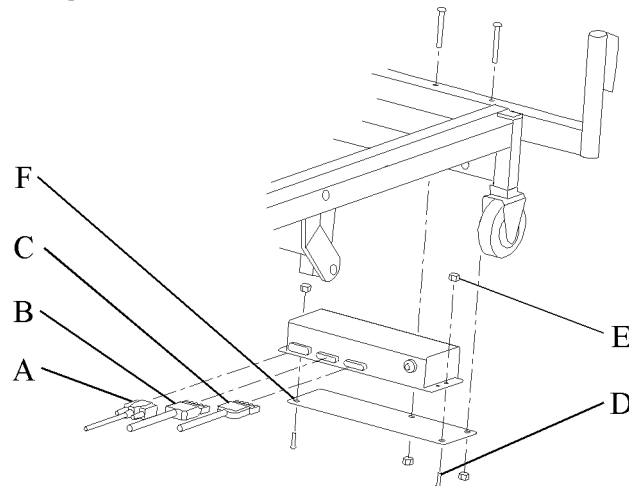


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

4. Unplug the bed from its power source.
5. Unplug the lockout control box or pendant cable (A), head actuator cable (B), and hilow actuator cable (C) from their receptacles on the electrical control box (see figure 4-18 on page 4-42).

Figure 4-18. Electrical Control Box



m169_023

6. Remove the two bolts (D) and nylon insert nuts (E) securing the electrical control box to the mounting plate (F) on the lower frame. Discard the nylon insert nuts (E).

Replacement

1. Align the back holes on the electrical control box mounting legs with the front holes on the mounting plate (F) on the lower frame.
2. From below the mounting plate, install a bolt (D) through the aligned holes.



WARNING:

Use a new nylon insert nut. Installation of used nylon insert nuts could result in personal injury or equipment damage.

3. Install a nylon insert nut (E) on each bolt (D).
4. Plug the lockout control box or pendant cable (A), head actuator cable (B), and hilow actuator cable (C) into their receptacles on the electrical control box.
5. Connect the power cord to an appropriate power supply.
6. Test the hilow and head operation to ensure proper operation.

4.17 Hilow Actuator Motor (Electric Drive Model Only)

Tools required: 7/16" open end wrench
3/4" flat wrench
Pliers
Scissors or utility knife
Ty-wraps
Ty-wrap tool
Loctite® adhesive (P/N 8651)

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.

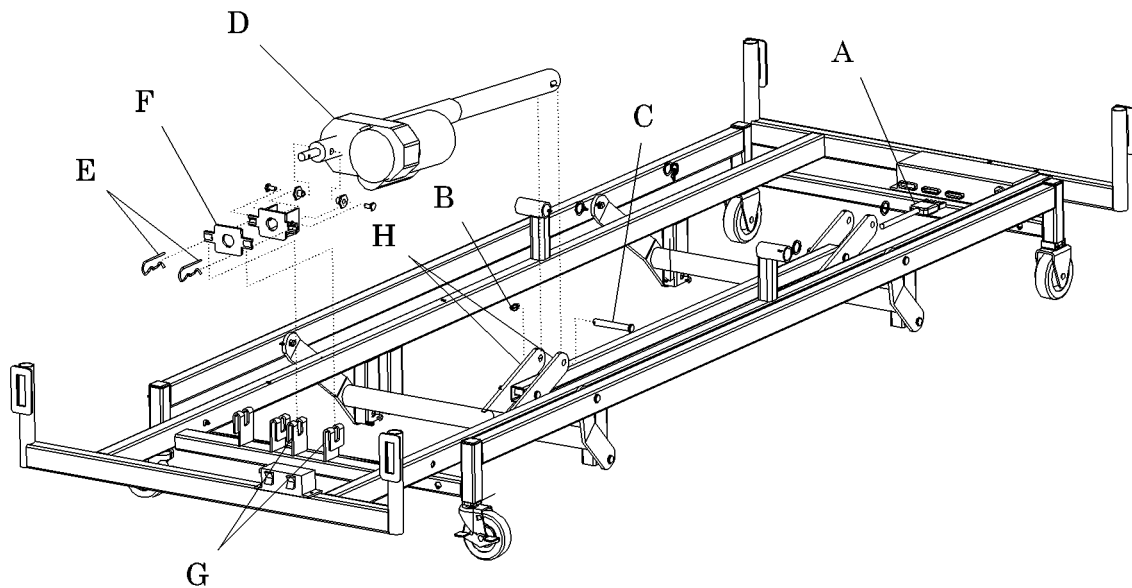


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

2. Unplug the bed from its power source.
3. Attach the optional hand crank to the end of the hilow actuator motor shaft, and turn the crank counterclockwise to lower the bed deck to the lowest possible position.
4. Raise the foot section deck, and lay it over the seat and head section.
5. Disconnect the hilow actuator motor plug (A) from the electrical control box (see figure 4-19 on page 4-44).

Figure 4-19. Hilow Actuator Motor Mounting Components



m169_025

NOTE:

Map the routing of the actuator motor cord. The new actuator motor cord must be routed along the same path in order to avoid pinch points as the bed articulates.

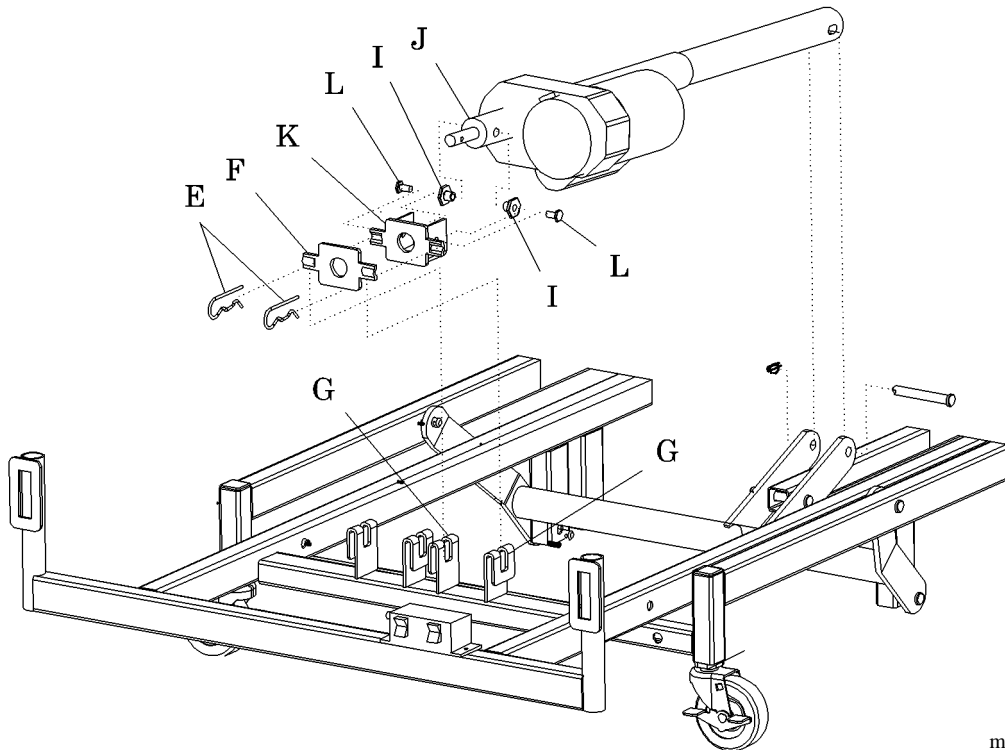
6. Cut the ty-wraps securing the actuator motor power cord to the frame members.
7. Remove the rue ring (B) from the clevis pin (C) at the head end of the hilow actuator extension (D), and pull the clevis pin (C).
8. Remove the cotter pins (E) securing the adapter bracket and spacer plate (F) in the mounting brackets (G) at the foot of the bed.
9. Lift the hilow actuator motor out of the mounting brackets (G).
10. Disassemble the adapter bracket and spacer plate (F), and examine the components. If they are in sound condition, retain them.

Replacement

1. Orient the hilow actuator motor assembly so the motor is to the left foot.

2. Align the hole on the actuator motor assembly extension (D) with the holes in the pivot connector mounting bracket (H).
3. Install a clevis pin (C) through the aligned holes, and secure it with a rue ring (B).
4. Install a flanged nut (I) in each side of the hilow actuator motor housing (J) (see figure 4-20 on page 4-45).

Figure 4-20. Actuator Motor Adapter Bracket and Spacer Plate



m169_032

NOTE:

The open side of the adapter bracket can be up or down.

5. Align the holes in the adapter bracket (K) with the holes in the flanged nuts (I).
6. Apply Loctite® adhesive to the threads of two bolts (L) and install them through the adapter bracket (K) and into the flanged nuts (I).
7. Install a spacer plate (F) next to the adapter bracket (K). Ensure that the node on the spacer plate (F) wings arc away from the adapter bracket (K).

8. Lower the adapter bracket (K) and spacer plate (F) into the openings on the top of the mounting brackets (G).
9. Install a cotter pin (E) through the openings on the adapter bracket (K) and spacer plate (F).
10. Route the actuator motor cord along the frame, and secure it with ty-wraps.
11. Plug the actuator motor cord into the center receptacle on the electrical control box.
12. Plug the bed into an appropriate power source.

4.18 Head Actuator Motor (Electric Drive Model Only)

Tools required: Pliers
7/16" open end wrench
3/4" flat wrench
Scissors or utility knife
Ty-wraps
Ty-wrap tool
Loctite® adhesive (P/N 8651)

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.

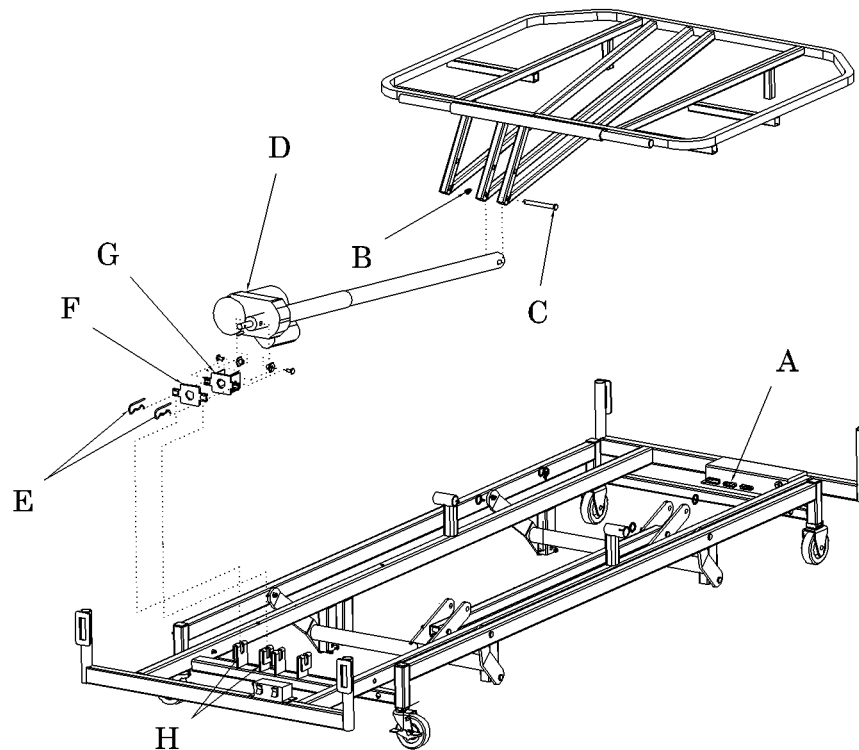


WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

2. Unplug the bed from its power source.
3. Attach the optional hand crank to the end of the head actuator motor shaft, and turn the crank counterclockwise to lower the bed deck to the full flat position.
4. Raise the foot section deck, and lay it over the seat and head section.
5. Disconnect the head actuator motor plug from the electrical control box (A) (see figure 4-21 on page 4-48).

Figure 4-21. Head Actuator Motor Components



m169_024

NOTE:

Map the routing of the head actuator motor cord. The new actuator motor cord must be routed and secured along the same path in order to avoid pinch points as the bed articulates.

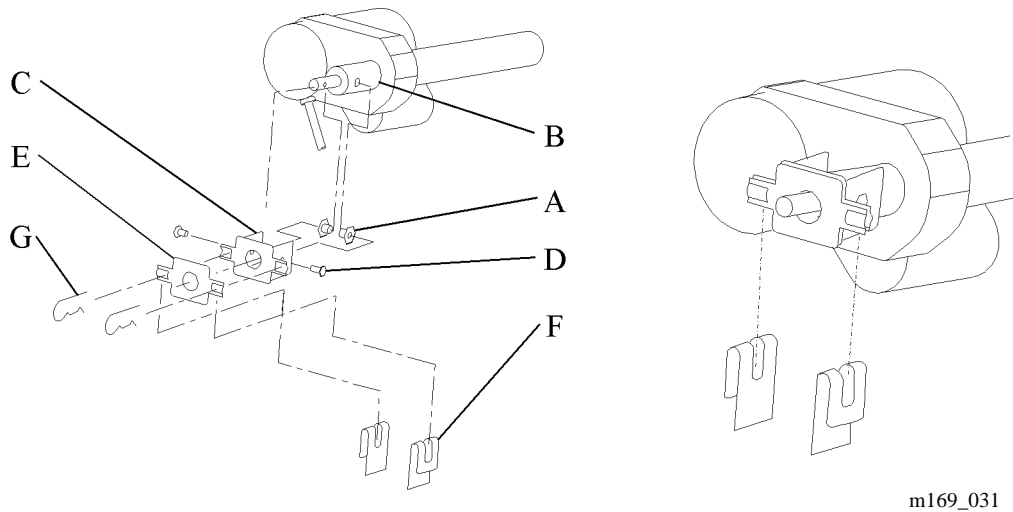
6. Cut the ty-wraps securing the actuator motor cord to the frame members.
7. Remove the rue ring (B) from the clevis pin (C) at the head end of the head actuator assembly (D) extension, and pull the clevis pin (C).
8. Remove the cotter pins (E) securing the mounting plate (F) and motor drive bracket (G) in the mounting brackets (H) at the foot of the bed.
9. Lift the head actuator assembly (D) motor out of the mounting brackets (H).
10. Disassemble the mounting plate (F) and motor drive bracket (G) and examine the components. If they are in sound condition, retain them.

Replacement

1. Orient the head actuator assembly (D) so the motor is to the right foot.

2. Raise the head actuator assembly (D) extension, and align the holes with those in the right and center supports under the head section deck.
3. Install a clevis pin (C) through the aligned holes, and secure it with a rue ring (B).
4. Install a flanged nut (I) in each side of the head actuator motor housing (J) (see figure 4-22 on page 4-49).

Figure 4-22. Actuator Motor Adapter Bracket and Spacer Plate



NOTE:

The open side of the adapter bracket can be up or down.

5. Align the holes in the motor drive bracket (G) with the holes in the flanged nuts (I).
6. Apply Loctite® adhesive to the threads of two bolts (K), and install them through the motor drive bracket (G) and into the flanged nuts (I).
7. Install a mounting plate (F) next to the motor drive bracket (G). Ensure that the node on the mounting plate (F) wings arc away from the motor drive bracket (G).

8. Lower the motor drive bracket (G) and mounting plate (F) into the openings on the top of the mounting brackets (H).
9. Install a cotter pin (E) through the openings on the motor drive bracket (G) and mounting plate (F).
10. Route the actuator motor cord along the frame, and secure it with ty-wraps.
11. Plug the actuator motor cord into the center receptacle on the electrical control box.
12. Plug the bed into an appropriate power source.

4.19 Lockout Box (Electric Drive Model Only)

Tools required: Phillips head screwdriver
7/16" open end wrench

Removal



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed. This could cause equipment damage or personal injury.

1. Move the bed to a convenient working location, and lock all caster brakes.
2. Remove the footboard.



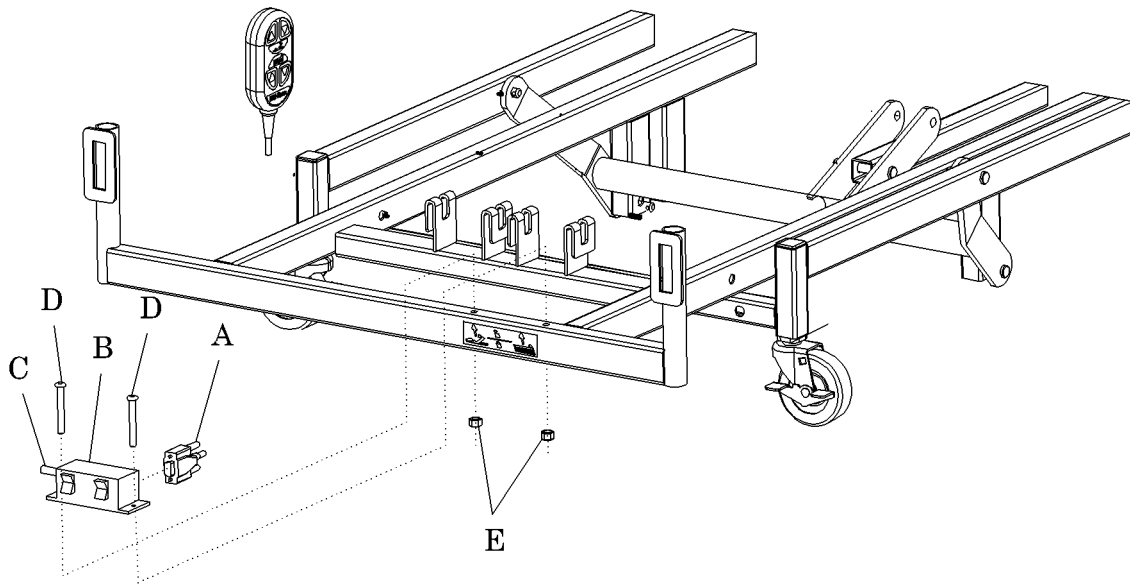
WARNING:

The bed is always energized when plugged into a power source. Unplug the bed from its power source before performing any service on the bed. Failure to do so could result in inadvertent movement of the bed and personal injury.

3. Unplug the bed from its power source.
4. Disconnect the pendant cable connector (A) from the receptacle on the back of the lockout control box (B) (see figure 4-23 on page 4-52).

Figure 4-23. Lockout Control Box

Note: Head and hilow drives removed for clarity.



m169_030

5. Disconnect the lockout box control cable (C) from the electrical control box.

NOTE:

Map the routing of the head actuator motor power cord. The new lockout box control cable must be routed along the same path in order to avoid pinch points as the bed articulates.

6. Cut the ty-wraps securing the lockout box control cable (C) along the frame.
7. Remove the two bolts (D) and nylon insert nuts (E) securing the lockout control box to the foot frame member. Discard the nylon insert nuts (E).

Replacement

1. Align the mounting holes on the wings of the lockout box with the mounting holes on the foot frame member.
2. Install a bolt (D) through each of the aligned holes.

**WARNING:**

Use a new nylon insert nut. Installation of used nylon insert nuts could result in personal injury or equipment damage.

3. Install a nylon insert nut (E) on each bolt (D).

NOTE:

Examine the condition of the lockout control box label. Replace the lockout control box label if it is worn or faded.

4. Plug the pendant cable connector (A) into the receptacle on the back of the lockout control box (B).
5. Route the lockout box control cable (C) to the electrical control box, and attach the cable to the frame with ty-wraps.
6. Plug the lockout box control cable (C) into the inner-most receptacle on the electrical control box.
7. Plug the bed into an appropriate power source.
8. Push the top of each lockout switch in to enable the head and hilow functions.
9. Press each of the pendant buttons to ensure that the controls function normally.

NOTES:

Chapter 5

Parts List

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Warranty

HILL-ROM, INC. OSPREY™ LTC BED 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 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 March 3, 1999

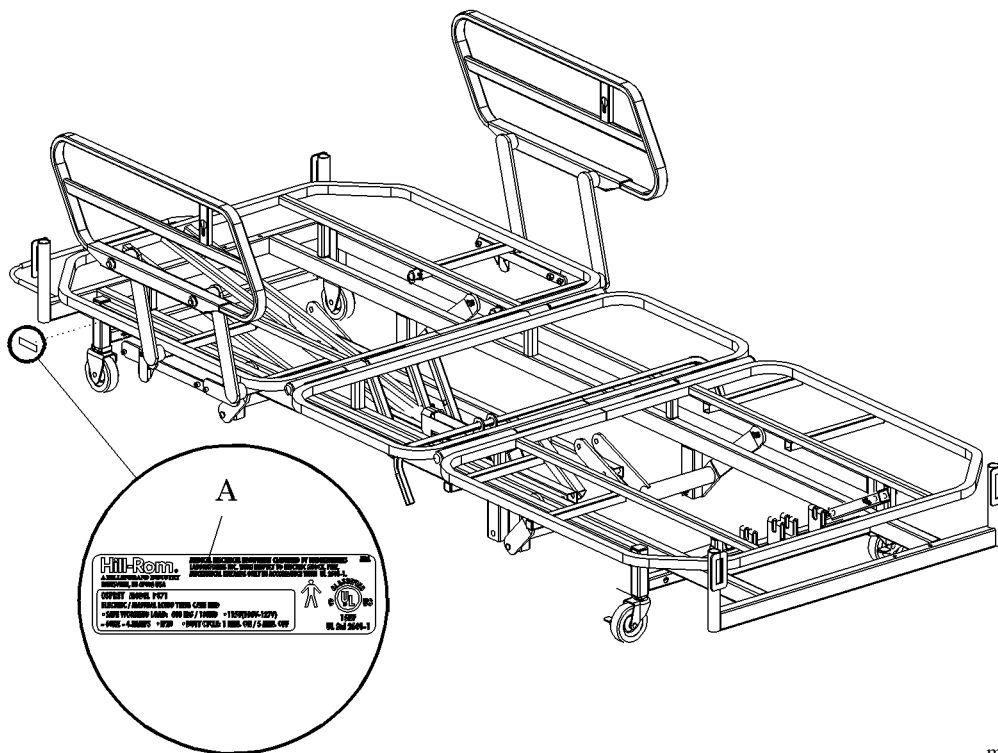
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NOTES:

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



m169_052

NOTE:

Call Hill-Rom Customer Service at (800) 445-3730 when ordering accessories with “P” part numbers.

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 COMPANY, INC.
1069 STATE ROUTE 46 E
BATESVILLE IN 47006-9167

Address all return goods to:

ATTN SERVICE STORES
DISTRIBUTION CENTER DOOR D23
HILL-ROM COMPANY, 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 Hill-Rom's policies for in-warranty and out-of-warranty exchanges.

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 Hill-Rom's internal use). 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 inoperative parts/products within 30 days, Hill-Rom will invoice your facility for the full selling price of the parts/products. Upon return of the inoperative parts/products, Hill-Rom will issue a credit for the discounted price.

Recommended Spare Parts

See table 5-1 on page 5-8 for a recommended spare parts list to service five units or more.

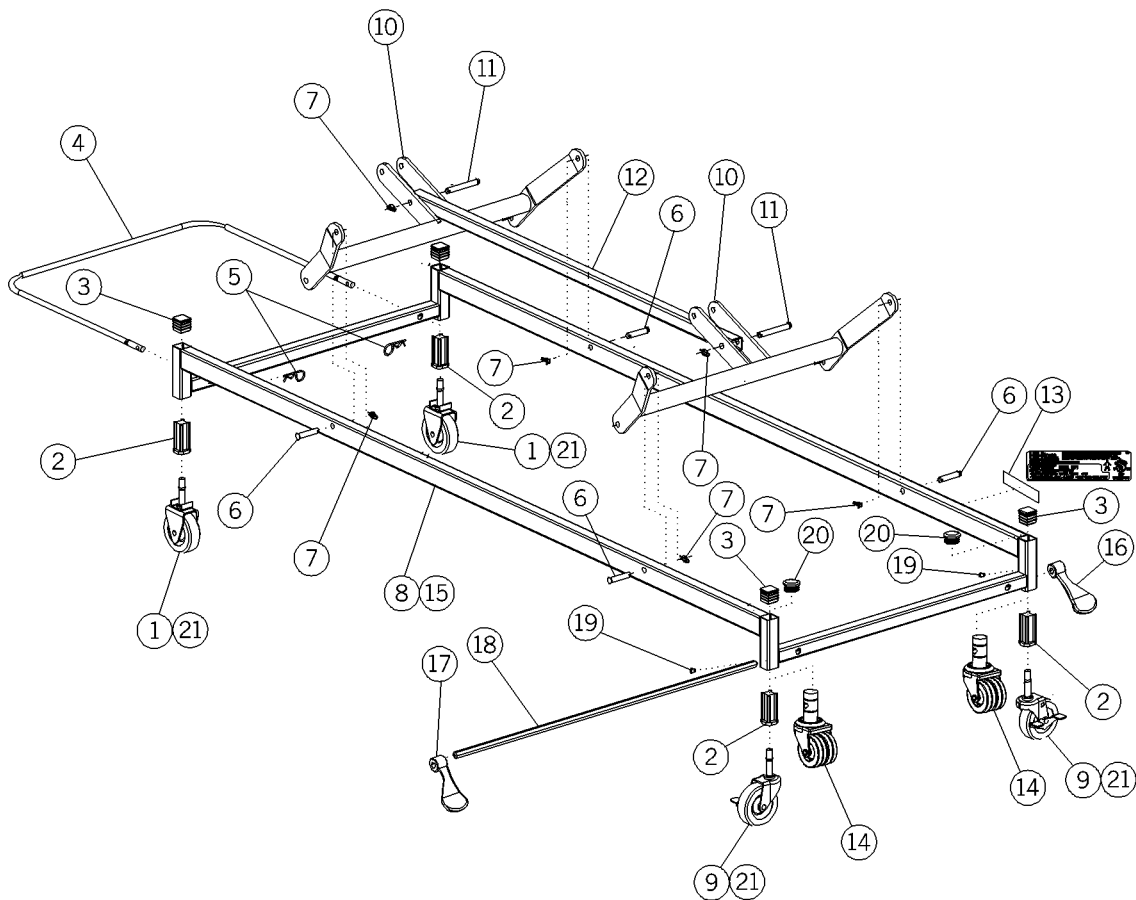
Table 5-1. Recommended Spare Parts

Part Number	Quantity	Description
61615 (871)	5	Rue ring cotter
63073 (871)	4	Plug, 1" round tube
63144 (871)	6	Plug, 3/4" square tube
63318 (871)	4	Plug, 1" square tube
6029404 (871)	5	Retaining ring, hairpin cotter
63338 (871)	1	Pendant, four-button
63157 (871)	10	Nut #10—24, nylon insert
63158 (871)	10	Nut 1/4"—20, nylon insert

NOTES:

Base Frame Assembly

Figure 5-2. Base Frame Assembly



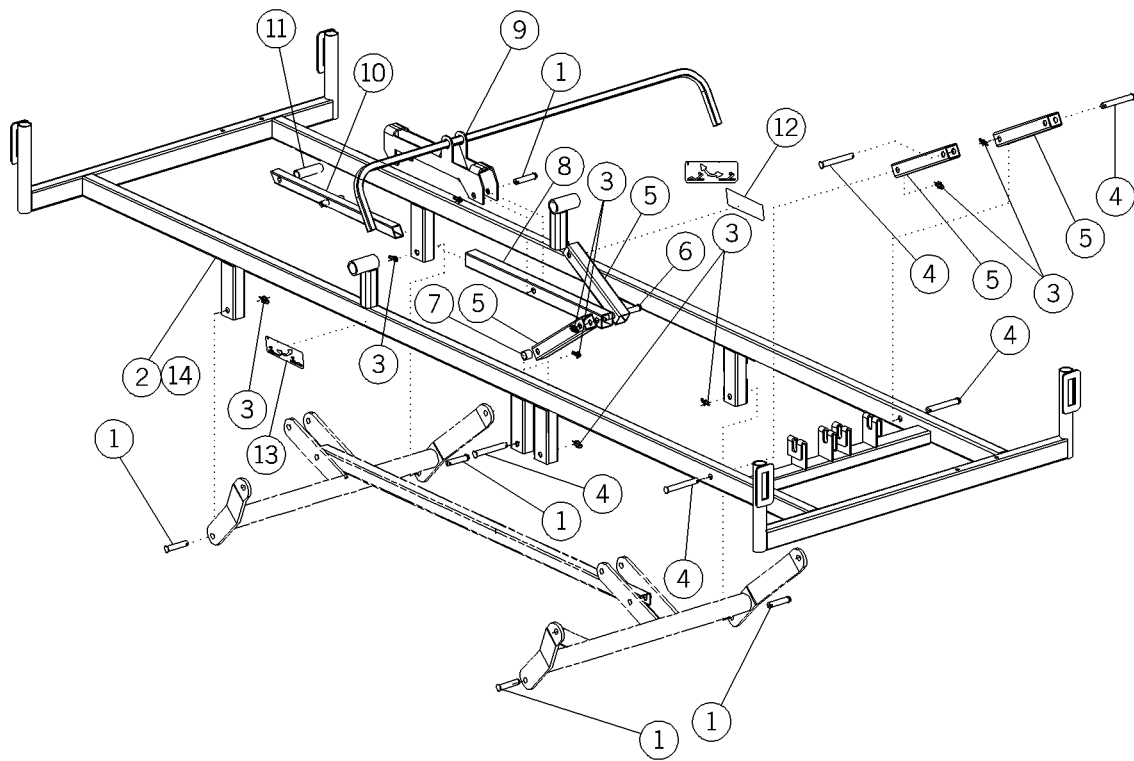
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Table 5-2. Base Frame Assembly

Item Number	Part Number	Quantity	Description
1	63316 (871)	2	Caster, fixed
2	63067 (871)	2 or 4	Caster socket
3	63318 (871)	2 or 4	Plug, 1" square tube
4	63107 (871)	1	Wall bumper
5	6029404 (871)	2	Retaining ring, hairpin cotter
6	63143 (871)	4	Clevis pin, 1 1/2"
7	61615 (871)	6	Rue ring cotter
8	Reference only	1	Base weldment
9	63317 (871)	2	Caster, swivel with brake (swivel caster with brake option or total lock swivel caster option only)
10	6308948 (871)	2	Lift arm weldment
11	6314301 (871)	2	Clevis pin, 2 1/2"
12	6307848 (871)	1	Pivot connector
13	Reference only	1	Serial number name plate
14	63855 (871)	2	Caster, central brake (central brake option only)
15	Reference only	1	Base weldment (central brake option only)
16	63859 (871)	1	Brake pedal, lh (central brake option only)
17	63860 (871)	1	Brake pedal, rh (central brake option only)
18	63861 (871)	1	Hex rod (central brake option only)
19	63862 (871)	2	Button socket cap screw, #10—24 x 1/4" (central brake option only)
20	63863 (871)	2	Plug, 1 1/4" round tube (central brake option only)
21	63145 (871)	4	Caster, total lock, swivel (total lock swivel option only)

Intermediate Frame Assembly

Figure 5-3. Intermediate Frame Assembly



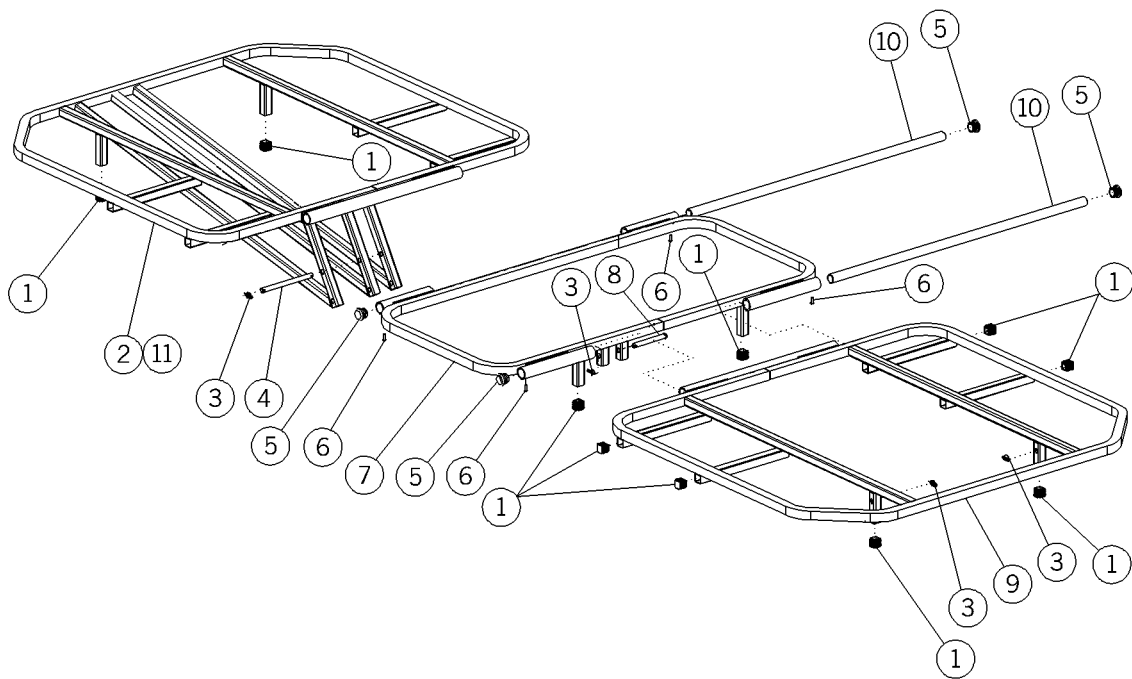
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Table 5-3. Intermediate Frame Assembly

Item Number	Part Number	Quantity	Description
1	63143 (871)	5	Clevis pin, 1 1/2"
2	6307448 (871)	1	Mid-frame weldment (80" model only)
3	61615 (871)	7	Rue ring cotter
4	6314301 (871)	5	Clevis pin, 2 1/2"
5	6307648 (871)	4	Knee linkage
6	6314302 (871)	1	Clevis pin, 3"
7	633340133 (871)	1	Spacer, short
8	6308148 (871)	1	Outer tube, automatic contour
9	6308548 (871)	1	Automatic contour weldment
10	6314148 (871)	1	Inner tube weldment
11	6333433 (871)	1	Spacer, long
12	63155 (871)	1	Label kit (Automatic contour label, lh)
13	63155 (871)	1	Label kit (Automatic contour label, rh)
14	630740148 (871)	1	Mid-frame weldment, 76" (76" model only)

Upper Frame Assembly

Figure 5-4. Upper Frame Assembly



m169_045

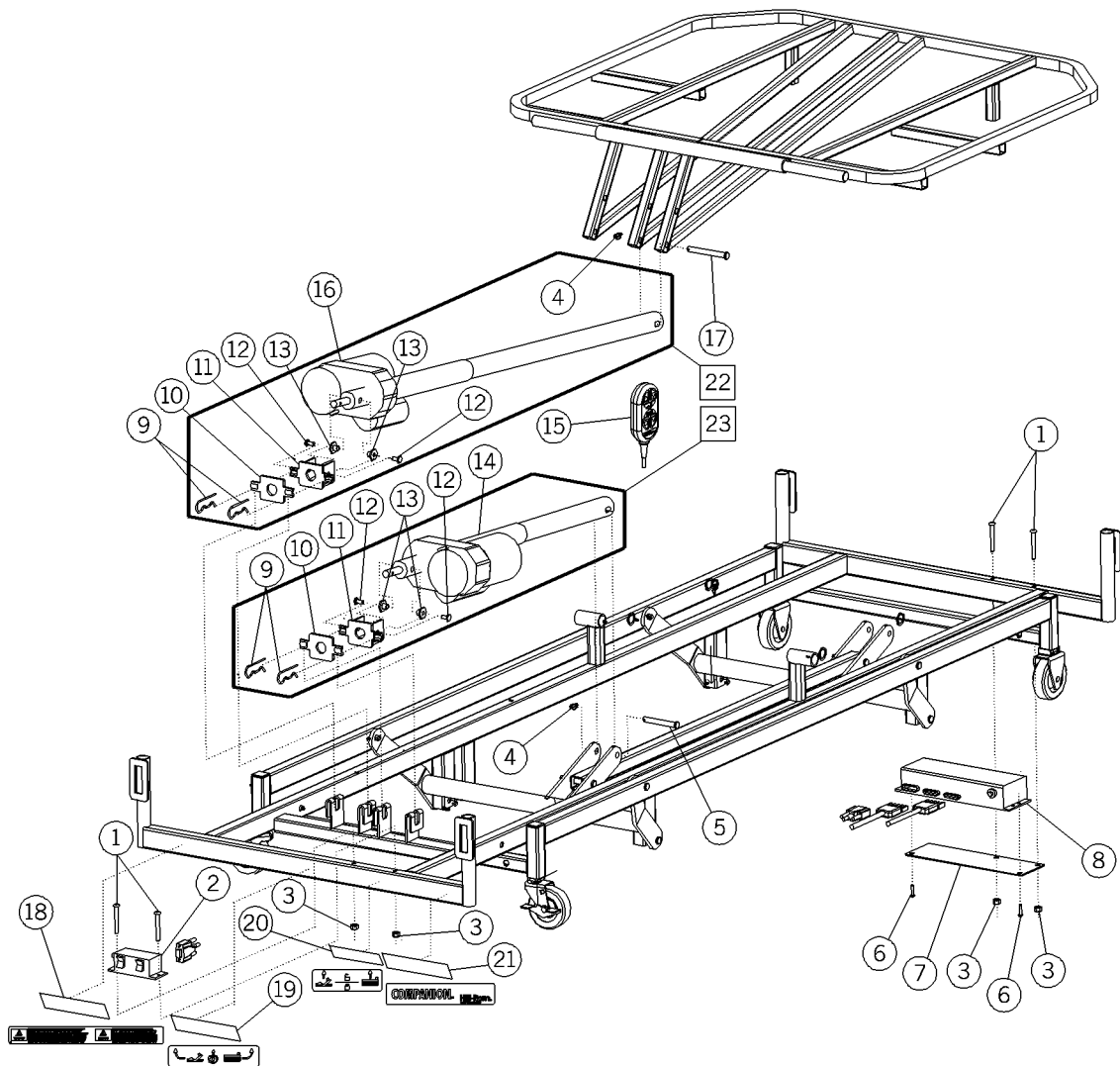
Table 5-4. Upper Frame Assembly

Item Number	Part Number	Quantity	Description
1	63144 (871)	10	Plug, 3/4" square tube
2	6310648 (871)	1	Head section weldment (80" model only)
3	61615 (871)	6	Rue ring cotter
4	63333 (871)	1	Clevis pin, headless
5	63073 (871)	4	Plug, 1" round tube
6	63159 (871)	4	Blind rivet
7	6310548 (871)	1	Seat section weldment
8	6314302 (871)	1	Clevis pin, 3"
9	6310448 (871)	1	Foot section weldment
10	63075pl (871)	2	Hinge pin
11	631060148 (871)	1	Head section weldment, 76" (76" model only)

NOTES:

Electric Drive Assemblies

Figure 5-5. Electric Drive Assemblies



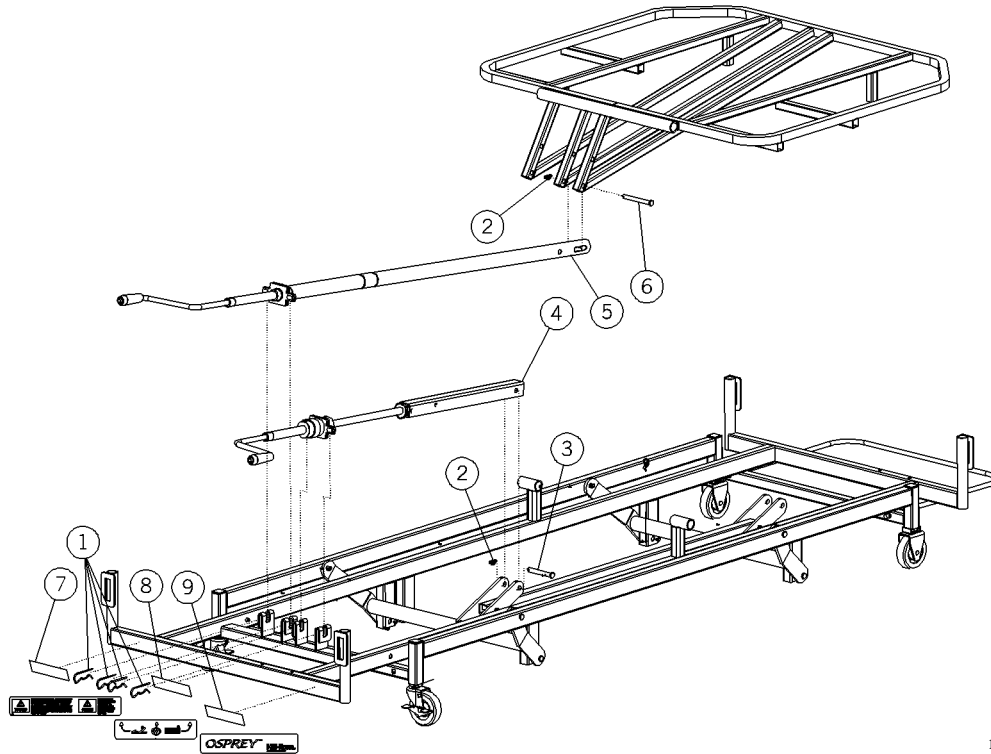
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Table 5-5. Electric Drive Assemblies

Item Number	Part Number	Quantity	Description
1	9006012 (871)	4	1/4"—20 x 3/4" pan head machine screw
2	63337 (871)	1	Lockout box
3	63158 (871)	4	Nut, 1/4"—20, nylon insert
4	61615 (871)	2	Rue ring cotter
5	6314301 (871)	1	Clevis pin, 2 1/2"
6	9002805 (871)	2	Screw, #10—32 machine
7	6314248 (871)	1	Mounting plate, control box
8	63131 (871)	1	Control box
9	24556 (871)	4	Hair pin
10	32589 (871)	2	Mounting plate
11	63319pl (871)	2	Motor drive bracket weldment
12	63336pl (871)	4	Screw, motor mount
13	63335pl (871)	4	Nut, motor mount
14	63129 (871)	1	AC motor, hilow
15	63338 (871)	1	Pendant, four-button
16	63128 (871)	1	AC motor, head
17	6314302 (871)	1	Clevis pin, 3"
18	63155 (871)	1	Label kit (Electric bed warning label)
19	63155 (871)	1	Label kit (Drive label)
20	63155 (871)	1	Label kit (Lockout label)
21	63155 (871)	1	Label kit (Product label)
22	SA1681 (871)	1	Head drive assembly
23	SA1682 (871)	1	Hilow drive assembly

Manual Drive Assemblies

Figure 5-6. Manual Drive Assemblies



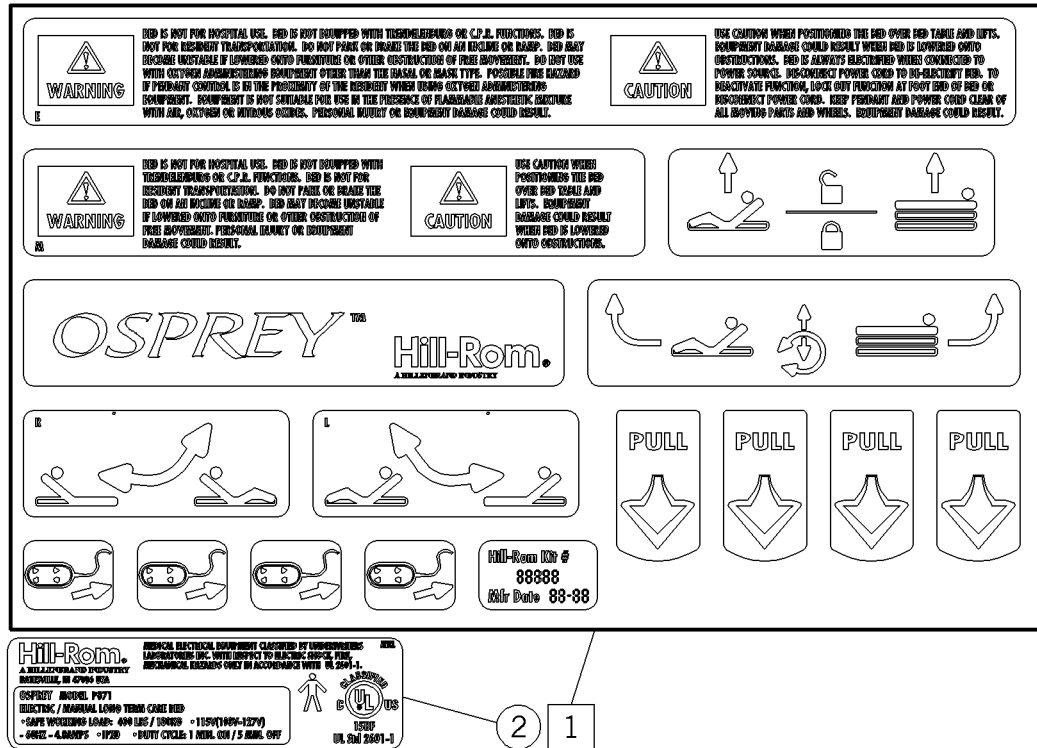
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Table 5-6. Manual Drive Assemblies

Item Number	Part Number	Quantity	Description
1	24556 (871)	4	Hair pin
2	61615 (871)	2	Rue ring cotter
3	6314301 (871)	1	Clevis pin, 2 1/2"
4	63850 (871)	1	Manual drive, hilow
5	63853 (871)	1	Manual head drive
6	6314302 (871)	1	Clevis pin, 3"
7	63155 (871)	1	Label kit (Manual bed warning label)
8	63155 (871)	1	Label kit (Drive label)
9	63155 (871)	1	Label kit (Product label)

Labels

Figure 5-7. Labels



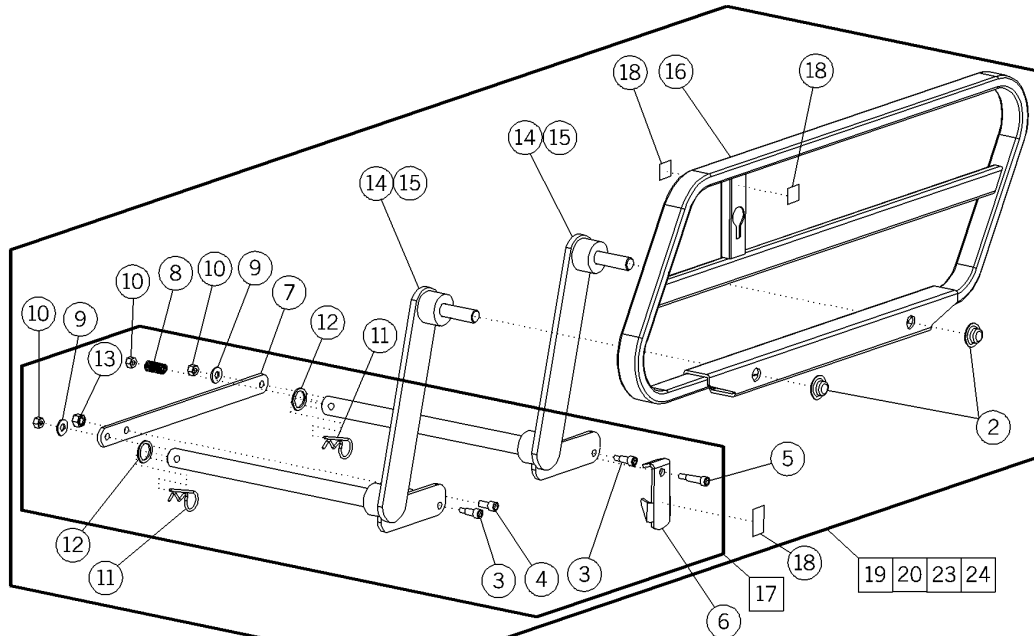
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Table 5-7. Labels

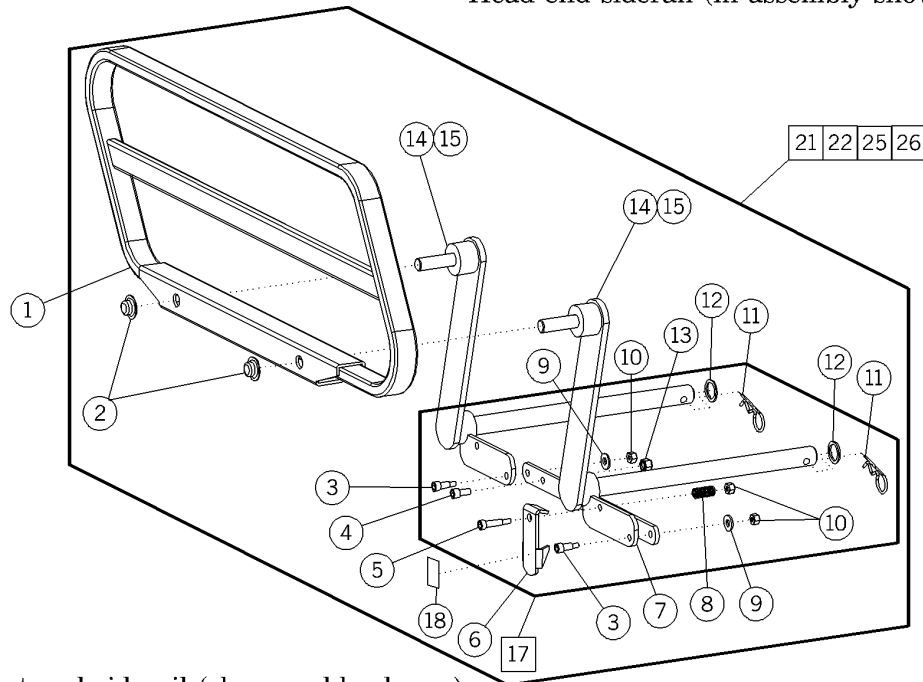
Item Number	Part Number	Quantity	Description
1	63155 (871)	1	Label kit
2	Reference only	1	Serial number name plate

1/2-Length Head End Siderail Assembly and 1/2-Length Foot End Siderail Assembly (Accessory)

Figure 5-8. 1/2-Length Head End Siderail Assembly and 1/2-Length Foot End Siderail Assembly (Accessory)



Head end siderail (lh assembly shown)



Foot end siderail (rh assembly shown)

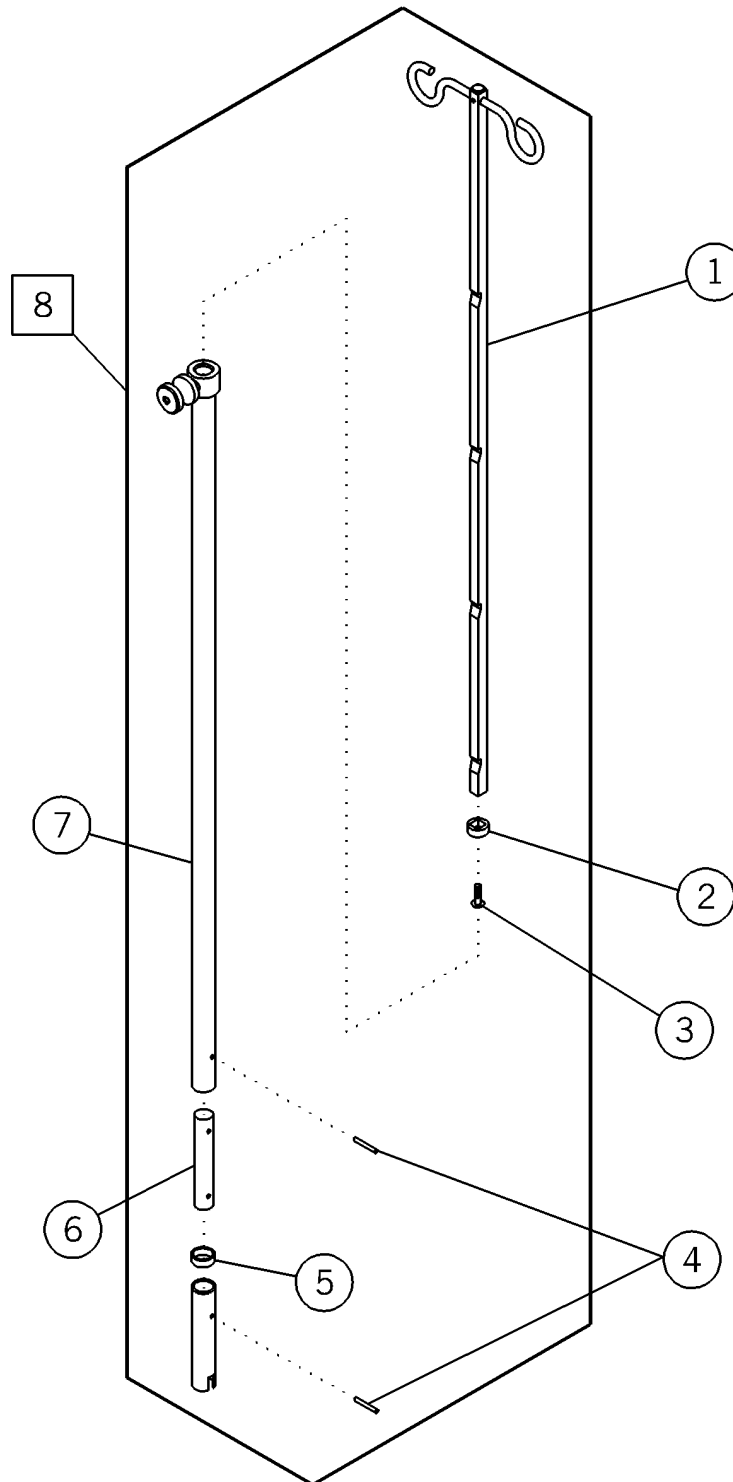
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**Table 5-8. 1/2-Length Head End Siderail Assembly and
1/2-Length Foot End Siderail Assembly (Accessory)**

Item Number	Part Number	Quantity	Description
1	Reference only	2	Siderail, upper (foot end siderail only)
2	Reference only	8	Cap, push nut
3	9033806 (871)	8	Shoulder, screw
4	63154 (871)	4	Screw, 1/4"—20 x 1/2" socket head
5	9033805 (871)	4	1/4" x 3/4" shoulder screw
6	63111pl (871)	4	Latch, siderail
7	63118pl (871)	4	Siderail link arm
8	63340 (871)	4	Spring, siderail
9	1012 (871)	8	Washer
10	63157 (871)	12	Nut, #10—24, nylon insert
11	6029404 (871)	8	Retaining pin, hairpin cotter
12	44595 (871)	8	Washer
13	63158 (871)	4	Nut, 1/4"—20, nylon insert
14	6311948 (871)	4	Arm weldment, lh (lh siderail only)
15	6313748 (871)	4	Arm weldment, rh (rh siderail only)
16	Reference only	2	Siderail weldment (head end siderail only)
17	SA1683 (871)	2	Siderail link arm assembly
18	63155 (871)	1	Label kit (Siderail latch and hand pendant labels)
19	63133 (871)	1	Siderail, lh head (80" model only)
20	63134 (871)	1	Siderail, rh head (80" model only)
21	63132 (871)	1	Siderail, lh foot (80" model only)
22	63135 (871)	1	Siderail, rh foot (80" model only)
23	63865 (871)	1	Siderail, lh head (76" model only)
24	63866 (871)	1	Siderail, rh head (76" model only)
25	63867 (871)	1	Siderail, lh foot (76" model only)
26	63868 (871)	1	Siderail, rh foot (76" model only)

IV Rod—P2217 (Accessory)

Figure 5-9. IV Rod—P2217 (Accessory)



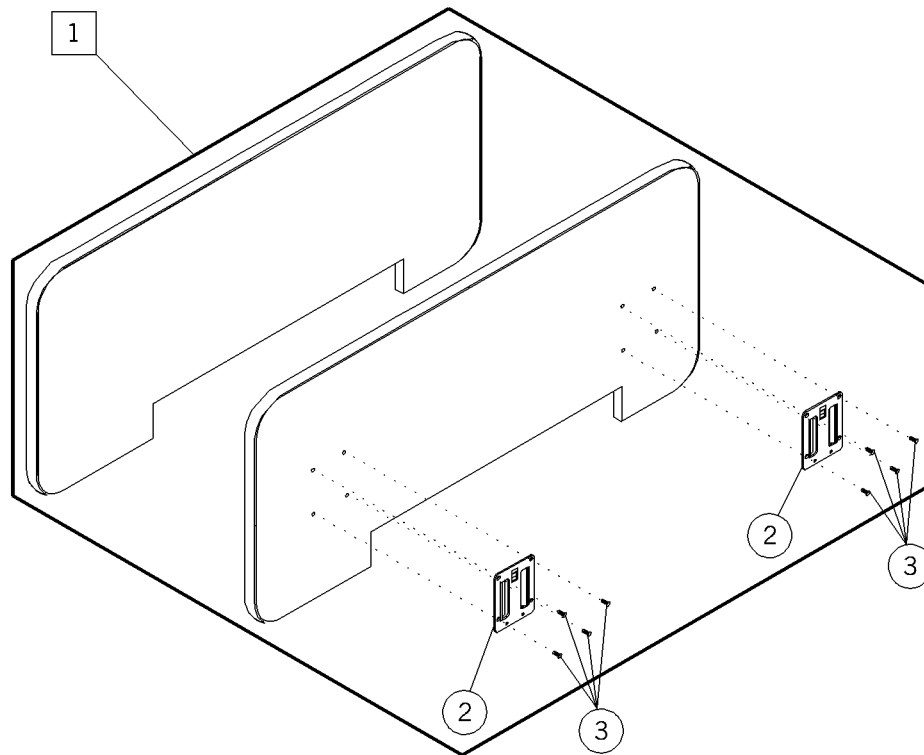
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Table 5-9. IV Rod—P2217 (Accessory)

Item Number	Part Number	Quantity	Description
1	32534 (871)	1	Extension rod assembly
2	32202 (871)	1	Nylon guide
3	10866 (871)	1	Screw
4	10640 (871)	1	Roll pin
5	32201 (871)	1	Extension
6	20858 (871)	1	Coupling
7	32199 (871)	1	Outer tube assembly
8	2217 (871)	1	IV rod

Century Head and Foot Panels—P4069 (Accessory)

Figure 5-10. Century Head and Foot Panels—P4069 (Accessory)



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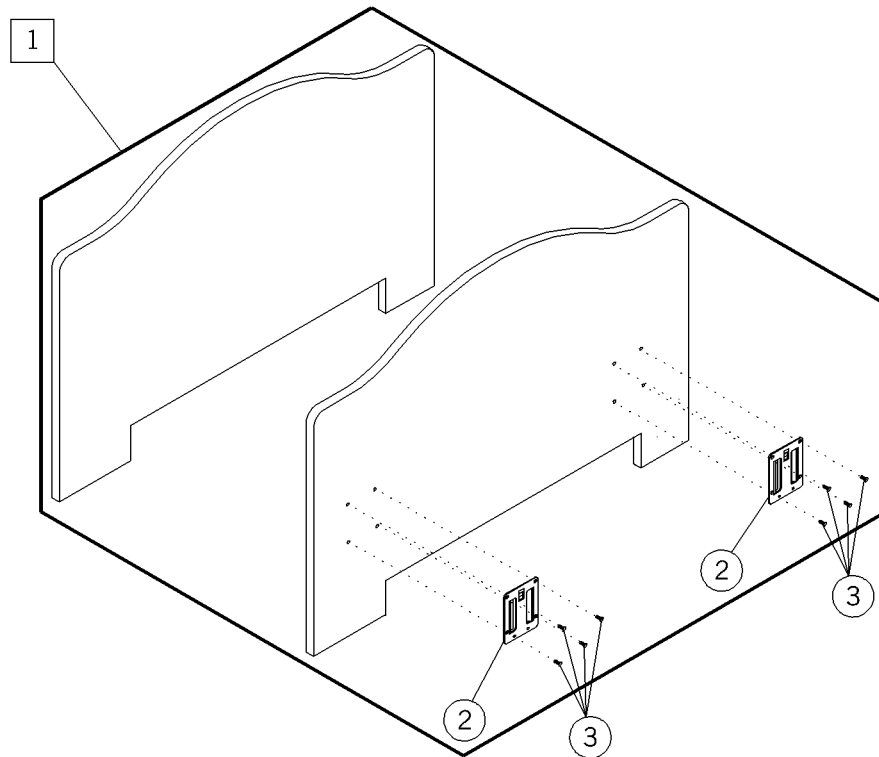
Table 5-10. Century Head and Foot Panels—P4069 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4069 (871) ††	1	Standard matching head and foot panels
2	39153 (871)	4	Panel bracket—four-hole
3	17290 (871)	16	Mounting screw

†† Specify wood and laminate finish.

Hearthside Head and Foot Panels—P4071 (Accessory)

Figure 5-11. Hearthside Head and Foot Panels—P4071 (Accessory)



m169_054

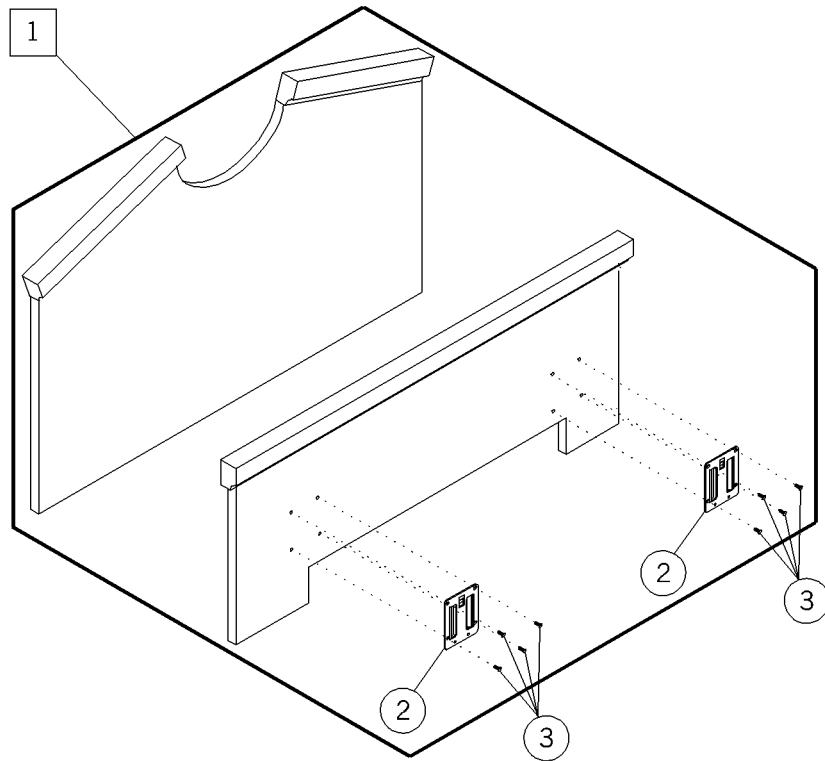
Table 5-11. Hearthside Head and Foot Panels—P4071 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4071 (871) ††	1	Matching head and foot panels
2	39153 (871)	4	Panel bracket—four-hole
3	61957 (871)	16	Screw, machine, pan, phillips #12 5/8"

†† Specify wood and laminate finish.

Heirloom Head and Foot Panels—P4072 (Accessory)

Figure 5-12. Heirloom Head and Foot Panels—P4072 (Accessory)



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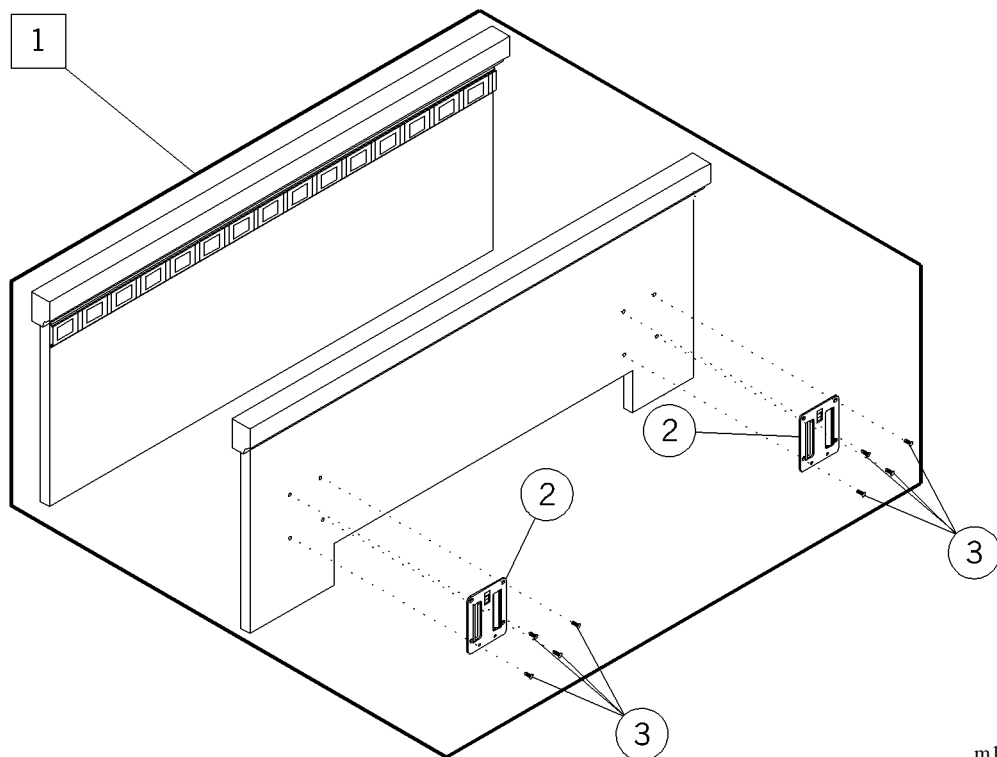
Table 5-12. Heirloom Head and Foot Panels—P4072 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4072 (871) ††	1	Matching head and foot panels
2	39153 (871)	4	Panel bracket—four-hole
3	61957 (871)	16	Screw, machine, pan, phillips #12 5/8"

†† Specify wood and laminate finish.

Artisan Dentil Head and Foot Panels—P4074 (Accessory)

Figure 5-13. Artisan Dentil Head and Foot Panels—P4074 (Accessory)



m169_056

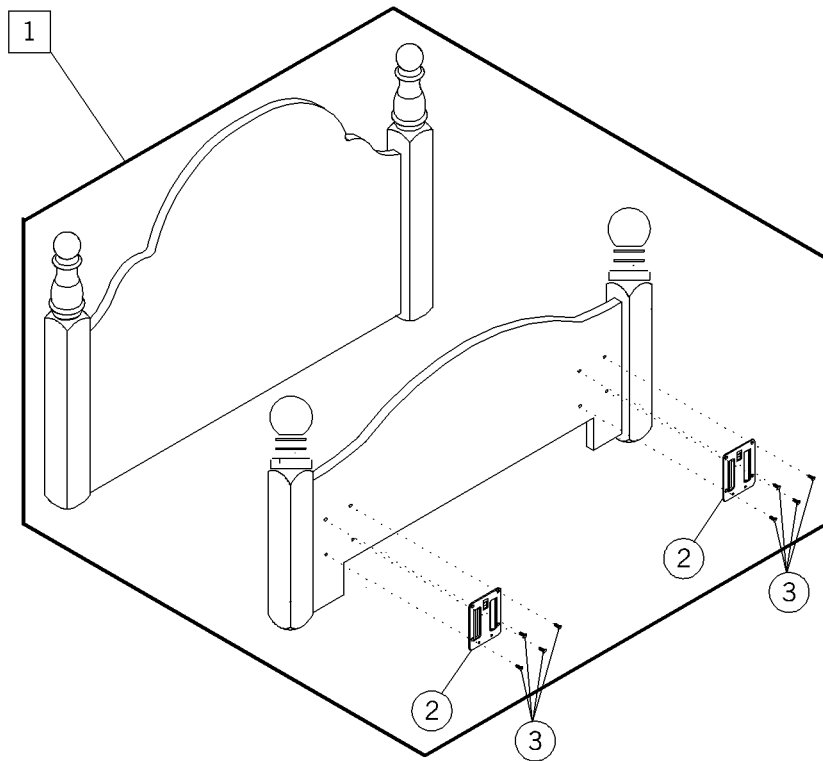
Table 5-13. Artisan Dentil Head and Foot Panels—P4074 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4074 (871) ††	1	Dentil style head and foot ends (Artisan)
2	39153 (871)	4	Panel bracket—four-hole
3	61957 (871)	16	Screw, machine, pan, phillips #12 5/8"

†† Specify wood and laminate finish.

Artisan Post Head and Foot Panels—P4073 (Accessory)

Figure 5-14. Artisan Post Head and Foot Panels—P4073 (Accessory)



m169_057

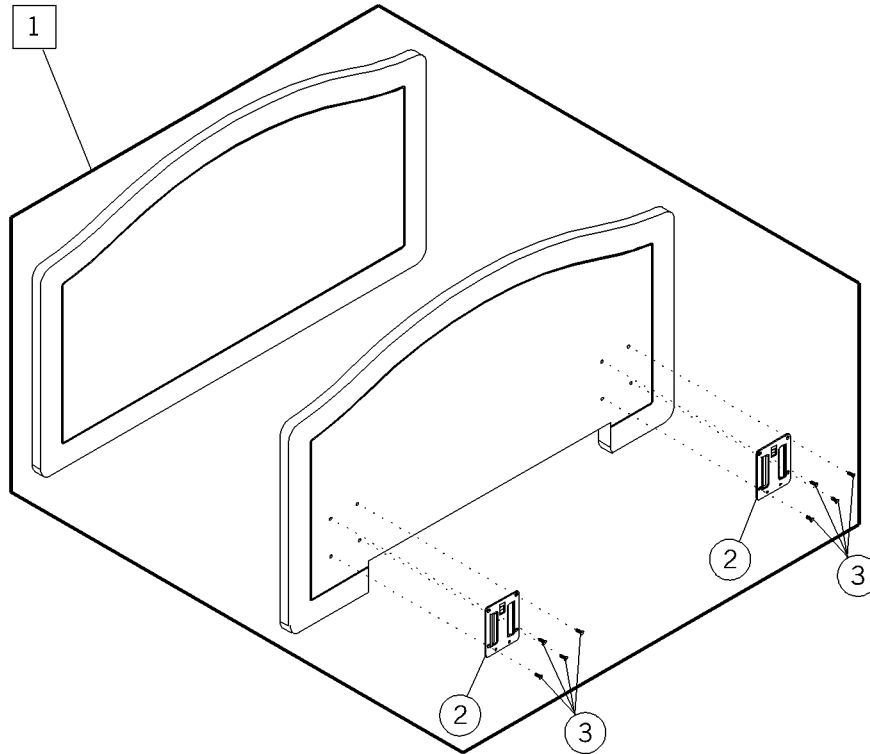
Table 5-14. Artisan Post Head and Foot Panels—P4073 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4073 (871) ††	1	Post style head and foot ends (Artisan)
2	39153 (871)	4	Panel bracket—four-hole
3	61957 (871)	16	Screw, machine, pan, phillips #12 5/8"

†† Specify wood and laminate finish.

Lynnfield Modified Head and Foot Panels—P4066 (Accessory)

Figure 5-15. Lynnfield Modified Head and Foot Panels—P4066 (Accessory)



m169_058

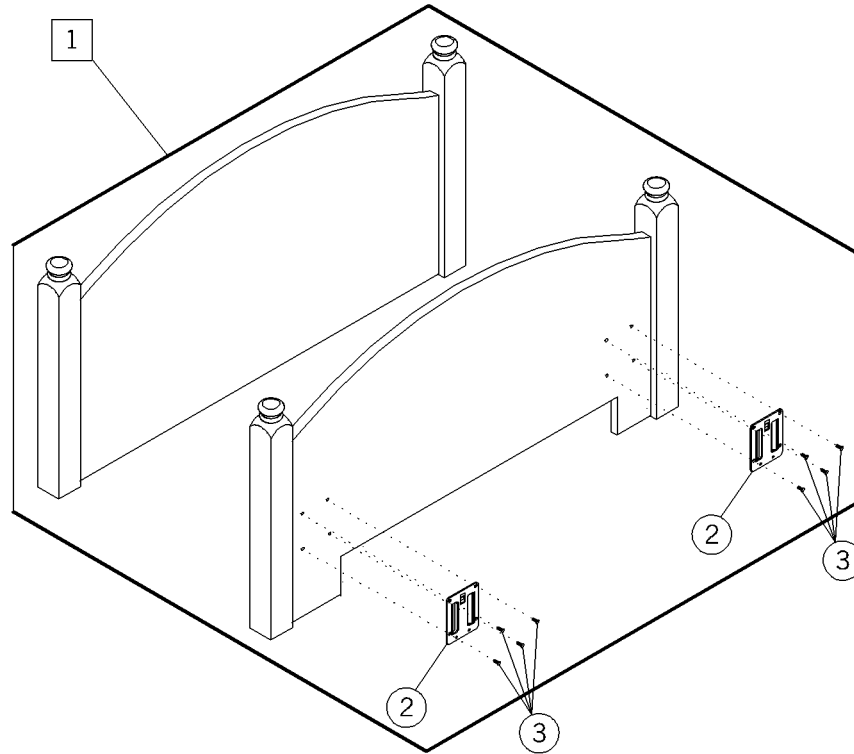
Table 5-15. Lynnfield Modified Head and Foot Panels—P4066 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4066 (871) ††	1	Modified head and foot ends (Lynnfield)
2	39153 (871)	4	Panel bracket—four-hole
3	17290 (871)	16	Mounting screw

†† Specify wood and laminate finish.

Lynnfield Deluxe Head and Foot Panels—P4067 (Accessory)

Figure 5-16. Lynnfield Deluxe Head and Foot Panels—P4067 (Accessory)



m169_059

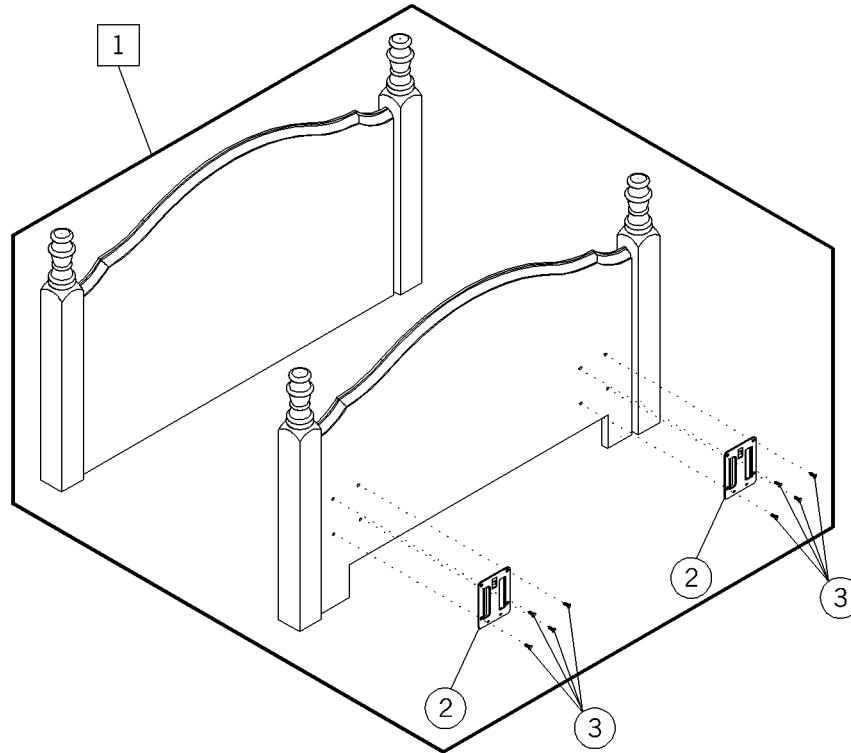
Table 5-16. Lynnfield Deluxe Head and Foot Panels—P4067 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4067 (871) ††	1	Lynnfield deluxe head and foot panels
2	39153 (871)	4	Panel bracket—four-hole
3	17290 (871)	16	Mounting screw

†† Specify wood and laminate finish.

Lynnfield Special Deluxe Head and Foot Panels—P4065 (Accessory)

Figure 5-17. Lynnfield Special Deluxe Head and Foot Panels—P4065 (Accessory)



m169_060

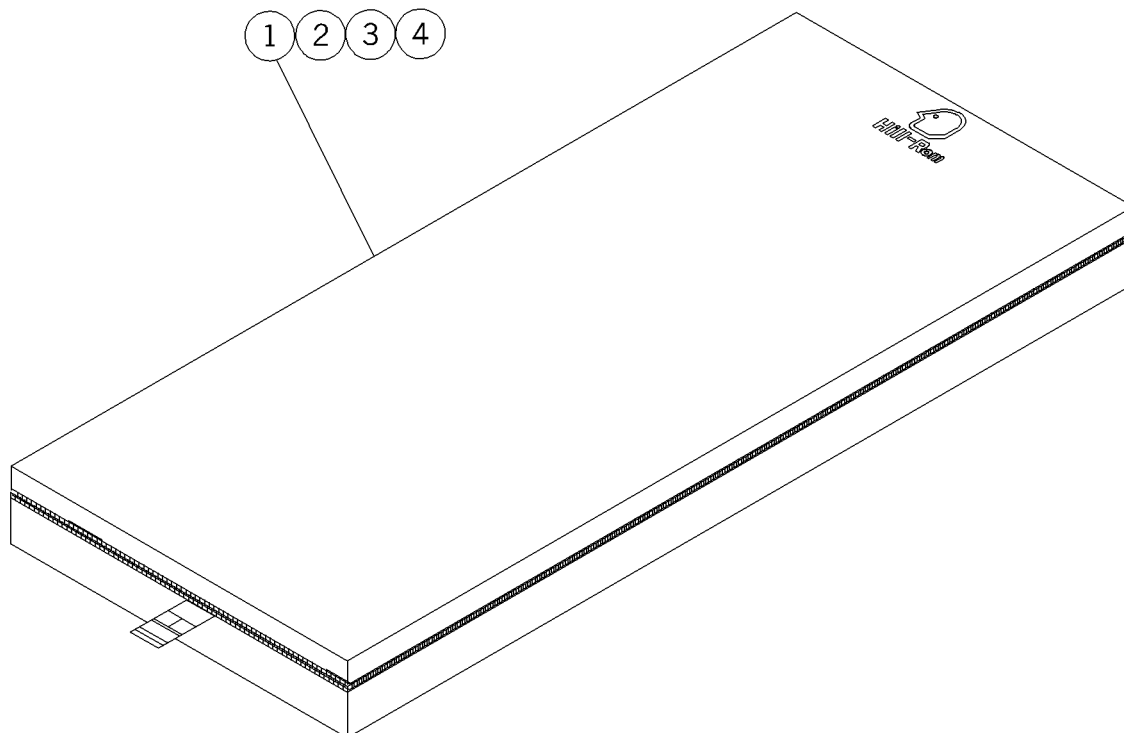
Table 5-17. Lynnfield Special Deluxe Head and Foot Panels—P4065 (Accessory)

Item Number	Part Number	Quantity	Description
1	P4065 (871) ††	1	Lynnfield special deluxe head and foot panels
2	39153 (871)	4	Panel bracket—four-hole
3	17290 (871)	16	Mounting screw

†† Specify wood and laminate finish.

Comfortline® Mattress—P1433 (Accessory)

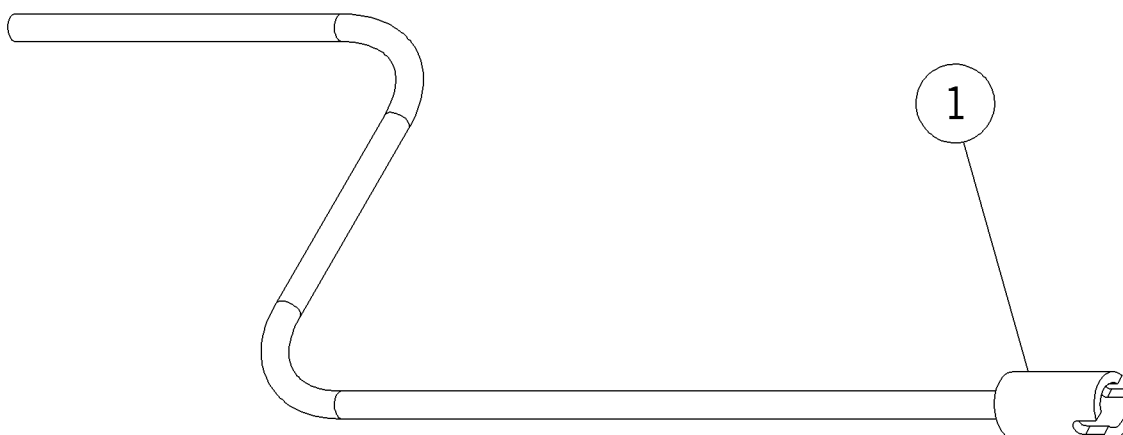
Figure 5-18. Comfortline® Mattress—P1433 (Accessory)



m169_050

Table 5-18. Comfortline® Mattress—P1433 (Accessory)

Item Number	Part Number	Quantity	Description
1	P1433CAT (871)	1	Mattress, standard width
2	P1433CAS (871)	1	Mattress, standard width
3	P1433EAT (871)	1	Mattress, flame retardant, standard width
4	P1433EAS (871)	1	Mattress, flame retardant, standard width

Emergency Crank Handle—P798A (Accessory) (Electric Drive Bed Only)**Figure 5-19. Emergency Crank Handle—P798A (Accessory) (Electric Drive Bed Only)**

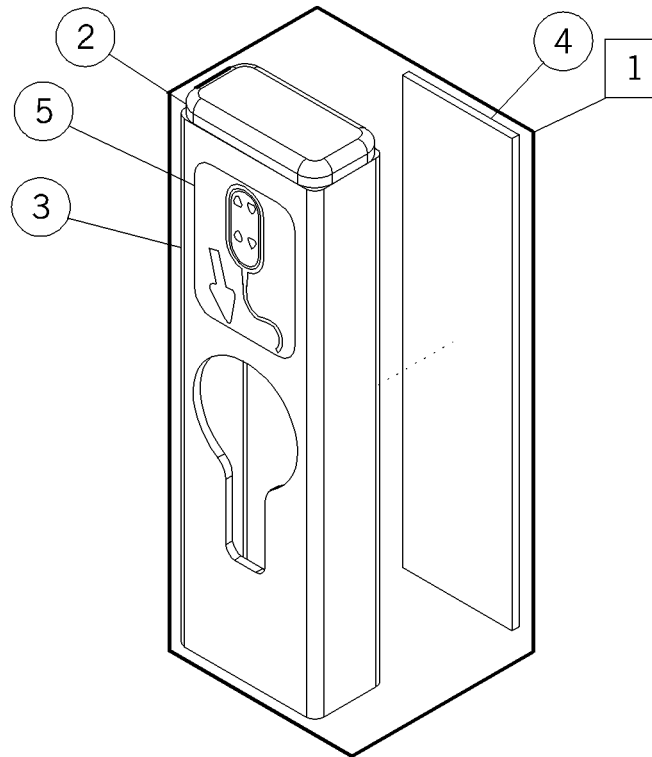
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**Table 5-19. Emergency Crank Handle—P798A (Accessory)
(Electric Drive Bed Only)**

Item Number	Part Number	Quantity	Description
1	P798A (871)	1	Emergency crank handle

Pendant Holder—P799A (Accessory) (Electric Drive Bed Only)

Figure 5-20. Pendant Holder—P799A (Accessory) (Electric Drive Bed Only)



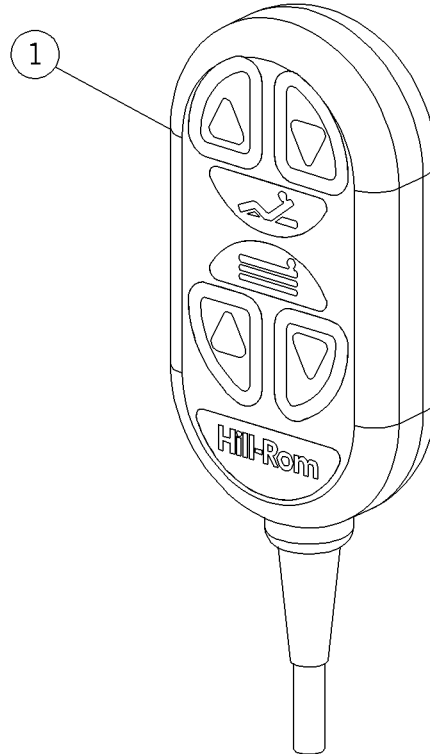
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Table 5-20. Pendant Holder—P799A (Accessory)
(Electric Drive Bed Only)

Item Number	Part Number	Quantity	Description
1	P799A (871)	1	Pendant holder
2	63124 (871)	1	Plug, 1" tube
3	63146 (871)	1	Pendant tube
4	63147 (871)	1	Foam tape
5	63155 (871)	1	Label kit (pendant label)

Pendant, Four-Button (Accessory) (Electric Drive Bed Only)

Figure 5-21. Pendant, Four-Button (Accessory) (Electric Drive Bed Only)



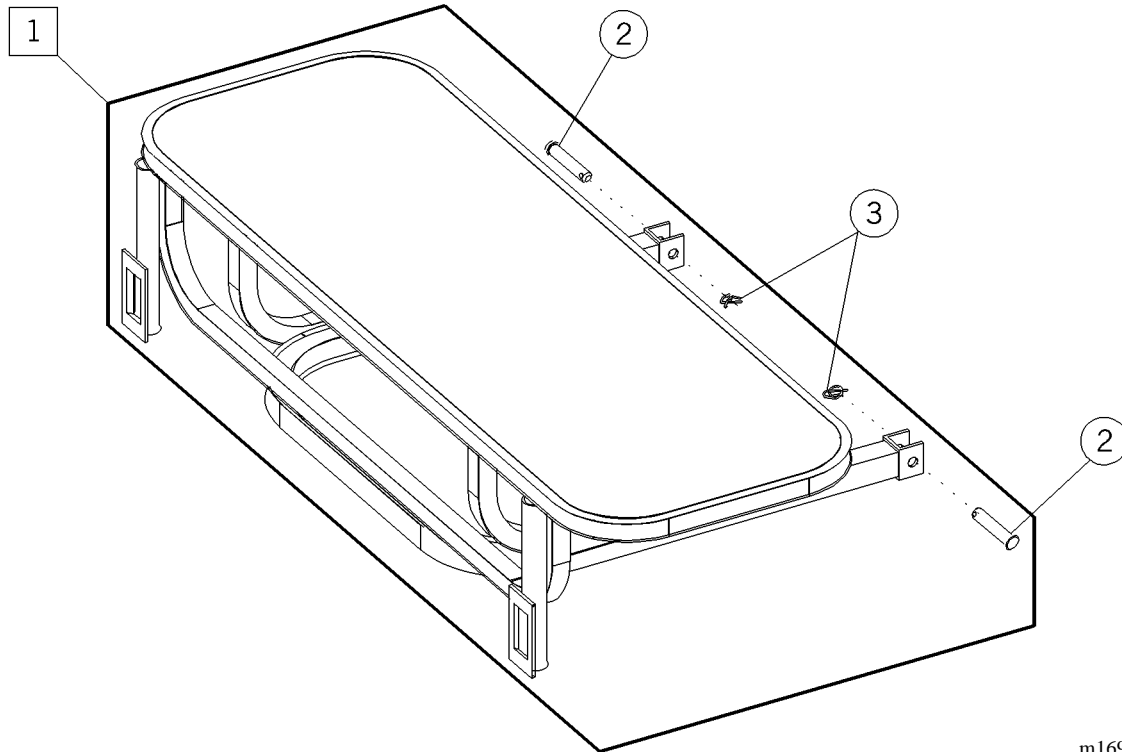
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Table 5-21. Pendant, Four-Button (Accessory) (Electric Drive Bed Only)

Item Number	Part Number	Quantity	Description
1	63338 (871)	1	Pendant, four-button

Bed Extender—P9912A02 (Accessory)

Figure 5-22. Bed Extender—P9912A02 (Accessory)



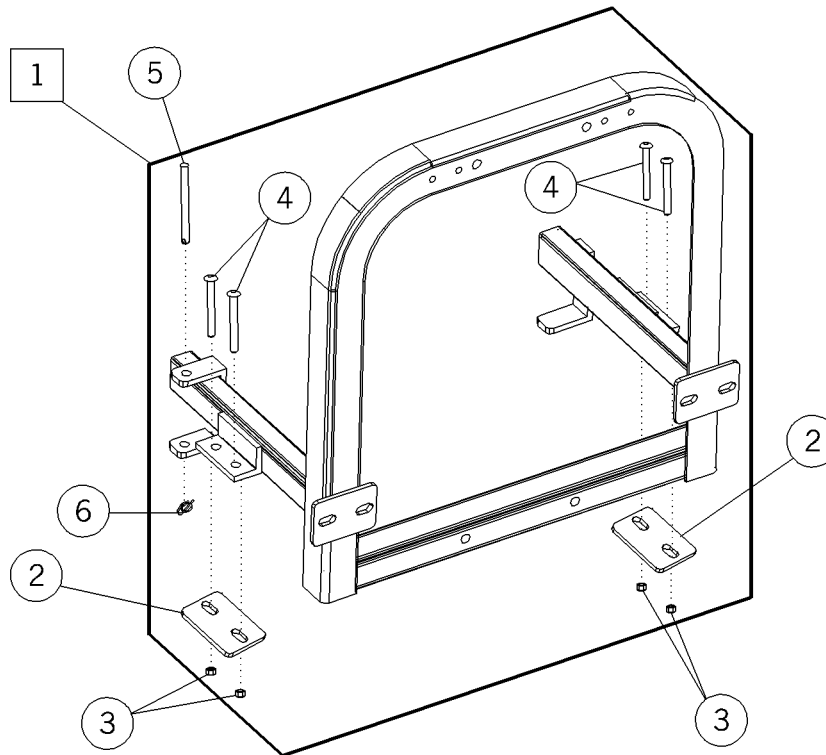
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Table 5-22. Bed Extender—P9912A02 (Accessory)

Item Number	Part Number	Quantity	Description
1	P9912A02 (871)	1	Bed extender
2	Reference only	2	Cotter pin
3	Reference only	2	Ring

Trapeze Support Bracket—P846A02 (Accessory)

Figure 5-23. Trapeze Support Bracket—P846A02 (Accessory)



m169_077

Table 5-23. Trapeze Support Bracket—P846A02 (Accessory)

Item Number	Part Number	Quantity	Description
1	P846A02 (871)	1	Trapeze support bracket
2	26633 (871)	2	Back plate
3	Reference only	4	Nuts
4	Reference only	4	Bolts
5	Reference only	1	Cotter pin
6	Reference only	1	Rue ring

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 OSPREY™ LTC Bed. Excessive moisture can damage mechanisms 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.

Wood Head and Foot Panel Care

Wood products from Hill-Rom are treated with a resin based sealer and finish that provide resistance to abrasion, staining, fluids, and fire.

Clean the headboard and foot panel by wiping with a soft cloth dampened with a suitable cleaning solution, and then wipe with a dry cloth. Use diluted ammonia, detergent, and bleach solutions to clean the wood surfaces.



CAUTION:

Many disinfectant cleaners, if used in high concentrations, have a softening effect on any painted or finished surface. Equipment damage could result.

The Centers for Disease Control recommend EPA approved hospital disinfectants, used at the manufacturers' suggested dilutions or bleach at 1:100 dilution (1/4 cup to 1 gallon water), to clean environmental surfaces such as the OSPREY™ LTC Bed.

Do not allow a wet cloth to lay on wooden surfaces. Immediately wipe up any liquid spilled on the surface to prevent possible damage to the finish.

Apply a liquid furniture polish to the wood surfaces to protect the finish.

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 used 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 bushings and bearings)
- P/N SA33516 grease (use on actuator rods)
- P/N SA0646 Teflon® spray lubricant, dry (aerosol spray can—use anywhere else that the bed needs lubrication)

Preventive Maintenance



WARNING:

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

The OSPREY™ LTC 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 ensure a long, operative life for the OSPREY™ LTC Bed. PM will minimize downtime due to excessive wear.

The following PM schedule guides the technician through a normal PM procedure on the OSPREY™ LTC 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 OSPREY™ LTC Bed. However, your facility can modify this checklist or design another to fit your needs. Keeping close records and maintaining the OSPREY™ LTC Bed are two effective ways to reduce downtime and ensure the patient remains comfortable.

Preventive Maintenance Schedule

Table 6-1. Preventive Maintenance Schedule

Function	Procedure
Hilow limits	Operate the hilow function to the upper and lower limits to ensure proper function of the hilow actuator limit switches.
Head limits	Operate the head function from full flat to its maximum angle of 65° (± 2°) to ensure proper function of the head actuator limit switches.
Brakes	Test the brakes to determine if the bed moves when the brakes are engaged.
Casters	Test the swivel casters to ensure they do not bind. Check all caster tires for cuts, wear, etc. Replace if necessary.
Siderails	Inspect for proper up and down operation. Inspect the locking latch for proper operation.
Lockout control box	Test each control lockout switch individually to ensure proper operation.
Pendant	Test each operating function individually to ensure that, when pressed, the corresponding function operates correctly and, when released, travel stops.
Wiring condition and routing	Check the power cord, plug, and wiring for cuts, nicks, or breaks. Ensure that the wiring is routed where it is not pinched. Replace if necessary.
Pivot points	Lubricate all pivot points on the bed.
Headboard and foot panels	Check aesthetics. Clean and touch up, if necessary.
Overall appearance	Inspect the condition of the labels, paint, and general aesthetics. Replace labels, touch-up paint, and clean, if necessary.

Table 6-2. Preventive Maintenance Checklist

[illegible]

Tool and Supply Requirements

The following tools are required to service the OSPREY™ LTC Bed:

- Drill
- 1/4" drill bit
- Pop rivet gun
- Pliers
- 7/16" open end wrench
- 3/8" open end wrench
- 1/8" allen wrench
- #3 allen wrench
- Phillips head screwdriver
- Screwdriver
- Hammer
- Ty-wraps
- Ty-wrap tool
- Scissors or utility knife
- Loctite® adhesive (P/N 8651)

NOTES:

Chapter 7

Accessories

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NOTES:

Accessories



WARNING:

Use only accessories specifically identified for use with the OSPREY™ LTC Bed. Failure to do so could result in personal injury or equipment damage.

Accessories may be added or removed at the point of resident care by a caregiver. Accessories are interchangeable within a product configuration.

See table 7-1 on page 7-3 for OSPREY™ LTC Bed accessories

Table 7-1. Accessories List

Product Number	Description
P1433 (871)	Comfortline® mattress
P2217 (871)	IV rod
P4065 (871) ††	Lynnfield special deluxe head and foot panels
P4066 (871) ††	Lynnfield modified head and foot panels
P4067 (871) ††	Lynnfield deluxe head and foot panels
P4069 (871) ††	Century head and foot panels
P4071 (871) ††	Hearthside head and foot panels
P4072 (871) ††	Heirloom head and foot panels
P4073 (871) ††	Artisan head and foot panels (Post)
P4074 (871) ††	Artisan head and foot panels (Dentil)
P798A (871)	Emergency crank handle
P799A (871)	Pendant holder
P9912A02 (871)	Bed extender
P846A02 (871)	Trapeze support bracket
P869A05 (871)	1/2-length head end siderail (pair)
P868A02 (871)	1/2-length foot end siderail (pair)

†† Specify wood and laminate finish.

7.1 IV Rod—P2217

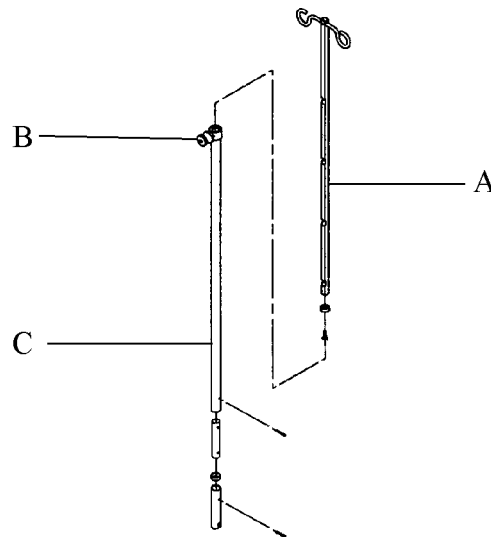
The two-sectioned, telescopic IV rod mounts in any of the sockets located at the four corners of the bed. The rod is adjustable in length so that it may be raised or lowered with respect to the bed frame.

Installation

Tools required: None

Insert the IV rod into the desired socket, and twist the lower section (C) clockwise to lock in place (see figure 7-1 on page 7-4).

Figure 7-1. IV Rod—P2217 1



m169_036

Adjustment

1. To extend the rod, pull upward on the upper section (A) to the desired height .
2. To lower the rod, pull outward on the release knob (B), and manually lower the upper section (A) into the lower section (C)

Removal

Twist the lower section (C) counterclockwise, and lift the IV rod from its socket.

7.2 Head and Foot Panels—P4065, P4066, P4067, P4069, P4071, P4072, P4073, and P4074

The Lynnfield Special Deluxe head and foot panels (P4065), Lynnfield Modified head and foot panels (P4066), Lynnfield Deluxe head and foot panels (P4067), Century head and foot panels (P4069), Hearthside head and foot panels (P4071), Heirloom head and foot panels (P4072), Artisan Post head and foot panels (P4073), and Artisan Dentil head and foot panels (P4074) are available as accessories.

The head and foot panels fit over two vertical post type mountings located at each end of the bed. They are removable by lifting vertically.

Installation

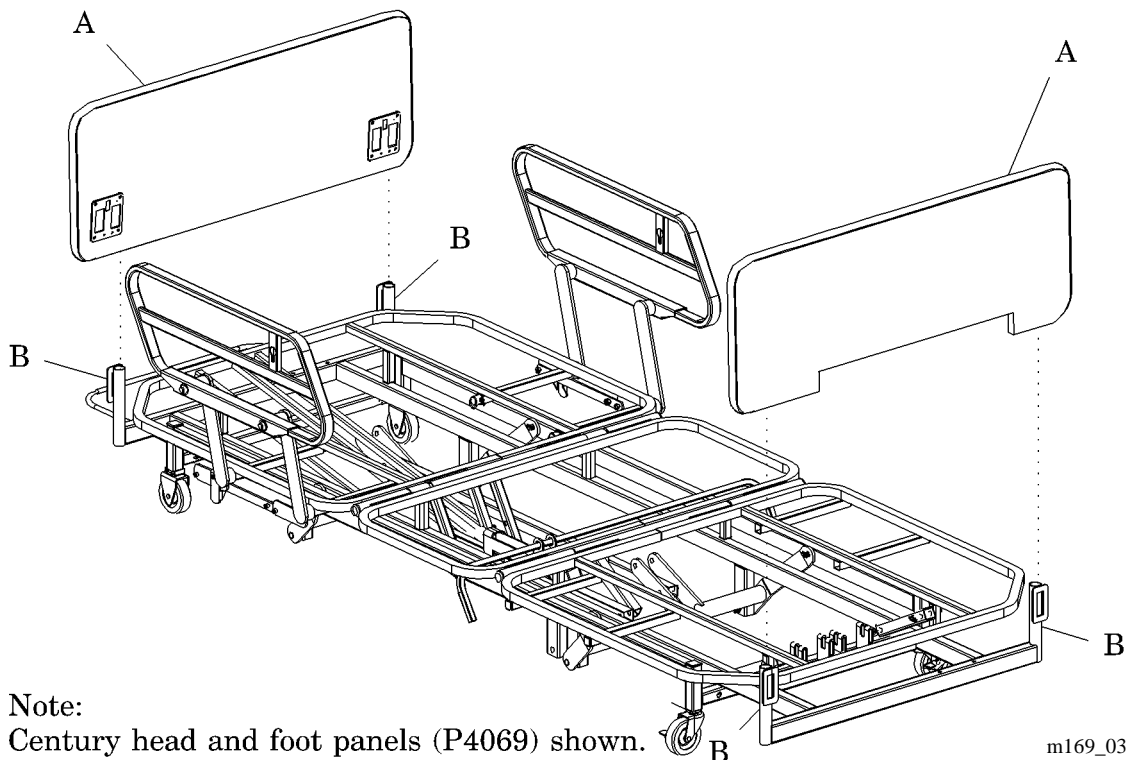
Tools required: None

NOTE:

The foot panel has a cutout for the manual controls.

Align the panel (A) brackets with the post mountings (B), and slide downward until fully engaged (see figure 7-2 on page 7-5).

Figure 7-2. Head and Foot Panel Installation



Note:

Century head and foot panels (P4069) shown.

m169_039

7.3 Comfortline® Mattress—P1433

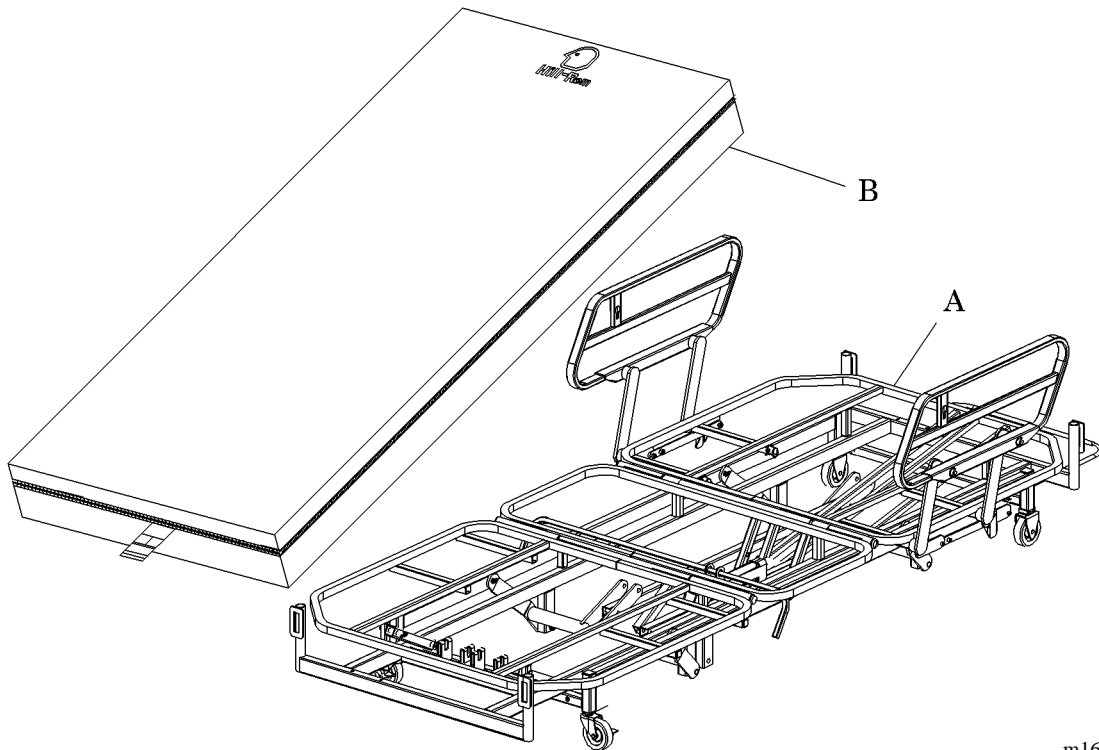
A 5" (13 cm) thick Comfortline® mattress is available as an accessory.

Installation

Tools required: None

1. Remove the existing mattress from the bed (A) (see figure 7-3 on page 7-6).

Figure 7-3. Comfortline® Mattress (P1433) Installation



m169_061

2. Remove the shipping wrappings from the Comfortline® mattress (B).
3. Place the Comfortline® mattress (B) on the sleep surface with the label “head section” at the head end of the bed (A).
4. Raise the mattress stop to the foot end of the bed (A) to keep the mattress from sliding toward the foot panel.

7.4 Emergency Crank Handle—P798A (Electric Drive Model Only)

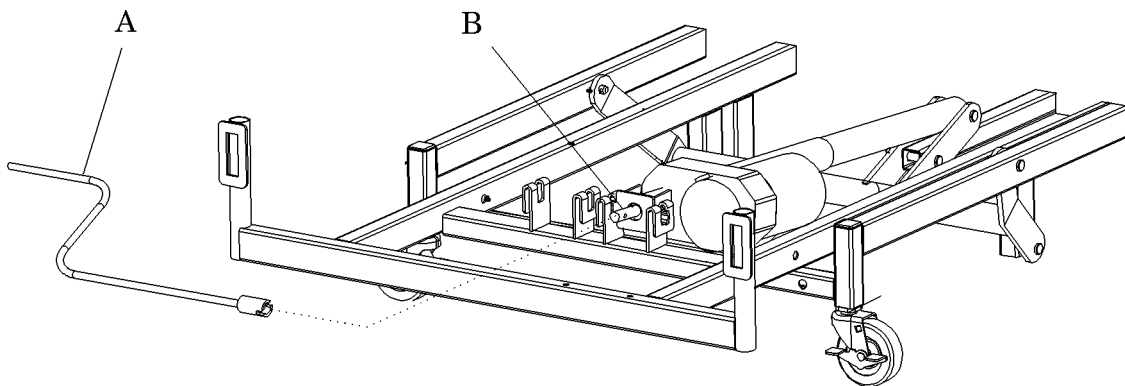
An emergency crank handle is available as an accessory for the electric drive model bed.

Installation

Tools required: None

1. Attach the emergency crank handle (A) to the electric drive shaft (B) (see figure 7-4 on page 7-7).

Figure 7-4. Emergency Crank Handle—P798A



m169_042

2. Ensure the electric drive shaft (B) locking pin secures the electric crank handle (A) attachment.
3. Turn the electric crank handle (A) clockwise to raise the electric drive action, or turn the electric crank handle (A) counterclockwise to lower the electric drive action.

7.5 Pendant Holder—P799A (Electric Drive Model Only)

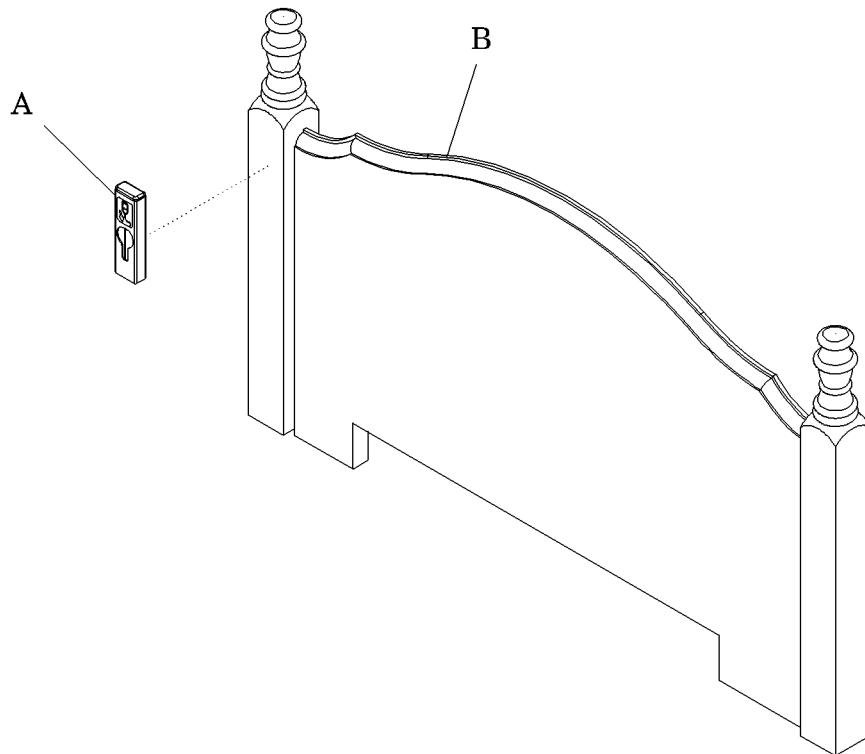
A pendant holder is available as an accessory for the electric drive model bed. The pendant holder may be mounted to a vertical surface to provide ready access and storage for the pendant assembly.

Installation

Tools required: None

1. Verify the pendant assembly will reach the desired pendant holder (A) location (see figure 7-5 on page 7-8).

Figure 7-5. Pendant Holder—P799A



m169_073

2. Wipe down the desired pendant holder (A) location with an approved disinfectant. Remove all dirt and soiling, and allow the location surface to dry.
3. Remove the backing from the pendant holder (A) foam tape.



CAUTION:

Ensure the pendant holder foam tape is securely fastened to the footboard. Press firmly onto the pendant holder during installation. Failure to do so could result in equipment damage.



CAUTION:

Use care and precision when mounting the pendant holder. Avoid removing the pendant holder once installation is complete. The adhesive may peel paint or discolor the surface. Equipment damage could result.

4. Orient the pendant holder (A) with the black cap up, and install the pendant holder (A) onto the footboard (B).

7.6 Bed Extender—P9912A02

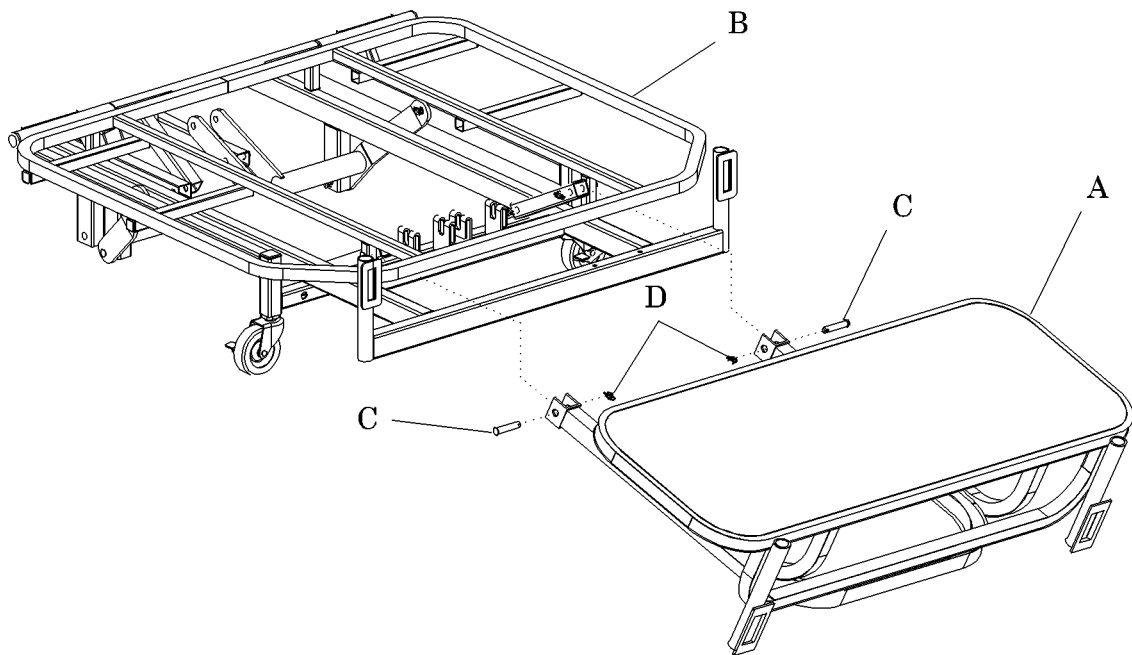
A bed extender is available as an accessory. The bed extender assembles to the foot end of the bed, and allows taller residents to keep their feet in the bed. The foot panel must be removed to install the bed extender.

Installation

Tools required: Pliers

1. Remove the foot panel from the bed (refer to procedure 7.2).
2. Align the holes on bed extender (A) brackets with the holes on the foot section weldment (B) posts, and install the bed extender (A) to the foot end of the bed (see figure 7-6 on page 7-10).

Figure 7-6. Bed Extender—P9912A02



m169_080

3. Install the clevis pins (C) and rue rings (D) securing the bed extender (A) to the foot section weldment (B).

7.7 Trapeze Support Bracket—P846A02

A trapeze support bracket is available as an accessory.

Installation

Tools required: Pliers
 Wrench

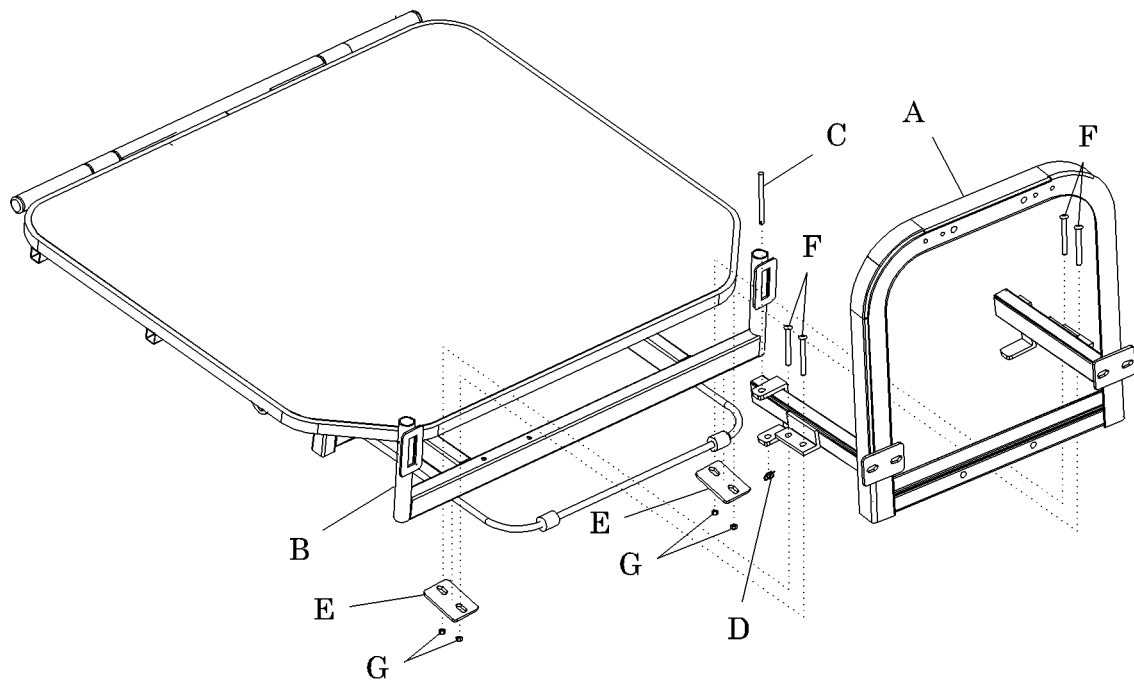


CAUTION:

Do not lower the bed frame while the trapeze support bracket is attached to the bed. Deactivate the hilow function while the trapeze support bracket is in use. Failure to do so could result in equipment damage.

1. Using the hilow function, completely raise the bed frame.
2. Using the control box, deactivate the hilow function (electrical drive bed model only).
3. Align the trapeze support bracket (A) arms with the intermediate frame (B) head end (see figure 7-7 on page 7-12).

Figure 7-7. Trapeze Support Bracket—P846A02



m169_079

4. Install the cotter pin (C) and rue ring (D) securing the trapeze support bracket (A) left-hand arm to the intermediate frame (B).
5. Position the trapeze support bracket (A) so its arm brackets rest on the intermediate frame (B) outer cross bar.
6. Align the two back plates (E) beneath the intermediate frame (B) cross bar so its holes are directly below the trapeze support bracket (A) arm bracket holes.
7. Install the four bolts (F) and nuts (G) securing the intermediate frame (B) outer cross bar between the trapeze support bracket (A) and back plates (E).

7.8 1/2-Length Head End Siderail—P869A05 and 1/2-Length Foot End Siderail—P868A02

1/2-length head end and foot end siderails are available as accessories.

Installation

Tools required: None



WARNING:

Lock all caster brakes before performing any service on the bed. Failure to do so could result in personal injury or equipment damage.

1. Move the bed to a location which provides easy access to the bed sides, and lock all caster brakes.
2. Raise the head end of the bed to gain access to the deck underside.



SHOCK HAZARD:

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

3. Unplug the unit from its power source (electric drive bed model only).



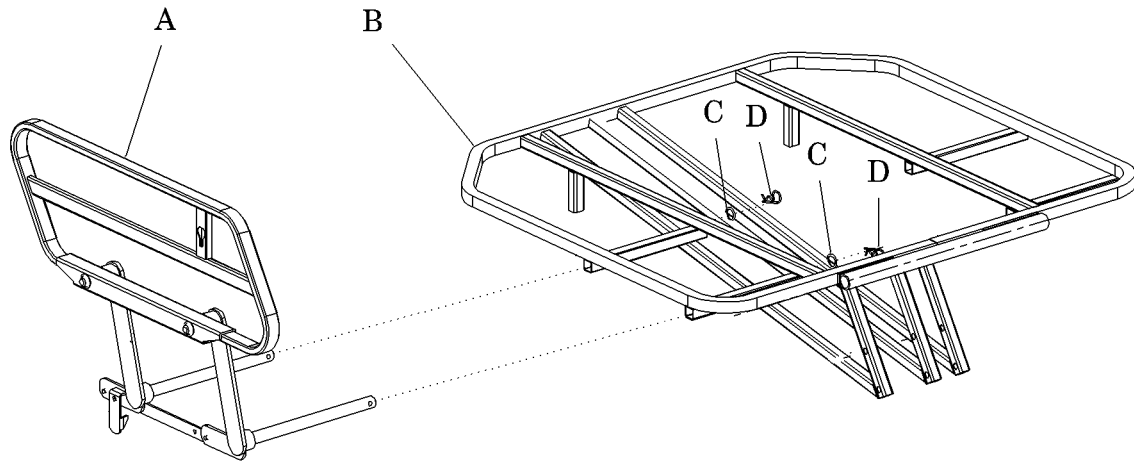
WARNING:

Ensure the siderails are properly installed. Orient the siderail with the siderail latch furthest from the middle of the bed, and siderail rotation towards the siderail respective bed end. Failure to do so could result in personal injury or equipment damage.

4. Remove the black plastic caps from the upper frame assembly (B) mounting tubes (see figure 7-8 on page 7-14).

Figure 7-8. 1/2-Length Head End Siderail—P869A05 and 1/2-Length Foot End Siderail—P868A02

Note: 1/2-length head end siderail shown.



m169_085

5. Assemble the siderail (A) mounting bars into the upper frame assembly weldment (B) mounting tubes.
6. Place the siderail (A) in the raised position.
7. Install the washer (C) and hairpin cotter retaining ring (D) into each siderail (A) mounting bar to secure the siderail (A) to the upper frame assembly weldment (B).
8. Raise and lower the siderail (A) to ensure proper operation.