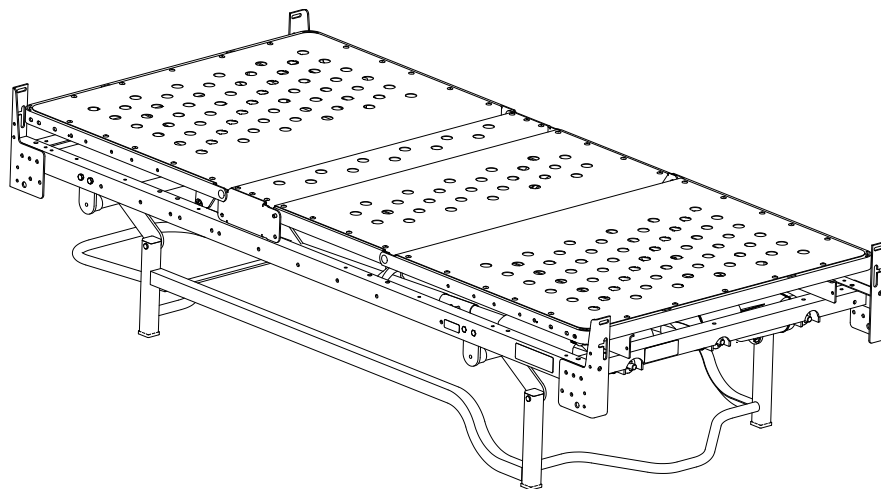


***Invacare Continuing Care, Inc.***

***Carroll<sup>®</sup> DLX Series  
Long Term Care Beds  
IH820DLX  
IH820-3MDLX  
SC900DLX***



**DEALER:** This manual **MUST** be given to the user of the product.

**USER:** BEFORE using this product, read this manual and save for future reference.

For more information regarding Invacare Continuing Care, Inc. (ICCI) products, parts, and services, please visit [www.invacare-ccg.com](http://www.invacare-ccg.com) or call 800-668-2337



***Yes, you can.***

---

## **WARNING**

**DO NOT** use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as owner's manuals, service manuals or instruction sheets supplied with this product or optional equipment. If you are unable to understand the warnings, cautions or instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

The initial set up of this bed **MUST** be performed by a qualified technician.

Procedures other than those described in this manual **MUST** be performed by a qualified technician.

---

## **ACCESSORIES WARNING**

ICCI products are specifically designed and manufactured for use in conjunction with ICCI accessories. Accessories designed by other manufacturers have not been tested by ICCI and are not recommended for use with ICCI products.

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## **SPECIAL NOTE**

For your convenience, the January 2008 version of the FDA's bed safety guidelines are provided in the Appendix. The information from the FDA's brochure, published by Hospital Bed Safety Workgroup, is reproduced verbatim, the latest revision of which is available at <http://www.fda.gov>.

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# SPECIAL NOTES

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. Refer to the table below for definitions of the signal words.

SIGNAL WORD	MEANING
DANGER	Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage or minor injury or both.

## NOTICE

**THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.**

### PENDANT OPERATION

A safety feature of this product includes protection against overheating caused by excessive or extended periods of operation. Depending on the duration, this includes multiple or repeated adjustments or the use of multiple functions at one time. To ensure trouble free operation, **ALWAYS** allow a slight pause between multiple adjustments and avoid pressing more than one function button at a time. If thermal protection activation should occur, the bed will not respond to pendant commands. Given this situation, release the pendant button and allow the bed unit to sit for several minutes. This will allow the protection function time to reset and restore bed function. Depending on severity of the initial overheating, this could take up to 30 minutes.

Check all parts for shipping damage and test before using. In case of damage, **DO NOT** use. Contact ICCI Customer Service Department (1-800-668-2337)/Carrier for further instruction.




**This Manual/Electric bed has been engineered to provide reliable operation. The bed has been thoroughly tested and inspected prior to shipment.**

This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE.

This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

Please be environmentally responsible and recycle this product through your recycling facility at its end of life.

# TYPICAL PRODUCT PARAMETERS

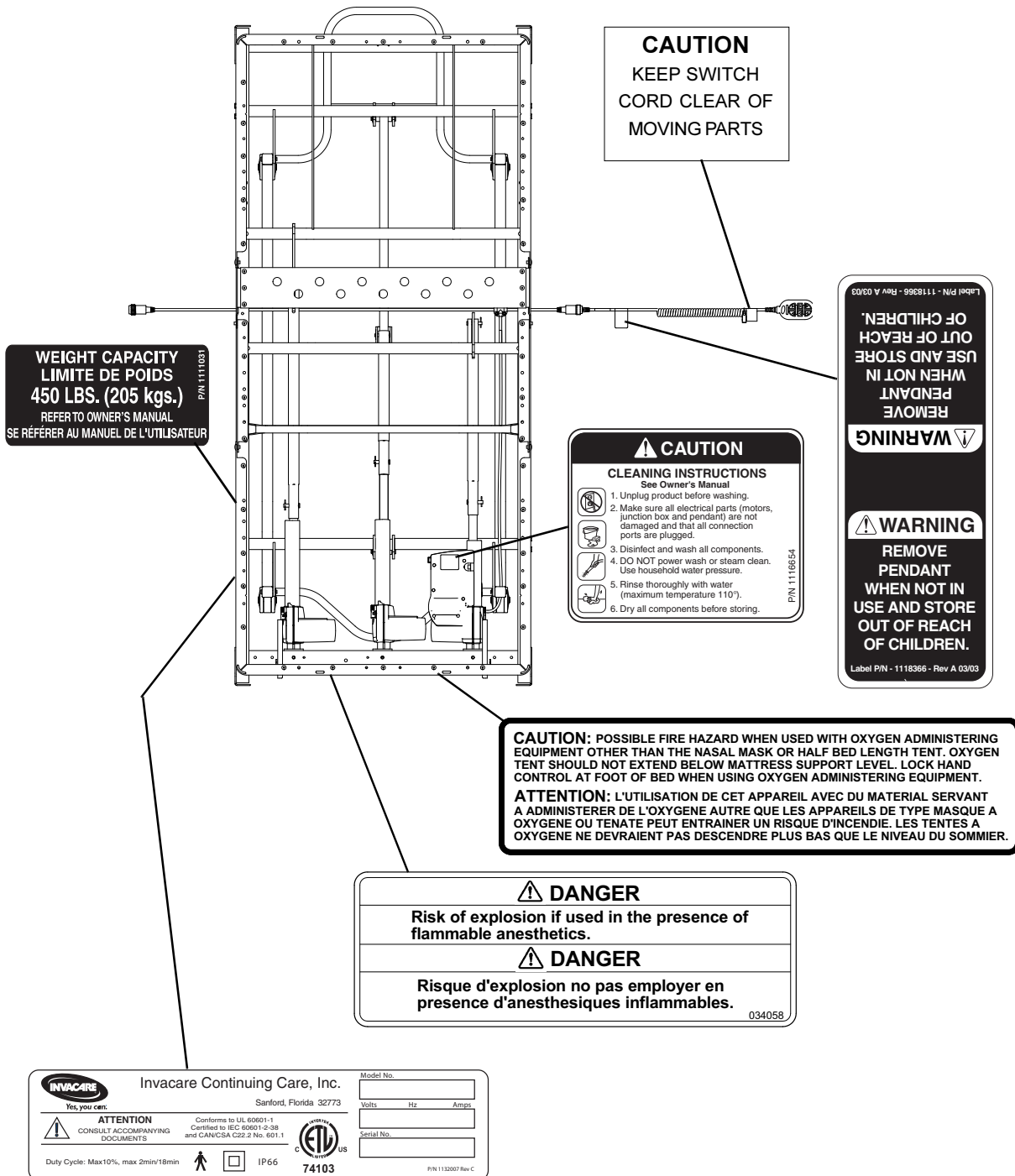
<b>REGULATORY LISTING:</b>	UL 60601-1, IEC 60601-2-38, CAN/CSA C22.2 No. 601-1
<b>ELECTRICAL REQUIREMENTS:</b>	120 VAC, 50-60 Hz
<b>RATED CURRENT INPUT:</b>	3.5 A max
<b>DUTY CYCLE:</b>	10%, max 2 min/18 min
<b>RECOMMENDED STORAGE AND SHIPPING TEMPERATURE:</b>	-29°C to 65°C (-20°F to 150°F)
	Degree of protection against electric shock, Type B equipment
	Attention - Consult Accompanying Documents
IP66	International Protection Code Degree of protection against solid foreign objects and ingress of water.
	Type of protection against electric shock. Class II, Double Insulation

	<b>IH820DLX AND IH820-3MDLX</b>	<b>SC900DLX</b>
<b>OVERALL WIDTH:</b>	35 inches (36 inches with head/foot boards)	
<b>OVERALL LENGTH:</b>	79 inches (82 inches with head/foot boards)	
<b>ADJUSTMENT RANGE:</b>	13 <sup>3</sup> / <sub>4</sub> to 27 inches	9 <sup>7</sup> / <sub>8</sub> to 20 <sup>1</sup> / <sub>4</sub> inches
<b>UNDER BED CLEARANCE</b> BED LOWERED: BED ELEVATED:	7 inches 8 <sup>1</sup> / <sub>4</sub> inches	4 <sup>1</sup> / <sub>2</sub> inches 5 inches
<b>HEAD ANGLE RANGE:</b>	0 to 70 degrees	0 to 70 degrees
<b>FOOT ANGLE RANGE:</b>	0 to 29 degrees	0 to 29 degrees
<b>APPROXIMATE OVERALL WEIGHT (IN POUNDS):</b>	155 - Manual Hi/Lo 170 - Electric Hi/Lo (3 Motors)	170 - Electric Hi/Lo (3 Motors)
<b>APPROXIMATE SHIPPING WEIGHT (IN POUNDS):</b>	165 - Manual Hi/Lo 180 - Electric Hi/Lo (3 Motors)	180 - Electric Hi/Lo (3 Motors)
<b>WEIGHT LIMITATION:</b>	450 lbs* (205 Kgs)	450 lbs* (205 Kgs)

NOTE: \* Includes all accessories.

# LABEL LOCATIONS

NOTE: Top view of bed shown.



# SECTION I—GENERAL GUIDELINES

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## **WARNING**

**SECTION I - GENERAL GUIDELINES** contains important information for the safe operation and use of this product.

---

## Operation Information

When using an extension cord, use only a three wire extension cord having at least 16 AWG (American Wire Gauge) wire and the same or higher electrical rating as the device being connected. Use of improper extension cord could result in a risk of fire and electric shock. Three prong to two prong adapters should not be used. Use of three prong adapters can result in improper grounding and present a shock hazard to the user.

After installation and before use make sure all attaching hardware is securely tightened.

DO NOT use near explosive gases.

Possible fire hazard when used with oxygen administering equipment other than nasal or masked type.

When using nasal or masked type administering equipment, oxygen or air tubing **MUST** be routed and secured properly to ensure that tubing does not become entangled, kinked or severed during normal operation of Manual/Electric bed.

Periodically inspect all electrical components for damage and replace if found. Continued use of a damaged component can result in abnormal operation and may present a hazard to some users.

Close supervision is necessary when this product is used by or near children or people with disabilities.

NEVER permit anyone under the bed at any time.

DO NOT move the bed while occupied.

When operating Manual/Electric Beds, **ALWAYS** ensure that the individual utilizing the bed is positioned properly within the confines of the bed. **DO NOT** let any extremities protrude over the side or between the bed rails when operating the bed.

Pendant cable **MUST** be routed and secured properly to ensure that cable does not become entangled and damaged during normal operation of Electric beds.

Keep all moving parts free of obstruction (i.e. blankets/sheets, heating blankets/pads, tubing, wiring, etc. and other types of products using electric cables) which may get tangled around the bed, side rails or legs during operation of Manual/Electric beds.

If bed is equipped with wheel locks, **ALWAYS** use wheel locks except when moving the bed. Inspect for correct locking action on wheel locks before using bed.

Once patient assessment concludes that the patient's condition increases the chance of entrapment, the bed **MUST** be in the flat position when left unattended.



Although bed rails and the ThinkSoft® positioning device are not rated to any specific weight limitation, the bed rails or ThinkSoft positioning device may become deformed or broken if excessive side pressure is exerted on the bed rails or ThinkSoft positioning device.

The bed rail is not an assist rail for getting into or out of bed.

The ThinkSoft positioning device is intended to provide a grip surface to a bed occupant to position themselves.

DO NOT use the bed rails and/or positioning device as push handles when moving the bed.

Trapeze units are to be used only for immobilizing a patient in various traction setups or assisting the patient in repositioning or transferring into or out of bed.

NEVER allow patients to use trapeze or traction units as a total individual weight support.

NEVER permit more than one person on/in the bed at any time.

Body weight should be evenly distributed over the surface of the bed. DO NOT lay, sit or lean in such a way that your entire body weight is placed only on raised head or foot sections of the bed. This includes when assisting the user in repositioning or transferring in or out of bed.

Before selection and use of the bed, care facilities and healthcare providers should ALWAYS evaluate the particular needs of the resident based on their specific abilities, medical condition and requirements.

---

### **⚠ ENTRAPMENT WARNING**

**Proper patient assessment and monitoring, and proper maintenance and use of equipment is required to reduce the risk of entrapment. Variations in bed rail dimensions, and mattress thickness, size or density could increase the risk of entrapment. Visit the FDA website at <http://www.fda.gov> to learn about the risks of entrapment. Review “A Guide to Bed Safety”, published by the Hospital Bed Safety Workgroup.**

**Refer to the individual instruction sheet included with the bed rails and/or positioning device for additional product and safety information.**

**After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Assist rails with dimensions different from the original equipment supplied or specified by the bed manufacturer may not be interchangeable and may result in entrapment or other injury.**

**Mattress MUST fit bed frame, assist rails and/or positioning device snugly to reduce the risk of entrapment.**

---

## **Radio Frequency Interference**

Electronic equipment may be influenced by Radio Frequency Interference (RFI). Caution should be exercised with regard to the use of portable communications equipment in the area around such equipment. If RFI causes erratic behavior, unplug the electric bed IMMEDIATELY. Leave unplugged while transmission is in progress.

## **Weight Limitation**

The weight limitation for the ICCI manual/electric beds taking into consideration patient size, proper positioning, realignment, transfer, overall care and all accessories is 450 lbs (205 kgs).

# SECTION 2—PACKAGING, HANDLING AND SET-UP

## Receiving

1. Count cartons before signing shipping papers.
2. Designate someone at the facility to receive and inspect all merchandise. Use the master order acknowledgment to check off items as they are received.
3. Compare the number of cartons shipped with the number of cartons actually received and note such on the consignee copy of the freight bill. Make sure to have the truck driver sign the copy acknowledging the count.
4. If shortage occurs, IMMEDIATELY contact ICCI customer service department.

## Unpacking

1. Visually inspect all cartons for obvious and hidden damage.
2. Remove any loose packing from the cartons.
3. Carefully remove all components from the cartons.
4. Check bed components for any damage.
5. If no damage has been found, cut all tie wraps that secure the bed for transport.

*NOTE: Unless the bed is to be assembled and put into use IMMEDIATELY, retain cartons and packing material for use in storing the bed until assembly is required.*

6. If damage has been found, perform the following sections:
  - A. Document the type of damage that has occurred directly on the freight bill (crushed, bent, torn, punctured carton etc.) and have the truck driver sign it, acknowledging the damage.
  - B. IMMEDIATELY contact the delivering carrier to make a freight claim and request an inspection of the damaged merchandise. You will have a maximum of 15 DAYS to make a claim.
  - C. Hold cartons and merchandise until inspection has been made.
  - D. Retain the original carton packaging material and damaged merchandise until freight claim inspection has been made and carrier advises appropriate disposal.
  - E. Contact your ICCI customer service representative to report the damaged items and request appropriate replacement parts or products.

## Set-Up

---

### CAUTION

The removal and installation of cables and the cable lock should be performed by a qualified technician.

The wall bumper on the head of the bed is designed to allow for clearance required to prevent wall damage due to the raising arc of the bed. **DO NOT** put any item at the head or foot end of the bed.

---

## Inspecting the Bed

### Electric Beds

---

### WARNING

This procedure **MUST** be performed by a qualified technician only.

**When installing any connectors into the junction box, be sure that the cable lock is secure after installation - otherwise, injury or damage may occur.**

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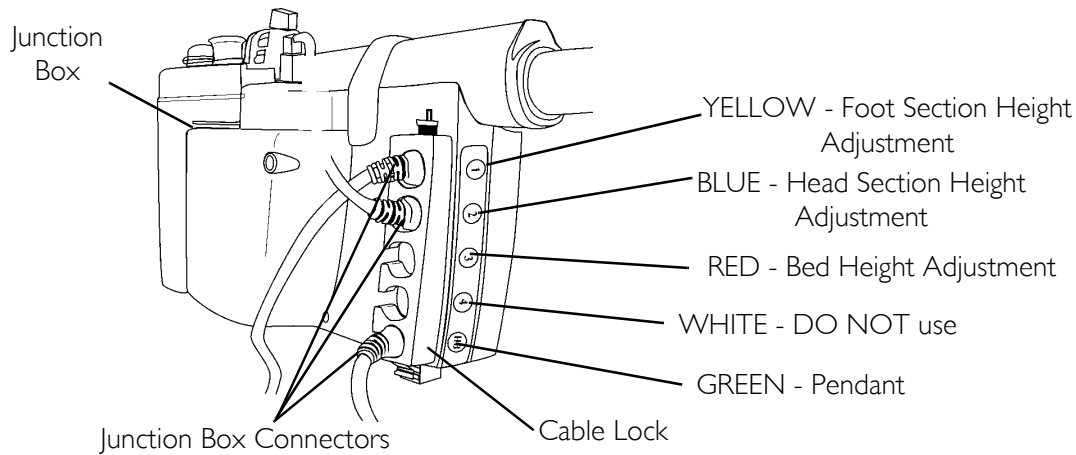
*NOTE: For this procedure, refer to FIGURE 2.1 on page 13.*

All motors, the junction box, connectors and wiring are located on the foot end of the bed.

All connectors will arrive plugged into the junction box. Each connector and junction box slot is color coded. If a connector is not plugged into the junction box when received or if a function of the bed is not working, use the color coding to check the placement of the connectors.

*NOTE: The color rings on the cables are not visible when the cables are plugged in and the cable lock is attached.*

1. Inspect the power supply cord and motor cables for cuts or damage to the cord and/or plug.
2. Inspect the junction box for any damage to the connectors.
3. Ensure that all cable plugs are connected securely.
4. Make sure all cables are routed through the cable lock slots.
5. Securely attach the cable lock.
6. If no damage is found, set-up the bed for use. Refer to Connecting the Pendant on page 13.
7. If damage is found, contact your ICCI customer service representative to report the damaged items and request appropriate replacement parts or products.



**FIGURE 2.1** Inspecting the Bed - Electric Beds

### Manual Beds

1. Raise and lower the cranks at the foot of the bed to make sure they work correctly. Refer to Manual Operation on page 16.
2. If no damage is found, set-up the bed for use.
3. If damage is found, contact your ICCI customer service representative to report the damaged items and request appropriate replacement parts or products.

### Connecting the Pendant

*NOTE: For this procedure, refer to FIGURE 2.2 on page 14.*

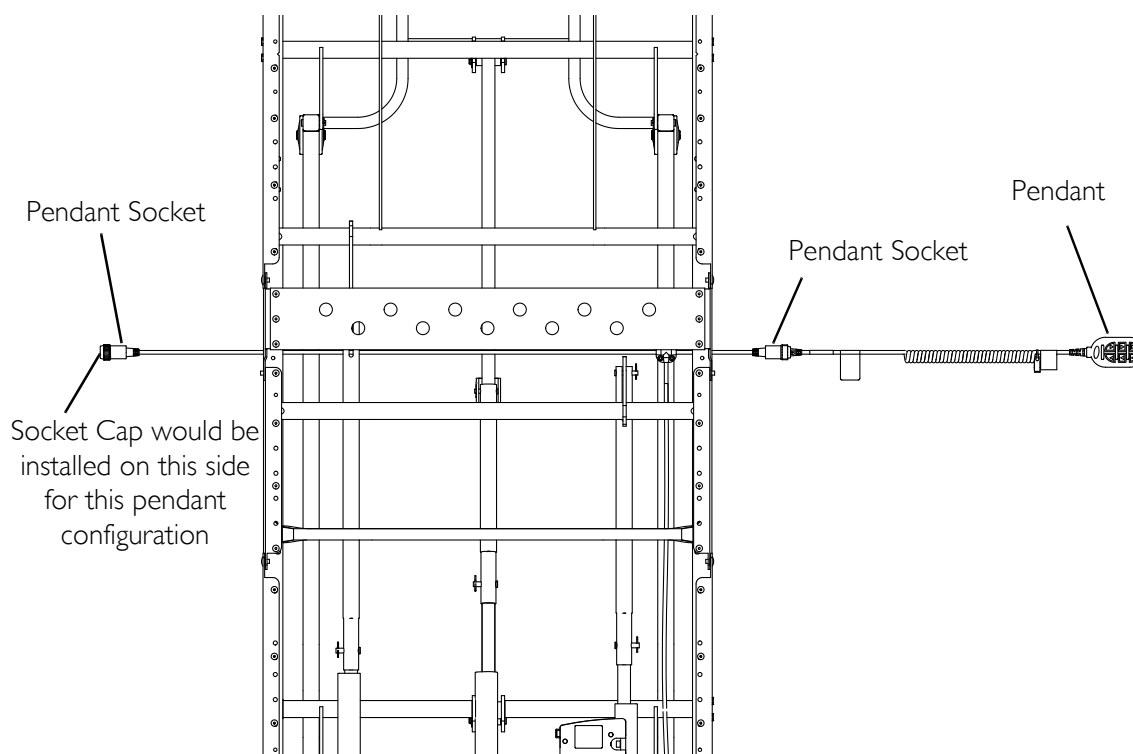
*NOTE: This procedure applies to electric beds only.*

1. Remove the pendant from the plastic bag.

*NOTE: The pendant can be attached to the pendant socket on either side of the bed.*

*NOTE: One pendant socket is equipped with a socket cap. The socket cap MUST be attached to the unused pendant socket.*

2. Unscrew and remove the socket cap, if necessary, and attach to opposite pendant socket.
3. Insert the pendant plug into the pendant socket and tighten the pendant nut to secure the connection.
4. Connect the junction box power cord to 110/120 VAC wall outlet.
5. Refer to Electric Operation on page 15 for instructions on operating the bed.

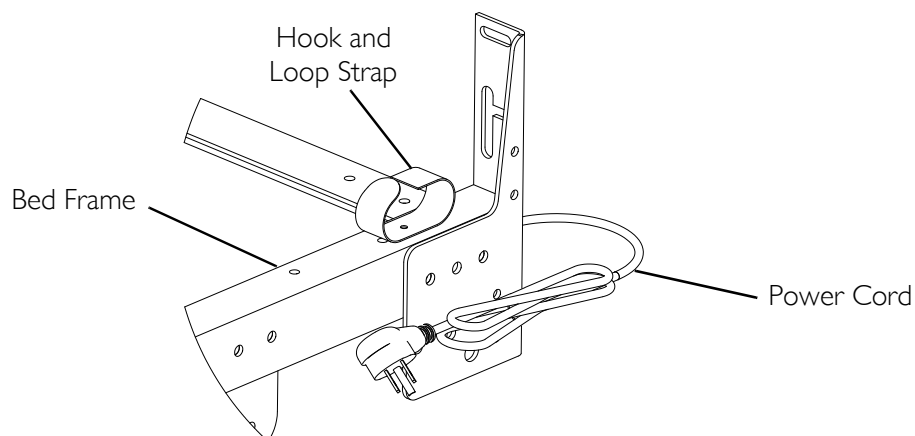


**FIGURE 2.2** Connecting the Pendant

## Storage

*NOTE: For this procedure, refer to FIGURE 2.3.*

1. If bed is not being assembled IMMEDIATELY, retain the cartons and packaging for storage.
2. Bundle the power cord.
3. Secure the power cord in the hook and loop strap on the bed frame.
4. Store the packaged/repackaged bed in a dry area.
5. DO NOT place other objects on top of the packaged/repackaged carton.



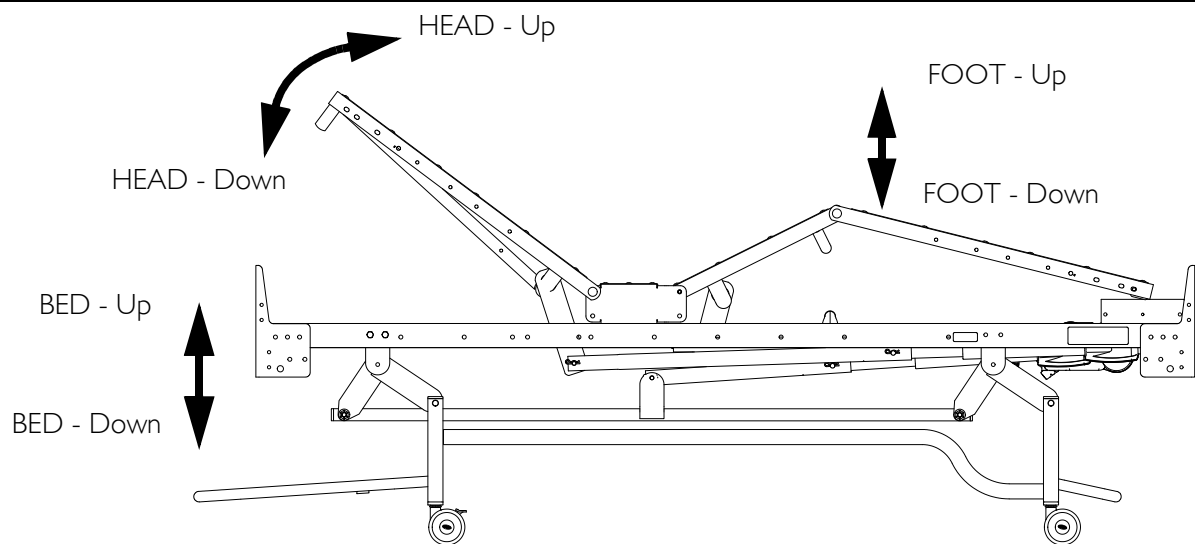
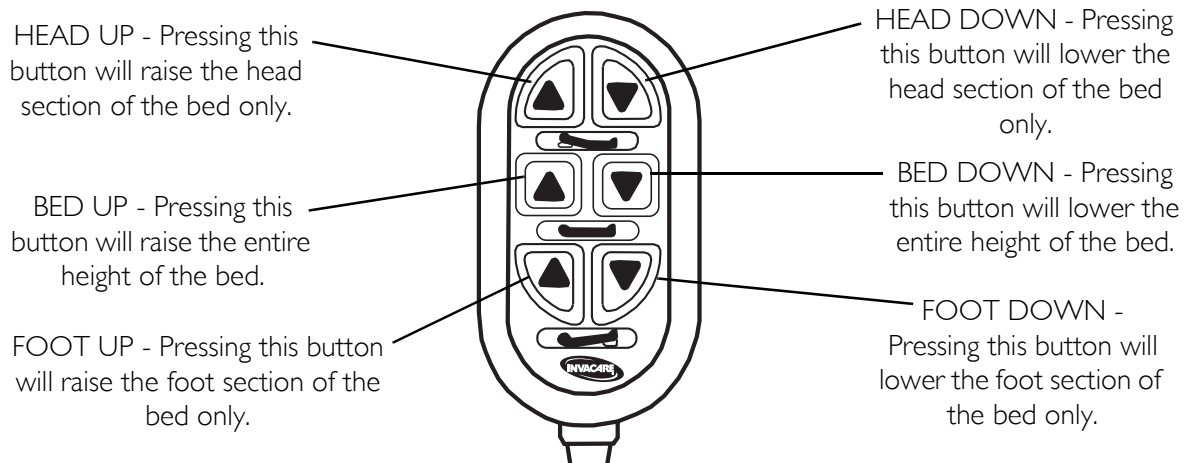
**FIGURE 2.3** Storage

# SECTION 3—OPERATION

## Electric Operation

*NOTE: For this procedure, refer to FIGURE 3.1.*

1. Connect the pendant. Refer to Connecting the Pendant on page 13.
2. Press the corresponding button on the pendant to achieve the desired position. Refer to FIGURE 3.1.



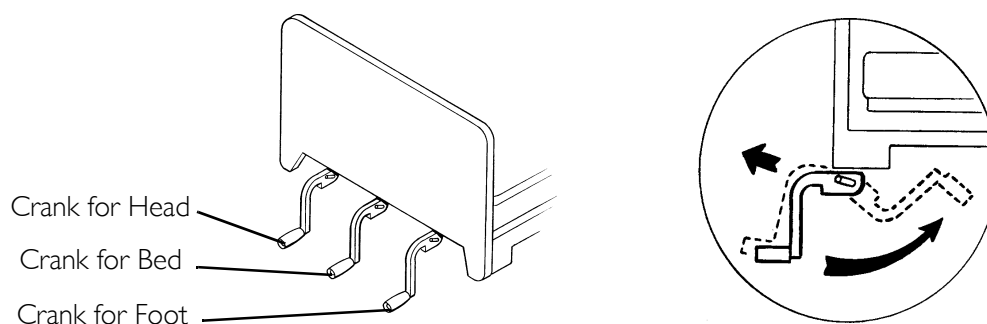
**FIGURE 3.1** Electric Operation

## Manual Operation

*NOTE: For this procedure, refer to FIGURE 3.2.*

1. To position the desired end of the bed, perform one of the following:

- Raising:
  - Head - Turn crank clockwise.
  - Bed - Turn crank counterclockwise.
  - Foot - Turn crank clockwise.
- Lowering:
  - Head - Turn crank counterclockwise.
  - Bed - Turn crank clockwise.
  - Foot - Turn crank counterclockwise.

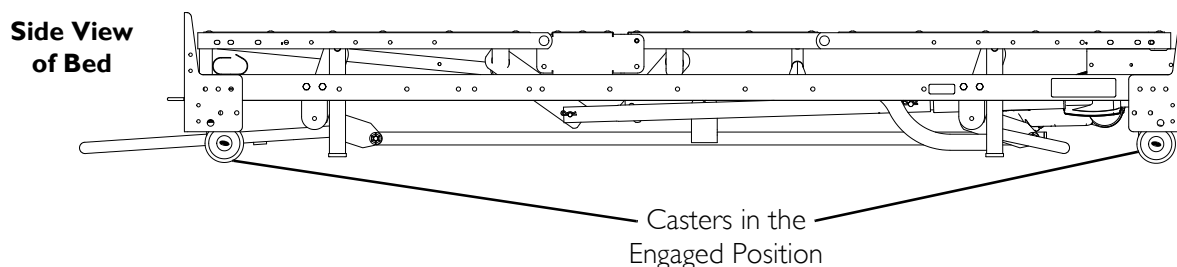


**FIGURE 3.2** Manual Operation

## Rolling the Bed

*NOTE: For this procedure, refer to FIGURE 2.3 on page 14 and FIGURE 3.3.*

1. To engage the casters, lower the bed to the low end stop position (FIGURE 3.3).
2. Bundle the power cord. Refer to FIGURE 2.3 on page 14.
3. Secure the power cord in the hook and loop strap on the bed frame.
4. Roll the bed to the desired location.



**FIGURE 3.3** Rolling the Bed



## SECTION 4—OPTIONAL ACCESSORIES

### **⚠ WARNING**

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

### Bed Rails and Positioning Devices

The listed bed rails and positioning devices are available:

MODEL	DESCRIPTION
IHRAILAB-DLX	Bar, DLX Beds
IHRAILAE-DLX	Assist Rail, DLX Beds
IH6803A	$\frac{1}{4}$ Length Positioning Rail
IH6815A	$\frac{1}{2}$ Rail Head Rail
IH6816A	$\frac{1}{2}$ Rail Foot Rail
IH6808A	$\frac{3}{4}$ Leg Rail
IH6801A	Full Length Rail
IH5748A	8-Bar Nylasar
IHRAILTS-DLX	ThinkSoft Positioning Device

*NOTE: Refer to the instruction sheet packaged with the above devices for instructions regarding assembly and use.*

### Positioning the Head/Foot Board Mounting Brackets

*NOTE: For this procedure, refer to FIGURE 4.1 on page 18.*

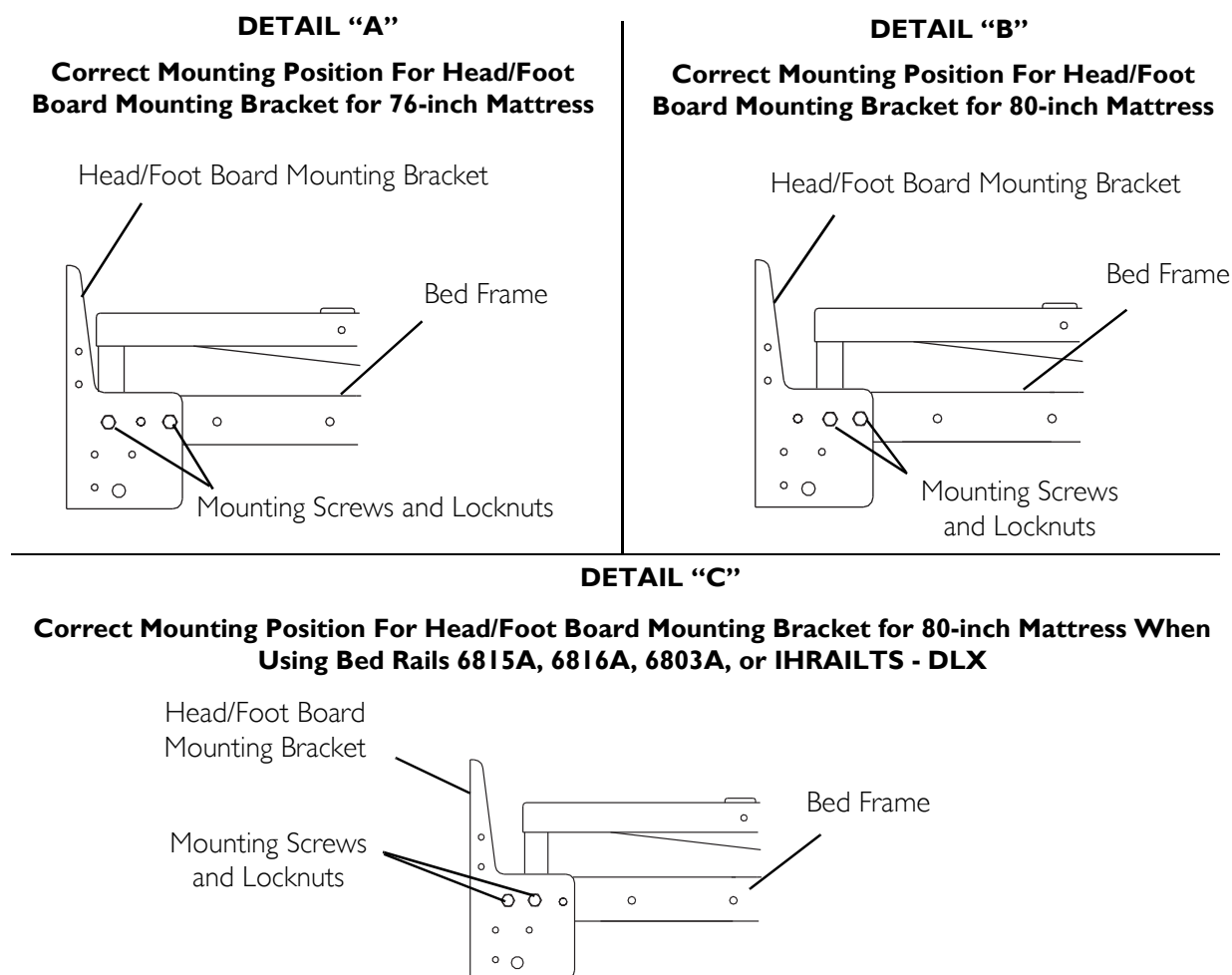
*NOTE: Angled half of head/foot board mounting brackets face the inside of the bed.*

*NOTE: Raising the head and foot sections may provide greater access to hardware.*

- Align head/foot board mounting bracket with bed frame in the appropriate mounting position according to the following:
  - 76-inch mattress length - See Detail "A"
  - 80-inch mattress length - See Detail "B"
  - 80-inch mattress length using bed rails 6815A, 6816A, 6803A or IHRAILTS - DLX. See Detail "C".
- Secure the head/foot board mounting bracket to the bed frame using two mounting screws and locknuts. Securely tighten.

*NOTE: Ensure mounting brackets are perpendicular to the floor.*

3. Repeat STEPS 1-2 to install remaining head/foot board mounting bracket.



**FIGURE 4.1** Positioning the Head/Foot Board Mounting Brackets

## Installing/Removing the Head/Foot Boards

*NOTE: For this procedure, refer to FIGURE 4.2 on page 19.*

*NOTE: If necessary, install the head/footboard mounting brackets. Refer to Positioning the Head/Foot Board Mounting Brackets on page 17.*

*NOTE: Raising the head and foot sections may provide greater access to hardware.*

### Installing Bolt On Head/Foot Boards

1. Position the mounting holes in the head/foot board with the mounting brackets on the bed frame.
2. Install the washers and hex bolts into the mounting brackets on the bed frame and the head/foot board.

3. Securely tighten the hex bolts.
4. Repeat STEPS 1-3 for the opposite end of the bed.

### Removing Bolt On Head/Foot Boards

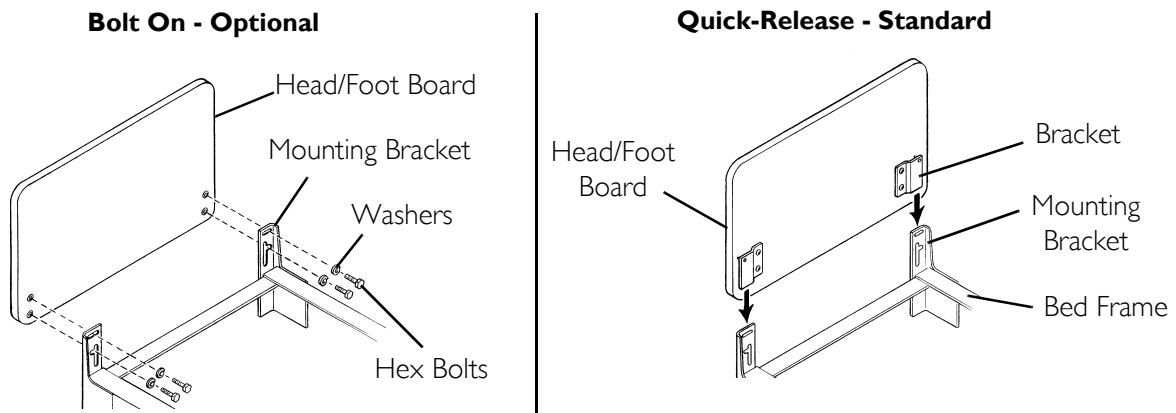
1. Remove the hex bolts and washers that secure the head/foot boards to the mounting brackets of bed frame.
2. Remove the head/foot board from the bed frame.
3. Repeat STEPS 1-2 for the opposite end of the bed.

### Installing Quick-Release Head/Foot Boards

1. Position the bracket on the head/foot board with the mounting bracket on the bed frame.
2. Slide the head/foot board onto the mounting bracket on the bed frame.
3. Repeat STEPS 1-2 for the opposite end of the bed.

### Removing Quick-Release Head/Foot Boards

1. Lift up on the head/foot board and remove from the bed frame.



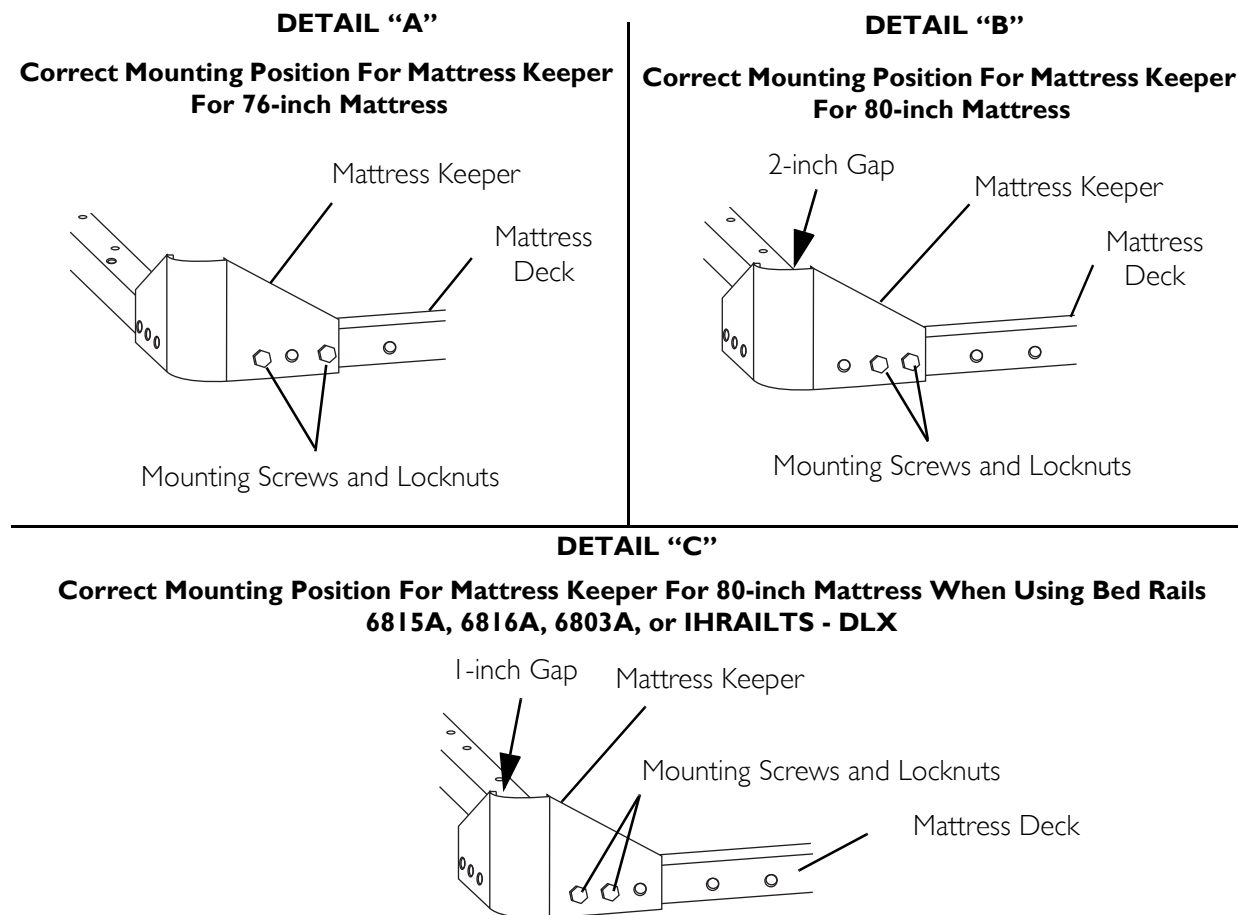
**FIGURE 4.2** Positioning the Head/Foot Board Mounting Brackets

### Installing Mattress Keepers

*NOTE: For this procedure, refer to FIGURE 4.3.*

1. Align mattress keeper with mattress deck in the appropriate mounting position according to the following:
  - 76-inch mattress length - See Detail "A"
  - 80-inch mattress length - See Detail "B"
  - 80-inch mattress length using bed rails 6815A, 6816A, 6803A, or IHRAILTS\_DLX. See Detail "C"

2. Secure the mattress keeper to the mattress deck using two mounting screws and locknuts. Securely tighten.
3. Repeat STEPS 1-2 to install remaining mattress keeper.



**FIGURE 4.3** Installing Mattress Keepers

## Using Emergency Crank

### **⚠ WARNING**

**Unplug the bed from the wall outlet before using the emergency crank.**

*NOTE: For this procedure, refer to FIGURE 4.4.*

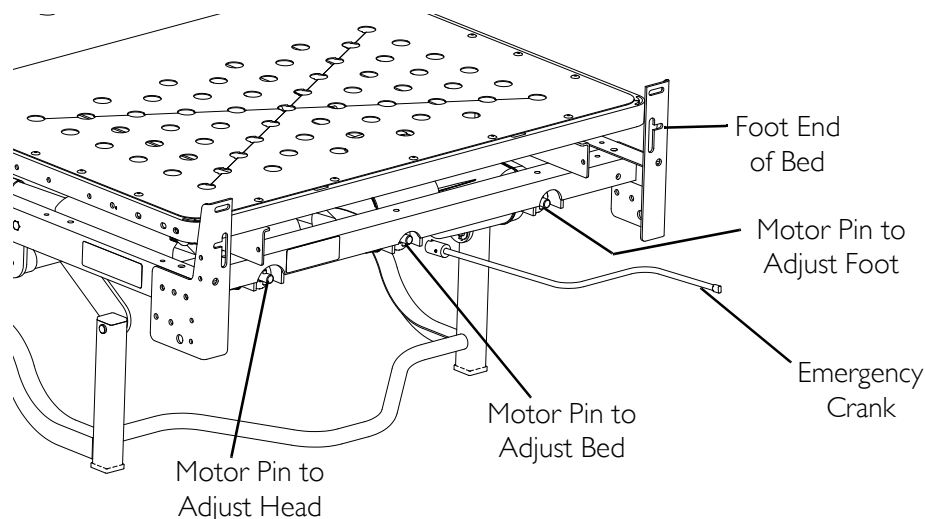
1. Disconnect the electric bed from the power source.
2. Determine the end of the bed and the corresponding motor that needs to be raised or lowered.

*NOTE: The motor for the foot end of the bed is on the right side and the motor for the head end of the bed is on the left side of the bed. Right and left is determined by standing at the foot end of the bed and facing the head end.*

*NOTE: Line up the slots on the emergency crank with the pin on the motor.*

3. To position the desired end of the bed, perform one of the following:

- Raising:
  - Head - Turn crank counterclockwise.
  - Bed - Turn crank counterclockwise.
  - Foot - Turn crank clockwise
- Lowering:
  - Head - Turn crank clockwise.
  - Bed - Turn crank clockwise.
  - Foot - Turn crank counterclockwise



**FIGURE 4.4** Using Emergency Crank

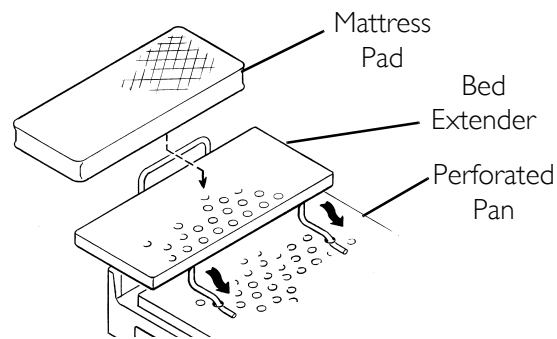
## Installing Bed Extender - Perforated Pan Only

*NOTE: For this procedure, refer to FIGURE 4.5.*

1. Remove the foot board from the bed. Refer to Installing/Removing the Head/Foot Boards on page 18.

*NOTE: Keep foot board for future use.*

2. Position the bed extender in the existing perforated pan.
3. Place the mattress pad onto the bed extender.



**FIGURE 4.5** Installing Bed Extender - Perforated Pan Only

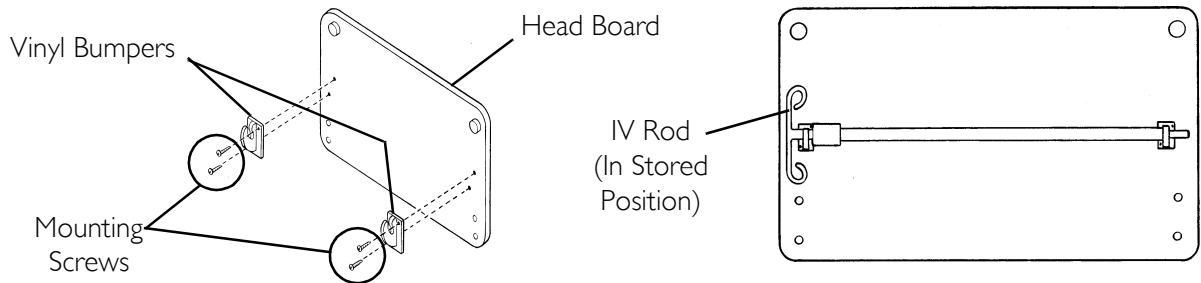
## Installing Vinyl Bumpers with IV Rod Holder

*NOTE: For this procedure, refer to FIGURE 4.6.*

1. Position the two vinyl bumpers on the back of the head board.

*NOTE: Make sure the two vinyl bumpers are mounted at the same height.*

2. Securely tighten the vinyl bumpers to the head board with the mounting screws provided.
3. Store the IV rod by snapping the IV rod into the two vinyl bumpers.



**FIGURE 4.6** Installing Vinyl Bumpers with IV Rod Holder

# SECTION 5—TROUBLESHOOTING AND MAINTENANCE

## Troubleshooting

1. If the bed is not operating, perform the following steps -
  - A. Disconnect the electric bed from the power source.
  - B. Check that all cables (motors, pendant, and power cord) are securely connected. Refer to FIGURE 2.2 on page 14.
  - C. Reconnect to outlet and operate pendant.
2. If bed still does not operate, contact dealer or a qualified technician.

## Cleaning the Beds

---

### **WARNING**

**Before cleaning the bed, make sure all cables are securely connected to the junction box.**

**DO NOT** spray water into any open junction box connection ports.

**The electronic motors, junction box and pendants are protected against the entrance of dust and water when properly attached.**

**Before disassembling or washing an electric bed, disconnect it from the power source.**

---

1. Disconnect the electric bed from the power source.
2. Roll the bed to the cleaning location. Refer to Rolling the Bed on page 16.
3. Remove the head and foot boards. Refer to Installing/Removing the Head/Foot Boards on page 18.

*NOTE: Inspect bed components for any exposed metal. To prevent rusting, ICCI recommends covering those areas with touch-up paint.*

4. Using a mild soap/detergent and soft bristle brush or sponge, scrub all exterior surfaces.
5. Using a hose and nozzle attachment, rinse bed thoroughly with plain cold or warm water.

*NOTE: DO NOT exceed a water temperature of 110° F.*

*NOTE: Use household tap pressure. DO NOT use pressure washers or steam cleaners.*

---

### **CAUTION**

**To protect flooring, ensure bed is completely drained and dry before placing on flooring. Otherwise, remaining dirty water may damage or stain flooring.**

---

6. Tip the bed from side to side to allow any collected or trapped water to drain.
7. Thoroughly towel dry bed and all components.
8. Repeat drying process until all components are dry.

*NOTE: Ensure that the bed is completely dry before storing.*



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# SECTION 6—REPAIR AND REPLACEMENT

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## **⚠ WARNING**

Unplug the power cord from its power source before performing any maintenance on the electric bed. **DO NOT** unplug the power cord from the junction box. Damage to cord will result.

**DO NOT** open assemblies such as the motors, pendant or junction boxes. No user serviceable parts are inside. Only qualified technicians are to repair these parts.

The junction box is mounted to the foot motor with a cable tie. If replacing the junction box, remove the cable tie and slide the junction box away from the foot motor until it is free. Disconnect all cable connections.

Before connecting/disconnecting the connections at the junction box, make sure the cable lock is removed by lightly depressing on the end tabs and lifting. After connectors are plugged in, route all cables into the cable lock slots and snap the cable lock in place.

When installing any connectors into the junction box, be sure the cable lock is secure after installation - otherwise, injury or damage may occur.

**DO NOT** force the connector into the junction box, otherwise - injury or damage may occur.

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## Removing/Installing the Junction Box

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### **⚠ WARNING**

**DO NOT** force the connectors into the junction box, otherwise - injury or damage may occur.

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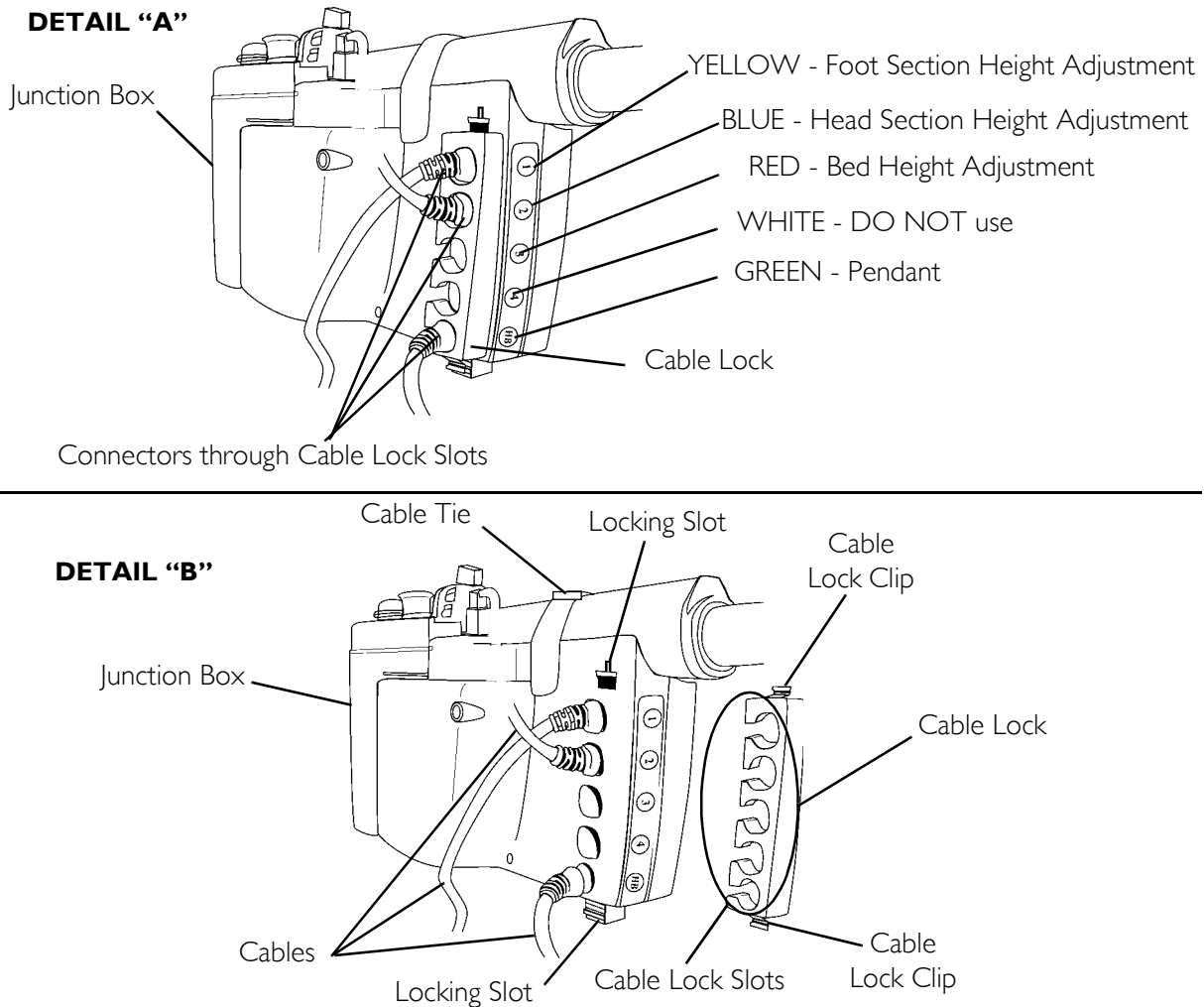
### Removing

*NOTE: For this procedure, refer to FIGURE 6.1 on page 27.*

1. Elevate the bed.
2. Raise the foot section of the bed.
3. Disconnect the bed from the power source.

*NOTE: Each connector and junction box slot is color coded. The color rings on the cables are not visible when the cables are plugged in and the cable lock is attached (Detail A").*

4. Remove the cable lock by performing the following steps (Detail “B”):
    - A. Compress the cable lock clips firmly.
    - B. Carefully pull the cable lock away from the junction box.
    - C. Slide the cable lock off of the cables.
  5. Grasp the pendant cable connector (GREEN) and pull, disconnecting the pendant cable from the junction box
  6. Disconnect the following motor cables from the junction box (Detail “A”):
    - A. Motor Cable (YELLOW) - controls foot section height adjustment - Grasp the motor cable connector (YELLOW) and pull, disconnecting the motor cable from the junction box.
    - B. Motor Cable (BLUE) - controls head section height adjustment - Grasp the motor cable connector (BLUE) and pull, disconnecting the motor cable from the junction box.
    - C. Motor Cable (RED) - controls height of bed - Grasp the motor cable connector (RED) and pull, disconnecting the motor cable from the junction box.
  7. Remove the cable tie that holds the junction box to the motor.
  8. Gently pull the junction box away from motor.
- NOTE: Remember that the power cord is still attached.*
9. Disconnect the power cord from the junction box by depressing the RED tabs on both sides and pulling power cord out of junction box.



**FIGURE 6.1** Removing/Installing the Junction Box

## Installing

### **⚠ WARNING**

**All cables MUST be routed and secured properly to ensure that cables DO NOT become entangled and eventually severed during normal operation of Electric bed, otherwise injury or damage can occur.**

*NOTE: For this procedure, refer to FIGURE 6.1.*

*NOTE: This bed has a power cord, a pendant cable, and three motor cables: one motor cable that operates the head section, one motor cable that operates the foot section and one motor cable that operates the height of the entire bed.*

*NOTE: Each connector and junction box slot is color coded.*

1. Position the junction box onto the motor
2. Install the new cable tie to secure the junction box to the motor.

---

**⚠ WARNING**

**DO NOT force the connectors into the junction box, otherwise - injury or damage may occur.**

---

3. Connect the following motor cables to the corresponding color coded slot on the junction box:
  - A. Motor Cable (YELLOW) - controls foot section height adjustment - Grasp the motor cable connector (YELLOW) and gently push into slot until an audible “click” is heard.
  - B. Motor Cable (BLUE) - controls head section height adjustment - Grasp the motor cable connector (BLUE) and gently push into slot until an audible “click” is heard.
  - C. Motor Cable (RED) - controls height of bed - Grasp the motor cable connector (RED) and gently push into slot until an audible “click” is heard.
4. Grasp the pendant cable connector (GREEN) and insert into the GREEN corresponding color coded slot on the junction box.
5. Installing the cable lock:
  - A. Slide the cables into the appropriate cable lock slots.
  - B. Depress the cable lock clips.
  - C. Push the cable lock clips into the locking slots on the junction box, until they click in place.
6. Grasp the power cable connector and insert it into the appropriate slot on the junction box.

## Replacing Head, Foot, or Hi/Lo Motor

*NOTE: For this procedure, refer to FIGURE 6.1 on page 27 and FIGURE 6.2 on page 31.*

1. Lower foot and head ends of the bed so they are flat.
2. Lower bed to the lowest position.

---

**⚠ WARNING**

**Unplug the power cord before performing any maintenance on the bed.**

---

3. Disconnect the electric bed from the power source.

## Replacing Head Motor

1. Disconnect the Motor Cable (BLUE) - controls head section height adjustment -
  - A. Remove the locking clip from the motor housing.
  - B. Grasp the motor cable connector (BLUE) and pull, disconnecting the motor cable from motor (Detail “A” in FIGURE 6.2).

2. Disconnect the head motor from bed frame by removing the two mounting screws, washers, pivot bushings, and flanged bearings that secure the head motor to the bed frame.
3. Disconnect head motor pull tube from bed frame by removing the clevis pin and hitch pin that secure the motor pull tube to the bed frame.
4. Remove existing motor.
5. Secure the new motor to the bed frame with two mounting screws, washers, pivot bushings, and flanged bearings that secure the head motor to the bed frame. Securely tighten.
6. Secure the motor pull tube to the bed frame with hitch pin and clevis pin.
7. Connect the motor cable and locking clip to the new motor.

### **Replacing the Foot Motor**

1. Remove the junction box. Refer to Removing/Installing the Junction Box on page 25.
2. Disconnect the Motor Cable (YELLOW) - controls foot section height adjustment -
  - A. Remove the locking clip from the motor housing.
  - B. Grasp the motor cable connector (YELLOW) and pull, disconnecting the motor cable from motor (Detail "A" in FIGURE 6.2).
3. Disconnect the foot motor from bed frame by removing the two mounting screws, washers, pivot bushings, and flanged bearings that secure the head motor to the bed frame.
4. Disconnect foot motor pull tube from bed frame by removing the clevis pin and hitch pin that secure the motor pull tube to the bed frame.
5. Remove existing motor.
6. Secure the new motor to the bed frame with two mounting screws, washers, pivot bushings, and flanged bearings that secure the head motor to the bed frame. Securely tighten.
7. Secure the motor pull tube to the bed frame with hitch pin and clevis pin.
8. Connect the motor cable and locking clip to the new motor.
9. Install the junction box. Refer to Removing/Installing the Junction Box on page 25.

## Replacing the Hi/Lo Motor

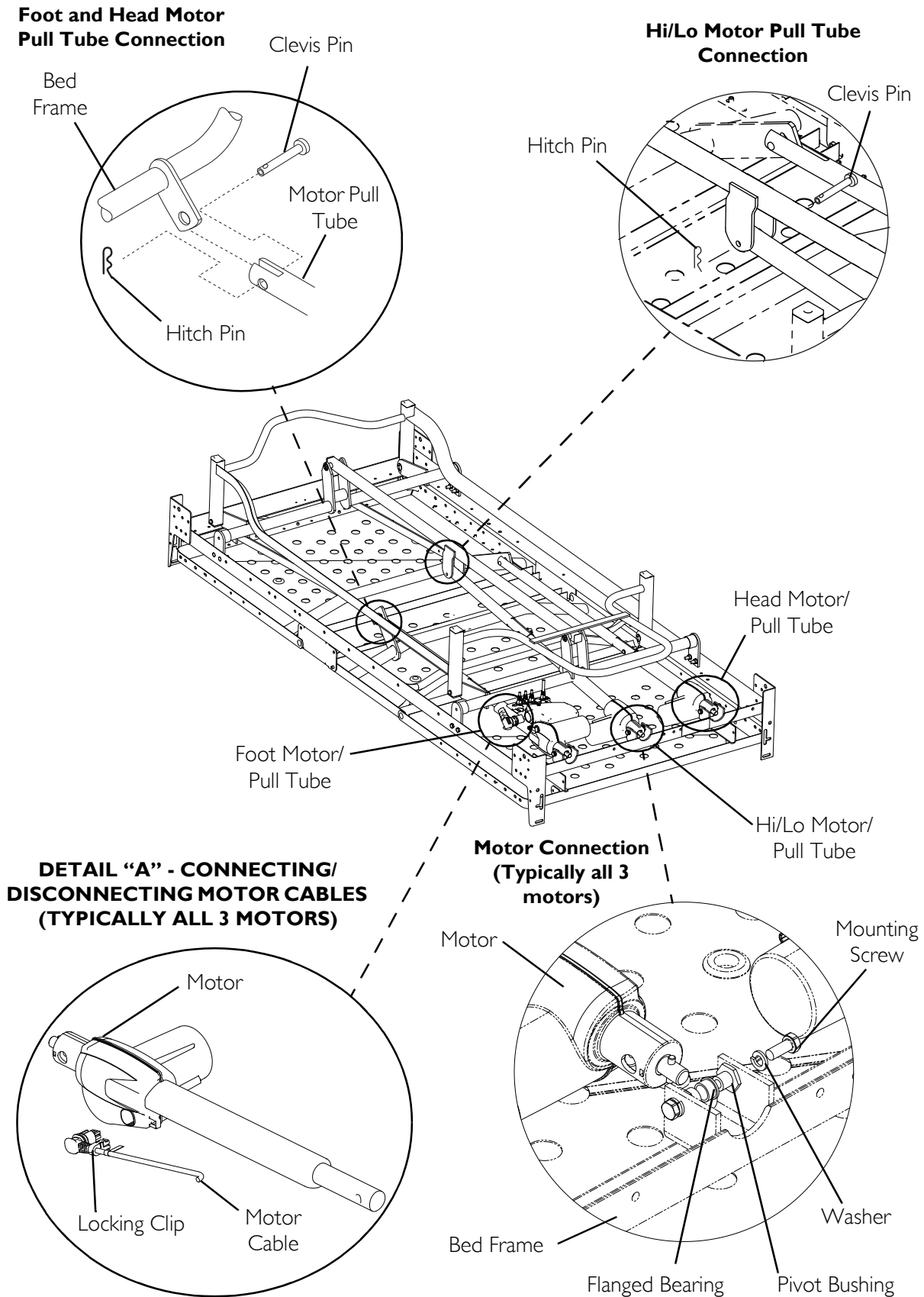
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### **⚠ WARNING**

**High-Low Motors Only: Make sure the upper frame of the bed is supported before removing the high-Low motor. If the upper frame of the bed is not supported, injury may occur.**

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1. High-Low motors only: Make sure the upper frame of the bed is supported before removing the existing motor.
2. Disconnect motor cable (RED) - controls height of bed -
  - A. Remove the locking clip from the motor housing.
  - B. Grasp the motor cable connector (RED) and pull, disconnecting the motor cable from the motor (Detail "A" in FIGURE 6.2).
3. Disconnect Hi/Lo motor from bed frame by removing the two mounting screws, washers, pivot bushings, and flanged bearings that secure the head motor to the bed frame.
4. Disconnect Hi/Lo motor pull tube from bed frame by removing the clevis pin and hitch pin that secure the motor pull tube to the bed frame.
5. Remove existing motor.
6. Secure the new motor to the bed frame with two mounting screws, washers, pivot bushings, and flanged bearings that secure the head motor to the bed frame. Securely tighten.
7. Secure the motor pull tube to the bed frame with hitch pin and clevis pin.
8. Connect the motor cable and locking clip to the new motor.

**FIGURE 6.2** Replacing Head, Foot, or Hi/Lo Motor

# APPENDIX

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## SPECIAL NOTE

For your convenience, the January 2008 version of the FDA's bed safety guidelines are provided in this section. The information from the FDA's brochure, published by Hospital Bed Safety Workgroup, is reproduced verbatim, the latest revision of which is available at <http://www.fda.gov>.

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## A Guide to Bed Safety Bed Rails in Hospitals, Nursing Homes and Home Health Care: The Facts

### Bed Rail Entrapment Statistics

Today there are about 2.5 million hospital and nursing home beds in use in the United States. Between 1985 and 2005, 691 incidents of patients\* caught, trapped, entangled, or strangled in beds with rails were reported to the U.S. Food and Drug Administration. Of these reports, 413 people died, 120 had a nonfatal injury, and 158 were not injured because staff intervened. Most patients were frail, elderly or confused.

*\*NOTE: In this brochure, the term patient refers to a resident of a nursing home, any individual receiving services in a home care setting, or patients in hospitals.*

### Patient Safety

Patients who have problems with memory, sleeping, incontinence, pain, uncontrolled body movement, or who get out of bed and walk unsafely without assistance, MUST be carefully assessed for the best ways to keep them from harm, such as falling. Assessment by the patient's health care team will help to determine how best to keep the patient safe. Historically, physical restraints (such as vests, ankle or wrist restraints) were used to try to keep patients safe in health care facilities. In recent years, the health care community has recognized that physically restraining patients can be dangerous. Although not indicated for this use, bed rails are sometimes used as restraints. Regulatory agencies, health care organizations, product manufacturers and advocacy groups encourage hospitals, nursing homes and home care providers to assess patients' needs and to provide safe care without restraints.

### The Benefits and Risks of Bed Rails

Potential benefits of bed rails include:

- Aiding in turning and repositioning within the bed.
- Providing a hand-hold for getting into or out of bed.
- Providing a feeling of comfort and security.
- Reducing the risk of patients falling out of bed when being transported.
- Providing easy access to bed controls and personal care items.



Potential risks of bed rails may include:

- Strangling, suffocating, bodily injury or death when patients or part of their body are caught between rails or between the bed rails and mattress.
- More serious injuries from falls when patients climb over rails.
- Skin bruising, cuts, and scrapes.
- Inducing agitated behavior when bed rails are used as a restraint.
- Feeling isolated or unnecessarily restricted.
- Preventing patients, who are able to get out of bed, from performing routine activities such as going to the bathroom or retrieving something from a closet.

## **Meeting Patients' Needs for Safety**

Most patients can be in bed safely without bed rails. Consider the following:

- Use beds that can be raised and lowered close to the floor to accommodate both patient and health care worker needs.
- Keep the bed in the lowest position with wheels locked.
- When the patient is at risk of falling out of bed, place mats next to the bed, as long as this does not create a greater risk of accident.
- Use transfer or mobility aids.
- Monitor patients frequently.
- Anticipate the reasons patients get out of bed such as hunger, thirst, going to the bathroom, restlessness and pain; meet these needs by offering food and fluids, scheduling ample toileting, and providing calming interventions and pain relief.

When bed rails are used, perform an on-going assessment of the patient's physical and mental status; closely monitor high-risk patients. Consider the following:

- Lower one or more sections of the bed rail, such as the foot rail.
- Use a proper size mattress or mattress with raised foam edges to prevent patients from being trapped between the mattress and rail.
- Reduce the gaps between the mattress and side rails.

## **Which Ways of Reducing Risks are Best?**

A process that requires ongoing patient evaluation and monitoring will result in optimizing bed safety. Many patients go through a period of adjustment to become comfortable with new options. Patients and their families should talk to their health care planning team to find out which options are best for them.

## **Patient or Family Concerns About Bed Rail Use**

If patients or family ask about using bed rails, health care providers should:

- Encourage patients or family to talk to their health care planning team to determine whether or not bed rails are indicated.
- Reassure patients and their families that in many cases the patient can sleep safely without bed rails.
- Reassess the need for using bed rails on a frequent, regular basis.

To report an adverse event or medical device problem, please call FDA's MedWatch Reporting Program at 1-800-FDA-1088.

For additional copies of the brochure, see the FDA's website at <http://www.fda.gov/cdrh/beds/>

For more information about this brochure, contact Beryl Goldman at 610-335-1280 or by e-mail at [bgoldman@kendaloutreach.org](mailto:bgoldman@kendaloutreach.org). She has volunteered to answer questions.

For information regarding a specific hospital bed, contact the bed manufacturer directly.

## **Developed by the Hospital Bed Safety Workgroup**

Participating Organizations:

- |  |   |
|--|---|
| • AARP   | • ECRI  |
| • ABA Tort and Insurance Practice Section  | • Evangelical Lutheran Good Samaritan Society                   |
| • American Association of Homes and Services for the Aging                         | • Hill-Rom Co., Inc.  |
| • American Health Care Association   | • Joint Commission on Accreditation of Healthcare Organizations |
| • American Medical Directors Association   | • Medical Devices Bureau, Health Canada                         |
| • American Nurses Association  | • National Association for Home Care                            |
| • American Society for Healthcare Engineering of the American Hospital Association | • National Citizens' Coalition for Nursing Home Reform          |
| • American Society for Healthcare Risk Management                                  | • National Patient Safety Foundation                            |
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|  | • U.S. Food and Drug Administration                             |

*Updated January 2008*

# LIMITED WARRANTY

**PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.**

This warranty is extended only to the original purchaser who purchases this product when new and unused from Invacare Continuing Care, Inc (ICCI) or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

ICCI warrants the frame and welds on this product when purchased new and unused will be free from structural defects for a period of ten (10) years from date of purchase from ICCI or a dealer, with a copy of the seller's invoice required for coverage under this warranty. ICCI warrants the mechanical components of this product when purchased new and unused to be free from defects in materials and workmanship for a period of two (2) years from date of purchase from ICCI or a dealer, with a copy of the seller's invoice required for coverage under this warranty. For all other components of this product when purchased new and unused, ICCI warrants that they will be free from defects in material and workmanship for a period of one (1) year from date of purchase from ICCI or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Upholstery (vinyls, fabrics and/or laminates) are not covered under this warranty. If within such warranty periods any such product shall be proven to be defective, such product shall be repaired or replaced, at ICCI's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. ICCI's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your ICCI product. In the event you do not receive satisfactory warranty service, please write directly to ICCI at the address on the back cover, provide dealer's name, address, and the date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

**LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECTED TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, PRODUCTS MODIFIED WITHOUT ICCI'S EXPRESS WRITTEN CONSENT (INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS; PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF ICCI, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND ICCI'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY ICCI. THE WARRANTY SHALL NOT APPLY TO NORMAL WEAR AND TEAR OR FAILURE TO ADHERE TO THE PRODUCT INSTRUCTIONS.**

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