

CARROLL[®]

HOSPITAL GROUP

User Instruction Manual for 120V Spirit™ Beds Spirit™ • Spirit Plus™ • Spirit Select™

Certifications

Certified to: UL 60601-1
 CSA C22.2 No. 601.1-M90

Conforms to: IEC 60601-1
 IEC 60601-2-38

Please Read Carefully Before Using Your New Bed

The
Spirit™ *Bed*



Spirit™ Bed – Quick Reference Guide

To Operate the Bed:

Use the footboard staff control or the pendant to raise or lower the head section, the knee section, or the entire bed.

To Operate One-Touch CPR:

Push and release the CPR button; head and knee sections will automatically flatten.

To Operate Trendelenburg:

Push and hold the TREND (Trendelenburg) or rev.TREND (Reverse Trendelenburg) button on the footboard control to achieve either function. To automatically level the bed, push and hold the opposite function until the bed stops.

To Operate Chair:

Push and hold the CHAIR button. Green LED illuminates when bed angle is attained, then head and knee will raise to full extension. Push and hold button again to remove chair. (Bed will reverse its position each time the CHAIR button is pressed).

To Operate Auto Contour:

Press the CONTOUR button so that the green light is on. Knee section will raise automatically when head section is raised. (NOTE: knee lock-out will override Auto Contour).

Lock-Outs:

The pendant can be locked or unlocked (to restrict patient use). Lock-outs for each bed function are located on the footboard staff control underneath each function. When the LOCK button LED is illuminated, patient control of that particular function with the pendant is restricted. If the LOCK button LED is not illuminated, then patient control of that function is permitted.

Master Lock-Out:

To restrict all pendant *and* footboard controls, press all three LOCK buttons simultaneously (the LOCK button LED's will sequentially flash). When Master Lock-Out has been activated, the emergency CPR function remains enabled.

To Operate Assist Rails™ :

Pull the black knob out, then rotate the rail into the desired position. Rail will automatically lock in the "GUARD" and the "ASSIST" positions, but will remain unlocked in the "TRANSFER" position.

To Move and Lock the Bed:

Use the Central "Lock & Steer" system:

BRAKE: All four wheels are locked in "BRAKE" mode

STEER: Foot-end wheels lock in "STEER" mode, head-end wheels swivel freely

NEUTRAL: All four wheels swivel freely in "NEUTRAL" mode

Spirit Plus™ Bed – Quick Reference Guide

To Operate the Bed:

Use the footboard staff control, rail controls, or the pendant to raise or lower the head section, the knee section, or the entire bed.

To Operate One-Touch CPR:

Push and release the CPR button; head and knee sections will automatically flatten.

To Operate Trendelenburg:

Push and hold the TREND (Trendelenburg) or rev.TREND (Reverse Trendelenburg) button on the footboard control to achieve either function. To automatically level the bed, push and hold the opposite function until the bed stops.

To Operate Chair:

Push and hold the CHAIR button. Green LED illuminates when bed angle is attained, then head and knee will raise to full extension. Push and hold button again to remove chair. (Bed will reverse its position each time the CHAIR button is pressed).

To Operate Auto Contour:

Press the CONTOUR button so that the green light is on. Knee section will raise automatically when head section is raised. (NOTE: knee lock-out will override Auto Contour).

Lock-Outs:

The side rail controls and pendant can be locked or unlocked (to restrict patient use). Lock-outs for each bed function are located on the footboard staff control underneath each function. When the LOCK button LED is illuminated, patient control of that particular function with the side rail controls or pendant is restricted. If the LOCK button LED is not illuminated, then patient control of that function is permitted.

Master Lock-Out:

To restrict all side rail, pendant, *and* footboard controls, press all three LOCK buttons simultaneously (the LOCK button LED's will sequentially flash). When Master Lock-Out has been activated, the emergency CPR function and Nurse Call remains enabled.

To Operate Quad Rails:

To lower the rails, gently depress the green push button, then rotate the rail down. Head rails rotate toward the headboard, hips rails rotate toward the footboard. The rail will automatically lock in the UP position.

To Move and Lock the Bed:

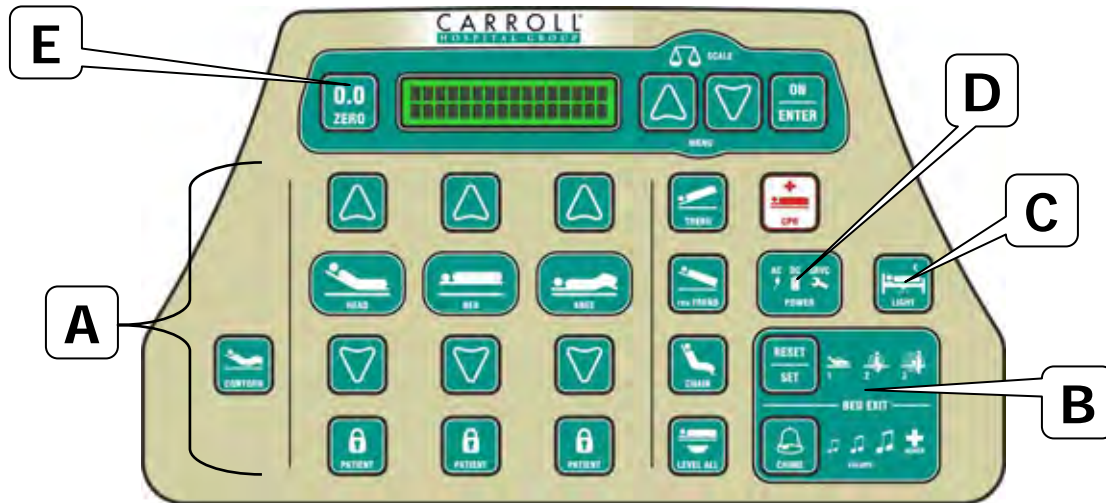
Use the Central "Lock & Steer" system:

BRAKE: All four wheels are locked in "BRAKE" mode

STEER: Foot-end wheels lock in "STEER" mode, head-end wheels swivel freely

NEUTRAL: All four wheels swivel freely in "NEUTRAL" mode

Spirit Select™ Bed – Quick Reference Guide



A: Basic Bed Operation

Bed Operation: Use footboard or rail controls to raise/lower head section, knee section, or the entire bed.

One-Touch CPR: Press and release to automatically flatten head and knee in emergency

Trendelenburg: Push and hold TREND or rev.TREND button to achieve function; to level bed, press and hold opposite function until bed automatically stops at level.

Chair: Push and hold CHAIR button until bed stops in chair position; push and hold to remove chair (bed will reverse position each time the CHAIR button is pressed).

Auto Contour: Press CONTOUR button. Illuminated button indicates that the Auto Contour function is active. Knee section will automatically raise when head section is raised (NOTE: knee lock-out will override Auto Contour).

Level All: Push and hold to flatten head and knee sections

Lock-Outs: To restrict patient use, press the LOCK button under each function; if the LOCK button is illuminated, patient control of that particular function with the side rail controls or pendant is restricted. If the LOCK button is not illuminated, then patient control of that function is permitted.

Master Lock-Out: To restrict all side rail, pendant, *and* footboard controls, press all three LOCK buttons simultaneously (the buttons will sequentially flash). When Master Lock-Out has been activated, the emergency CPR function and Nurse Call remains enabled.

B: Bed Exit Alarm

1. Place patient in bed
2. Press SET/RESET button to cycle through the sensitivity levels; stop at appropriate level
3. An audible "chirp" will also sound to indicate that the alarm has been armed.
4. Press CHIME button to cycle the through the volume and nurse call levels; stop at appropriate level
5. A ringing alarm can be silenced by:
 - Pressing SET/RESET button (this will shut down alarm mode; once patient is properly positioned again, you must press SET/RESET to arm); or
 - Returning patient to proper position; the "chirp" will indicate the alarm is re-activated

C: Underbed Light

Press LIGHT button to scroll through brightness levels of underbed light (OFF – LOW – HIGH)

Bed Exit Light: Automatically illuminates when patient exits bed. Automatically turns off when patient re-enters the bed or after 15 minutes has elapsed

D: Power Status Indicator

GREEN AC only – Bed is plugged into wall; battery is fully charged

GREEN AC and flashing AMBER DC – Bed is plugged in and the battery is charging

AMBER DC only – Bed is running on battery power

AMBER DC and flashing RED SRVC – Bed is running on battery power but has used up the allocated reserve power. Service bed immediately.

GREEN AC and flashing RED SRVC – Bed is plugged in, but problem with battery (ensure battery is plugged into main control box)

E: Patient Scale & LCD Display

Press ON/ENTER button to “wake up” display to show Weight, Wt. Change, and Trend Angle

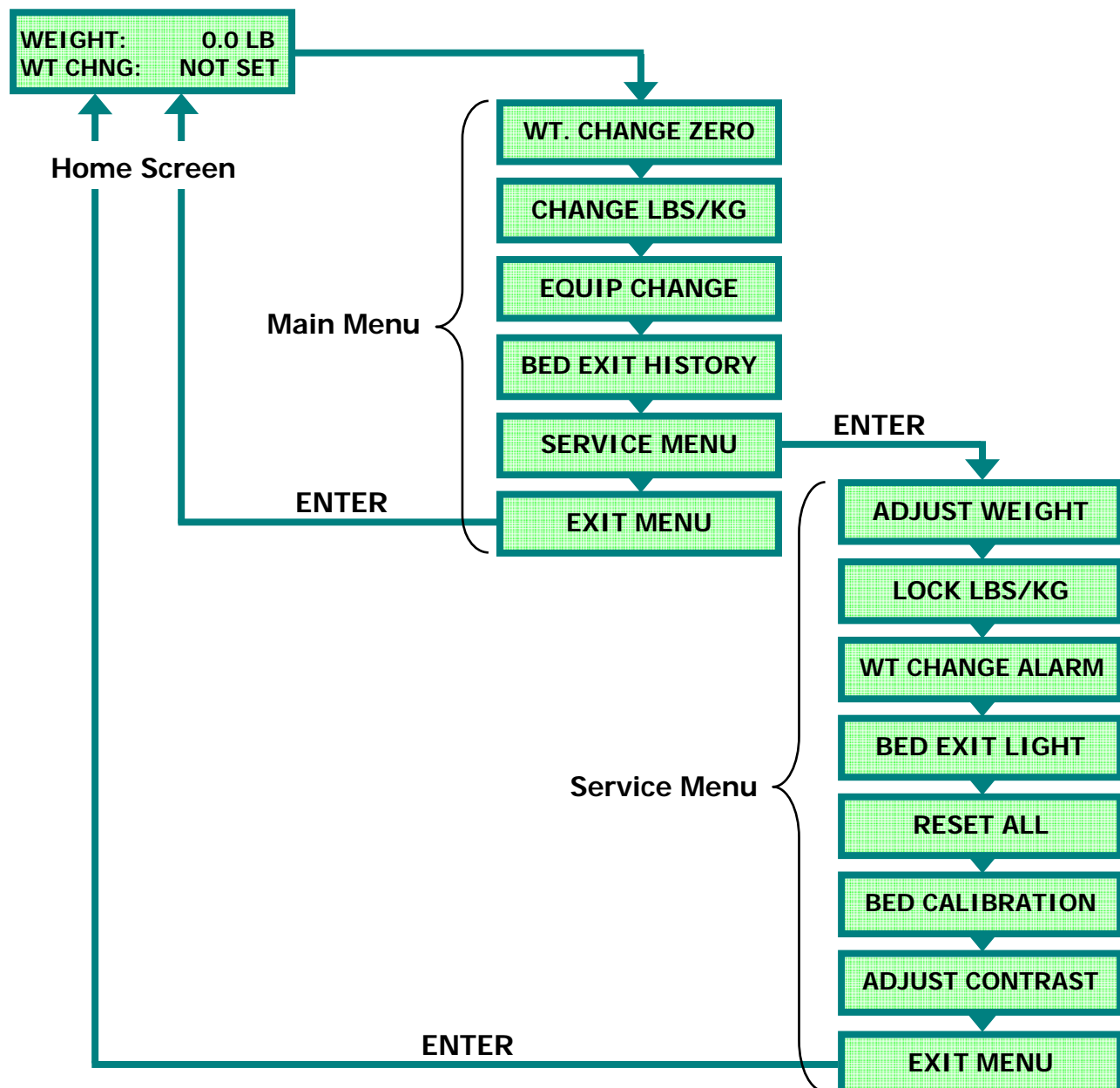
Use UP/DOWN Arrow buttons to scroll through the following menus

Recommended before each new patient:

- Zero bed
- Reset “Bed Exit History”

Recommended after patient is placed in bed:

- Zero “Weight Change”



A Message from Carroll Hospital Group

To Our Valued Customers,

Thank you for selecting Carroll Hospital Group as your hospital bed provider, and congratulations on your purchase of a Spirit™ bed. You are a part of the growing majority of healthcare providers that recognize the benefits of a low hospital bed.

Carroll Hospital Group is committed to meeting the needs of our customers through quality products that are innovative, user-friendly, easy to maintain, and most importantly, focused on patient safety. We are sure that your hospital will enjoy the benefits and safety features of the Spirit™ bed for many years to come.

The Spirit™ bed is manufactured in Ontario, Canada in an ISO 9000 certified manufacturing facility. Each and every Spirit™ bed is inspected and tested by one of our highly trained and dedicated quality technicians to ensure that all Spirit™ beds meet our strict quality standards before entering your hospital.

Our sales team is focused on providing exceptional sales support before, during, and after the delivery of your Spirit™ beds. If at any time you have questions or concerns regarding your Spirit™ bed, we strongly encourage you to call us at 1-866-516-5446. Our hands-on company philosophy enables us to respond to our customers quickly and effectively.

We recommend that you carefully read this Spirit™ Bed Owner's Manual prior to operating your bed. Becoming acquainted with the safe operation and maintenance procedures outlined in this manual will ensure proper bed use and can extend the service life of the bed.

Sincerely,



Kyle Sobko
Vice President of Sales & Marketing
Carroll Hospital Group

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Section 1:

Specifications & Safeguards

1.1 Full Bed Warranty

Carroll Hospital Group's pro-rated warranty covers manufacturing defect, or failure due to workmanship or materials. Electrical components are guaranteed to be free from manufacturing defect for one (1) year from the date of purchase, covered by the actuator manufacturer's own warranty. Carroll Hospital Group warrants to the original purchaser of its products that the product or any part thereof, in the judgement of Carroll Hospital Group will not be defective in material or workmanship for one (1) year from date of original purchase. Carroll Hospital Group specifically warrants to the original purchaser of its products that the reinforced fiberglass sections of the mattress deck will not be defective in material or workmanship for twenty (20) years from date of original purchase. Such defects will be repaired or replaced (at the company's option) free of charge for parts only, provided the defective product is shipped to the factory or an authorized depot at the customer's own expense. Shipping charges for return of the product to the customer will also be at the customer's own expense.

This warranty does not include any labour or shipping charges incurred in replacement part installation or repair of any such part. Carroll Hospital Group's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

After one year, for the next four years, frame parts only will be covered by the warranty according to the following fee schedule: 2nd year – frame parts (list price less 60%); 3rd year – frame parts only (list price less 40%); 4th year – frame parts (list price less 20%); 5th year frame parts (list price less 10%). Parts in the judgement of Carroll Hospital Group found to be damaged through normal wear and tear, impact, abuse, overloading, fire, lightening, water damage or power surges, brown-outs, improper supply voltage or use of other manufacturer's head and foot boards or accessories will not be covered and parts will be charged out at the full list price. Note also that any alteration of the bed or one of its components voids this warranty. A Return Goods Authorization number (RGA) must be obtained before returning any products or parts to the factory. We regret that no products will be accepted at the factory without an RGA number. No other warranty, expressed or implied by Carroll Hospital Group or its agents shall be considered valid.

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1.2 Intended Use


The Spirit™ bed is intended for low to moderate acuity patients in the medical and/or surgical area of the hospital. The Spirit™ bed is also intended for use as a general-purpose variable height hospital bed for general care, post-operative, and general medicine wards.

1.3 Standard Conventions Used in this Manual

This manual includes information essential to the safety of the patient, staff, and equipment during the normal operation of the Spirit™ bed. Before operating the Spirit™ bed be sure you have read and understood the contents of this manual. It is important that you use this equipment in accordance with the procedures outlined in this manual. As you read through this manual be alert to the five signal words.
























 **DANGER** Information appearing under the DANGER caption concerns the protection of patient and staff from the immediate and imminent hazards that, if not avoided, will result in immediate, serious personal injury or loss of life in addition to equipment damage.

 **WARNING** Information appearing under the WARNING caption concerns the protection of patient and staff from potential hazards that can result in personal injury or loss of life in addition to equipment damage.









 **CAUTION** Information appearing under the CAUTION caption concerns the protection of patient and staff from potential hazards that can result in minor personal injury or equipment damage.

NOTE: Information appearing in a NOTE caption provides additional information which is helpful in understanding the item being explained.

1.4 Symbols Used on the Spirit™ Bed

	PROTECTIVE EARTH GROUND	 OR 	CARDIOPULMONARY RESUSCITATION (CPR) FUNCTION ONE TOUCH TO FULLY LOWER ALL SECTIONS OF MATTRESS SUPPORT PLATFORM PARALLEL TO BED FRAME	 OR 	CHAIR FUNCTION PUSH AND HOLD TO BRING PATIENT TO SITTING POSITION
	POTENTIAL EQUALIZATION	 OR 	TRENDELENBURG FUNCTION PUSH AND HOLD TO MOVE THE BED INTO TRENDELENBURG POSITION	 OR 	CONTOUR FUNCTION TOGGLE TO INITIATE AUTOMATIC ACTION OF KNEE-FOOT SECTION WHEN ACTION IS INITIATED TO HEAD SECTION OF MATTRESS DECK
	WARNING – SAFE WORKING LOAD THE MAXIMUM ALLOWABLE LOAD ON EQUIPMENT IF THE INSTRUCTIONS FOR INSTALLATION AND USE ARE FOLLOWED	 OR 	REVERSE TRENDELENBURG FUNCTION PUSH AND HOLD TO MOVE THE BED INTO REVERSE TRENDELENBURG POSITION	 OR 	FUNCTION LOCK-OUT ACTIVATE TOGGLE SWITCH TO RESTRICT FUNCTION OF PATIENT AND PENDANT CONTROL
IP54	INGRESS PROTECTION CODE (IP CODE)		INITIATE ACTION TO HEAD SECTION OF MATTRESS DECK		
	TYPE B EQUIPMENT		INITIATE ACTION TO ENTIRE MATTRESS DECK (HI-LO)	 OR 	UP CONTROL ELEVATES THE CORRESPONDING SECTION OF THE MATTRESS DECK
CLASS 1	EQUIPMENT CLASSIFICATION IN TERMS OF PROTECTION AGAINST ELECTRICAL SHOCK		INITIATE ACTION TO KNEE-FOOT SECTION OF MATTRESS DECK	 OR 	DOWN CONTROL LOWERS THE CORRESPONDING SECTION OF THE MATTRESS DECK

1.5 Additional Symbols Used on the Spirit Select™ Bed

	LEVEL ALL FUNCTION PUSH AND HOLD FULLY LOWER ALL SECTIONS OF MATTRESS SUPPORT PLATFORM PARALLEL TO BED FRAME		SCALE ZERO BUTTON PUSH AND HOLD TO ZERO SCALE		SET/RESET BUTTON PUSH TO TURN ON/OFF AND SELECT DESIRED BED EXIT SENSITIVITY LEVEL
	UNDERBED LIGHT PUSH TO TURN UNDERBED AMBIENT LIGHTING ON/OFF		DISPLAY ON/ENTER BUTTON PUSH TO ACTIVATE OR “WAKE UP” MENU DISPLAY OR MAKE A MENU SELECTION		CHIME BUTTON PUSH TO CYCLE THROUGH CHIME VOLUME AND NURSE CALL SETTINGS PUSH AND HOLD TO CYCLE THROUGH AVAILABLE CHIME OPTIONS
	POWER STATUS INDICATOR		MENU SCROLL ARROW BUTTONS PUSH TO SCROLL UP/DOWN THROUGH MENUS		

1.6 Technical Specifications

Certifications			
Canada	CSA C22.2 No. 601.1-M90		
USA	UL 60601-1		
Europe	IEC 60601-1, 60601-2-38		
Elevation Range (Floor to Top Surface of the Mattress Deck)			
	Spirit™	Spirit Plus™	Spirit Select™
Lowest Position	8¾" (222.3 mm)	8¾" (222.3 mm)	10" (254.0 mm)
Highest Position	34" (863.6 mm)	34" (863.6 mm)	35¼" (895.4 mm)
Head Section Angle	0° to 67°	0° to 67°	0° to 71.5°
Knee - Foot Section Angle	0° to 25°	0° to 25°	0° to 28°
Trendelenburg	0° to - 15°	0° to - 15°	0° to - 14°
Reverse Trendelenburg	0° to +13°	0° to +13°	0° to +14°
Under-bed patient lift clearance	13" (330.2 mm) bed at highest stable position	13" (330.2 mm) bed at highest stable position	13" (330.2 mm) bed at highest stable position
Electrical Specifications			
Control Box Mains Voltage	120V		
Control Box Input Current	2.7 A		
Control Box Current Frequency	60 Hz		
Control Box Output Voltage	24 Volts DC (70W max)		
Control Box Duty Cycle	10% (6 min/hr max)		
Motorised Linear Head Actuator	24 Volts DC		
Motorised Linear HI-LO Actuator (head end mount)	24 Volts DC		
Motorised Linear HI-LO Actuator (foot end mount)	24 Volts DC		
Motorised Linear Foot Actuator	24 Volts DC		
Intermittent Operation or Maximum Continuous Operation	6min/hr	2 Minutes Continuous Operation 18 Minutes Cool Down (No Operation)	
Six function handheld pendant	Spirit™ Standard	Spirit Plus™ Optional	Spirit Select™ Optional
Footboard Staff Control	Standard Footboard Staff Control	Standard Footboard Staff Control	Enhanced Footboard Staff Control c/w Integrated Patient Weigh Scale, Bed Exit, and LCD Display
Safety Features			
Protective Earth Ground	Class I		
Electric Shock Protection	Type B		
Enclosure Protection	IPX4		
Dual Foot Pedal - Steer Feature	Engagement of the Foot End Casters (No Swivel)		
Dual Foot Pedal - Lock Feature	Total Lock On All 4 Casters (No Roll, No Swivel)		
On-Board Battery Back-up	Standard		
Convenience Features on Staff Footboard Control			
One-Touch CPR Mode	Standard		
Chair Mode	Standard - Toggle Button with LED		
Auto Contour Mode	Standard - Toggle Button with LED		
Security - Patient Lock-Out			
Bed Elevation (HI-LO)	Standard - Toggle Button with LED		
Head Section	Standard - Toggle Button with LED		
Knee-Foot Section	Standard - Toggle Button with LED		
Master Lock-Out (All Patient and Staff Control Locations)	Standard - Toggle Button with LED's		
Dimensions and Weight			
	Spirit™	Spirit Plus™	Spirit Select™
Length (Overall)	91½" (2324.1mm)	93½" (2374.9mm)	91¾" (2330.5mm)
Length - Between Head & Foot Boards	82" (2082.8mm)	81¼" (2063.8mm)	81¼" (2063.8mm)
Length - Mattress Deck	80" (2032mm)	80" (2032mm)	80" (2032mm)
Width - Between Outer Edges of Siderails	41" (1041.4mm)	40" (1016mm)	40" (1016mm)
Width - Mattress Deck	35" (889mm)	35" (889mm)	35" (889mm)
Weight of Bed (Empty)	372 lbs (169 kg)	426 lbs (193 kg)	474 lbs (215 kg)
Load Capacity - Safe Working Load	500 lbs (227 kg)	500 lbs (227 kg)	500 lbs (227 kg)


*All dimensions are nominal and have approximate manufacturing tolerances of $\pm \frac{1}{2}$ " (12.7 mm) for length and $\pm 2^\circ$ for angular dimensions


1.7 Important Electrical Safeguards

- Plug the three prong power supply cord ONLY into a properly grounded 110 VAC to 120 VAC, 60 Hz outlet that is rated to at least 10 A.
- DO NOT use an extension cord.
- DO NOT permit the power supply cord, wall outlet, electric actuators, control box or pendant to become wet or submerged.
- DO NOT operate the bed if the cord or outlet is damaged.
- DO NOT operate the bed if any actuator has malfunctioned or is damaged in any manner.
- DO NOT use this bed in Active Treatment "Ether Environments".

1.8 On-Board Battery

- All Spirit™ beds are equipped with a standard on-board rechargeable battery. The battery is located under the knee section of the mattress deck between two linear actuators (on Spirit™ and Spirit Plus™ beds) or mounted to a bed frame cross member (Spirit Select™ beds).
- The battery is continuously charged as long as the bed's power supply is plugged into a 120 VAC wall outlet, and the battery cable is connected to the control box (refer to the Unpacking Instructions on page 24). During extended periods of disconnect from mains AC power, the battery is susceptible to permanent damage caused by being deep discharged. When storing the Spirit™ or Spirit Plus™ beds for an extended period of time, ensure the battery connection cable is disconnected from the control box (located under the head section of the mattress deck). The Spirit Select™ is equipped with an automatic disconnect feature which disengages the battery from the charging circuit (no cables need to be disconnected).
- The battery is maintenance free, with the exception of a recommended semi-annual test to verify the battery's operation (refer to Semi Annual Maintenance on page 83).
- In the event the battery is deemed to be faulty, does not hold a charge, will not operate the functions of the bed while the bed is unplugged from the wall outlet, or if the battery's case or mounting hardware has been damaged in any way, replace the battery. Faulty batteries should be disposed of according local laws and regulations. Lead acid batteries are completely recyclable.
- If the bed is to be stored out of service, store in a cool, dry environment.
- Do not expose the battery to heat. Keep away from flames and sparks.

	⚠ WARNING
If a sulphuric odour (like a burnt match) is detected, or if any residual leakage is found on or around the area of the battery, the battery should be replaced immediately. Faulty batteries should be disposed of according local laws and regulations. Lead acid batteries are completely recyclable.	

	⚠ WARNING
Lead-acid batteries can be hazardous to your health. Do not open the battery, avoid contact with internal components. Internal components are Oxide lead and electrolyte. Short-term exposure – Sulphuric acid may cause irritation of eyes, nose and throat. Prolonged contact may cause severe burns. Long term exposure – repeated contact causes irritation and skin burns. Repeated exposure to mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat, and bronchial tubes.	



⚠ WARNING

In the event a person is exposed to sulphuric acid, flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary. Eye wash and emergency shower should be readily available. If swallowed, give large amounts of water. DO NOT induce vomiting, obtain medical treatment.



⚠ WARNING

If a sulphuric acid spill is found under the bed, dilute the spill cautiously with five to six volumes of water and gradually neutralize with sodium bicarbonate, soda ash or lime. When exposure level is not known, wear NIOSH approved positive pressure self-contained breathing apparatus. Reference North American Emergency Response Guidebook #154. Be sure to wear acid resistant gloves, safety glasses, and acid resistant clothing when cleaning a sulphuric acid spill.

1.9 Grounding Instructions

This electric bed must be grounded.

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current, thereby reducing the risk of electric shock.

This product is equipped with a cord having an equipment-grounding conductor and a grounded plug. The plug must be inserted into an appropriate electric outlet that is properly installed and grounded in accordance with all local codes and ordinances.



⚠ DANGER

Improper connection of the equipment-grounding conductor can result in electrocution. Check with a qualified electrician or service person if you are doubtful that the electrical outlet is properly grounded.

DO NOT modify the three prong plug provided. If it will not fit into the electrical outlet, have a proper outlet installed by a qualified electrician.



⚠ DANGER

Electric components, such as actuators, exposed to water, may cause severe injury including electrocution.

During routine bed operation or when cleaning, DO NOT expose electrical components to water. Unplug and de-energize electrical components when water products are near these components.



⚠ CAUTION

Grounding reliability can only be achieved when bed is connected to an equivalent receptacle marked "HOSPITAL ONLY" or "HOSPITAL GRADE".



⚠ DANGER

EXPLOSION Hazard

DO NOT operate this bed in the presence of a flammable anaesthetic mixture with air or with nitrous oxide.



⚠ DANGER

Possible FIRE Hazard exists if the handheld pendant is not disabled when using oxygen administering equipment. If bed is equipped with a pendant, disconnect the pendant from the port at the side of the bed and insert pendant into its holster or attach pendant to bed linen using the included linen clip when not in use.

Keep pendant cord clear of moving equipment.



⚠ DANGER

Possible FIRE Hazard exists when connecting the electric cord to a 120V wall outlet if oxygen administering equipment is in use.

Use either a patient nasal mask or ½-length tent, ensuring the tent never extends below the mattress deck, when administering oxygen.



⚠ WARNING

DO NOT roll the bed over the power supply cord. DO NOT entangle the power supply cord on other objects. A pinched power supply cord can become damaged and could be dangerous. Be aware of the power supply cord location especially when moving the bed.



⚠ WARNING

This equipment may cause electromagnetic disturbances to its environment. The bed has NOT been evaluated for electromagnetic compatibility (EMC).


The performance of this equipment may be degraded when exposed to electromagnetic disturbances and/or electrostatic discharge.


1.10 Important Mechanical Safeguards


- DO NOT stand on the bed or concentrate weight on the sections of the mattress deck.
- DO NOT use the bed without a mattress at least 6" (152 mm) thick and of recommended dimensions. Refer to Mattress Specifications on page 20.
- DO NOT use without a special mattress specifically designed to bend and conform to the shape of the bed.
- DO NOT use a water filled or gel filled mattress on this bed.
- Ensure that the head board and foot board are properly attached to the frame.

1.11 General Precautions

- Do not use headboards or footboards from other manufacturers.
- Ensure all hinges of the mattress deck sections are properly aligned before raising head or knee sections. Refer to Mattress Deck Removal on page 86
- All four sections of the mattress deck can be detached for thorough cleaning, sanitization, and maintenance


	⚠ WARNING
	This bed is rated to 500 lbs. (227 kg). DO NOT overload the bed. The combined weight of patients, visitors, mattress and bedding must NOT exceed 500 lbs. (227 kg). The maximum load on either side rail is 170 lbs. (77 kg).

	⚠ WARNING
	DO NOT drop the bed. DO NOT allow patients to fall on the bed. DO NOT jump on the bed. Each of the preceding impacts can permanently damage either HI-LO actuator resulting in an inoperable bed. In the case of an inoperable bed due to a damaged HI-LO actuator, replace the HI-LO actuator immediately. If left unattended, a damaged HI-LO actuator could result in patient injury.

	⚠ WARNING
	DO NOT exceed the maximum continuous mode of operation. Refer to Technical Specifications on page 15.

1.12 Mattress Specifications

A mattress is not included with this bed. It is highly recommended that you use a 35.5" (900 mm) wide mattress that is designed to conform to the bed length of 80" (2032 mm), such as a Carroll Hospital Group TheraMax™ Mattress. The mattress must be at least 6" (150 mm) in height.

	⚠ WARNING
	Possible patient ENTRAPMENT Hazard if using non-specified mattress.
	Patient entrapment may result in injury or death. Use only a mattress of recommended specifications with this bed.

1.13 Optional Accessories

Spirit™ Bed Optional Accessories

The Spirit™ bed comes complete with standard wooden head/foot boards, set of two Assist Rails™, patient restraint loops, four mattress keepers, and handheld patient pendant control. Spirit™ bed options include:

- Bed Exit Alarm
- Full Length or Partial Length Siderails
- 4" (102 mm) Bed Extension Kit
- Trapeze Adapter

Spirit Plus™ Bed Optional Accessories

The Spirit Plus™ bed comes complete with a moulded plastic head/foot boards, moulded plastic Quad siderails with integrated staff and patient controls and a Nurse Call feature, patient restraint loops, and four mattress keepers. Spirit Plus™ bed options include:

- Bed Exit Alarm
- Handheld Patient Pendant
- 4" (102 mm) Bed Extension Kit
- Trapeze Adapter

Spirit Select™ Bed Optional Accessories

The Spirit Select™ bed comes complete with integrated patient weigh scale and bed exit, enhanced footboard staff control with scale display and bed exit controls, underbed lighting, moulded plastic head/foot boards, moulded plastic Quad siderails with integrated staff and patient controls and a Nurse Call feature, patient restraint loops, and four mattress keepers. Spirit Select™ bed options include:

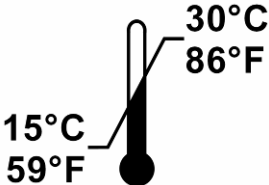
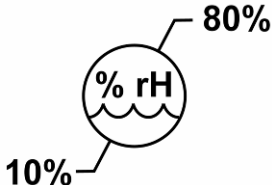
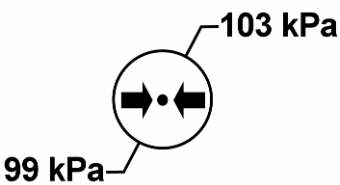
- Underbed Obstruction Sensing
- Handheld Patient Pendant
- 4" (102 mm) Bed Extension Kit
- Trapeze Adapter


1.14 Storage and Transport

Storage: During extended periods of disconnect from mains AC power, the battery is susceptible to permanent damage caused by being deep discharged. When storing the Spirit™ or Spirit Plus™ beds for an extended period of time, ensure the battery connection cable is disconnected from the control box (located under the head section of the mattress deck). The Spirit Select™ is equipped with an automatic disconnect feature which automatically disengages the battery from the charging circuit (no cables need to be disconnected).

Always store the bed in a clean, dry, and cool environment.

Transportation: Do not re-use any original packaging material to transport the bed. Transport the bed by rolling the bed on its casters. Ensure the Central “Lock & Steer” system is in the “BRAKE” position once the bed is loaded onto another vehicle. Use additional strapping or tie downs as necessary to ensure the bed does not move while in transport.

Storage and Transportation Environmental Limits		
		
Ambient Temperature Limits	Ambient Humidity Limits	Ambient Pressure Limits

	⚠ CAUTION
<p>DO NOT use the siderails as lifting points for the bed during transportation and/or storage.</p> <p>DO NOT use the siderails as a means of mechanically restraining the bed during transportation and/or storage.</p>	

1.15 Ultra-Low Feature

The Spirit™ product line is a family of ultra-low beds, designed to reduce patient injury due to falls out of bed.


Therefore, in an effort to reduce patient injury, always lower the bed completely to the lowest position before leaving a patient unattended.

Section 2:

Set-Up Instructions

2.1 Unpacking Instructions


Upon delivery of the bed, remove all cardboard, Styrofoam, crates, or other packaging material. Follow these instructions to unpack and set up the bed.

	⚠ CAUTION
	Equipment DAMAGE may result from improper plastic tie wrap removal. Do not cut any trimmed plastic tie wraps (see step 3 on page 27). Trimmed plastic tie wraps are permanent features on the Spirit™ bed.







2.1.1 Delivery

	
If your Spirit™ bed is shipped standing on-end, use two people to carefully lower it to the floor. DO NOT attempt to lower the bed without assistance. Once the bed is lowered, you may begin installation of your Spirit™ bed.	If your Spirit™ bed is shipped on a pallet or in a crate, roll the bed onto the floor and begin the installation procedure. <i>For the purpose of clarity, the packaging has been removed from this bed.</i>

	⚠ WARNING
	<i>BED IS TOP HEAVY!!!</i> Bed may TIP OVER when positioned upright during storage and/or transport

	⚠ WARNING
	<i>BED IS HEAVY!!!</i> Improper handling may result in serious injury to personnel and/or damage to bed. Use proper lifting techniques when lifting or lowering bed. DO NOT attempt to lower bed without assistance.

2.2 Set-Up of the Spirit Plus™ and Spirit Select™ Beds

		
<p>1. Remove the plastic tie wrap around the main power supply cord bundle. Plug the bed into a properly grounded 120V outlet.</p> <p>Exercise caution to ensure that you do not cut into or otherwise damage the insulation of the power supply cord.</p>	<p>2. Remove any remaining packaging straps, plastic tie wraps and/or material from the siderails and/or around the mattress deck, then press the UP button on the side rail control and raise bed to a comfortable working height.</p>	<p>3. On Spirit Plus™ beds, raise the head section the mattress deck and connect the battery cable to the open port of the CB09 control box as shown above.</p> <p>This will ensure the on-board battery remains fully charged and ready for use.</p>
		
<p>4. On Spirit Select™ beds, raise the knee and foot sections the mattress deck and connect the battery cable to the side DC jack of the CB10 control box as shown above. This will ensure the on-board battery remains fully charged and ready for use.</p>	<p>5. On Spirit Select™ beds, remove the wooden shipping stand using a 1/2" deep socket and ratchet.</p> <p>The wooden shipping stand is attached to the headboard mounting bracket with 4 carriage bolts.</p>	<p>6. On Spirit Select™ beds, remove the four fastener bushings that are inserted into the IV pole mounting holes of the headboard mounting bracket.</p> <p>Discard fastener bushings, fasteners, and wooden shipping stand.</p>



7. Unpack the headboard and footboard from their separate packaging box.



8. Place the headboard into the bracket assembly at the head end of the bed.

Ensure that the headboard is oriented as shown before attempting insertion into mounting bracket.

Electrical connector is not live. It is used as an indexing feature to ensure correct headboard installation orientation.



9. Place the footboard into the bracket assembly at the foot end of the bed.

Ensure that the footboard is oriented as shown before attempting insertion into mounting bracket.

The Staff Control faces away from the bed.

Electrical connection is made when footboard is inserted into bracket assembly; footboard becomes inactive when removed



10. If your Spirit Plus™ or Spirit Select™ bed is equipped with the optional pendant, plug it into the available port on either side of the bed.

Carefully align and screw on threaded retaining cap.



11. Initialize the bed for use:

Lower the bed using any control location (footboard staff, rail staff, rail patient, or pendant).






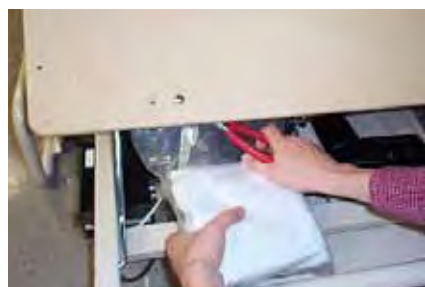
Once the lower limit is reached continue to hold the DOWN button for an additional 10 seconds.










This process will synchronize the actuators so that the bed will perform properly over time.



12. Your Spirit Plus™ or Spirit Select™ bed is now ready for use.

2.3 Set-Up of the Spirit™ Bed

		
<p>1. Remove the plastic tie wrap around the main power supply cord bundle. Plug the bed into a properly grounded 120V outlet.</p> <p>Exercise caution to ensure that you do not cut into or otherwise damage the insulation on the power supply cord.</p>	<p>2. Cut the plastic strapping around the head and foot sections of the mattress deck.</p>	<p>3. Cut all untrimmed plastic tie wraps.</p> <p>DO NOT cut any trimmed plastic tie wraps. Trimmed plastic tie wraps are permanent features on the Spirit™ bed.</p>
		
<p>4. Remove any remaining packaging straps or material from siderails, then locate the pendant strapped to the side of the bed. Press the UP button to elevate the bed to a comfortable working height.</p>	<p>5. Raise the head section the mattress deck and connect the battery cable to the open port of the CB09 control box as shown above.</p> <p>This will ensure the on-board battery remains fully charged and ready for use.</p>	<p>6. Lift the knee/foot sections of the mattress deck then cut the wire tie wrap holding the mattress keeper bag, and remove.</p> <p>If the four corner mattress keepers are already installed on each corner of the bed mattress deck, skip to the step 8.</p>

		
<p>7. Install four corner mattress keepers. See page 32 for installation instructions.</p>	<p>8. Install siderails. See page 29 for installation instructions.</p>	<p>9. Unpack the headboard and footboard from their separate packaging box.</p>
		
<p>10. Place the headboard into the bracket assembly at the head end of the bed.</p> <p>Ensure that the headboard is oriented as shown before attempting insertion into mounting bracket.</p> <p>The headboard posts face towards the wall.</p>	<p>11. Place the footboard into the bracket assembly at the foot end of the bed.</p> <p>Ensure that the footboard is oriented as shown before attempting insertion into mounting bracket.</p> <p>The staff control faces away from the bed.</p>	<p>12. Connect the footboard staff control cord.</p>
		
<p>13. Fasten the bolts through the holes in both sides of the brackets and posts. This will ensure that the footboard is not accidentally removed before the footboard cord is disconnected.</p>	<p>14. Initialize the bed for use:</p> <p>Lower the bed using either the footboard staff control or the pendant.</p> <p>Once the lower limit is reached continue to hold the DOWN button for an additional 10 seconds.</p> <p>This process will synchronize the actuators so that the bed will perform properly over time.</p>	<p>15. Your Spirit™ bed is now ready for use.</p>

2.4 Siderail Assemblies

Your Spirit™ bed will be equipped with one of the following four types of siderail assemblies:

Siderail Types	Spirit™	Spirit Plus™	Spirit Select™
Carroll Assist Rails™	Standard	-	-
Full Length Non-Tuck Siderails	Optional	-	-
Partial Length Non-Tuck Siderails	Optional	-	-
Quad Siderails	Not Available	Standard	Standard

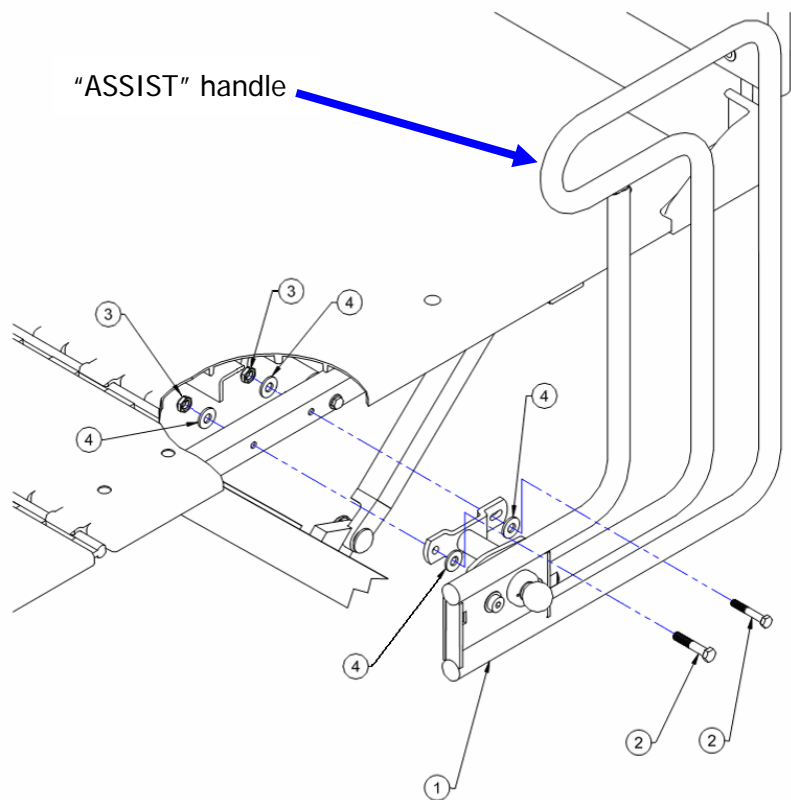
2.4.1 Carroll Assist Rails™

Your Spirit™ bed comes with Carroll Assist Rails™ as standard equipment. The Carroll Assist Rails™ are packaged separately from the bed and must be installed before the bed can be put into service. Remove the assist rails from their packaging and fit them to the main frame rails on either side of the bed.

Installing Carroll Assist Rails™

The release knob always faces outward and the "ASSIST" handle section of the assist rail points either towards the foot of the bed in the "ASSIST" position, or down in the "GUARD" position.

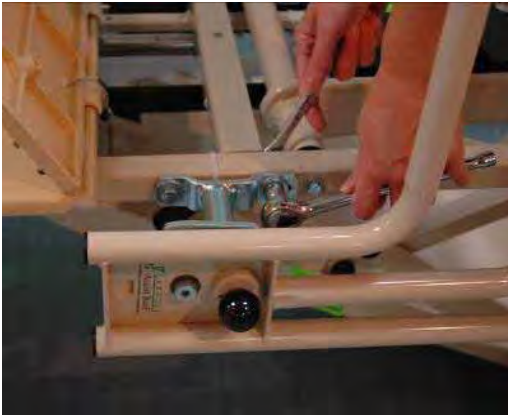
1. Mounting holes on the main rail of the bed frame are below the mattress deck. Assist rail shown in "ASSIST" position.
2. Place one 3/8 flat washer on the 3/8-16 X 2" long hex head screw and push this from outside the bracket, through the mounting hole in the main rail of the bed frame. Place another 3/8 flat washer over the bolt on the inside of the main frame rail mounting hole then secure with a 3/8-16 locking nut. Tighten with two 9/16" wrenches or socket wrenches.
3. Repeat for second fastener for the assist rail on this side of the bed.
4. Repeat the installation on the other side of the bed for the remaining assist rail assembly.



NOTE: PATIENT LEFT SIDE SHOWN

NOTE: HEAD AND SEAT SECTIONS OF MATTRESS DECK AND A FRAME CROSS MEMBER ARE CUT-AWAY FOR CLARITY

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	ASSIST RAIL – PATIENT LEFT SIDE (SHOWN) ASSIST RAIL – PATIENT RIGHT SIDE (NOT SHOWN)	RL3-010-26-1 RR3-010-26-1	1 1
2	3/8-16 X 2 LONG HEX HEAD SCREW	BLT382-P	4
3	3/8-16 LOCKING NUT	NUT38N-L	4
4	3/8 FLAT WASHER	WSR38U-SS	8



HINT: Raising the head section of the mattress deck will allow for better access when mounting the assist rail to the main rail of the bed frame.

Carroll Assist Rail™ Spacing

When installed properly, the space between the assist rail and the headboard should be as follows:

In "ASSIST" position (Assist Rail™ up):

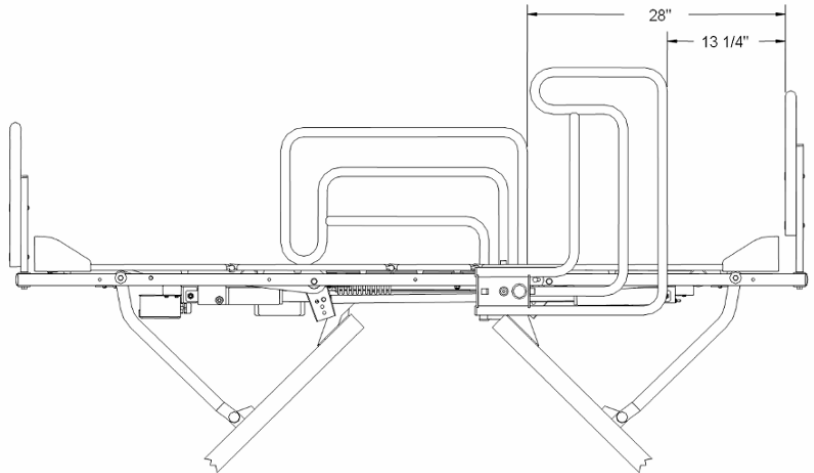
13 ¼" (336.5mm)

In "GUARD" position (Assist Rail™ down):

28" (711mm)

IMPORTANT: After installation, measure the spacing between the headboard and both of the assist rails in both the "ASSIST" and "GUARD" positions.

IMPORTANT: If the actual measured spacing differs from the spacing specified above, carefully inspect the installation to ensure that the assist rails have been mounted using the proper mounting holes.



Carroll Assist Rail™ Rotation

After proper installation, the bracket mounting point will become the pivot point that is fixed on the main bed frame, enabling the assist rail to rotate from the "GUARD" to "ASSIST" to "TRANSFER" position.



⚠ WARNING

FDA Rail Guidelines specify a minimum distance between the rail and the head board. To comply with the guideline, the assist rail bracket must be mounted in the correct mounting holes on the main rail of the bed frame. When mounted correctly, the distance between the Assist Rail™ and the headboard will be 13 ¼" (336.5mm) when the rail is in the "ASSIST" position and 28" (711mm) when the rail is in the "GUARD" position.

Failure to mount the assist rail correctly may result in patient entrapment.



⚠ WARNING

Never install two assist rails on the same side of the bed. The assist rail must be used alone (one on either side) or a serious patient entrapment hazard could result.

The left-side and right-side assist rails must be installed on their intended side of the bed, respectively. The assist rails are not interchangeable.

2.4.2 Full Length and Partial Length Non-Tuck Siderails

Your Spirit™ bed may be equipped with the optional Full Length or Partial Length Non-Tuck siderails.

Both the Full Length and Partial Length Non-Tuck siderails are pre-installed at the factory. They are each held in place, for shipping purposes, with tape and plastic tie wrap.

		
<p>Cut and remove the plastic tie wrap around the foam</p>	<p>Cut and remove the filament tape around the rails.</p>	<p>The siderails are now free to rotate.</p>

2.4.3 Quad Siderails

Your Spirit Plus™ or Spirit Select™ bed comes with moulded plastic Quad siderails as standard equipment. All four individual rail assemblies of the Quad siderails are pre-installed at the factory.

The two foot siderails (two rail assemblies closest to the foot end of the bed) are each held in place, for shipping purposes, with a plastic tie wrap. The two head siderails (two rail assemblies closest to the head end of the bed) are nestled in the packaging Styrofoam (on Spirit Plus™ beds) or are retained by the wooden shipping stand (on Spirit Select™ beds) which prevents their rotation during shipping.

	
<p>Cut and remove the plastic tie wraps restraining the foot siderails to the bed frame.</p>	<p>The foot siderails are now free to rotate.</p>

2.5 Installing Corner Mattress Keepers

Depending on how your bed was shipped, the corner mattress keepers may need to be installed on the bed. All corner mattress keeper fasteners are included in a clear plastic hardware bag inside the corner mattress keeper bag at the foot end of the bed. See step 6 on page 27.

IMPORTANT: There are two left side and two right side corner mattress keepers.

IMPORTANT: Ensure that the longer, tapered edge is parallel with the side of the bed

Corner Mattress Keeper Installation

1. Align square hole in corner mattress keeper with the moulded holes in the head end and foot end sections of the mattress deck as shown.
2. Insert a 1/4-20 X 5/8" long carriage bolt through the top of the corner mattress keeper hole.



3. Lift the mattress deck to gain access. Start a 1/4-20 hex nut on the carriage bolt. Tighten using a 7/16 wrench or socket wrench.
4. Repeat for the second hole on the first corner mattress keeper.
5. Repeat for the three remaining corner mattress keepers.






⚠ CAUTION


DAMAGE to mattress deck may occur.
Over-tight fasteners could cause the mattress deck to crack.
Do not over-tighten the corner mattress keeper hardware.

Section 3:

Bed Operation

3.1 Central “Lock & Steer” System

Mode	Caster Functionality	Pedal Position
<p>“BRAKE”</p> <p>Mode used to stabilize the bed from shifting.</p> <p>This mode prevents the bed from moving forwards, backwards or sideways.</p>	<p>Casters DO NOT swivel or roll</p>	
<p>“NEUTRAL”</p> <p>Mode used only to manoeuvre the bed in a tight area.</p> <p>This mode allows the bed to move forwards, backwards or sideways.</p>	<p>All casters swivel and roll</p>	
<p>“STEER”</p> <p>Mode used when attempting to steer the bed in a desired direction.</p> <p>All caster wheels can still rotate, enabling the bed to move forwards or backwards.</p>	<p>Head end casters swivel</p> <p>Foot end casters DO NOT swivel</p> <p>All casters roll</p>	

	<p style="text-align: center;">⚠ WARNING</p> <p>Unintended bed movement may occur if bed is left in either of the two mobilized positions; “STEER” or “NEUTRAL”.</p> <p>NEVER leave the bed unattended in either the “STEER” or “NEUTRAL” positions.</p> <p>DO NOT attempt to move the bed until the “BRAKE” has been released.</p>
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3.1.1 Bed Mobilization & Stabilization

Bed Mobilization

The bed is mobile when the Central “Lock & Steer” pedal is in either the “NEUTRAL” or “STEER” position. Use either of these two pedal positions depending on the situation, when bed mobility is needed.

Enable “Steer”

Fully depress the right side of the Central “Lock & Steer” pedal at either end of the bed. Pedal actuation mechanism should make an audible engagement when switching between modes.

IMPORTANT: Depending upon the orientation of the castors, it may be necessary to roll the bed sideways, in a back and forth motion, at the foot end of the bed until the steering casters become engaged in the “STEER” mode.



Put the bed into “Neutral”

Depress or lift the Central “Lock & Steer” pedal with your foot until the pedal is level. Pedal actuation mechanism should make an audible engagement when switching between modes.

The bed can be put in “NEUTRAL” regardless of caster orientation.



Bed Stabilization

The bed is stable when the Central “Lock & Steer” pedal is in the “BRAKE” position. Use this pedal position whenever the bed is left unattended or when the bed needs to remain stable.

Apply the “BRAKE”

Fully depress the left side of the Central “Lock & Steer” pedal at either end of the bed. Pedal actuation mechanism should make an audible engagement when switching between modes.

The “BRAKE” can be applied regardless of caster orientation.



⚠ WARNING

DO NOT to move the bed until the side rail assemblies have been rotated completely to the raised/closed, UP or “GUARD” position and the locking/latching mechanism has engaged. For complete instruction see Side Rail Operation on page 51.

NOTE:

When the “NEUTRAL” mode is activated properly, the bed should move freely without any unusual noises. If any clicking noises are heard when in the “NEUTRAL” position, stop and check that the Central “Lock & Steer” pedal is level. Adjust, if necessary.

3.2 Bed Control

Depending on the Spirit™ bed you purchased, you will have two or three locations for controlling bed functions.

Control Location	Spirit™	Spirit Plus™	Spirit Select™
Patient Hand Control (Pendant)	Standard	Optional	Optional
Footboard Staff Control	Standard	Standard	Enhanced
Patient/Staff Siderail Controls	Not Available	Standard	Standard

3.2.1 Patient Handheld Control (Pendant)

The Spirit™ has been designed with provisions to connect a patient, handheld, 6 function control (pendant).

The pendant offers patient control of basic bed operations:

- Head UP/DOWN,
- Knee/Foot UP/DOWN
- Bed UP/DOWN



Storage

For Spirit™ beds, the pendant can be affixed to the bed using a holster that clips between the side rail bars on the outside of the bed. The pendant slips into the holster for easy location and convenient patient access.

OR

For all beds, the pendant can be secured to the bed linens with the included linen clip. Choose a clip location so that the pendant is within easy reach.



Connection

The pendant can be connected on either side of the bed (the connection port is just beneath the seat section of the mattress deck on both sides of the bed).

To move the pendant to the opposite side of the bed, first, unscrew the threaded retaining cap then carefully disconnect the jack.

Reconnect the pendant control cable to the existing port on the other side of the bed. Ensure that the indexing arrows are aligned to enable connection. Carefully align and screw on threaded retaining cap.



⚠ WARNING









Electric SHOCK Hazard when working on the electrical components.

Before working on any electrical part, such as the 9-pin pendant coupling, ensure the mains AC power to the bed is disconnected and the capacitor inside the control box is fully discharged.









Full capacitor discharge can be achieved by sequentially depressing the UP and DOWN buttons on the pendant at least 20 times, after mains AC power to the control box has been disconnected.

3.3 Bed Positioning









3.3.1 Bed Elevation – HI-LO Operation

<p>To raise the bed, press the BED UP arrow on the footboard staff control, the rail staff controls, or on the pendant.</p> <p>Release the button when the desired elevation has been achieved.</p>				
<p>To lower the bed, press the BED DOWN arrow on the footboard staff control, the rail staff controls, or on the pendant.</p> <p>Release the button when the desired elevation has been achieved.</p>				

3.3.2 Head Elevation - Head Actuator Operation




<p>To raise the head section of the bed, press the HEAD UP arrow on the footboard staff control, the rail staff/patient controls, or on the pendant.</p> <p>Release the button when the desired elevation has been achieved.</p>				
<p>To lower the head section of the bed, press the HEAD DOWN arrow on the footboard staff control, the rail staff/patient controls, or on the pendant.</p> <p>Release the button when the desired elevation has been achieved.</p>				

3.3.3 Knee Elevation - Foot Actuator Operation

<p>To raise the knee section of the bed, press the KNEE UP arrow on the footboard staff control, the rail staff/patient controls, or on the pendant.</p> <p>Release the button when the desired elevation has been achieved.</p>	 		
<p>To lower the knee section of the bed, press the KNEE DOWN arrow on the footboard staff control, the rail staff/patient controls, or on the pendant.</p> <p>Release the button when the desired elevation has been achieved.</p>	 		

3.3.4 Auto Contour Mode



When the head section of the mattress deck is elevated, there is often the tendency for the patient to slide towards the foot end of the bed. The Auto Contour Mode helps to prevent this motion. The Auto Contour mode automatically raises/lowers the knee section to, correspondingly, whenever the head section is raised or lowered.


<p>To activate Auto Contour mode, simply press the CONTOUR button. The green LED in the top right corner of the button (for Spirit™ and Spirit Plus™ beds) or the entire CONTOUR button (for Spirit Select™ beds) will illuminate when the Contour mode has been activated.</p> <p>To de-activate Auto Contour mode, simply press the CONTOUR button again. If the CONTOUR button is not illuminated, Auto Contour mode has been de-activated.</p>	 	
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NOTE: Patient lock-out will override Auto Contour if the knee elevation lock-out has been activated.

3.3.5 Chair Mode

The Chair mode allows patient to be placed in an upright position.



<p>To activated Chair mode, simply press and hold the CHAIR button.</p> <p>The bed will first move into a Reverse Trendelenburg position and then will articulate into the chair configuration. The green LED in the top right corner of the button (for Spirit™ and Spirit Plus™ beds) will illuminate once the proper Reverse Trendelenburg angle has been achieved. The CHAIR button does not illuminate on the Spirit Select™. Release the button anytime when the desired chair contour has been achieved or the bed will stop automatically once the full chair configuration has been achieved.</p> <p>To de-activate Chair mode, simply press and hold the CHAIR button until the bed is flat. The bed will stop automatically.</p>		
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	<p style="text-align: center;">⚠ WARNING</p> <p>The Reverse Trendelenburg position is integral to the Chair mode configuration. The Spirit™ bed may shift during Reverse Trendelenburg activation.</p> <p>Activate Chair mode only after the Central “Lock & Steer” system has been put in the “BRAKE” position.</p>
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3.4 Staff and Emergency Functions

3.4.1 CPR (Cardiopulmonary Resuscitation) Function

Activation of the CPR function allows one-touch flattening of the mattress deck to facilitate staff administering CPR to the patient.

<p>Press the CPR button on the attendant control pad one time. The head section and knee section will lower to flat position.</p> <p>The CPR mode does not need deactivation. Simply resume head and knee-foot operation once the CPR action is complete.</p> <p>To interrupt the CPR mode, touch any other function on the keypad.</p>		
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	<p style="text-align: center;">⚠ CAUTION</p> <p>Improper use of CPR mode may cause patient injury.</p> <p>Once activated, CPR function will lower head and knee sections to flat position automatically. To interrupt CPR function, touch any other button on the keypad.</p>
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3.4.2 Trendelenburg Operation

Press and hold the TREND button. Release the button once the desired bed angle between 0° and -15° (-14° on Spirit Select™ beds) is reached.

To return the bed to the horizontal position, press and hold the rev.TREND button. The bed will automatically stop when the mattress deck has returned to the horizontal position.

On the Spirit Plus™ and Spirit Select™ beds, the Trendelenburg angle is shown on the bed frame angle gauge integral on the staff side of both hip Quad rails.

On the Spirit Select™ beds, the enhanced footboard staff control will graphically show the current Trendelenburg angle. The entire TREND button will also illuminate once the bed has achieved a Trendelenburg angle of $\geq -2^\circ$.



3.4.3 Reverse Trendelenburg Operation

Press and hold the rev.TREND button on the attendant control pad. Release the button once the desired bed angle between 0° and 13° is reached (+14° on Spirit Select™ beds).

To return the bed to the horizontal position, press and hold the TREND button. The bed will automatically stop when the mattress deck has returned to the horizontal position.

On the Spirit Plus™ and Spirit Select™ beds, the Reverse Trendelenburg angle is shown on the bed frame angle gauge integral on the staff side of both hip Quad rails.

On the Spirit Select™ beds, the enhanced footboard staff control will graphically show the current Reverse Trendelenburg angle. The entire rev.TREND button will also illuminate once the bed has achieved a Reverse Trendelenburg angle of $\geq +2^\circ$.



CAUTION

Patient discomfort may result from normal operation of the Trendelenburg and Reverse Trendelenburg function.

Trendelenburg and Reverse Trendelenburg modes should only be used on the advice of a medical practitioner.



WARNING

The Spirit™ bed may shift during Trendelenburg or Reverse Trendelenburg activation.

Initiate Trendelenburg or Reverse Trendelenburg only after the Central "Lock & Steer" system has been put in the "BRAKE" position.

3.4.4 Patient Lock-Outs

Patient lock-outs restrict the patient from initiating head, knee, and bed elevation from the side rail controls or the pendant. The degree of restriction depends on the lock-out option selected.

Staff may choose to restrict patient access to one, two, or all three bed functions. To restrict a function, press the patient lock-out button under that particular function. The yellow LED in the top right corner of the button (for Spirit™ and Spirit Plus™) or the entire lock-out button (for Spirit Select™) will illuminate when patient control of a particular function has been locked-out.

To unlock, simply press the patient lock-out button again. When the patient lock-out button is no longer illuminated, patient control of that particular function has been restored.

IMPORTANT: Patient lock-outs also restrict bed operation from both of the staff rail controls.



NOTE:

When patient lock-outs have been activated, the footboard staff control remains fully active.

3.4.5 Master Lock-Out

To completely restrict access to all bed functions from all control locations (staff and patient controls), use the Master Lock-out function.

To activate the Master Lock-Out, press and hold all three patient lock-out buttons at the same time. All three yellow LED's in the top right corner of the three patient lock-out buttons (for Spirit™ and Spirit Plus™) or all three entire patient lock-out buttons (for Spirit Select™) will flash sequentially to indicate that Master Lock-Out has been activated.

To deactivate the Master Lock-Out function, simply repeat this process. Press and hold all three patient lock-out buttons at the same time. When all three patient lock-out buttons are no longer illuminated, Master Lock-Out has been deactivated and both staff and patient control from all control locations has been restored.



NOTE:

When Master Lock-Out has been activated, the emergency CPR function and Nurse Call remains enabled.



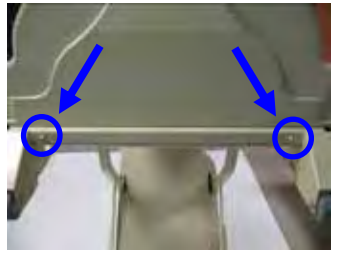




⚠ WARNING

When a patient is left unattended, the bed should be lowered to its lowest position and the bed elevation controls should be locked-out in order to reduce the risk of patient injury.

3.4.6 Nurse Call

The Spirit Plus™ and Spirit Select™ beds are equipped with a Nurse Call feature.

<p>To operate the Nurse Call, press the red NURSE button on the rail patient control (inside of each head rail control).</p> <p>Operation of the Nurse Call requires a conventional connection cable (not supplied) to be plugged into the ¼" Phono jack on the headboard mounting bracket and into the designated outlet in the hospital's communication system.</p>		
<p>The Spirit Plus™ beds are equipped with two Nurse Call ports and Spirit Select™ beds are equipped with one Nurse Call ports to accommodate multiple Nurse Call controls.</p> <p>Nurse Call ports are located on the headboard mounting bracket.</p>		
<p>Ensure that the attached "dummy plug" is inserted to any inactive Nurse Call ports.</p>		

3.5 Spirit Select™ Unique Functions & Features

3.5.1 LCD Menu Display

The enhanced footboard staff control on the Spirit Select™ is equipped with an integral LCD menu display. The LCD menu display is activated or “wakes up” when the ON/ENTER, TREND, and rev.TREND buttons are pressed. The LCD menu display automatically turns off after 20 seconds of keypad inactivity has elapsed. LCD contrast is adjustable in the Service Menu. See page 63 for Service Menu navigation and page 73 for instructions.

Home Screen

When the menu display is activated, the home screen will automatically display the patient weight in either kilograms (kg) or pounds (lbs) depending upon which unit of measure has been set for patient weight display. The home screen will also show the TREND or revTREND angle for the first 5 seconds of menu display activation. Once 5 seconds has elapsed, the menu display will then show the weight change (not set as shown below) before turning off after 20 seconds of keypad inactivity has elapsed.



5 second delay



Menu ON/ENTER Button

“ON” Functionality of this Button

Press this button to activate or “wake up” the menu display.

“ENTER” Functionality of this Button

Press this button (as enter button) when prompted by the menu display to make a selection.



Menu UP/DOWN Arrow Buttons

Press the ON/ENTER button to activate or “wake up” the menu display

Press the ARROW buttons to scroll up or down the available menu options

When the desired option is displayed, press the ON/ENTER button to make a selection.



NOTE:

The LCD display **WILL NOT** function or illuminate when bed operating under battery power. This is to reserve battery power for emergency functions.

3.5.2 Patient Weigh Scale

The Spirit Select™ is equipped with an integral scale to facilitate the weighing of patients while in the bed. The scale is always activated and will display the patient's weight in either kilograms (kg) or pounds (lbs) depending upon which unit of measure has been set for patient weight display. The factory default displayed patient weight is pounds (lbs).

The Spirit Select™ scale is very sensitive. Patient weight will be displayed most accurately if nothing is touching the bed and the bed is not contacting the wall, patient station, etc.

ACCURACY: The Spirit Select™ scale has an approximate error of 1% of patient weight. This equates to an approximate error of ±0.8 kg (±1.8 lbs) for a patient weighting 80 kg (176 lbs).

Zeroing the Scale (Establish Tare Value)

1. Press and hold the ZERO button for 3 seconds
2. Release the ZERO button when instructed
3. DO NOT TOUCH BED
4. Ensure that the displayed weight is 0.0 (lbs or kg – depending upon which unit has been set)

IMPORTANT: DO NOT zero the scale with a patient in the bed. This will result in a zero patient weight being displayed.

IMPORTANT: Make sure that all necessary equipment and linens are on the bed prior to zeroing the scale.



IMPORTANT: If the bed detects any movement while attempting to zero the scale, a warning message will be displayed and the scale zeroing procedure will have to be repeated.



Scale Related Activities

Changing patient weight display units:

- If setting is not locked - see page 56 for Main Menu navigation and page 58 for instructions
- If setting is locked - see page 63 for Service Menu navigation and page 65 for instructions

Patient weight change zero: see page 56 for Main Menu navigation and page 57 for instructions

Change equipment on the bed: see page 56 for Main Menu navigation and page 59 for instructions

Adjusting patient display weight: see page 63 for Service Menu navigation and page 64 for instructions

Weight change alarm: see page 63 for Service Menu navigation and page 67 for instructions

NOTE:

Carroll Hospital Group recommends that the bed is zeroed prior to use by each new patient and patient weight change is zeroed once the new patient enter the bed.

3.5.3 Bed Exit Feature

The enhanced footboard staff control on the Spirit Select™ is equipped with an integral bed exit feature to help monitor and report patient activity with audible and/or Nurse/Priority Call alarms. This feature is not intended to replace patient monitoring by staff.

The Bed Exit Alarm can be set to three different sensitivity levels corresponding to the level of monitoring a patient requires.

The Bed Exit Alarm can be set to produce an audible bed alarm (three different volume settings) or to send a Nurse/Priority Call alarm or it can be set to produce both audible and Nurse/Priority Call alarms.



Bed Exit Activation, Deactivation, and Sensitivity Level Selection

To activate the Bed Exit Alarm, press the SET/RESET button to cycle through the alarm sensitivity levels. When the desired alarm sensitivity level has been selected, the SET/RESET button and the selected sensitivity level icon will remain illuminated to indicate that the bed exit alarm has been activated. An audible “chirp” will also sound to indicate that the Bed Exit Alarm has been armed.

To de-activate the Bed Exit Alarm, press the SET/RESET button to cycle through the three alarm sensitivity levels. When the SET/RESET button and no alarm sensitivity icons are illuminated the Bed Exit Alarm has been de-activated.

IMPORTANT: The Bed Exit Alarm can ONLY be activated if there is weight on the bed (20lbs minimum). The Bed Exit Alarm can ONLY be de-activated using the SET/RESET button.

The factory default alarm chime setting is audible chime (high volume) and Nurse Call alarm. To change this setting or chime tone see below.



Bed Exit Alarm Volume Selection

To set the desired Bed Exit Alarm volume, press the CHIME button to begin cycling through the alarm volume settings. There are three alarm volume settings (low, medium, high) and a Nurse Call setting. Cycling through the alarm volume settings one time will allow staff to select the desired alarm volume setting **OR** the Nurse/Priority Call alarm. Cycling through the alarm volume settings a second time will allow staff to select the desired alarm volume setting **AND** the Nurse/Priority Call alarm.

When the desired chime is selected, the CHIME button and the selected alarm volume and/or Nurse/Priority Call icon(s) will remain illuminated.



Chime Tone Selection

To change the default chime tone, the Bed Exit Alarm must first be activated. Press the SET/RESET button to activate the Bed Exit Alarm.

Press and hold the CHIME button for 5 seconds to begin cycling through the available chime tones. Each chime tone will sound (at the selected volume) for several seconds and will be followed by a brief pause before the next available chime tone begins. When the desired chime tone is heard, release the CHIME button to set. The selected chime tone will sound as confirmation that the chime tone selection has been changed.



Locking Bed Exit Alarm Settings

To lock the setting of the Bed Exit Alarm, press and hold both the SET/RESET & CHIME buttons simultaneously for 5 seconds. An audible “chirp” will indicate that the Bed Exit Alarm setting has been locked.

To unlock the Bed Exit Alarm settings, simply repeat this process.



3.5.4 Underbed Light

The Spirit Select™ is equipped with integrated underbed lighting. Press the LIGHT button to activate the underbed light and cycle through two (2) brightness settings: LOW or HIGH. The LIGHT button will illuminate when the underbed light is on at either brightness level. When the LIGHT button is no longer illuminated, the underbed light has been de-activated.



Automatic Bed Exit Light

The underbed light can also be set to operate as an automatic Bed Exit Light. The Bed Exit Light improves nighttime visibility around the bed and in the room providing an increased level of patient safety. The Bed Exit Light mode automatically switches the underbed light on just prior to the patient exiting the bed.

In Bed Exit Light mode, the underbed light will remain illuminated until the patient returns to the bed, and automatically switches off after a short delay. If the patient does not immediately return to bed, the underbed light automatically shuts off after 15 minutes has elapsed.

The factory default setting for the Bed Exit Light is ON. This setting can be changed in the Service Menu. See page 63 for Service Menu navigation and page 69 for instructions.

NOTE:

Underbed lighting **WILL NOT** function (illuminate) when bed operating under battery power. This is to reserve battery power for emergency functions.

3.5.5 Level All Function

The Spirit Select™ is equipped with a Level All function.

Press and hold the Level All button to simultaneously lower both the head and foot sections of the mattress deck. Bed motion will stop automatically when both sections of the mattress deck are parallel with the bed frame.










3.5.6 Standard 37 Pin Connector

The Spirit Select™ is equipped with a standard I 37 pin connector to accommodate connection to the hospital's communication system found in most typical patient stations.

The 37 pin connector is integrated into the headboard mounting bracket.






3.5.7 Power Status Indicator

<p>The enhanced footboard staff control on the Spirit Select™ is equipped with an integrated power status indicator. This cluster of 3 discrete icons indicate the real-time status of power available to operate the bed. The icons will illuminate respective of the source of power, the operation of the battery charging circuit, and the level of battery reserve power.</p> <p>When the bed is plugged into mains AC power the 24VDC backup battery receives continuous charge from the charging circuit. If the battery voltage drops below 18VDC, the battery will be automatically disconnected from the charging circuit to prevent any permanent damage to the battery from being deep discharged during extended periods of disconnect from mains AC power.</p>	
<p>AC icon is ON (GREEN) – Bed is connected and operating on mains AC power. The battery is connected and is fully charged. Bed is ready to operate on battery power if required. This is the optimum operating condition for the bed after a full 24 hr recharge period.</p>	
<p>AC icon is ON (GREEN) + SRVC icon is FLASHING (RED) – Bed is connected and operating on mains AC power. The battery is connected but not holding proper charge. Bed may not reliably operate on battery power if required. The battery is either improperly charging, or the battery is disconnected from a control box. The battery needs to be serviced and/or replaced immediately.</p>	
<p>AC icon is ON (GREEN) + DC icon is FLASHING (AMBER) – Bed is connected and operating on mains AC power. The battery is connected but is currently recharging.</p>	
<p>DC icon is ON (AMBER) – Bed is disconnected from mains AC power and is operating on battery reserve power. The battery is connected and has not yet exhausted the available reserve power. Bed is OK to operate on battery reserve power but it should be connected to mains AC power as soon as is possible.</p> <p>IMPORTANT: Exercise caution when operating the bed on battery reserve power. Ensure that only vital and necessary bed articulations are performed to extend battery reserve power as long as possible and ensure essential emergency functions remain available.</p>	
<p>DC icon is ON (AMBER) + SRVC icon is FLASHING (RED) – Bed is disconnected from mains AC power and has been operating on battery reserve power. Although the battery is connected, it has exhausted its reserve power. The bed should be connected to mains AC power as soon as possible to recharge the battery.</p> <p>IMPORTANT: At this point, reliable bed operation cannot be guaranteed although some bed functionality may still be available.</p>	
<p>NO icons illuminated (ALL OFF) – IMPORTANT: Bed may NOT operate.</p> <p>The bed has been disconnected from mains AC power and/or has either a faulty connection or a component (CB09, CB10, and/or the battery).</p> <p>OR</p> <p>The battery may have been automatically disconnected from the charging circuit because the voltage has dropped below 18VDC. This may be the case if the bed has been in storage.</p>	

NOTE: In-house testing has demonstrated that a new back-up battery, when fully charged, has sufficient reserve power to deliver the equivalent of approximately 5 CPR cycles with a patient weight of 250 lbs. Battery reserve power discharge rate depends on such factors as patient weight, age of battery, ambient temperature, and the amount of charge/discharge cycles the battery has been subjected to. For example, the heavier the patient, the faster battery reserve power will be exhausted during battery powered bed operation. Conversely, the lighter the patient, battery reserve power may offer a longer duration of battery powered bed operation.

3.6 Optional Bed Exit Alarm System (Spirit™ and Spirit Plus™)

<h3>System Components</h3> <ul style="list-style-type: none"> • Bed Exit Monitor • 8 ft long ¼" x ¼" Standard Nurse Call System Cable • 1-Year Replaceable Sensor Pad, 10" x 30" • Power Cable 	<p style="text-align: center;">Bed Exit Monitor – Front</p>  <p style="text-align: center;">Nurse Call System Cable Power Cable Sensor Pad Connection Cable</p>	
<h3>Set-Up</h3> <ol style="list-style-type: none"> 1. Plug in the sensor pad connection cable, the power cable, and the nurse call cable. 2. Once the alarm system has been properly configured and tested put the patient into bed. Ensure that the patient's weight is positioned on the bed exit pad area. A short confirmation tone will sound to indicate the patient is now being monitored by the system. 3. When the patient attempts to leave bed, the system will trigger an alarm in the patient's room and at the nurses station (depending on your setting selection). 4. To turn the bed exit monitor off, pull out the power cable as shown. 	<div style="display: flex; justify-content: space-around;"> <div data-bbox="852 1024 1230 1669"> <p style="text-align: center;">Bed Exit Monitor – Back</p>  <p style="text-align: center;">Settings Selection</p> </div> <div data-bbox="1230 1024 1523 1669"> <p style="text-align: center;">Bed Exit Monitor – Side</p>  <p style="text-align: center;">Reset Button</p> </div> </div>	
<h3>Settings</h3> <p>Setting selection is made inside the battery compartment located on the back of the bed exit monitor. You can select from four alarm tones and three volume settings: Hi, Lo, and Nurse Call. A zero (0) or two (2) second alarm delay can also be selected.</p> <p>Alarm reset settings are located on the side of the bed exit monitor.</p> <ul style="list-style-type: none"> • Select LOCAL/RE if you want to reset the bed exit monitor by pressing the two re-set buttons simultaneously or by returning the patient to the bed. • Select RE ONLY if you want to reset the bed exit monitor only by returning the patient to bed. <p>Prior to patient use, it is recommended that you trial the alarm system to see which settings are preferable for your particular environment.</p>	<p>IMPORTANT: Test your bed exit alarm pad and control unit on a regular basis to ensure it is in proper working order. The sensor pad should be replaced after one year, or at any time it has been determined not to be functioning properly</p>	
<h3>Sensor Pad Replacement</h3>		
<p>To replace the sensor pad, disconnect the sensor pad connection cable and remove the sensor pad from the seat section of the mattress deck. Cut the plastic tie wraps that secure the cable to the bed frame. Place the new sensor pad on the seat section and re-route the cable along the bed frame, securing the cable to the frame rails with plastic tie wraps. Ensure that the jack is fully plugged into the "Pad" port on the control unit.</p>		

3.7 Optional 4" Bed Extension Kit (Spirit Plus™ and Spirit Select™)

To accommodate the physical needs of taller patients, Carroll Hospital Group offers an optional extension kit that will increase the length of the mattress deck by 4 inches (101.6 mm). **Tools not included*

Your extension kit will include:

- Metal extension pan
- 4" foam mattress bolster (optional)
- Fasteners: two 5/16-18 X 2" long hex head screws, two 5/16-18 hex locknuts, two 5/16 flat washers



1. Lift the foot section of the mattress deck to access the footboard bracket and cables. Rotate foot section of the mattress deck towards the head of the bed until it comes to rest.

2. Extend the footboard cable so that there is sufficient slack to accommodate the 4" addition. To perform this step, it may be necessary to cut some of the plastic tie wraps. Replace and trim all cut plastic tie wraps after the footboard cable has been sufficiently slackened.

3. Using a 1/2" socket wrench, loosen and remove the two hex head screws that attaches the footboard bracket to the bed frame. *These fasteners will not be reused.*



4. Slide the bracket back 4". Align the holes in the footboard bracket with the corresponding holes in the main rail of the bed frame.

5. Place one 5/16 flat washer on a hex head screw and insert as shown above. Repeat on other side of the bed

6. Place one 5/16 flat washer over threads of the hex head screw and start a 5/16-18 hex locknut. Tighten using two 1/2" wrenches or socket wrenches. Repeat on other side of the bed.



7. Remove the two foot-end Corner Mattress Keepers. Loosen and remove the four 1/4-20 X 5/8" long carriage bolts and nuts using a 7/16" wrench or socket wrench. *These fasteners will be reused.*

8. Install the metal extension pan using the fasteners that were removed in the previous step. Tighten with a 7/16" wrench or socket wrench. **Do not over tighten fasteners.** See Corner Mattress Keeper section on page 32 for details.

9. Place the foam mattress bolster into the extension pan.
Your extension kit is now ready for use.

3.8 Optional Underbed Obstruction Sensor (Spirit Select™)

If your Spirit Select™ is equipped with the optional underbed obstruction sensor, the bed will be outfitted with 6 obstruction sensor pads as shown below.



Obstruction sensor pad for castor cover



Obstruction sensor pads for primary leg top and bottom covers



Contact with an obstruction while the bed is in downward motion

When any of the obstruction sensors make contact with a foreign object during any lowering motion of the bed (BED DOWN, TREND or rev.TREND), the bed will immediately stop all downward motion and automatically elevate the bed up a safety distance of 1". This will provide clearance for removal of the obstruction.

After an obstruction has been detected, the obstruction indicator (BED UP button) will immediately begin to flash and an audible "chirp" will sound. A warning message will display on the LCD screen for 5 seconds.

All bed motion will be disabled until such time that all buttons are released. Also, once an obstruction has been detected, further attempts to lower the bed or to attempt Trendelenburg or Reverse Trendelenburg operation will not be permitted.

Contact with an obstruction while bed is stationary (ie: not in motion)

When an obstruction is detected prior to any bed movement, the OBSTRUCTION INDICATOR (BED UP button) will immediately begin to flash and will remain flashing until such time that the obstruction is removed. All downward motion of the bed platform (BED DOWN, TREND or rev.TREND) will be disabled and a warning message will be displayed on the LCD screen if a bed lowering movement is attempted. When the obstruction has been removed, the OBSTRUCTION INDICATOR light will stop flashing and normal bed operation will be restored.

VISUAL OBSTRUCTION INDICATORS:

In addition to operating BED UP functionality, the BED UP button illuminates & flashes whenever an underbed obstruction has been detected.

The menu display show a warning message.

AUDIO OBSTRUCTION INDICATORS:

An audible "chirp" will sound when an obstruction is contacted during bed motion. If the an obstruction is contacted prior to any bed movement, no "chirp" will sound.





3.9 Side Rail Operation

All of Carroll Hospital Group's Spirit™ bed siderail assemblies fully comply with FDA and Health Canada patient entrapment reduction guidelines and have successfully passed rail entrapment testing using test procedures outlined by the Hospital Bed Safety Workgroup. Spirit™ bed siderail assemblies were qualified using the Cone and Cylinder Tool as specified by FDA and Health Canada patient entrapment reduction guidelines. Entrapment Test Kits are readily available so ongoing compliance can be monitored by the healthcare provider. For further information, refer to the FDA's website at <http://www.fda.gov/cdrh/beds/>.

3.9.1 Intended Application/Use of Spirit™ Bed Side Rail Assemblies




When locked/latched in the fully raised/closed in the UP or "GUARD" position, the siderails define a residence area for patients to rest upon the bed. This provides positive patient location/support helping to protect against the potential for patients to fall from the bed as the siderails give the patient a visual and physical indicator of the edge of the bed. In the fully open/lowered in the DOWN or "TRANSFER" position, the siderails permit patient ingress to and egress from the bed. The "ASSIST" position on the Carroll Assist Rails™ and integral handles on the Quad siderails facilitate patient mobility.

	⚠ CAUTION
	DO NOT use the siderails as a patient lifting device/apparatus. DO NOT use the siderails as part of a patient restraint mechanism.





	⚠ CAUTION
	DO NOT use the siderails as lifting points for the bed during transportation and/or storage. DO NOT use the siderails as a means of mechanically restraining the bed during transportation and/or storage.


3.9.2 Carroll Assist Rails™

Your Spirit™ bed comes with Carroll Assist Rails™ as standard equipment.

Operation of the Carroll Assist Rail™	
It is important that caregivers know how to operate the assist rails safely. The assist rails locks in two positions and enables patient transfer in a third, unlocked position.	
<p>In the "GUARD" position, the assist rails provide positive patient location and support helping to protect the patient from the potential of falling from the bed.</p> <p>IMPORTANT: An audible "click" should be heard when the assist rails have been completely rotated into the "GUARD" position as the locking mechanism engages.</p>	
<p>In the "ASSIST" position, the assist rails aid patient ingress to and egress from the bed.</p> <p>IMPORTANT: An audible "click" should be heard when the assist rails have been completely rotated into the "ASSIST" position as the locking mechanism engages.</p>	
<p>In the "TRANSFER" position, the assist rails fully rotate out of the way to provide unimpeded and unassisted patient ingress to and egress from the bed and also enables patient transfer by staff.</p> <p>IMPORTANT: The assist rails will not lock in the "TRANSFER" position.</p>	

Change Carroll Assist Rail™ From "Guard" to "Assist" to "Transfer"

			
<p>1. When the assist rail is locked in the "GUARD" position, pull the release knob at the bottom of the assist rail and rotate the assist rail about the pivot point.</p>	<p>2. As soon as the assist rail begins to rotate, you may let go of the release knob.</p> <p>The locking mechanism is spring loaded and will not engage until the assist rail has been completely rotated into the "ASSIST" position or back into the "GUARD" position.</p>	<p>3. Continue to rotate the assist rail until it "clicks" into the "ASSIST" position.</p> <p>To change back into the "GUARD" position or into the "TRANSFER", pull the release knob and rotate the assist rail into the desired position.</p>	<p>4. In the "TRANSFER" position, the assist rail will not lock.</p>

	WARNING
	<p>Do not leave patient unattended when the assist rail is in the "TRANSFER" position.</p> <p>Once patient transfer has been completed, rotate the assist rail to either locking positions; "GUARD" or "ASSIST" positions.</p>

3.9.3 Full Length or Partial Length Non-Tuck Siderails (*Full Length Shown*)

Your Spirit™ bed may be equipped with the optional Full Length or Partial Length Non-Tuck siderails.

Operation of the Full Length or Partial Length Siderails

It is important that caregivers know how to operate the Full Length or Partial Length siderails safely. The Full Length or Partial Length siderails lock in the UP position and enables patient ingress, egress, and transfer in the DOWN position.

In the UP position, the Full Length or Partial Length siderails provide positive patient location and support helping to protect the patient from the potential of falling from the bed.

IMPORTANT: An audible “click” should be heard when each siderail has been completely rotated into the UP position as the locking mechanism engages.



The DOWN position the Full Length or Partial Length siderails fully rotate out of the way to provide unimpeded and unassisted patient ingress to and egress from the bed and also enables patient transfer by staff.

IMPORTANT: The siderails will not lock in the DOWN position.



Raising the Siderail

Gently lift the siderail to the UP position. The siderail will first arc towards the foot end of the bed then back towards the head end of the bed as it fully rotates to the UP position.

IMPORTANT: An audible “click” should be heard when the siderail has been completely raised to the UP position as the locking mechanism engages.



Lowering the Siderail

Pull the release knob towards you then gently push down on the siderail. The siderail will first arc towards the foot end then back towards the head end as it fully rotates to the DOWN position.

IMPORTANT: The siderails will not lock in the DOWN position.



3.9.4 Quad Siderails

Your Spirit Plus™ or Spirit Select™ bed comes with moulded plastic Quad siderails as standard equipment.

Operation of the Quad Siderails

It is important that caregivers know how to operate the Quad siderails safely. The Quad siderails lock in the UP position and enables patient ingress, egress, and transfer in the DOWN position.

In the UP position, Quad siderails provide positive patient location and support helping to protect the patient from the potential of falling from the bed.

IMPORTANT: An audible “click” should be heard when each siderail assembly has been completely rotated into the UP position as the locking mechanism engages.



The DOWN position the Quad siderails fully rotate out of the way to provide unimpeded and unassisted patient ingress to and egress from the bed and also enables patient transfer by staff.

IMPORTANT: The siderails will not lock in the DOWN position.



Raising the Foot Siderails

Gently rotate the foot siderail to the UP position. The foot siderail will first arc toward the foot end of the bed then back towards the head end of the bed as it rotates to the UP position.

IMPORTANT: An audible “click” should be heard when the foot siderail has been completely raised to the UP position as the locking mechanism engages.



Lowering the Foot Siderails

Depress the green push button then gently push down on the foot siderail. The foot siderail will first arc towards the foot end of the bed then back towards the head end of the bed as it rotates to the DOWN position.

IMPORTANT: The foot siderails will not lock in the DOWN position.



Raising the Head Siderails

Gently rotate the head siderail to the UP position. The head siderail will first arc toward the head end of the bed then back towards the foot end of the bed as it rotates to the UP position.

IMPORTANT: An audible “click” should be heard when the head siderail has been completely raised to the UP position as the locking mechanism engages.



Lowering the Head Siderails

Depress the green push button then gently push down on the head siderail. The head siderail will first arc towards the head end of the bed then back towards the foot end of the bed as it rotates to the DOWN position.

IMPORTANT: The head siderails will not lock in the DOWN position.



Integrated Features

Staff Siderail Controls

The head siderails incorporate integrated staff control that offers staff control of basic bed operations:

- Head UP/DOWN,
- Knee/Foot UP/DOWN
- Bed UP/DOWN

IMPORTANT: Bed operation from this control is disabled when the patient lock-outs are activated.



Patient Siderail Controls

The head siderails incorporate integrated patient control that offers patient control of basic bed operations:

- Head UP/DOWN,
- Knee/Foot UP/DOWN
- Nurse Call feature

IMPORTANT: Bed operation from this control is disabled when the patient lock-outs are activated.

IMPORTANT: The Nurse Call feature remains active if patient lock-outs have been activated.



Angle Gauges

All four siderails have integrated angle gauges:

- The head siderail angle gauge displays the angle of the head section of the mattress deck.
- The foot siderail angle gauge displays the Trendelenburg or Reverse Trendelenburg angle

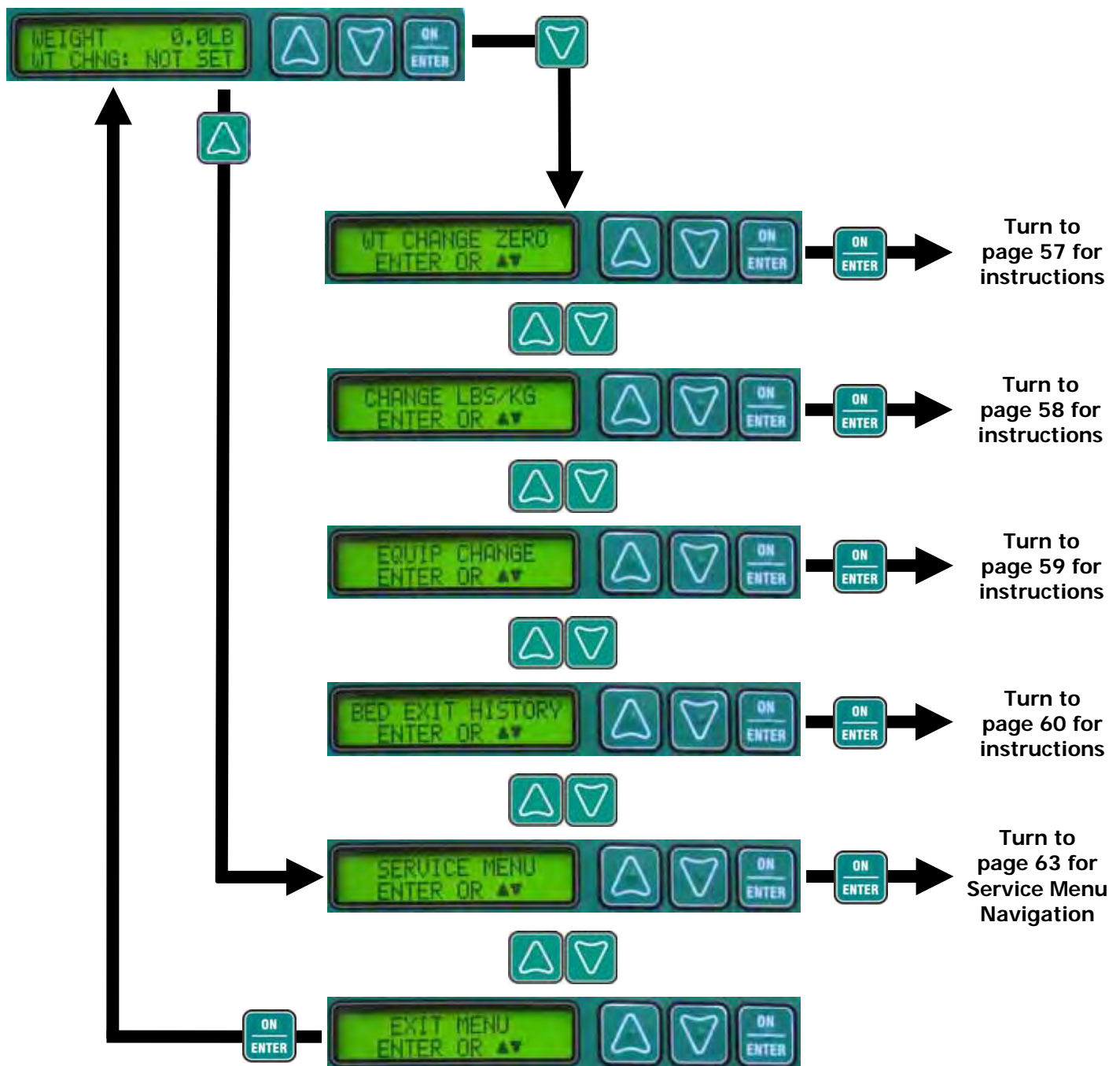


Head Siderail Angle Gauge



Hip Siderail Angle Gauge

3.10 Main Menu Navigation



Automatic Return Home Feature

To help staff with display menu navigation, an automatic **"return home"** feature has been included.

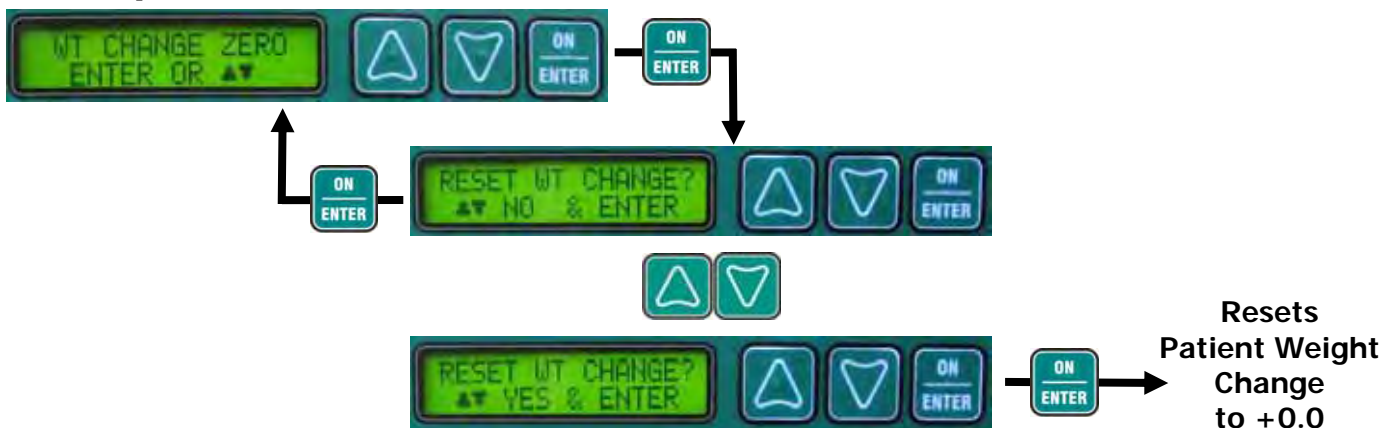
The display will automatically return to the home screen without any unselected impact to any setting after 1 minute of keypad inactivity (example: a setting change attempt has been abandoned).

This automatic home screen return feature will work in any menu screen if a setting change selection has not been made (ENTER button has not been pressed to make a setting change).

HINT: To avoid having to wait the 1 minute to initiate the automatic **"return home"** feature, simply remove the footboard from the bed and then replace it. The home screen will be displayed when the menu display is powered up.

3.10.1 Instructions: Patient Weight Change Zero

From page 56



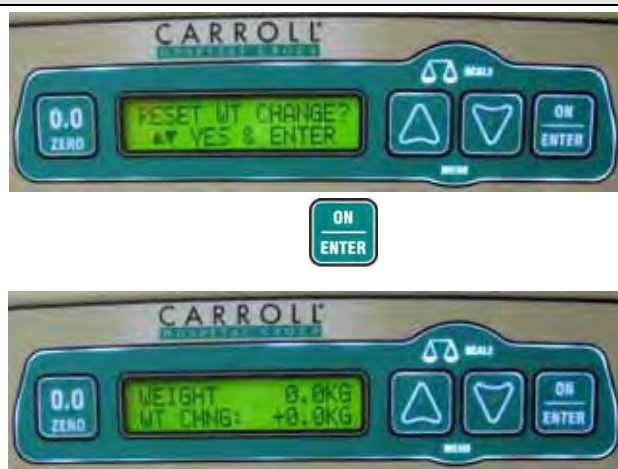
Patient Weight Change Zero – YES Selected

KG units used for this example

To zero the patient weight change:

1. Use the UP/DOWN Arrow buttons to scroll to the “YES” option.
2. Press ENTER to zero patient weight change.
3. The display will automatically return to the home screen.

The patient weight change will now show +0.0 (LB or KG depending upon which unit of measure has been set for patient weight display). Patient weight and weight change are displayed in the same unit of measure.



Patient Weight Change Zero – NO Selected

If this selection was made by accident or you do not wish zero the patient weight change at this point, simply use the UP/DOWN Arrow buttons to scroll to the “NO” option

1. Press ENTER to not zero patient weight change. The display will automatically return to the “WT CHANGE ZERO” screen of the Main Menu.
2. Use the UP/DOWN Arrow buttons to scroll to the “EXIT MENU” screen of the Main Menu.
3. Press ENTER button to exit the Main Menu to the home screen.

The patient weight change will remain unchanged.

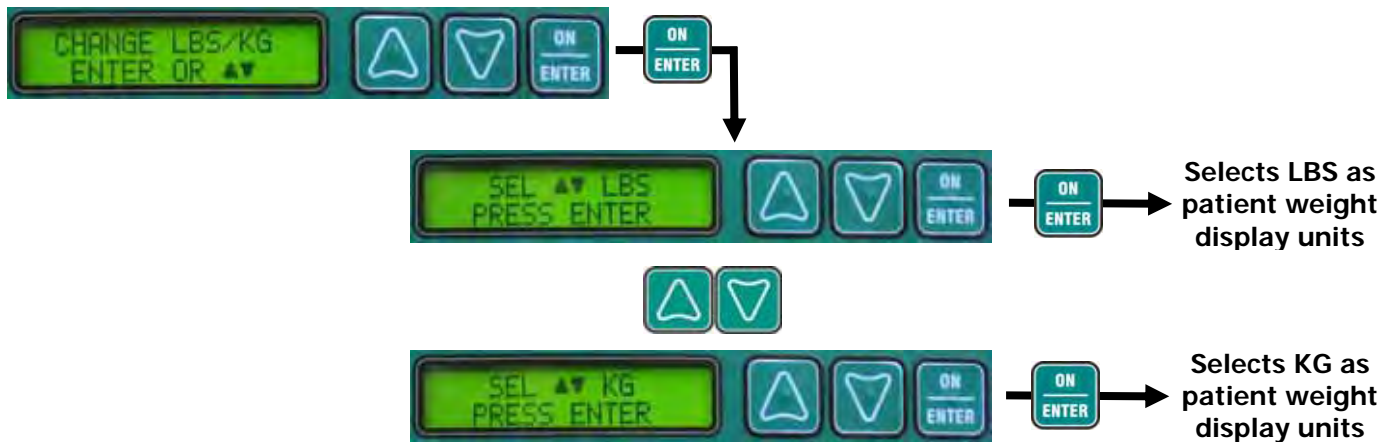


NOTE:

Carroll Hospital Group recommends that the patient weight change is zeroed once a new patient enters the bed.

3.10.2 Instructions: Change Patient Weight Display Units

From page 56



Changing Patient Weight Display Units

KG units used for this example

To change the patient weight display units:

1. Use the UP/DOWN Arrow buttons to scroll to desired patient weight display units.
2. Press ENTER to select the desired display unit. The display will automatically return to the "CHANGE LBS/KG" screen of the Main Menu.
3. Use the UP/DOWN Arrow buttons to scroll to the "EXIT MENU" screen of the Main Menu.
4. Press ENTER button to exit the Main Menu to the home screen.

The patient weight will now be displayed in the units that were just selected.



Patient Weight Display Units - LOCKED

If the patient weight display units has been locked, the units cannot be changed from the Main Menu.

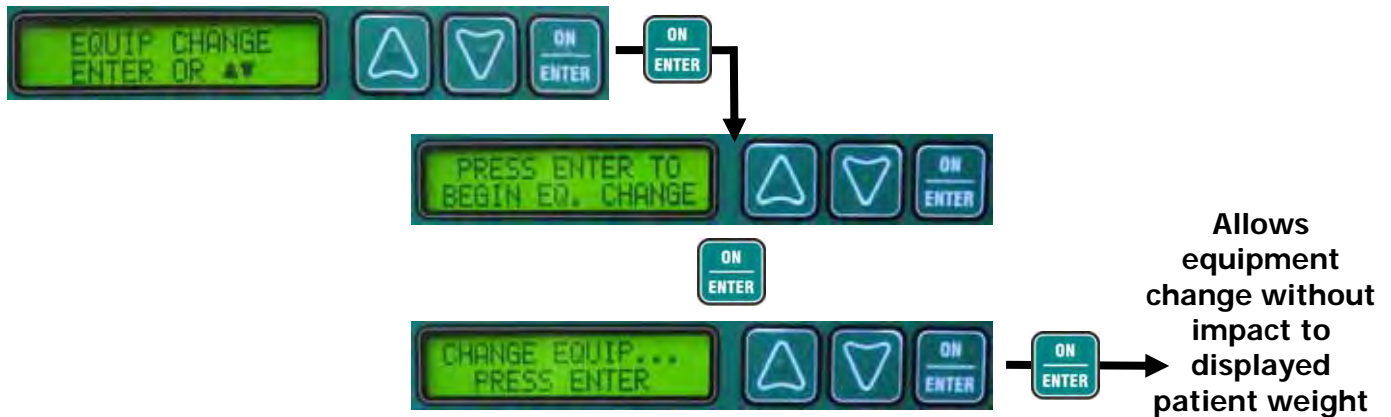
The unit lock and display units can be changed in the Service Menu.

See page 63 for Service Menu navigation and page 65 for instructions.



3.10.3 Instructions: Change Equipment

From page 56



Making an Equipment Change to Bed

At any time when the patient is on the bed, staff:

- Can add additional equipment to the bed after a patient has entered the bed, or
- Can removed equipment that was on the bed before the patient entered the bed.

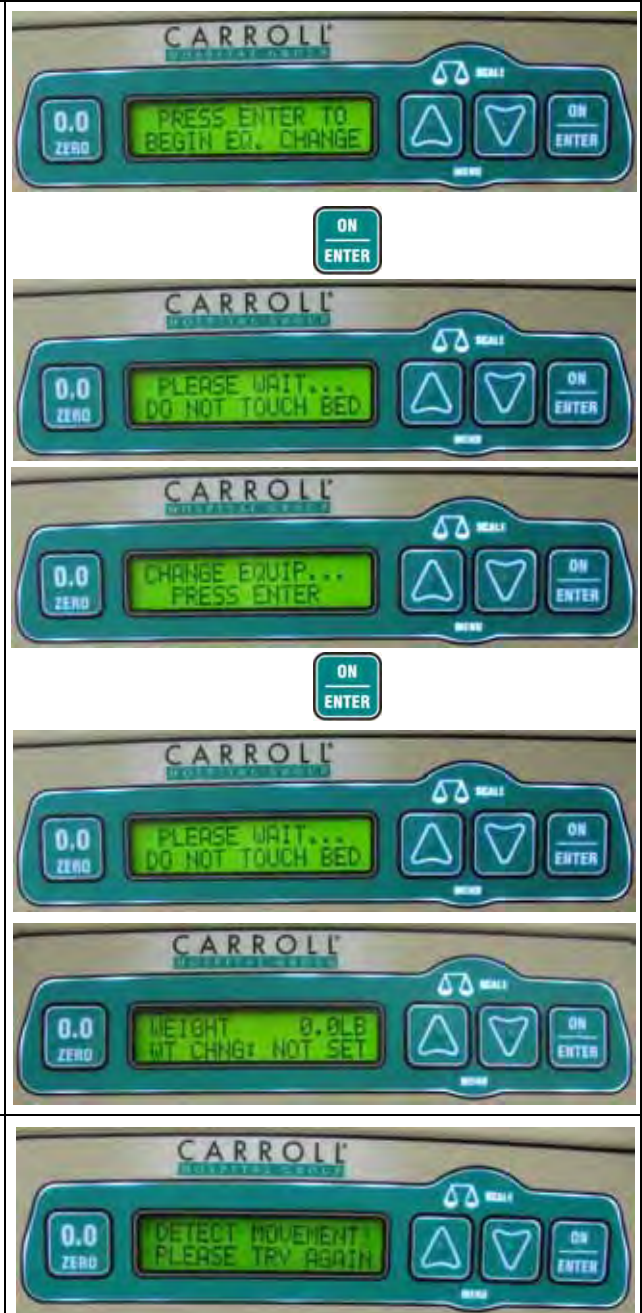
To make an equipment change:

1. Press ENTER button to begin equipment change process. The scale will take a snapshot of the current bed weight (patient, mattress, equipment, lines, etc.)
2. Perform desired equipment addition or removal.
3. Press ENTER button when done. The scale will take a second snapshot of the new bed weight. The difference between the first and second weight snapshots will simply be ignored by the scale. The display will automatically return to the home screen.

The displayed patient weight will not be impacted by this addition or removal of equipment from the bed.

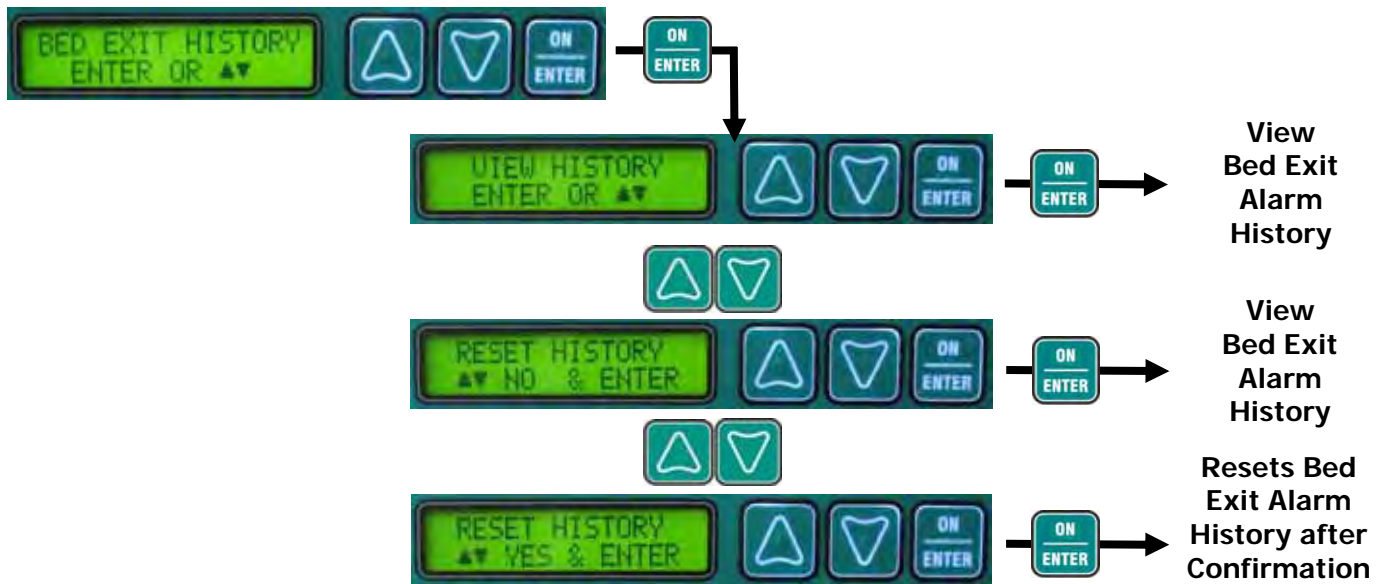
HINT: Use this feature when adding additional pillows and/or linen to the bed to ensure that a patient weight change alarm is not triggered (if set).

IMPORTANT: If the bed detects any movement while attempting to perform an equipment change, a warning message will be displayed and the equipment change procedure will have to be repeated. **Instruct patient to remain still during this procedure.**



3.10.4 Instructions: Bed Exit History

From page 56



Reset Bed Exit Alarm History – YES Selected – Not Sure

When a YES selection in the “RESET HISTORY” screen has been made you will be asked to confirm that you wish to reset the bed exit alarm history.

If this selection was made by accident or you have decided to not reset the bed exit alarm history at this point, simply use the UP/DOWN Arrow buttons to scroll to the “NO” option.

1. Press ENTER button to not reset bed exit alarm history. The display will automatically go to the “ALARM HISTORY” screen to show that the alarm history still remains.
2. Press ENTER button to exit to the “BED EXIT HISTORY” screen of the Main Menu.
3. Use the UP/DOWN Arrow buttons to scroll to the “EXIT MENU” screen of the Main Menu.
4. Press ENTER button to exit the Main Menu to the home screen.



Reset Bed Exit Alarm History – YES Selected – Sure

When a YES selection in the “RESET HISTORY” screen has been made you will be asked to confirm that you wish to reset the bed exit alarm history.

If you do wish to reset the bed exit alarm history at this point, simply use the UP/DOWN Arrow buttons to scroll to the “YES” option.

1. Press ENTER button to reset bed exit alarm history. The display will automatically go to the “ALARM HISTORY” screen to show that the bed exit alarm history has been reset.
2. Press ENTER button to exit to the “BED EXIT HISTORY” screen of the Main Menu.
3. Use the UP/DOWN Arrow buttons to scroll to the “EXIT MENU” screen of the Main Menu.
4. Press ENTER button to exit the Main Menu to the home screen.



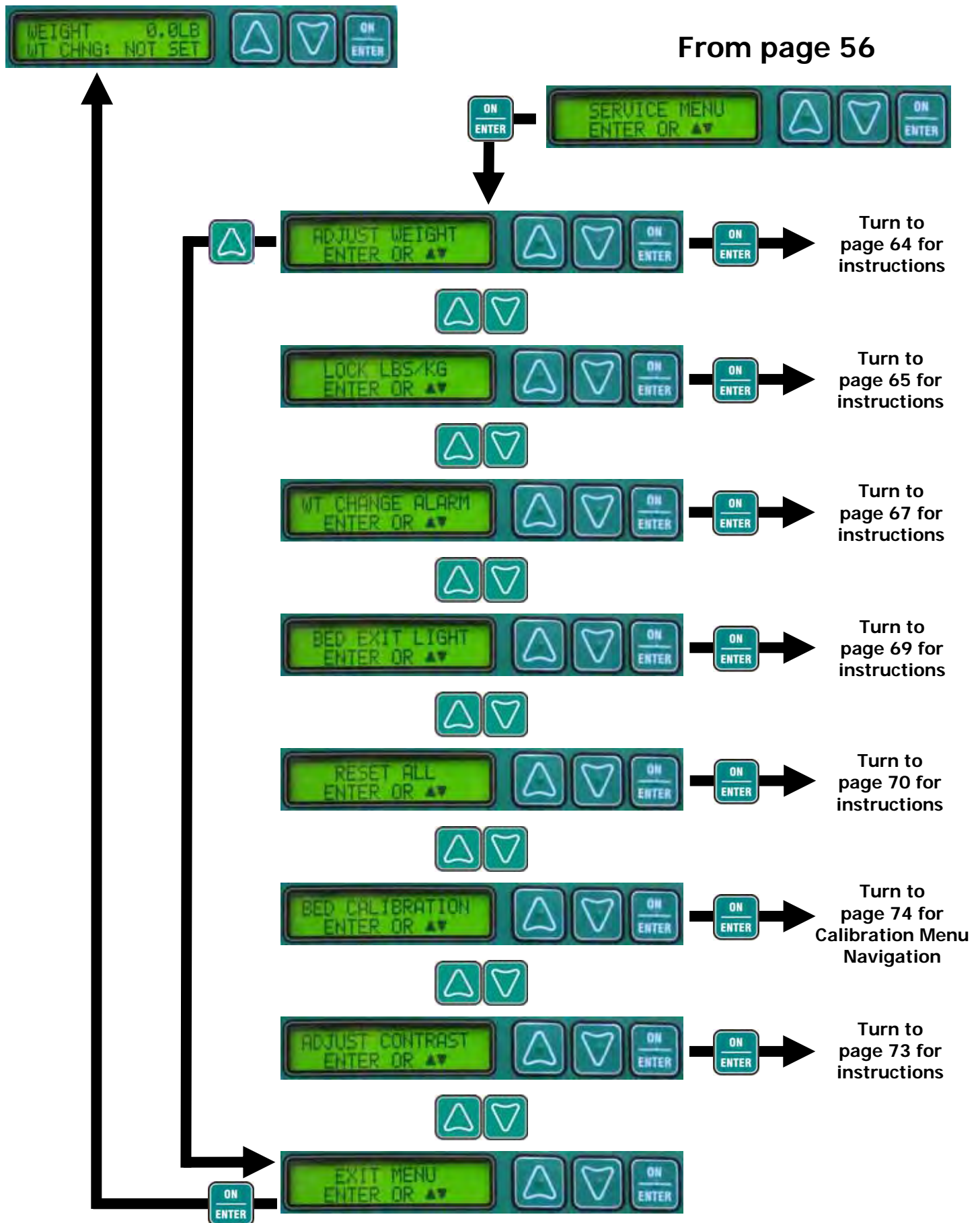
Reset Bed Exit Alarm History – NO Selected

When a NO selection in the “RESET HISTORY” screen has been made the display will automatically return to the “ALARM HISTORY” screen.

1. Press ENTER button to exit to the “BED EXIT HISTORY” screen to the Main Menu.
2. Use the UP/DOWN Arrow buttons to scroll to the “EXIT MENU” screen of the Main Menu.
3. Press ENTER button to exit the Main Menu to the home screen.

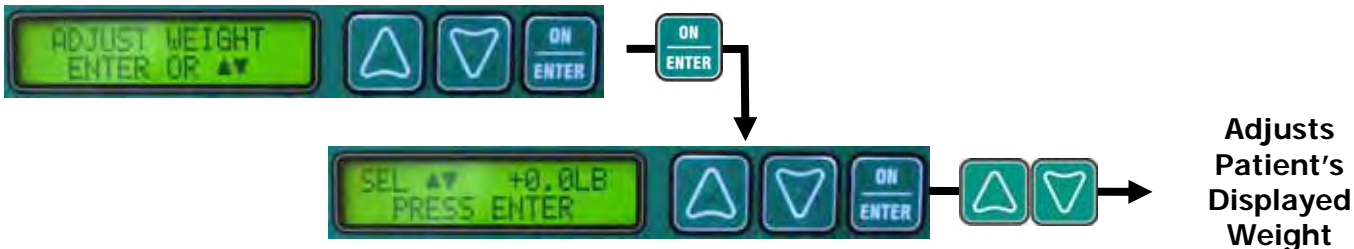


3.11 Service Menu Navigation



3.11.1 Instructions: Adjust Patient Display Weight

From page 63



Adjusting Patient Display Weight

LB units used for this example

Increase of patient weight used for this example

Use the UP/DOWN Arrow buttons to make adjustments to patient's displayed weight.

Each time the UP/DOWN Arrow buttons are pushed, an increase/decrease of 0.5 LB or 0.5 KG (depending upon which unit of measure has been set for patient weight display) will register.

- The UP Arrow button will increase the patient's displayed weight.
- The DOWN Arrow button will decrease the patient's displayed weight.

After the desired increase/decrease has been made, press ENTER button to return to the home screen.

The patient display weight will now display this increase or decrease.



IMPORTANT: To inform staff that the patient's weight has been adjusted, a message will automatically be displayed for 5 seconds each time the display menu is activated or "woken up".

The display of this message can be interrupted by pushing either UP/DOWN Arrow buttons or the ON/ENTER button.

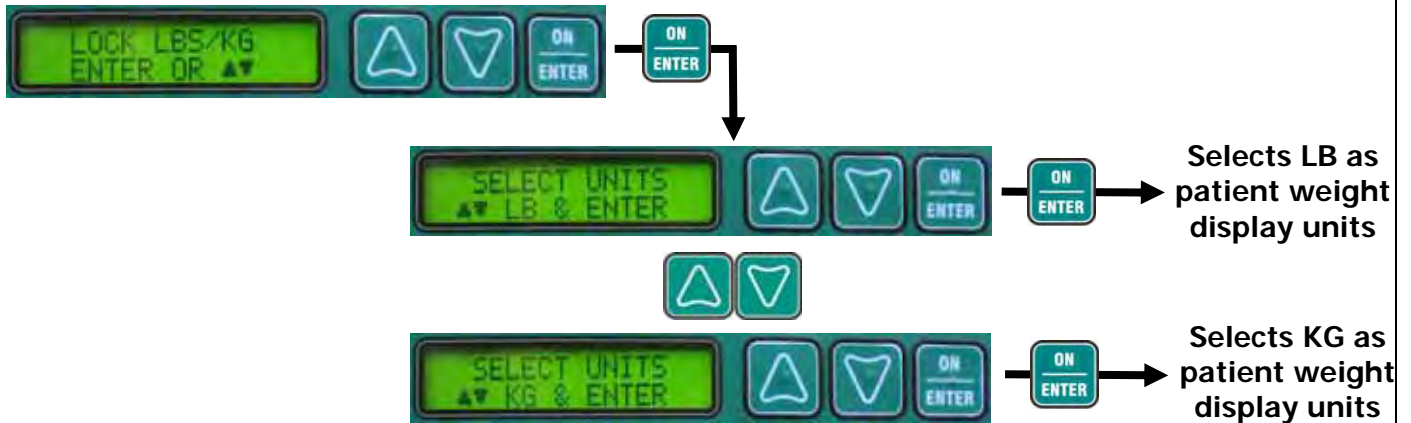


NOTE:

Zeroing the bed will override any adjustments made to patient weight.

3.11.2 Instructions: Lock Patient Weight Display Units

From page 63



Patient Weight Display Units – Selection Made – Units Unlocked

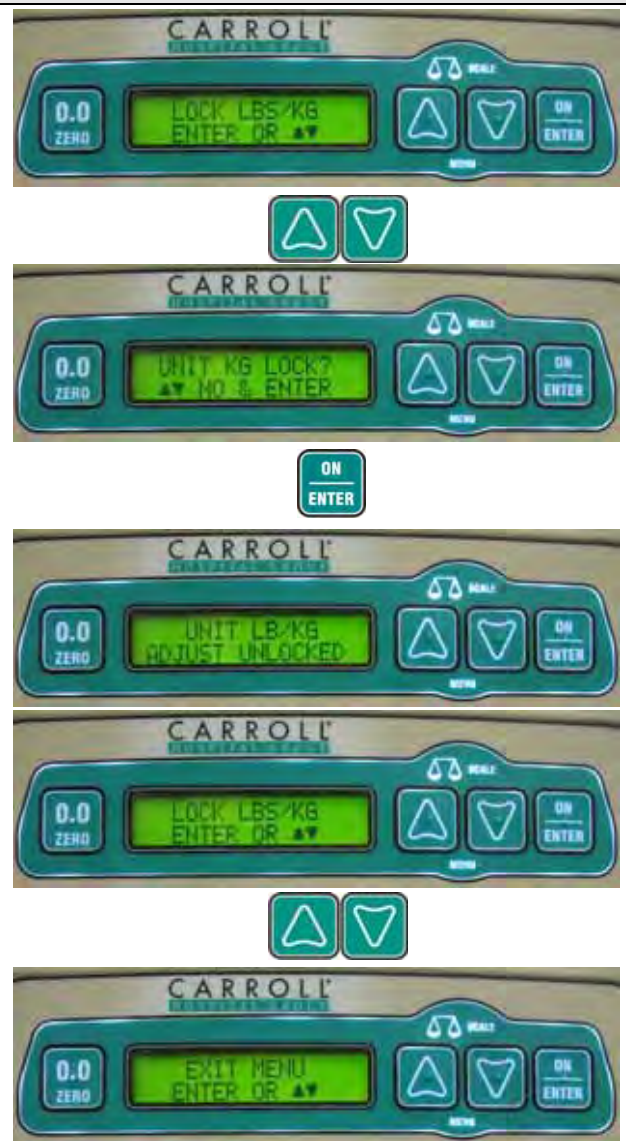
KG units used for this example

Once the patient weight display units have been selected (ENTER button pushed) you will be prompted to lock the units.

If you do not wish to lock the patient weight display units at this point, simply use the UP/DOWN Arrow buttons to scroll to the "NO" option.

1. Press ENTER button to not lock the units. The display will automatically go to the "UNIT LB/KG UNLOCKED" screen to show that the unit change is not locked. The display will then automatically return to the "LOCK LBS/KG" screen of the Service Menu.
2. Use the UP/DOWN Arrow buttons to scroll to the "EXIT MENU" screen of the Service Menu.
3. Press ENTER button to exit the Service Menu to the home screen.

IMPORTANT: If the patient weight display unit is unlocked at this point, it can easily be changed from the Main Menu. See page 56 for Main Menu navigation and page 58 for instructions.



Patient Weight Display Units – Units Locked

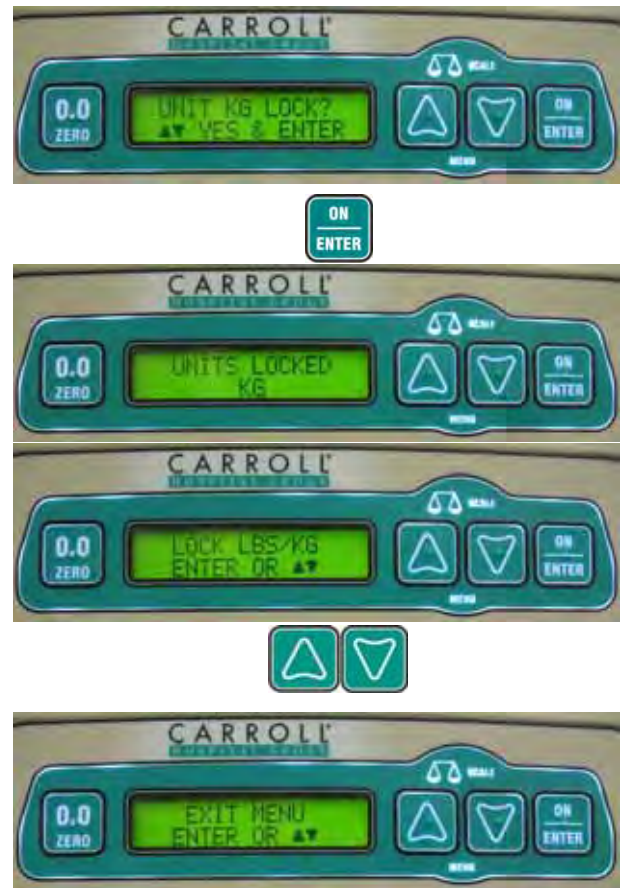
KG units used for example

Once the patient weight display units have been selected (ENTER button pushed) you will be prompted to lock the units.

If you do wish to lock the patient weight display units, simply use the UP/DOWN Arrow buttons to scroll to the "YES" option.

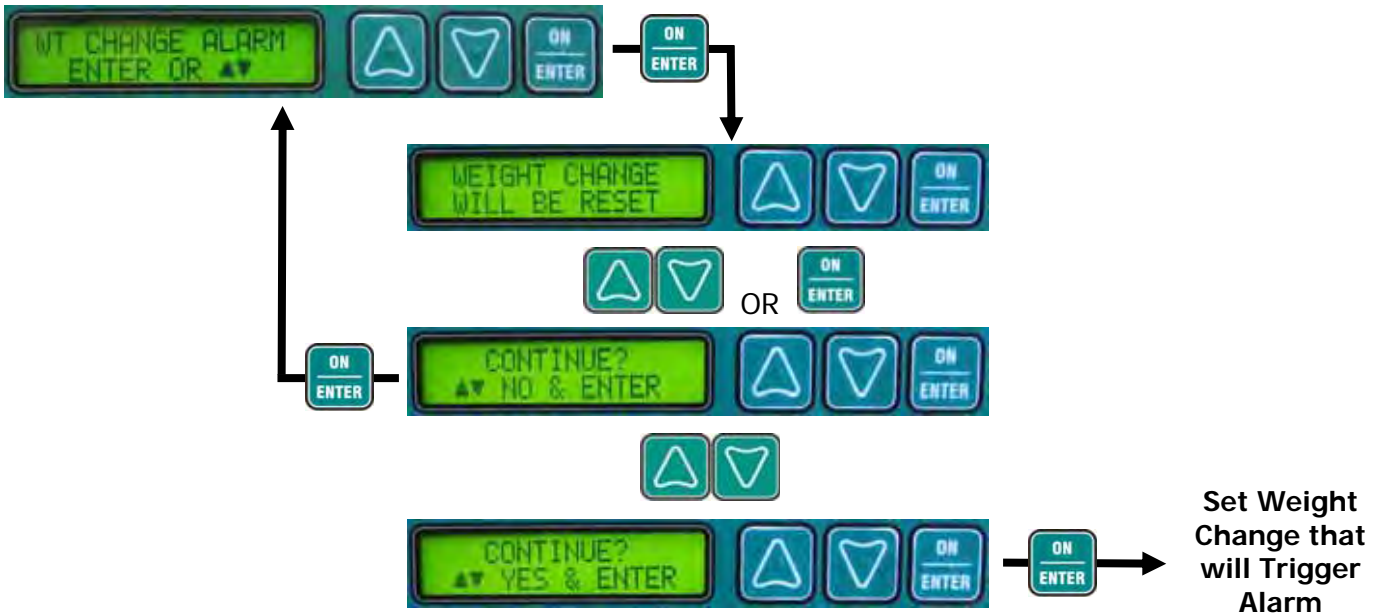
1. Press ENTER button to select the lock units. The display will automatically go to the "UNIT LOCKED" screen to show that the unit change has been locked. The display will then automatically return to the "LOCK LBS/KG" screen of the Service Menu.
2. Use the UP/DOWN Arrow buttons to scroll to the "EXIT MENU" screen of the Service Menu.
3. Press ENTER button to exit the Service Menu to the home screen.

IMPORTANT: If the patient weight display unit is locked at this point, it cannot be changed from the Main Menu. Staff will need to access the Service Menu to change the patient weight display units.



3.11.3 Instructions: Weight Change Alarm

From page 63



Patient Weight Change Alarm – How it works

When the weight change alarm is set, the bed takes snapshots of the of patient's weight and stores this value. Weight change is a time related event and is assumed to occur gradually. If the difference in the patient's weight equals or exceeds the set amount after an elapsed period of an hour, a weight change alarm is triggered.

If the difference is significantly greater than the set amount, the bed assumes that this occurrence is not related to patient weight change (example: a healthcare practitioner or family member is likely sitting on and/or something has been placed on the bed without using the "Change Equipment" feature – see page 59). In this case the bed simply ignores this change and a patient weight change alarm will not be triggered in this instance.

IMPORTANT: If a weight change alarm is set, all patient weight change tracking data collected prior to setting the alarm will be lost.

KG units used for this example

Patient weight GAIN used for this example

When a weight change alarm is triggered, the display will flash two warning messages sequentially and will also send a priority call via the Nurse Call system (if connected). There is no audio component to this alarm.

Pressing the ENTER button will clear both the triggered alarm and the weight change alarm setting and will return the display to the home screen.

IMPORTANT: The weight change alarm set amount is an absolute value. A patient weight change alarm will be triggered if the patient **GAINS** or **LOSES** this set amount of weight.



Setting Patient Weight Change Alarm – YES Selected

KG units used for this example

Each time the UP Arrow button is pushed, an increase of 0.5 LB or 0.5 KG (depending upon which unit of measure has been set for patient weight display) will register.

1. After the desired patient weight change has been made, press ENTER button to return. The display will automatically return to the “WT CHANGE ALARM” screen of the Service Menu.
2. Use the UP/DOWN Arrow buttons to scroll to the “EXIT MENU” screen of the Service Menu.
3. Press ENTER button to exit the Service Menu to the home screen.

All patient weight change tracking data has been reset and a patient weight change alarm has been set.



Setting Patient Weight Change Alarm – NO Selected

If this selection was made by accident or you do not wish to lose patient weight change tracking and/or set a patient weight change alarm at this point, simply use the UP/DOWN Arrow buttons to scroll to the “NO” option

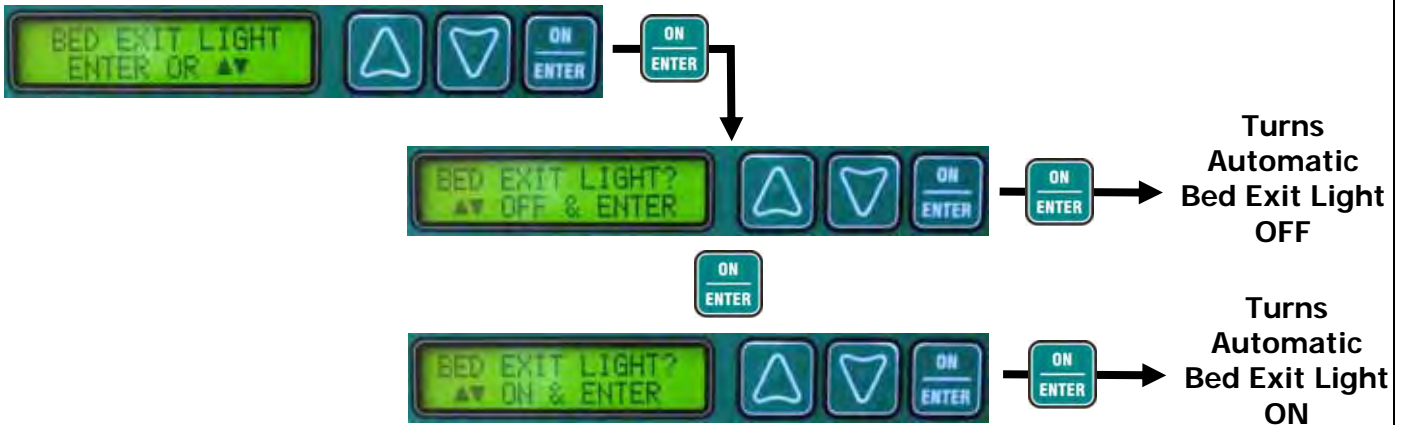
4. Press ENTER to not zero patient weight change. The display will automatically return to the “WT CHANGE ZERO” screen of the Main Menu.
5. Use the UP/DOWN Arrow buttons to scroll to the “WT CHANGE ALARM” screen of the Service Menu.
6. Press ENTER button to exit the Service Menu to the home screen.

All patient weight change tracking data is unchanged and a patient weight change alarm has not been set.



3.11.4 Instructions: Bed Exit Light

From page 63



Bed Exit Light - ON/OFF Selection Made

After a selection has been made the display will return to the "BED EXIT LIGHT" screen of the Service Menu.

1. Use the UP/DOWN Arrow buttons to scroll to "EXIT MENU" screen of the Service Menu.
2. Press ENTER button to exit the Service Menu to the home screen.

If an ON selection is made, the automatic bed exit light will be activated

If an OFF selection is made, the automatic bed exit light will not be activated.

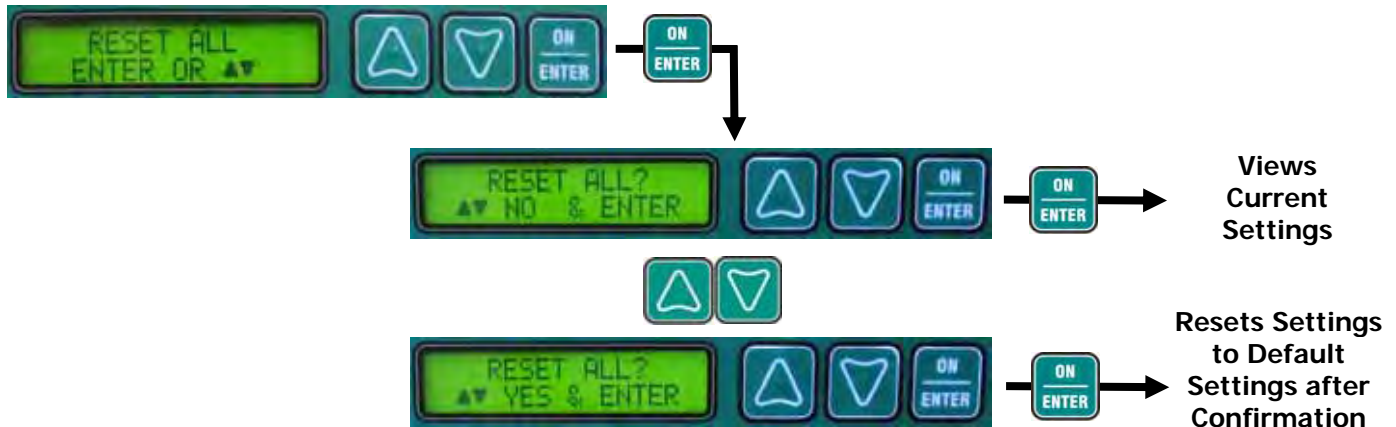
See page 46 for Bed Exit Light feature description.

IMPORTANT: Default setting for Bed Exit Light is ON.



3.11.5 Instructions: Reset All

From page 63



Reset All Settings – YES Selected – Not Sure

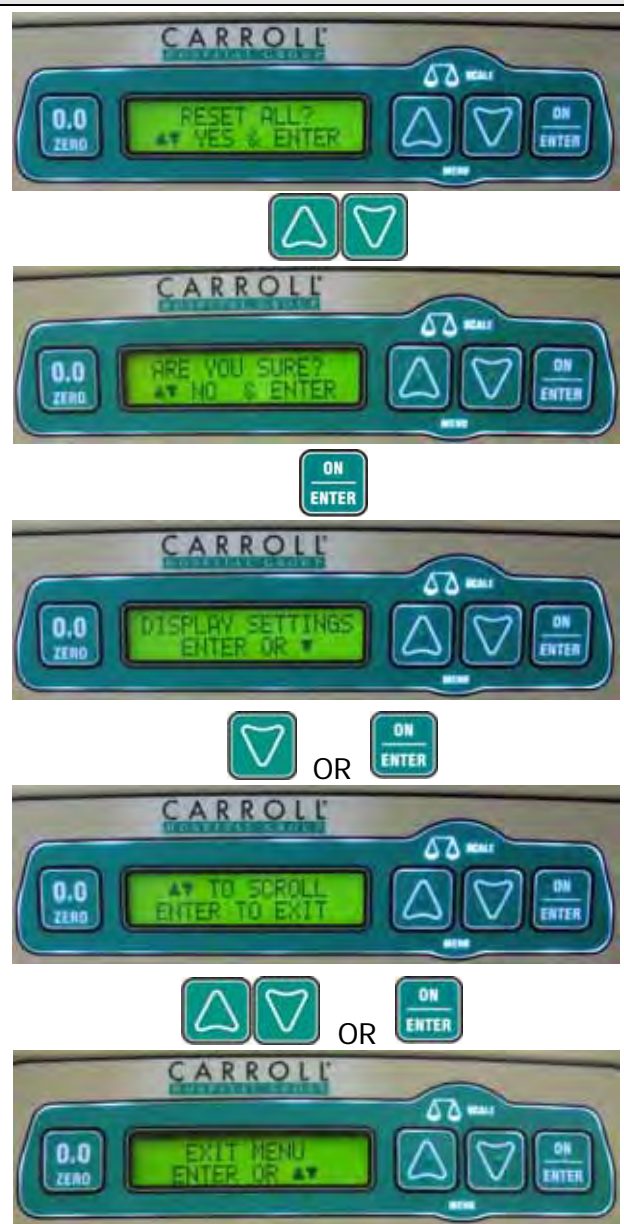
When a YES selection in the “RESET ALL” screen has been made you will be asked to confirm that you wish to reset the current settings.

If this selection was made by accident or you have decided to not reset the current settings at this point, simply use the UP/DOWN Arrow buttons to scroll to the “NO” option.

1. Press ENTER button to not reset the current settings. The display will automatically go to the “DISPLAY SETTINGS” screen to review current settings.
2. Press ENTER button to scroll through current settings OR press DOWN Arrow button to exit to “RESET ALL” screen of the Service Menu.
3. At any time while reviewing current settings, press ENTER button to exit to the “DISPLAY SETTINGS” screen.
4. When in the “DISPLAY SETTINGS” screen, press DOWN Arrow button to exit to the “RESET ALL” screen of the Service Menu.
5. Use the UP/DOWN Arrow button to scroll to the “EXIT MENU” screen of the Service Menu.
6. Press ENTER button to exit the Service Menu to the home screen.

Reset All will reset the following settings:

- Bed Exit History
- Patient Weight Change Alarm
- Patient Weight Change

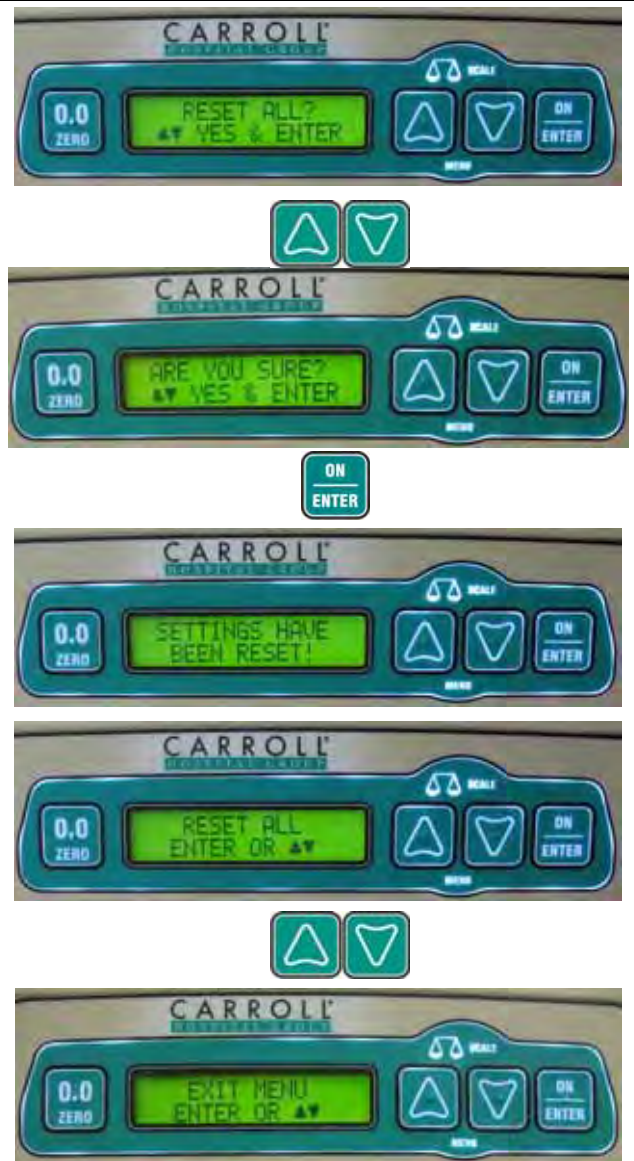


Reset All Settings – YES Selected – Sure

When a YES selection in the “RESET ALL” screen has been made you will be asked to confirm that you wish to reset the current settings.

If you do wish to reset the current settings at this point, simply use the UP/DOWN Arrow buttons to scroll to the “YES” option.

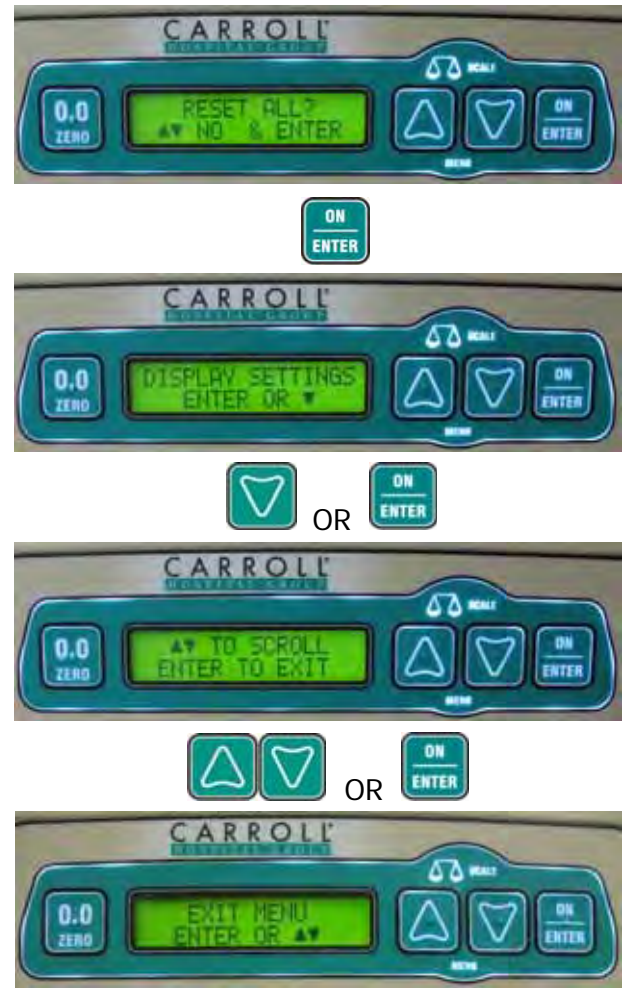
1. Press ENTER button to reset all current settings. The display will automatically go to the “SETTINGS RESET CONFIRMATION” screen to show that the settings have been reset.
2. Press ENTER button to exit to the “RESET ALL” screen of the Service Menu.
3. Use the UP/DOWN Arrow buttons to scroll to the “EXIT MENU” screen of the Service Menu.
4. Press ENTER button to exit the Service Menu to the home screen.



Reset All Settings – NO Selected

When a NO selection in the “RESET ALL” screen has been made you will be taken to the “DISPLAY SETTINGS” screen.

1. Press ENTER button to scroll through current settings OR Press DOWN Arrow button to exit to the “RESET ALL” screen.
2. At any time while reviewing current settings, press ENTER button to exit to the “DISPLAY SETTINGS” screen.
3. When in the “DISPLAY SETTINGS” screen, press DOWN Arrow button to exit to the “RESET ALL” screen.
4. Use the UP/DOWN Arrow button to scroll to the “EXIT MENU” screen of the Service Menu.
5. Press ENTER button to exit the Service Menu to the home screen.



3.11.6 Instructions: Adjust Menu Display Contrast

From page 63



Selecting Desired Contrast Level

Use the UP/DOWN Arrow buttons to adjust the level of contrast on the menu display.

Each time the UP/DOWN Arrow buttons are pushed, the contrast will darken/lighten one preset level.

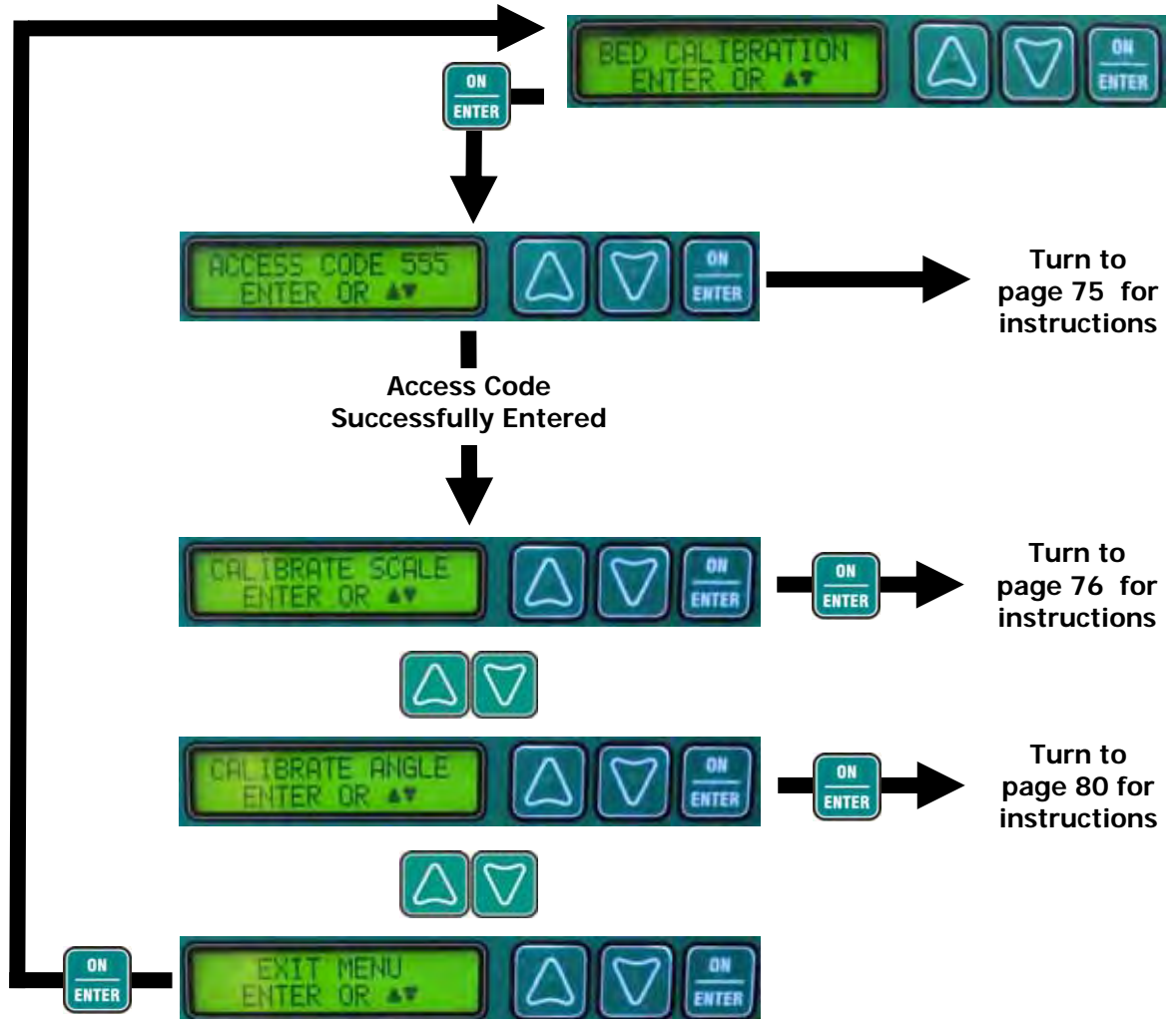
- The UP Arrow button will increase the contrast of the menu display (words darker with respect to the backlit background). **Maximum contrast setting shown.**
- The DOWN Arrow button will decrease the contrast of the menu display (words lighter with respect to the backlit background). **Minimum contrast setting shown.**

After the desired level of menu display contrast has been selected has been made, press ENTER button to return to the home screen.



3.12 Calibration Menu Navigation

From page 63



NOTE:

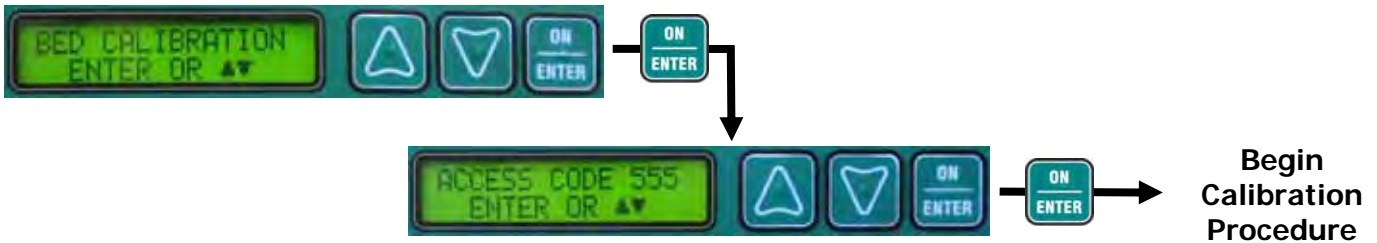
A scale or bed angle calibration attempt may be abandoned at any time. Simply remove the footboard from the bed and then replace it. The home screen will be displayed when the menu display is powered up. The scale and bed angle calibration will, respectively, revert to their previous, successfully completed calibration settings to enable scale functionality.

NOTE:

The scale must be calibrated if any/all of the load cells have been replaced. However, the scale calibration procedure must be initiated by staff. Scale calibration will automatically be initiated if the CB10 is replaced.

3.12.1 Instructions: Inputting Access Code

From page 73



OR Calibration Initiated by Replacement of Scale Components

If the CB10 control box has been replaced, the scale calibration process will automatically be initiated when the bed is first powered up. The display will show the following message. The scale calibration procedure must be completed before the bed can be put into service.



Entering the Access Code

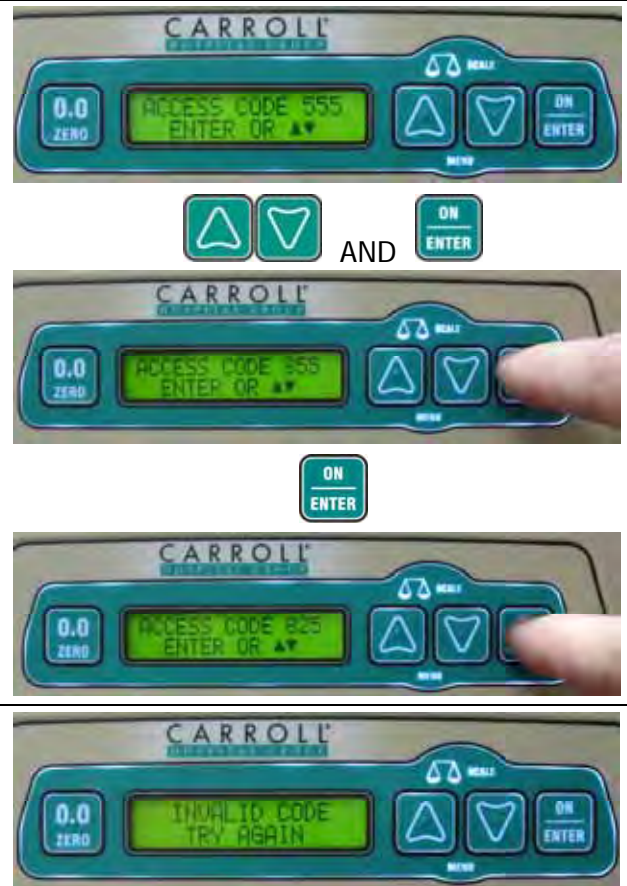
Carroll Hospital Group Access Code: 825

The access code must be entered to begin scale calibration. To enter the access code:

1. Use the UP/DOWN Arrow buttons to scroll to each respective number of the access code.
2. Press ENTER button to input each number of the access code. The cursor will shift to the next number when the ENTER button is pushed.
3. When **825** has been inputted, press ENTER button to enter access code.

The access code is not customizable

IMPORTANT: If an incorrect access code is entered, a warning message will be displayed and the display will automatically return to the "BED CALIBRATION" screen to allow for another attempt.



3.12.2 Instructions: Scale Calibration

From page 74



1. The first step of the scale calibration procedure is to perform the bed angle calibration. See page 80 for instructions.
2. After the successful completion of the bed angle calibration, return to this page to continue with scale calibration procedure.
3. Elevate the bed to a comfortable working height.

Preparing the Bed for Calibration

Immediately following the successful completion of the bed angle calibration procedure, you will be instructed to clear the bed of all equipment (mattress, lines, etc). Ideally, the mattress deck should be bare.

IMPORTANT: Do not place the calibration masses on the bed at this point.



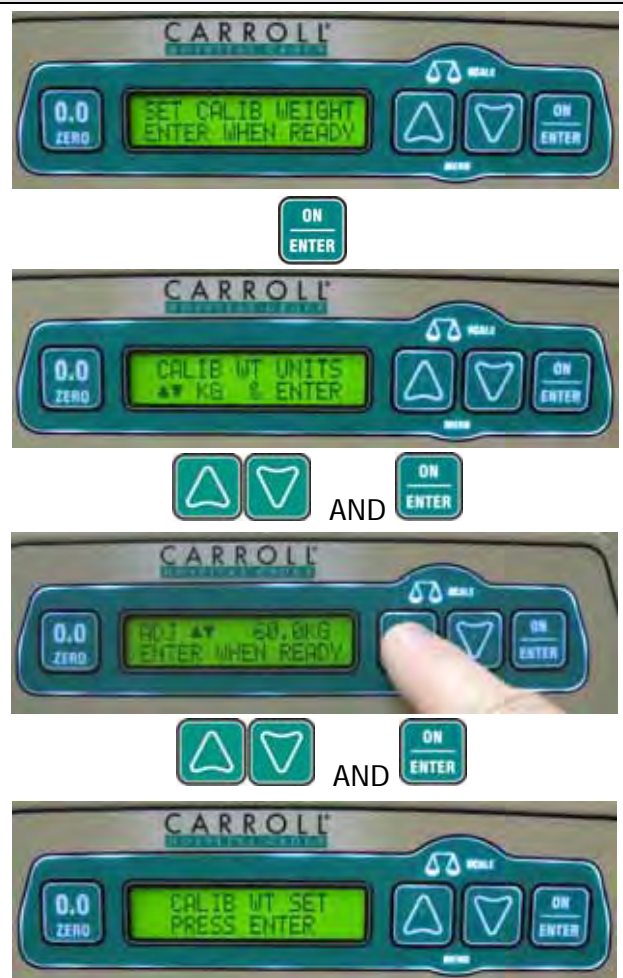
Set Calibration Units and Weight

KG units used in this example

You will now be asked to set the calibration weight. This is the total sum of the certified calibration masses used to the calibration procedure.

1. Press ENTER button to begin.
2. Use the UP/DOWN Arrow buttons to select the units that correspond to the calibration masses that will be used.
3. Press ENTER button to select the appropriate units. You will automatically be taken to the calibration weight input screen.
4. Each time the UP/DOWN Arrow buttons are pushed, an increase/decrease of 1 LB or 1 KG (depending upon which unit was just selected) will register.
5. After the appropriate calibration mass has been inputted, press ENTER button to set calibration weight.

IMPORTANT: Correctly setting the calibration weight and then using that exact total sum of calibration mass is essential to ensure the accuracy of the scale. For this reason, Carroll Hospital Group strongly recommends the use of certified calibration masses.



Scale Calibration Procedure

It is important to position the calibration masses as shown below. The positions shown below locate the calibration masses directly over each respective load cell. This will produce the best calibration results.



LH = Patient Left, Head end of Bed.

1. Place calibration masses at the patient left, head end of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.



LF = Patient Left, Foot end of Bed.

2. Place calibration masses at the patient left, foot end of the bed. Press ENTER button when the weights are in correct position.. A confirmation "chirp" will sound to indicate that this step was successful.



RF = Patient Right, Foot end of Bed.

3. Place calibration masses at the patient right, foot end of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.



RH = Patient Right, Head end of Bed.

4. Place calibration masses at the patient right, head end of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.



LF = Patient Left, Foot end of Bed.

5. Place calibration masses at the patient left, foot end of the bed. Press ENTER button when the weights are in correct position.. A confirmation "chirp" will sound to indicate that this step was successful.



LH = Patient Left, Head end of Bed.

6. Place calibration masses at the patient left, head end of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.



RH = Patient Right, Head end of Bed.

7. Place calibration masses at the patient right, head end of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.



RF = Patient Right, Foot end of Bed.

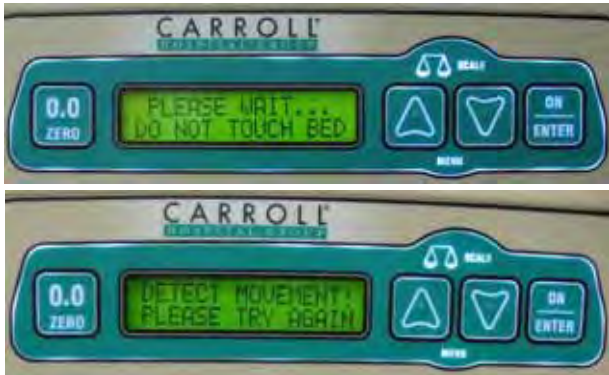
8. Place calibration masses at the patient right, foot end of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.



CEN = Center of Bed.

9. Place calibration masses at the center of the bed. Press ENTER button when the weights are in correct position. A confirmation "chirp" will sound to indicate that this step was successful.

IMPORTANT: If the bed detects movement during any stage of the scale calibration procedure, a warning message will be displayed and that particular step will have to be repeated.



The load cell locations are assigned in the CB10 during the first 4 steps of the calibration procedure. Once assigned, each load cell will then "remember" where it's assigned location.

IMPORTANT: If the bed detects that the calibration masses are located in an incorrect location during steps 5-9, a warning message will be displayed. Relocate the calibration masses to the correct location and press the ENTER button to continue with scale calibration.



NOTE: To ensure scale accuracy, use only ASTM, OIML, NIST (or equivalent) certified test masses when performing scale calibration. If your healthcare facility does not have certified test masses, enlist the service of an accredited calibration laboratory/service to perform scale calibration. Ensure that the calibration laboratory/service has been accredited by Measurement Canada (or equivalent "weights and measures" certifying body/agency).

NOTE: A scale is most accurate and delivers superior repeatability when it has been calibrated within the range that the scale is expected to typically operate. For this reason, Carroll Hospital Group recommends that minimum weight is 60kg (132.3 lbs) is used to calibrate the scale.



10. Leaving the calibration masses in the bed center, place the bed in the maximum Trendelenburg position. Press and hold the TREND button. Press ENTER button once the bed automatically stops in the maximum Trendelenburg position. A confirmation “chirp” will sound to indicate that this step was successful.



11. Leaving the calibration masses in the bed center, place the bed in the maximum reverse Trendelenburg position. Press and hold the rev.TREND button. Press ENTER button once the bed automatically stops in the maximum reverse Trendelenburg position. A confirmation “chirp” will sound to indicate that this step was successful.

12. After successful completion of the calibration procedure, a message will be displayed. Press ENTER button to continue. Press and hold the TREND button to level bed. The bed will stop automatically when the mattress deck is level with the floor. The scale has now been successfully calibrated and the bed is now ready for use.



If the bed detects a problem during any stage of the scale calibration procedure, a warning message will be displayed.

1. Press ENTER button to acknowledge calibration procedure failure.
2. The display will automatically return you the beginning of the calibration procedure.
3. Press ENTER button to start calibration procedure again or allow display to time out or remove and replace footboard to abandon scale calibration attempt at this time.



IMPORTANT: If the calibration procedure fails a second time, the bed may require service and/or component replacement.



⚠ WARNING

The Spirit™ bed may shift during Trendelenburg or Reverse Trendelenburg activation.

Initiate Trendelenburg or Reverse Trendelenburg only after the Central “Lock & Steer” system has been put in the “BRAKE” position.

3.12.3 Instructions: Bed Angle Calibration

From page 74



Begin
Bed Angle
Calibration
Procedure

Bed Angle Calibration Procedure

To begin the bed angle calibration procedure:

1. Press ENTER button.
2. You will be instructed to lower the bed down to the floor. Use BED DOWN button to lower bed.
CAUTION: Ensure nothing is under bed.
3. Press ENTER button when the bed has been fully lowered. A confirmation “chirp” will sound to indicate that the bed angle has been reset.

The menu display will automatically to return to home screen.

IMPORTANT: Because of manufacturing tolerances, the mass of the bed alone may be insufficient to completely compress the Hi-Lo springs. The ensure that the bed is sitting flat (parallel with floor) in the lowest position, Carroll Hospital Group recommends that the bed angle is calibrated with at least 60kg (132.2 lbs) on the bed.

HINT: Perform bed angle calibration with a patient or another staff personnel laying on the bed.



NOTE:

Calibrating the bed angle is the first step of scale calibration. If the scale has just been calibrated or is about to be calibrated, there is no particular reason to calibrate the bed angle as a separate step.

NOTE:


Carroll Hospital Group strongly recommends re-calibrating the bed angle if a major bed component (example, Hi-Lo actuator, Hi-Lo spring, primary leg, frame element, caster assembly, etc) has been replaced.

Section 4:

Care & Maintenance

4.1 Regular Maintenance & Cleaning

Very little maintenance is required to keep the Spirit™ bed and rails in good working order.

	⚠ CAUTION
	Equipment or property DAMAGE or patient INJURY may occur if the following points are not followed:
	DO NOT use solvents, alcohol or petroleum products on the surface.
	DO NOT submerge the bed frame or electrical parts.
	DO NOT allow liquids to enter electrical components.
DO NOT Steam Clean or Pressure Wash.	

4.1.2 Sanitizing Method

All surfaces may be cleaned with:

- Soapy water or
- Any common consumer disinfecting product, or
- Most non-abrasive commercially available disinfecting products.

4.1.3 Semi Annual Maintenance

- Perform all bed functions from all control locations: footboard staff control, patient/staff side rail controls (Spirit Plus™ and Spirit Select™ beds), and pendant (if equipped).
- Unplug the bed from the wall outlet and perform all bed functions test bed DC operation and to verify that battery is holding a proper charge (battery reserve power) sufficient to deliver emergency functions when needed.

4.1.4 Yearly Maintenance

- Inspect for damaged or loose wiring. Have a qualified electrician replace any frayed or damaged cords.
- Inspect for secure grounding.
- Tighten, adjust or replace any parts or bolts etc. that are loose or show signs of wear.
- If epoxy coated rails become scratched or chipped, use a matching enamel touch up paint. See Colour Information on page 88 for paint specifications.
- There is no greasing or oiling required for any Spirit™ bed.

4.1.5 Specific Maintenance Requirements for Siderail Assemblies


Perform monthly inspection of siderails to ensure that they are in good working order and continue to operate properly.


Spirit™ Beds:

- Ensure that each siderail fully and smoothly rotates from the DOWN or “TRANSFER” position to the UP, “ASSIST” and/or “GUARD” positions. Ensure that no binding and/or grinding noises are caused when the siderails are rotated. If a siderail fails to rotate fully and smoothly, service and/or replace siderail assembly.
- Ensure that the locking/latching mechanism reliably self-engages when the siderails are fully rotated to the raised/closed to the UP, “ASSIST” and/or “GUARD” positions. If locking/latching mechanism fails to reliably self-engage service and/or replace siderail assembly.
- Ensure that the locking/latching mechanism completely disengages when the knob is pulled outwards permitting the siderails to fully rotate to the DOWN or “TRANSFER” positions. If locking/latching mechanism fails to completely disengage, service and/or replace siderail assembly.

Spirit Plus™ and Spirit Select™ Beds:

- Ensure that each siderail fully and smoothly rotates from the DOWN position to the UP position. Ensure that no binding and/or grinding noises are caused when the siderails are rotated. If a siderail fails to rotate fully and smoothly, service and/or replace siderail assembly.
- Ensure that the locking/latching mechanism reliably self-engages when the siderails are fully rotated to the raised/closed position. If locking/latching mechanism fails to reliably self-engage service and/or replace siderail assembly.
- Ensure that the locking/latching mechanism completely disengages when the push button is depressed permitting the siderails to fully rotate to the lowered/open position. If locking/latching mechanism fails to completely disengage service and/or replace siderail assembly.

	⚠ WARNING
	Patient entrapment within, under, between, and beside siderails may cause injury or death. Ensure only specified mattress (must be at least 6” thick) is used on bed. Ensure that mattress is in good condition and maintains proper resilience. If mattress is exhibiting any signs of wear (ie: reduced cross sectional thickness, reduced resilience, etc) stop use immediately and replace mattress to limit patient exposure to a potential rail entrapment situation.

	⚠ WARNING
	To help minimize the potential for patient entrapment, Carroll Hospital Group strongly recommends that the customer perform thorough inspection of all siderail assemblies to confirm continued compliance to IEC 60601-2-38 by conducting annual examinations of each siderail assembly to test described in IEC 60601-2-38, Amendment1, Clause 23.101. If testing results indicate a potential risk of patient rail entrapment, discontinue patient bed use and remove the bed from active service immediately.

4.1.6 Specific Maintenance Requirements for Spirit Select™ Beds

Perform annual calibration of the scale on your Spirit Select™ bed or immediately following the replacement of one or more load cells and/or the CB10 control box. See page 74 for Calibration Menu navigation and page 76 for scale calibration instructions.

NOTE:

To ensure scale accuracy, use only ASTM, OIML, NIST (or equivalent) certified test masses when performing scale calibration. If your healthcare facility does not have certified test masses, enlist the service of an accredited calibration laboratory/service to perform scale calibration. Ensure that the calibration laboratory/service has been accredited by Measurement Canada (or equivalent “weights and measures” certifying body/agency).

NOTE:

Calibrating the bed angle is the first step of scale calibration. If the scale has just been calibrated or is about to be calibrated, there is no particular reason to calibrate the bed angle as a separate step.




If your Spirit Select™ is equipped with the underbed obstruction sensing option, perform monthly inspection of all six obstruction sensor pads to ensure that they are in good working order and continue to operate properly.

- Ensure that contact at any point on EACH of the six obstruction sensor pads stops all downward bed motion.
- Ensure that the bed automatically elevates the 1" safety distance.
- Ensure audible and visual warnings are present as described on page 50.
- Replace any obstruction sensor pad that fails to operate correctly or consistently.

4.2 Mattress Deck Removal

All four sections of the composite mattress deck can be detached for thorough cleaning, sanitization, and maintenance.

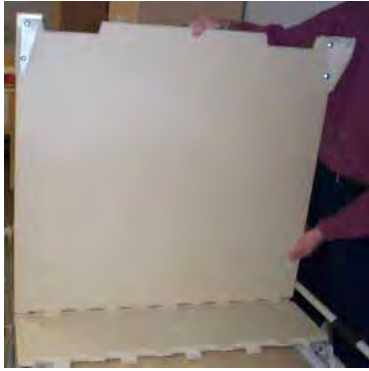

4.2.1 Mattress Deck Removal - Foot Section

		
1. Lift the foot and knee sections together until the angle between them is 90°.	2. Lift the foot section away from the knee section at the hinge, to separate the sections.	3. Disengage the metal foot 'bale' from the mounting holes.

4.2.2 Mattress Deck Removal - Knee Section

<p>Once the foot section is removed, the knee section can be separated from the stationary seat section. Lift the knee section until it is at 90° to the seat section.</p> <p>Using a horizontal force, strike the knee section near the hinge to separate these two sections.</p>		
--	--	---

4.2.3 Mattress Deck Removal - Head Section

<p>Lift the head section until it is at a 90° angle to the stationary (bolted) seat section. The head section can now be lifted straight up, detaching it from bed.</p> <p>IMPORTANT! On Spirit Plus™ and Spirit Select™ beds, the head section is attached to the head gatch assembly with two shoulder screws through the head siderail assembly mounting bracket. Ensure that these fasteners are removed from the head gatch assembly and that the side rail control cables are disconnected before removing the head section.</p>		
---	--	---

4.2.4 Mattress Deck Removal - Seat Section

The seat section is attached to the bed frame with two bolt and nut fasteners. Although it is not designed for routine removal, it can be removed, if necessary, using a 1/2" wrench.

Unscrew the hex nut from the carriage bolt beneath the main rail.

Repeat for the opposite side, being careful to save the fasteners. The seat section can now be lifted off the frame.



NOTE:

When reinstalling any section of the mattress deck, make sure that all hinges are **COMPLETELY** engaged.

Check for engagement by gently articulating the head, knee, and foot sections of the mattress deck up and down.

The head, knee, and foot sections of mattress deck should articulate freely without binding.

4.3 Before Calling The Factory

To ensure prompt and accurate attention to your concerns please have the following information available before you call:

Your facility's phone number : <i>(Where you can be reached):</i>	
Your facility's fax number <i>(If Available):</i>	
Bed(s) Model and Type :	
Bed(s) Serial Number	
Date of Purchase:	
List of defective part(s) <i>(Identify by part number, or describe relative to nearest numbered part):</i>	
List of deficiencies or Type of problem :	

NOTE:	"Patient Left" and "Patient Right" determination is made from the patient's point of view while positioned on the bed facing up.
--------------	--

If you have carefully followed all of these instructions, you should have many years of trouble free service. If you're not 100% satisfied with your bed, please call your sales representative or the factory immediately. It's always better to ask if you have any questions such as hole drilling locations in head and foot boards, electrical service or modifications, or any minor damage that could lead to more serious consequences.

If you require further information regarding circuit diagrams, component part lists, descriptions etc. please call the number below.

Call Carroll Hospital Group Inc. at (519) 963-4010 or Toll Free 1 (866) 516-5446.

Mailing Address: Carroll Hospital Group Inc.
 825 Bradley Avenue
 London, Ontario
 CANADA
 N6E 3C2

4.4 Colour Information

Touch up paint Sherwin Williams Auto #35-30041 – Cream.

Headboard/Footboard colour Options for Spirit™ Bed	Colour Code "???"
Almond	05P
Solar Oak	05D
Kensington Maple (previously Honey Maple)	05N
Monticello Maple (previously Caramel Cherry)	05O
African Walnut (previously Regal Mahogany)	05I

4.5 Troubleshooting Guide

NOTE:

Prior to using the Troubleshooting Guide, perform a brief function test on the bed. Check all functions initiated from both the footboard staff control and the patient control (staff/patient rail control and/or pendant) to determine which functions are not working.

Problem / Failure	Recommended Action
No functions working on bed	<ol style="list-style-type: none"> 1. Check to ensure bed is connected to AC power (plugged into wall outlet) 2. Check wall outlet for power 3. Check Master Lockout. Hold all three patient lock-out buttons at same time to lock/unlock, then try bed functions 4. Lift head section of the mattress deck and remove dust shield from on top of control box. Check for green power light (LED). If no light, replace CB09 control box 5. Call for Technical Assistance
Patient controls working properly, footboard staff control not working	<ol style="list-style-type: none"> 1. Check to ensure footboard is completely down into bracket 2. Check cable connection under lower left side of footboard 3. Check to make sure that there is no damage to Blindmate connectors (plastic connector between bottom of footboard and footboard mounting bracket) 4. Check footboard staff control cable connection into DJB Box under head section of mattress deck 5. Replace footboard control
Footboard staff control working properly, rail controls not working	<ol style="list-style-type: none"> 1. Some functions may be locked out. Check patient lock-out buttons on footboard. Patient lock-out prevents bed operation from rail controls 2. Check rail controls on both sides of bed. If only one rail control is not working skip to next section. If both rail controls are not working, continue to next step 3. Check cable connections from rail to port on bed frame (ensure jack is fully inserted into port) 4. Check pendant connection into DJB Box under head section 5. Replace DJB Box; Replace CB09 Control Box
Rail control working on one side of the bed only	<ol style="list-style-type: none"> 1. Check cable connection (ensure jack is fully inserted into port) 2. Unplug rail connection at port and replace with pendant (if available). If pendant works, replace inoperable rail control. If pendant doesn't work, replace T-Cable
Footboard staff control working properly, pendant not working	<ol style="list-style-type: none"> 1. Some functions may be locked out. Check patient lock-out buttons on footboard. Patient lock-out prevents bed operation from the pendant 2. Check cable connection from pendant to port on bed frame 3. Check pendant connection into DJB Box under head section of mattress deck 4. Unplug pendant from current port and plug into port on opposite side of bed. If pendant works in new port, replace DJB Box and T-

	<p>Cable. If pendant does not work in new port, continue to next step</p> <p>5. Test pendant on a properly functioning bed (if available). If pendant works, replace DJB Box and T-Cable. If pendant doesn't work, replace pendant</p>
Only some functions working on the rail controls or pendant	<ol style="list-style-type: none"> 1. Some functions may be locked out. Check patient lock-out buttons on footboard. Amber LED on patient lock-out button prevents the bed operation from the rail controls and pendant 2. Check cable connection from rail control to port on bed frame 3. Check pendant connection into DJB Box under head section of the mattress deck 4. Replace rail control or pendant
Bed will not lower all the way	<ol style="list-style-type: none"> 1. Check to see if the Bed UP/DOWN function is locked out on the footboard 2. Check to see if bed is in Trendelenburg or Reverse Trendelenburg position. For patient safety, bed remains at the angle established by staff whenever the bed is raised and lowered. If the bed is in TREND/rev.TREND, it will not lower past the preset TREND /rev.TREND safety zone (minimum mattress deck elevation of 15"). If the bed is angled, level bed by pressing opposite TREND button. The bed will automatically stop when the mattress deck is in the horizontal position <p>HINT: A slight Trendelenburg or Reverse Trendelenburg angle may not be easily visible. If the bed appears "stuck" at a bed elevation of approximately 15", briefly press and hold the TREND button to achieve a slight bed angle, then hold the rev.TREND button until the bed automatically stops at level. Then, lower the bed using the Bed DOWN button</p> <p>OR</p> <p>Use the "Hi-Lo Actuator Synchronization Feature". Lower the bed by pressing and holding the Bed DOWN button on either the staff rail control or the pendant. The bed will first level the mattress deck. Once level, the bed will automatically begin to lower</p>

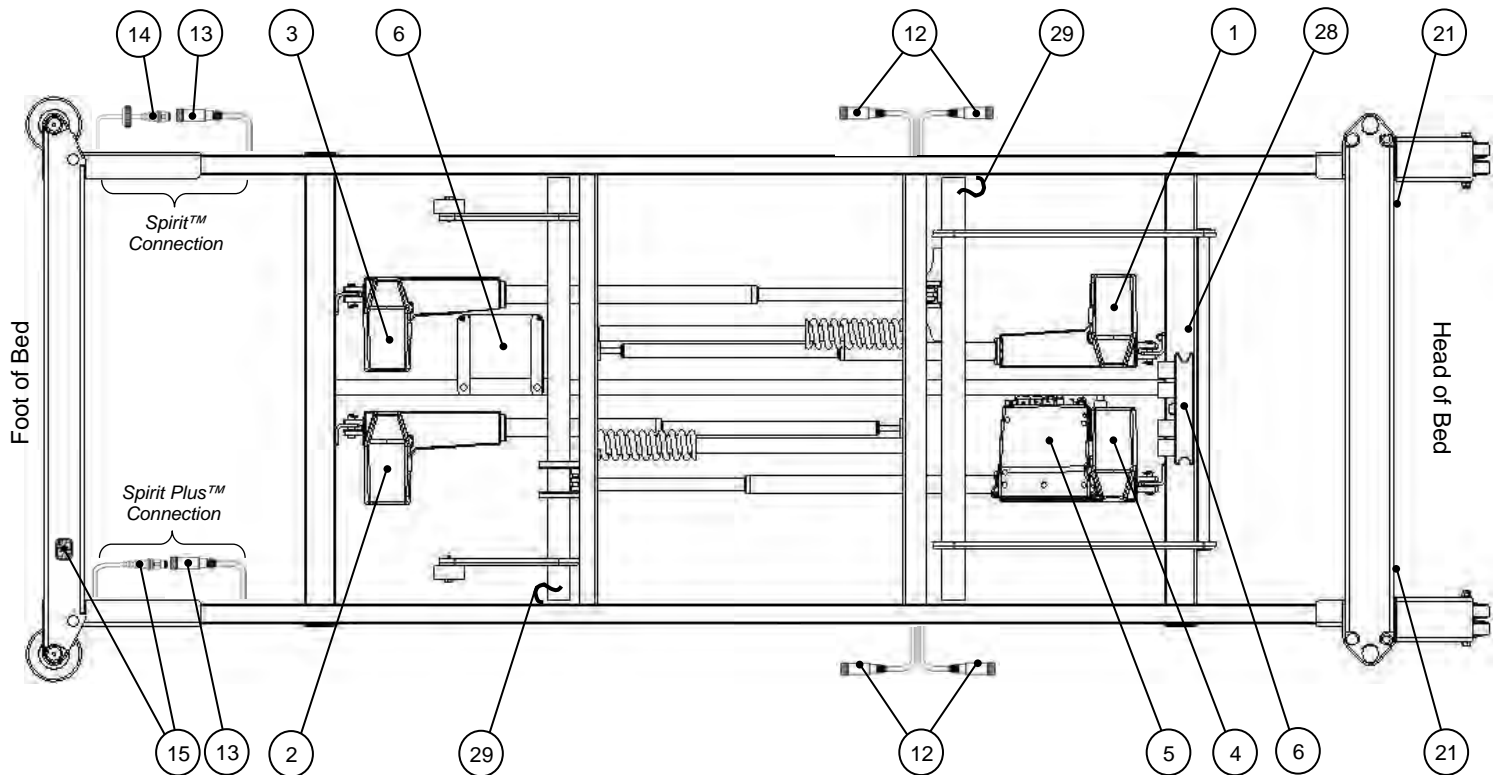
4.6 Troubleshooting Guide for Unique Features of Spirit Select™ Bed

Problem / Failure	Recommended Action
Footboard staff control does not power up (no icons illuminated on Power Status Indicator and/or display does not activate)	<ol style="list-style-type: none"> 1. Check to see if the bed is operable. If not operable, check to ensure bed is connected to AC power. If not plugged in, connect to AC power (wall outlet) and allow battery to recharge 2. Check to see if the bed is operable from either rail controls or pendant (if equipped). If bed is operable, continue to next step. If the bed is not operable from rail controls, check rail and pendant T-cable connections at rail and in CB10 control box 3. If bed is operable from footboard control, continue to next step. If the bed is not operable from the footboard control check above sections. Check footboard staff control cable connection into CB10 control box 4. If bed remains inoperable, check to see if a supply cable has been disconnected from the CB09 and/or the CB10 control box.

	<p>Connect DC supply cable at both control boxes</p> <ol style="list-style-type: none"> 5. If bed remains inoperable, either the DC supply cable and/or a component has failed. Replace DC supply cable 6. Replace footboard control 7. Replace CB10 control box 8. Call for Technical Assistance
Bed will not run on DC power	<ol style="list-style-type: none"> 1. Check to see if SRVC icon on the Power Status Indicator is illuminated. If illuminated, check to see if the battery has been disconnected from the CB10 control box. Connect DC plug into DC jack in the side of the CB10 control box 2. The battery is connected but voltage has dropped below 18VDC and the battery has been automatically disconnected from charging circuit. Ensure bed is connected to AC power (wall outlet) and allow battery to recharge. Confirm charging Power Status Indicator is illuminated 3. If the service icon of the Power Status Indicator remains on after lengthy recharge period, replace battery 4. If the service icon of the Power Status Indicator remains on after battery replacement, replace CB10 control box
Patient weight not correct	<ol style="list-style-type: none"> 1. Remove patient from bed. Zero scale. Allow patient to re-enter bed 2. Remove patient from bed. Calibrate scale. Allow patient to re-enter bed 3. Call for Technical Assistance
Automatic bed exit light does not work	<ol style="list-style-type: none"> 1. Confirm underbed lights work by toggling button on footboard control. If underbed lights turn on, continue to next step. If underbed lights do not turn on, check connection in CB10 control box. Replace underbed light 2. Check Bed Exit Light is set to on in Service Menu
Bed does not automatically stop when one or more obstructions sensors is contacted. (bed equipped with obstruction sensing option)	<ol style="list-style-type: none"> 1. Confirm which obstruction sensor pad(s) is(are) not working 2. Check to see if interconnection cables (between sensor pads) are connected or have been twisted. Replace interconnection cables. 3. Check to see if interconnection cables (between sensor pad and CB10 control box) are connected or have been twisted. Replace interconnection cables. 4. Replace faulty obstruction sensor pad(s)
Bed will not lower (bed equipped with obstruction sensing option)	<ol style="list-style-type: none"> 1. Check Bed UP button footboard control. If illuminated, check under bed for any obstruction that is contacting bed. Remove obstruction. Confirm Bed UP button is not illuminated. 2. If no obstruction is present, carefully inspect each obstruction sensor pad for damage. Damage could cause false circuit contact to be made. Replace damaged obstruction sensor pad(s).

4.7 Schematics and Technical

4.7.1 Spirit™ and Spirit Plus™ Wiring Schematic



NOTE: For the purpose of clarity, mattress deck, head/foot boards, bed legs, and other wiring systems are not shown

NOTE: Spirit Plus™ headboard and footboard mounting brackets shown

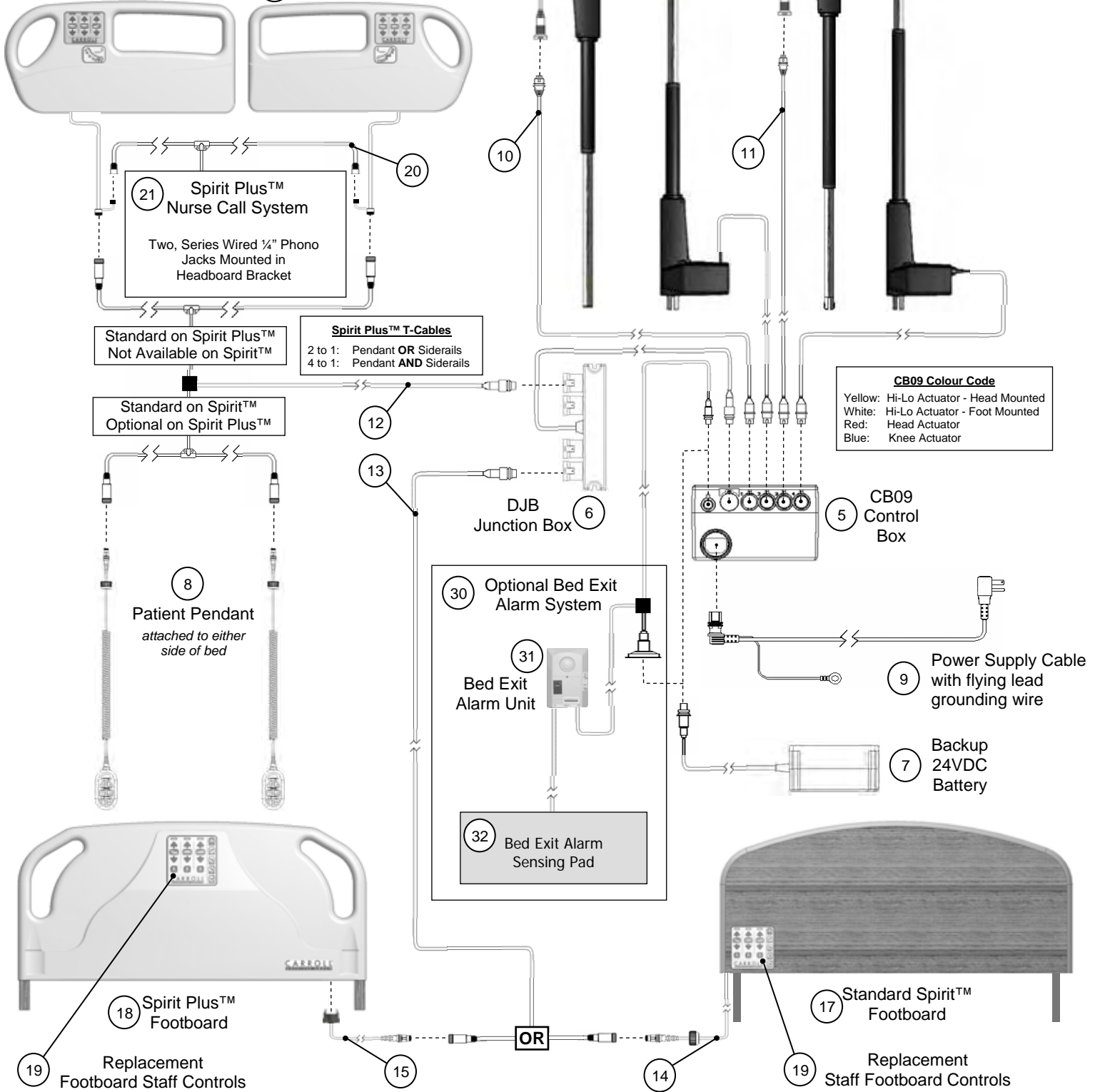
ITEM	PART DESCRIPTION	ORDER THIS P/N FOR REPLACEMENT PARTS	QTY
1	Hi-Lo Actuator (Head Mounted)	MTRM25-474	1
2	Hi-Lo Actuator (Foot Mounted)	MTRM25-473	1
3	Spirit™ & Spirit Plus™ Head Actuator	MTRM25-03	1
4	Spirit™ & Spirit Plus™ Knee Actuator	MTRM25-02	1
5	Spirit™ & Spirit Plus™ CB09 Control Box	JNCTND-C1F	1
6	DJB Box	JNCTND-C35	1
7	Back-up Battery	JNCTND-CTR-BA-T	1
8	Six Function Hand Pendant with Coiled Cable, 10 Pin Plug Connection, and Screw-on Threaded Retaining Cap	PNDNT6-FNC-IV-2	1
9	Power Supply Cord with 12" Flying Lead Grounding Wire	JNCTND-CCO-RD-S	1
10	Extension Cable – Foot Mounted Hi-Lo Actuator (Yellow Tape on End)	Call Customer Service	1
11	Extension Cable – Head Actuator (Red Tape on End)	Call Customer Service	1
12	10P4C to DIN T-Cable – Siderail Controls OR Pendant (from DJB Box to Side of Bed)	JNCTND-C40	1
	10P4C to DIN T-Cable – Siderail Controls AND Pendant (from DJB Box to Side of Bed)	G1231-M	1
13	10P4C to DIN Cable (from CB09 to Foot End of Bed)	JNCTND-C33	1
14	Spirit™ 10P4C Cable to Footboard Staff Control	JNCTND-C32	1
15	Spirit Plus™ Blindmate Female 4 Pin Connector to 10P4C Cable	G1229	1
16	Spirit Plus™ Blindmate Male 4 Pin Receptacle to Footboard Staff Control Cable (Mounted inside Footboard - <i>not shown</i>)	G1227	1
17	Spirit™ Footboard Assembly c/w Item 19	FTBD00-???-19 (see Page 88 for colour code)	1
18	Spirit Plus™ Footboard Assembly c/w Item 19	G1154	1
19	Footboard Staff Control c/w Overlay	JNCTND-C20-B2	1
20	Nurse Call T-Cable	G1231	1
21	Nurse Call Jack Cable (Mounted Inside Headboard Bracket)	G1233	1
22	Spirit Plus™ Patient Left Siderail Assembly c/w circuit board and connection cable and Items 23 & 24	G1255	1
23	Spirit Plus™ – Siderail Control Overlay A (Patient Left – Inside Overlay)	G1124	1
24	Spirit Plus™ – Siderail Control Overlay B (Patient Left – Outside Overlay)	G1123	1
25	Spirit Plus™ Patient Right Siderail Assembly c/w circuit board and connection cable and Items 26 & 27	G1254	1
26	Spirit Plus™ – Siderail Control Overlay C (Patient Right – Inside Overlay)	G1125	1
27	Spirit Plus™ – Siderail Control Overlay D (Patient Right – Outside Overlay)	G1126	1
28	Equipotential Conductor	E0051	1
29	Grounding Wire 4.75" (120.65mm) long c/w (2x) #10 x ½ long TEK Screw and (2x) #10 External Tooth Star Washer – Typical 4 Places on Bed	JNCTND-RND-04-34 c/w (2X) TEKSCR-HX#-10-12 and (2x) WSRSTA-R10	4 (only 2 shown)
OPTIONAL FEATURES/EQUIPMENT			
30	Bed Exit Package c/w alarm unit, sensing pad, and all electrical wiring	BES PACKAGE	1
31	Replacement Bed Exit Alarm Unit	BES BOX ONLY	1
32	Replacement Bed Exit Alarm Sensing Pad	BES PAD ONLY	1

Carroll Hospital Group Customer Service: (519) 963-4010 or Toll Free 1-866-516-5446

Spirit Plus™ Siderails

- 22 Patient Left Siderail Assembly
- 23 Siderail Control Overlay A
- 24 Siderail Control Overlay B
- 25 Patient Right Siderail Assembly
- 26 Siderail Control Overlay C
- 27 Siderail Control Overlay D

- 2 Foot Mounted Hi-Lo Actuator
- 1 Head Mounted Hi-Lo Actuator
- 3 Head Actuator
- 4 Foot Actuator



CB09 Colour Code
 Yellow: Hi-Lo Actuator - Head Mounted
 White: Hi-Lo Actuator - Foot Mounted
 Red: Head Actuator
 Blue: Knee Actuator

Standard on Spirit Plus™
 Not Available on Spirit™

Spirit Plus™ T-Cables
 2 to 1: Pendant OR Siderails
 4 to 1: Pendant AND Siderails

Standard on Spirit™
 Optional on Spirit Plus™

8 Patient Pendant
 attached to either side of bed

DJB Junction Box 6

5 CB09 Control Box

9 Power Supply Cable with flying lead grounding wire

7 Backup 24VDC Battery

30 Optional Bed Exit Alarm System
 31 Bed Exit Alarm Unit
 32 Bed Exit Alarm Sensing Pad

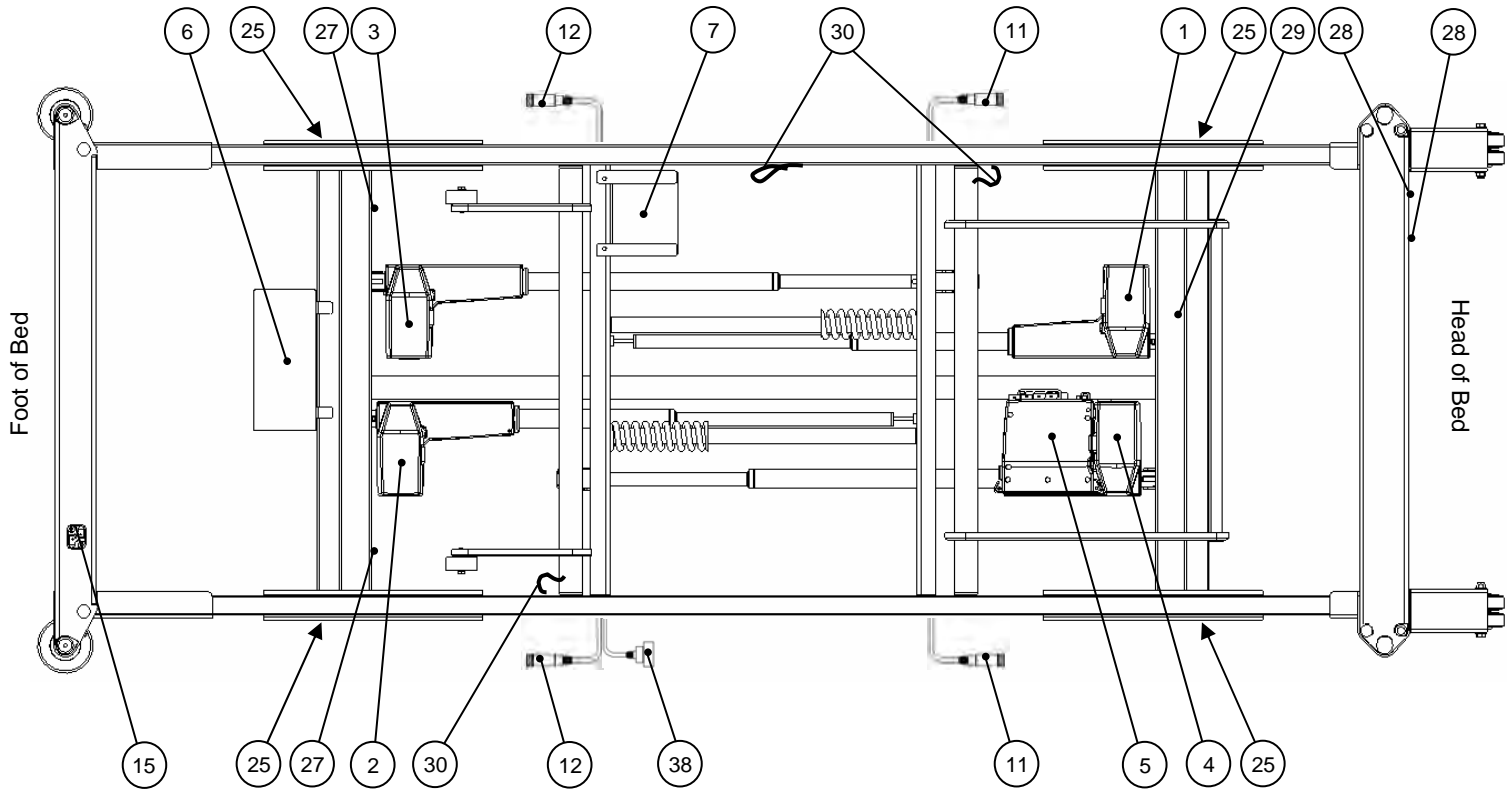
18 Spirit Plus™ Footboard

17 Standard Spirit™ Footboard

19 Replacement Footboard Staff Controls

19 Replacement Staff Footboard Controls

4.7.2 Spirit Select™ Wiring Schematic



NOTE: For the purpose of clarity, mattress deck, head/foot boards, bed legs, and other wiring systems are not shown

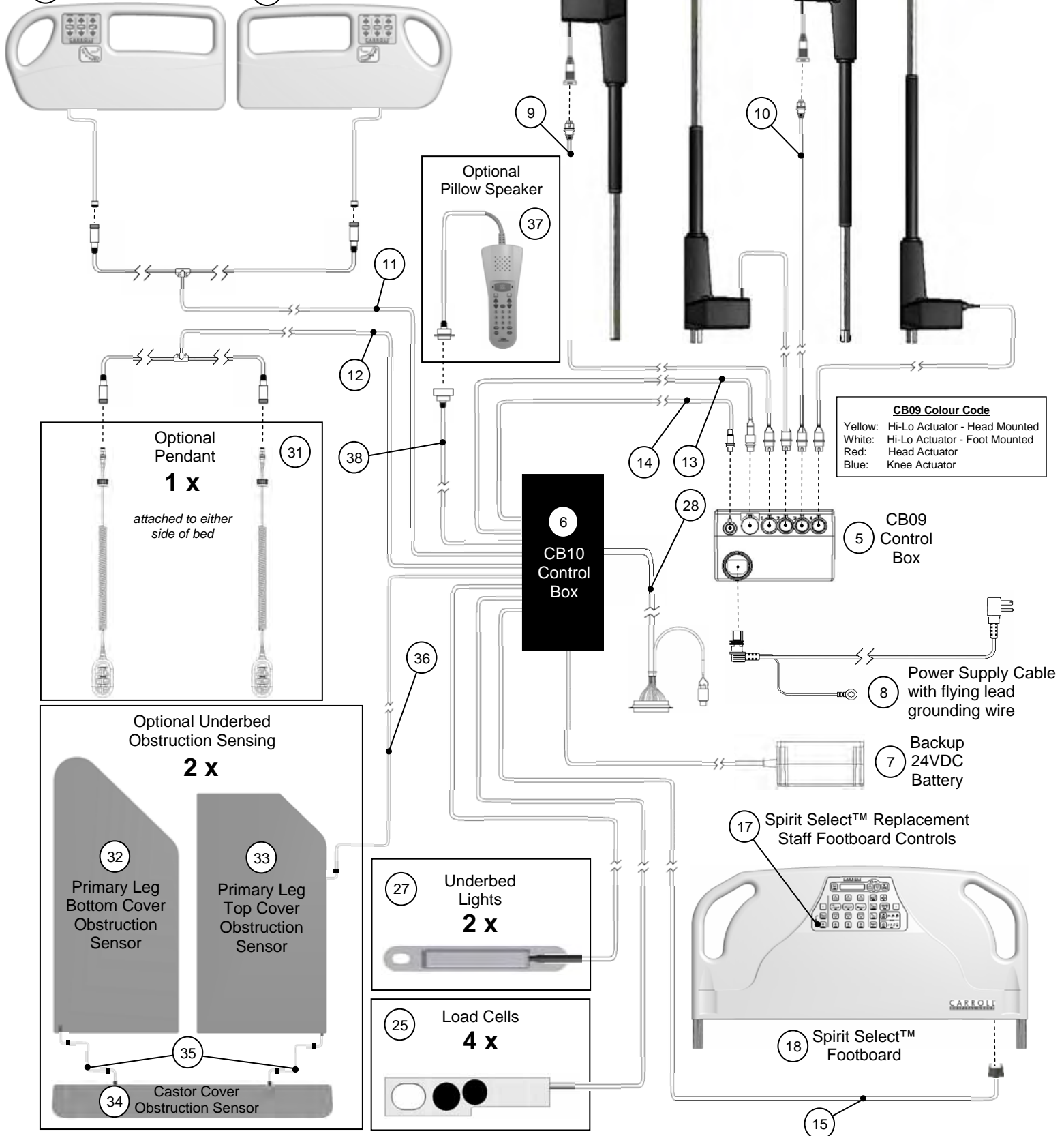
ITEM	PART DESCRIPTION	ORDER THIS P/N FOR REPLACEMENT PARTS	QTY
1	Hi-Lo Actuator (Head Mounted)	MTRM25-474	1
2	Hi-Lo Actuator (Foot Mounted)	MTRM25-473	1
3	Spirit Select™ Head Actuator	Call Customer Service	1
4	Spirit Select™ Knee Actuator	Call Customer Service	1
5	Spirit Select™ CB09 Control Box	JNCTN-DC-1G	1
6	CB10 Control Box Assembly c/w Circuit Board	E0100	1
7	Back-up Battery	JNCTND-CTR-BA-T	1
8	Power Supply Cord with 12" Flying Lead Grounding Wire	JNCTND-CCO-RD-S	1
9	Extension Cable – Foot Mounted Hi-Lo Actuator (Yellow Tape on End)	Call Customer Service	1
10	Extension Cable – Head Actuator (Red Tape on End)	Call Customer Service	1
11	T-Cable (Siderails Controls)	E0060	1
12	T-Cable (Pendant)	E0063	1
13	Communication Cable (CB09 to CB10)	E0064	1
14	CB10 Power Cable (from CB09)	E0067	1
15	Blindmate Male 4 Pin Connector to CB10 Cable	E0073	1
16	Blindmate Female 4 Pin Receptacle to Footboard Staff Control Cable (Mounted inside Footboard - <i>not shown</i>)	E0070	1
17	Footboard Staff Control c/w Overlay	Call Customer Service	1
18	Footboard Assembly c/w Footboard Staff Control and Overlay	Call Customer Service	1
19	Patient Left Siderail Assembly c/w circuit board and connection cable and Items 20 & 21	G1255	1
20	Siderail Control Overlay A (Patient Left – Inside Overlay)	G1124	1
21	Siderail Control Overlay B (Patient Left – Outside Overlay)	G1123	1
22	Patient Right Siderail Assembly c/w circuit board and connection cable and Items 23 & 24	G1254	1
23	Siderail Control Overlay C (Patient Right – Inside Overlay)	G1125	1
24	Siderail Control Overlay D (Patient Right – Outside Overlay)	G1126	1
25	Load Cell	Call Customer Service	1
26	Load Cell Bushing (2 Mounted inside each Load Cell – <i>not shown</i>)	Call Customer Service	8
27	Underbed Light	E0088	2
28	Patient Station Cable (c/w Integrated Nurse Call ¼" Phono Jack)	E0078	1
29	Equipotential Conductor	E0051	1
30	Grounding Wire 4.75" (120.65mm) long c/w (2x) #10 x ½ long TEK Screw and (2x) #10 External Tooth Star Washer – Typical 4 Places on Bed	JNCTND-RND-04-34 c/w (2X) TEKSCR-HX#-10-12 and (2X) WSRSTA-R10	5 (only 3 shown)
OPTIONAL FEATURES/EQUIPMENT			
31	Six Function Hand Pendant with Coiled Cable, 10 Pin Plug Connection, and Screw-on Threaded Retaining Cap	PNDNT6-FNC-IV-2	1
32	Primary Leg Bottom Cover Obstruction Sensor	E0105	2
33	Primary Leg Top Cover Obstruction Sensor	E0107	2
34	Caster Cover Obstruction Sensor	E0109	2
35	Obstruction Sensor Inter-connection Cable (connection between Obstruction Sensors)	E0112	4
36	Obstruction Sensor Connection Cable (to CB10)	E0084	2
37	Pillow Speaker	Call Customer Service	1
38	Pillow Speaker Cable	E0075	1

Carroll Hospital Group Customer Service: (519) 963-4010 or Toll Free 1-866-516-5446

Siderails

- 19 Patient Left Siderail Assembly
- 20 Siderail Control Overlay A
- 21 Siderail Control Overlay B
- 22 Patient Right Siderail Assembly
- 23 Siderail Control Overlay C
- 24 Siderail Control Overlay D

- 2 Foot Mounted Hi-Lo Actuator
- 1 Head Mounted Hi-Lo Actuator
- 3 Head Actuator
- 4 Foot Actuator



CB09 Colour Code
 Yellow: Hi-Lo Actuator - Head Mounted
 White: Hi-Lo Actuator - Foot Mounted
 Red: Head Actuator
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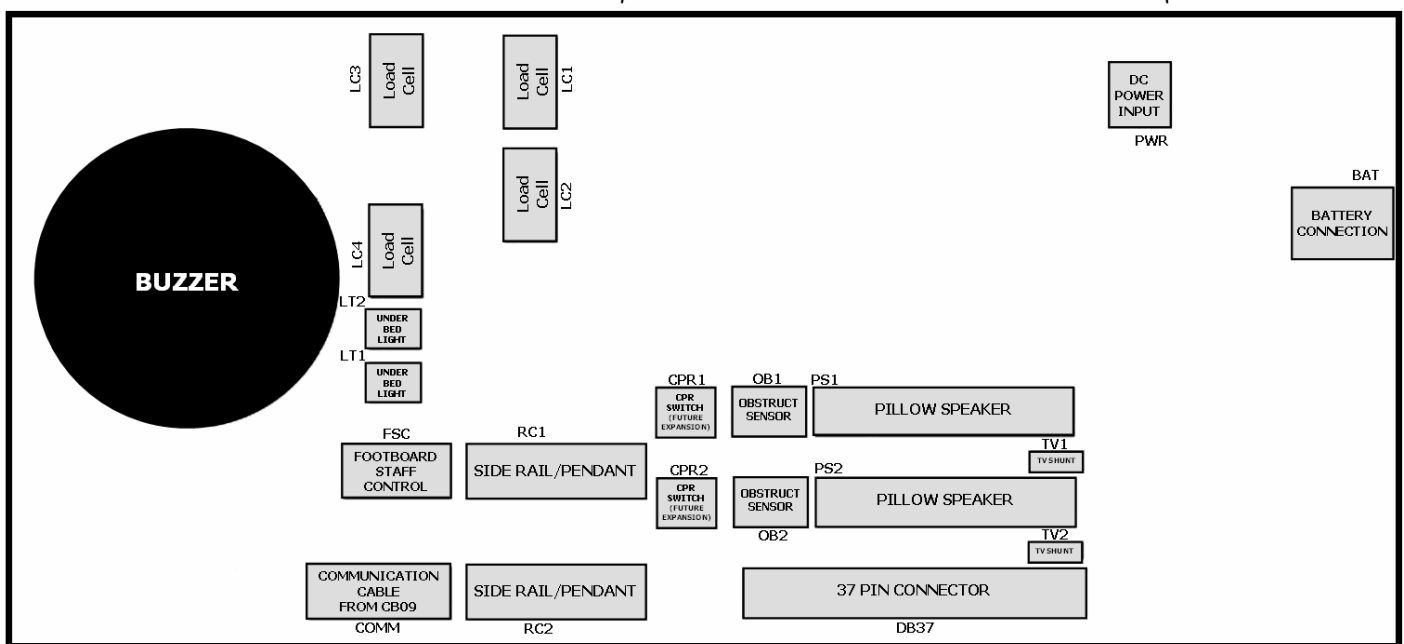
4.7.3 Spirit™ CB09 Control Box – Overview

			
<p>CB09 Control Box CB09 is common for the Spirit™ and Spirit Plus™ CB09 is unique for the Spirit Select™ <i>Typical connections for all bed</i></p>	<p>DJB Junction Box Pendant/Siderail controls and Footboard Staff Control cable connections are labelled <i>Not present on Spirit Select™</i></p>		
			
<p>Communication Cable (8 pin, DIN style, double keyed connector) Spirit™ and Spirit Plus™ - center cable from DJB Junction Box Spirit Select™ - cable to COMM header on CB10</p>			
			
<p>Actuator Cable Plug (4 pin, DIN style, double keyed connector) <i>Typical all beds – COLOUR CODED</i></p>			
<p>Yellow: Hi-Lo Actuator (Head Mounted)</p>	<p>White: Hi-Lo Actuator (Foot Mounted)</p>	<p>Red: Head Actuator</p>	<p>Blue: Knee Actuator</p>
			
<p>DC Power Cable (Ø5.5 mm X Ø2.5 mm male plug end) Spirit™ and Spirit Plus™ - cable from back-up battery Spirit Select™ - power cable to DC power input header on CB10</p>			
			
<p>Power Supply Cable (IEC 320 C13 female plug end) <i>Typical on all beds</i></p>			

4.7.4 Spirit Select™ CB10 Control Box – Overview



CABLE OPENING



NOTE:

If load cell cables are plugged into different connection points, the bed **MUST** be recalibrated.

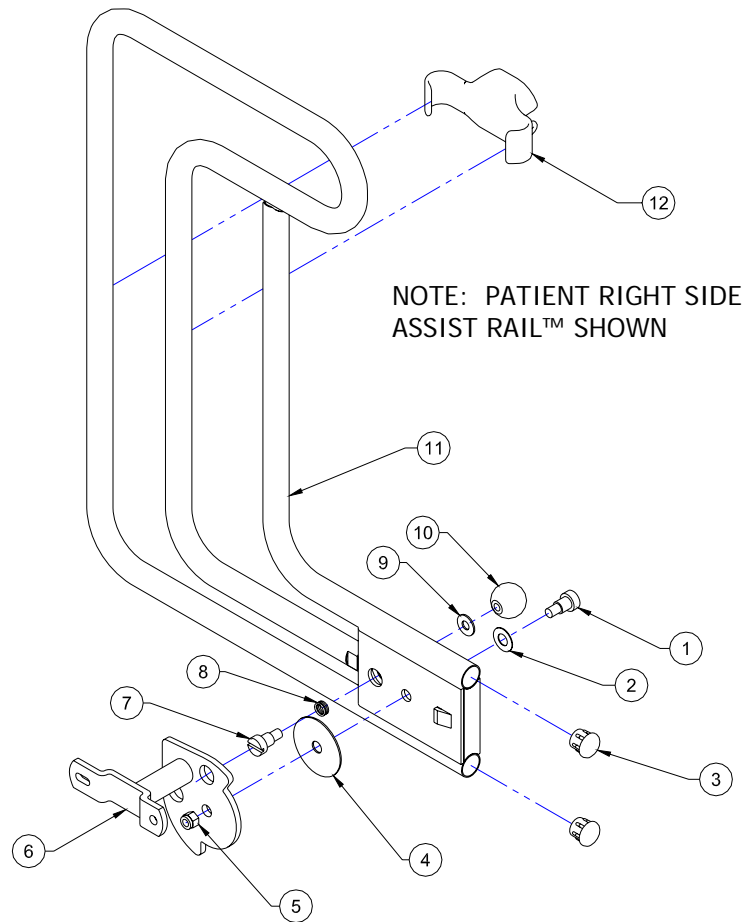
NOTE:

There are multiple connection points for the load cells, siderails, underbed lights, pillow speakers, and obstruction sensors (if equipped).

The bed will operate properly with these features connected to any of their respective connection points.

4.8 Service Part Sub-Assemblies

4.8.1 Carroll Assist Rail™ Assembly



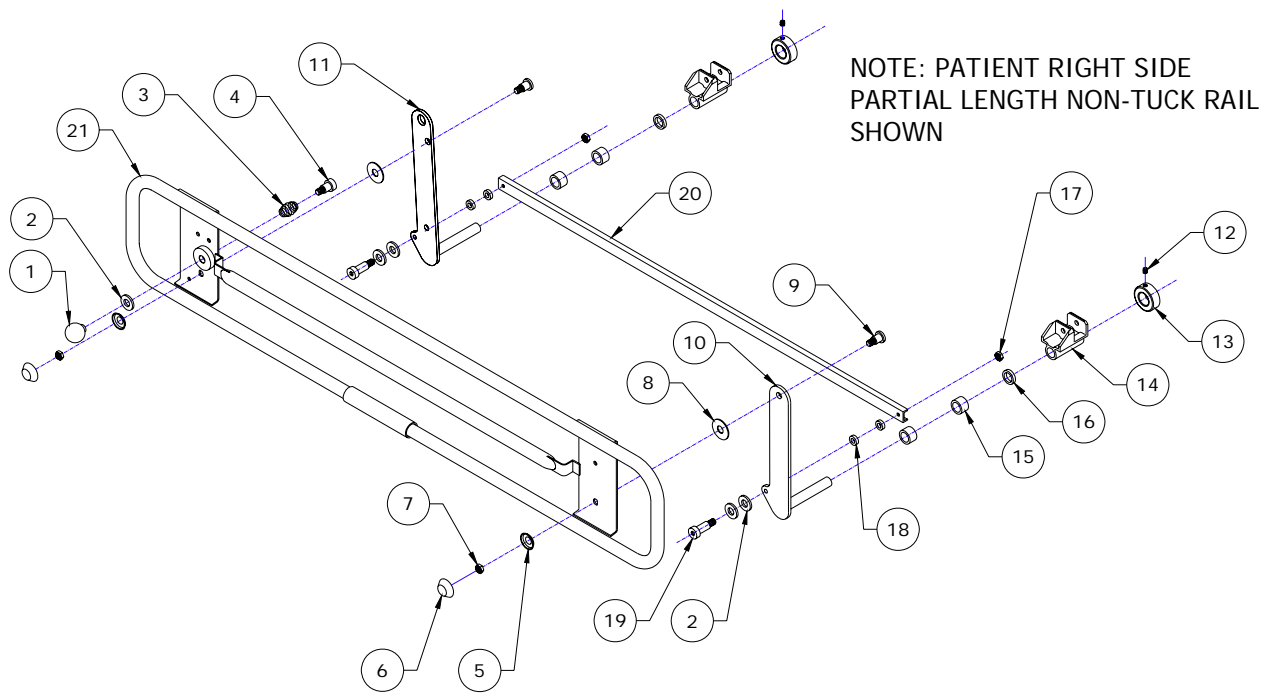
Full Assemblies:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
N/A	FULLY ASSEMBLED ASSIST RAIL PAIR (PATIENT LEFT & RIGHT SIDE)	RAILS-AE-PR	-

Components:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	SOCKET SHOULDER BOLT	BLT121-2SO-CK-SH	1
2	BELLVILLE WASHER	WSRBEL-VIL-1	1
3	18 GAUGE PLUG	PLG1RD-18	2
4	WASHER - NYLON 1/2 ID, 2 1/2 OD	WSR122-123-64-N	1
5	3/8 NYLON LOCK NUT	NUT38N-L	1
6	RIGHT SIDE ASSIST RAIL BRACKET, PLATED (SHOWN) LEFT SIDE ASSIST RAIL BRACKET, PLATED (NOT SHOWN)	RRBRAC-KAS-SI-ST (SHOWN) OR RLBRAC-KAS-SI-ST (NOT SHOWN)	1
7	SLOTTED SHOULDER BOLT	BLT121-2SL-OT-SH	1
8	COMPRESSION SPRING	SPRASS-IST	1
9	WASHER 3/8 ID X 3/4 OD X 1/16 THICK NYLON	WSR383-411-6N	1
10	BLACK BALL KNOB	LATCH0-002	1
11	SIDE MOUNT SPIRIT ASSIST RAIL MEMBER - RIGHT SIDE (SHOWN) SIDE MOUNT SPIRIT ASSIST RAIL MEMBER - LEFT SIDE (NOT SHOWN)	RR1010-26-C (SHOWN) RL1010-26-C (NOT SHOWN)	1
12	PENDANT HOLSTER	PNDNTH-OLS-TE-RS	1

4.8.2 Spirit™ Full Length & Partial Length Non-Tuck Rail Assembly



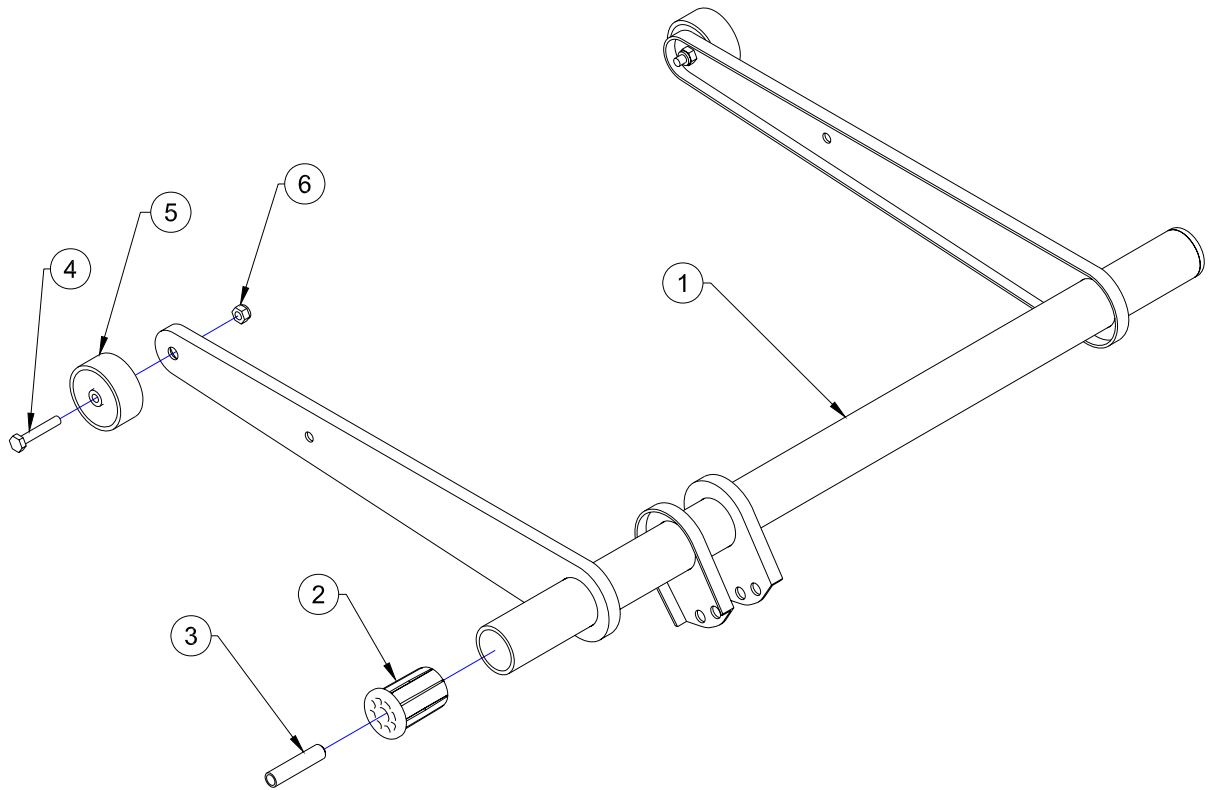
Full Assemblies:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
N/A	FULLY ASSEMBLED NON-TUCK PATIAL RAIL PAIR (PATIENT LEFT & RIGHT SIDE) (<i>SHOWN</i>); OR FULLY ASSEMBLED NON-TUCK FULL RAIL PAIR (PATIENT LEFT & RIGHT SIDE) (<i>NOT SHOWN</i>)	RAILS0-080-PE-NT (<i>SHOWN</i>); OR RAILS0-08-FE-NT (<i>NOT SHOWN</i>)	-

Components:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	BLACK BALL PULL KNOB	LATCH0-002	1
2	NYLON SPACER 3/8 X 3/4 X 1/16 THICK	WSR383-411-6N	5
3	COMPRESSION SPRINGS	SPRASS-IST	1
4	SLOTTED SHOULDER BOLT 1/2-13 X 1/2 LONG	BLT121-2SL-OT-SH	1
5	STEEL WASHER 3/8 ID	WSRRHW-204	2
6	PLASTIC CAP RH-20	CAP14R-H20	2
7	LOCKING FLANGE NUT 5/16-18	NUT516-FLL	2
8	NYLON WASHER 1.46 OD X 0.515 ID X 0.050 THICK	WSRNYL-ONF-LA-T	2
9	RAIL PIN 1/2 X 7/8 PLATED	RPIN12-78P	2
10	NON-TUCK SHORT RAIL ARM WELDED - RIGHT SIDE (<i>SHOWN</i>); OR NON-TUCK SHORT RAIL ARM WELDED - LEFT SIDE (<i>NOT SHOWN</i>)	SRA001-RA (<i>SHOWN</i>); OR SRA001-LA (<i>NOT SHOWN</i>)	1
11	NON-TUCK LONG RAIL ARM WELDED - RIGHT SIDE (<i>SHOWN</i>); OR NON-TUCK LONG RAIL ARM WELDED - LEFT SIDE (<i>NOT SHOWN</i>)	LRA001-RA (<i>SHOWN</i>); OR LRA001-LA (<i>NOT SHOWN</i>)	1
12	SET SCREW 5/16-18 NC	SETSCR-516-51-6N	2
13	LOCKING SET COLLAR 3/4 ID WITH 1/4-20 NC SET SCREW	COL34R	2
14	NON-TUCK SIDE RAIL BRACKET	RAILBR-ACK-NT	2
15	NYLON BUSHING - 3/4 X 1-1/2 LONG	WSR341-141-2N	4
16	NYLON SPACER - 3/4 X 1-11/16 THICK	WSR341-116-4N	2
17	5/16-18 CENTRE LOCK NUT	NUT516-L	2
18	NYLON BUSHING - 3/8 X 3/4 X 5/16 LONG	WSR383-451-6N	4
19	SOCKET HEAD SHOULDER BOLT 3/8-16 X 1 LONG	BLT381-HSS-B	2
20	NON-TUCK PARTIAL RAIL LINK BAR (<i>SHOWN</i>); OR NON-TUCK FULL RAIL LINK BAR (<i>NOT SHOWN</i>)	RLNK00-01P-AP-NT (<i>SHOWN</i>); OR RLNK00-01F-AP-NT (<i>NOT SHOWN</i>)	1
21	PARTIAL RAIL WELDED AND EPOXY PAINTED - RIGHT SIDE (<i>SHOWN</i>); OR PARTIAL RAIL WELDED AND EPOXY PAINTED - LEFT SIDE (<i>NOT SHOWN</i>); OR FULL RAIL WELDED AND EPOXY PAINTED - RIGHT SIDE (<i>SHOWN</i>); OR FULL RAIL WELDED AND EPOXY PAINTED - LEFT SIDE (<i>NOT SHOWN</i>)	RR1010-52 (<i>SHOWN</i>); OR RL1010-52 (<i>NOT SHOWN</i>); OR RR1010-67 (<i>NOT SHOWN</i>); OR RL1010-67 (<i>NOT SHOWN</i>)	1

4.8.3 Spirit™ Head Gatch Assembly



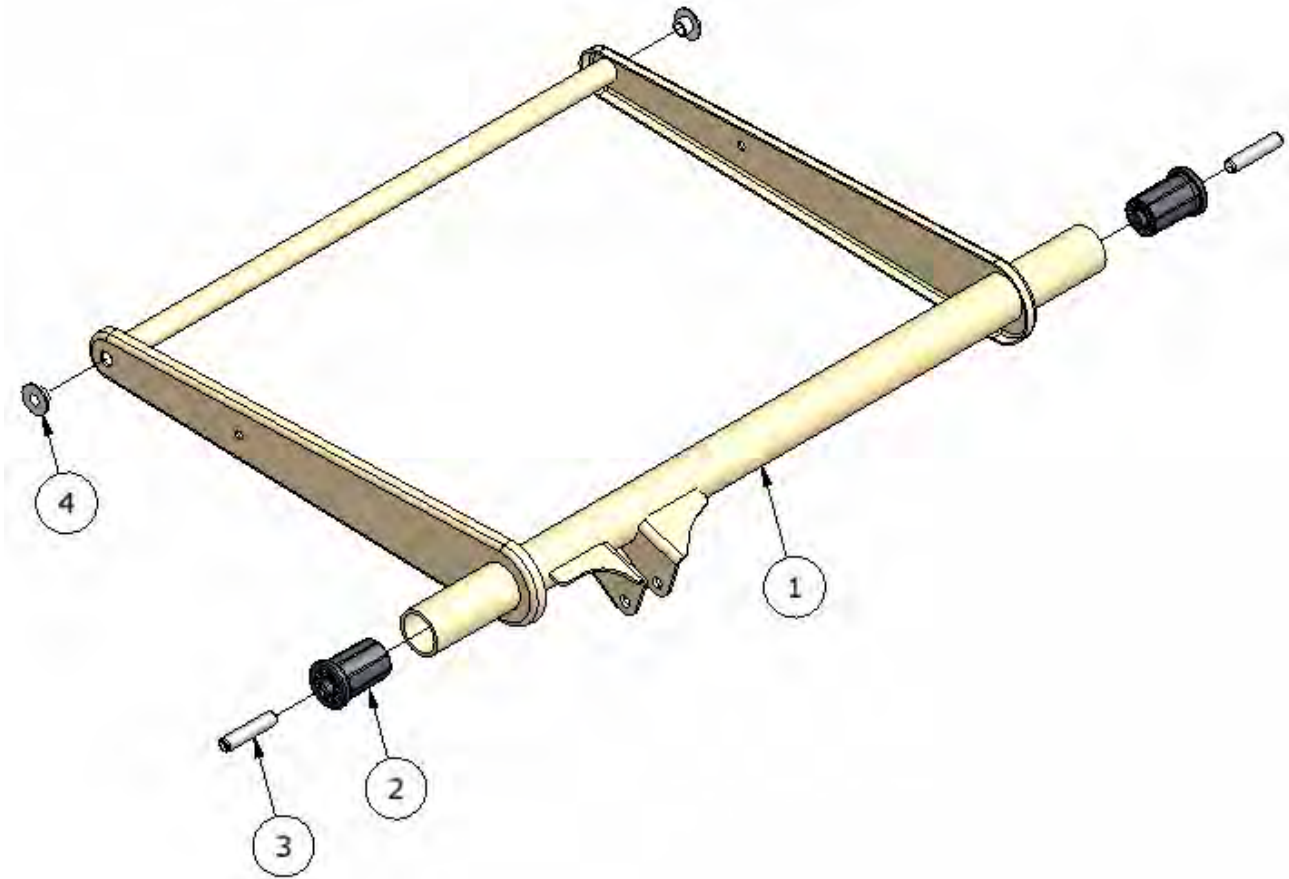
Full Assembly:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
N/A	SPIRIT HEAD GATCH ASSEMBLY	RD0055-HDG-AT-AS (G0913)	-

Components:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	SPIRIT HEAD GATCH - PAINTED	G0924P	1
2	ROUND TUBE GATCH SOCKET 1.5 INCH 11GA	G0910	2
3	PIVOT PIN	G0909	2
4	1/4-20 X 1-1/2 HEX HEAD BOLT GRADE 2	F0037	2
5	2 INCH PLASTIC WHEEL	C0031	2
6	1/4-20 NYLON LOCK NUT	F0013	2

4.8.4 Spirit Plus™ & Spirit Select™ Head Gatch Assembly



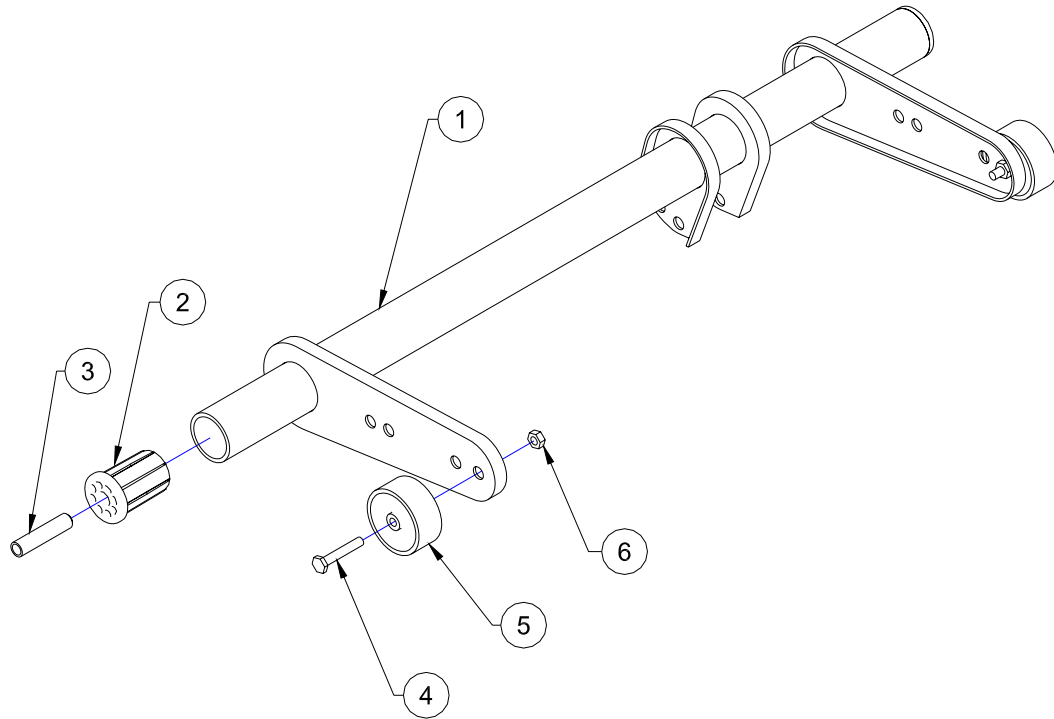
Full Assembly:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
N/A	SPIRIT PLUS HEAD GATCH ASSEMBLY (<i>SHOWN</i>); OR SPIRIT SELECT HEAD GATCH ASSEMBLY (<i>NOT SHOWN</i>)	RD0055-HDG-AP-LA (G1366) (<i>SHOWN</i>); OR G1363 (<i>NOT SHOWN</i>)	-

Components:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	SPIRIT PLUS HEAD GATCH - PAINTED (<i>SHOWN</i>); OR SPIRIT SELECT HEAD GATCH - PAINTED (<i>NOT SHOWN</i>)	G1367P (<i>SHOWN</i>); OR G1361P (<i>NOT SHOWN</i>)	1
2	ROUND TUBE GATCH SOCKET 1.5 INCH 11GA	G0910	2
3	PIVOT PIN	G0909	2
4	HEAD GATCH SUPPORT MEMBER BUSHING	C0047	2

4.8.5 Spirit™, Spirit Plus™ & Spirit Select™ Foot Gatch Assembly



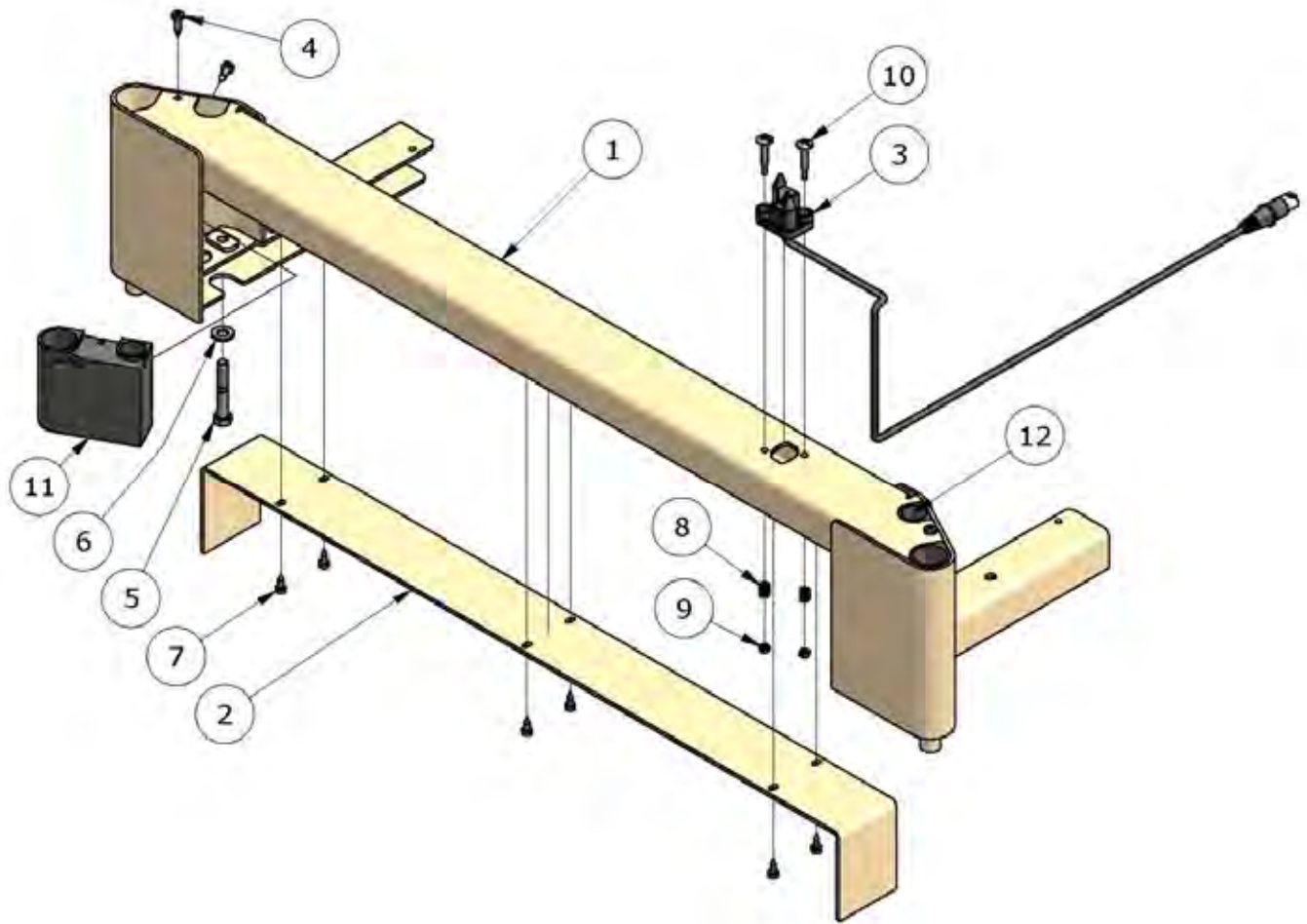
Full Assembly:

ITEM	PART DESCRIPTION	PART NUMBER	QTY
N/A	SPIRIT/SPIRIT PLUS FOOT GATCH ASSEMBLY (<i>SHOWN</i>); OR SPIRIT SELECT FOOT GATCH ASSEMBLY (<i>NOT SHOWN</i>)	RD0055-FTG-AT-AS (G0912) (<i>SHOWN</i>); OR G1362 (<i>NOT SHOWN</i>)	-

Components:

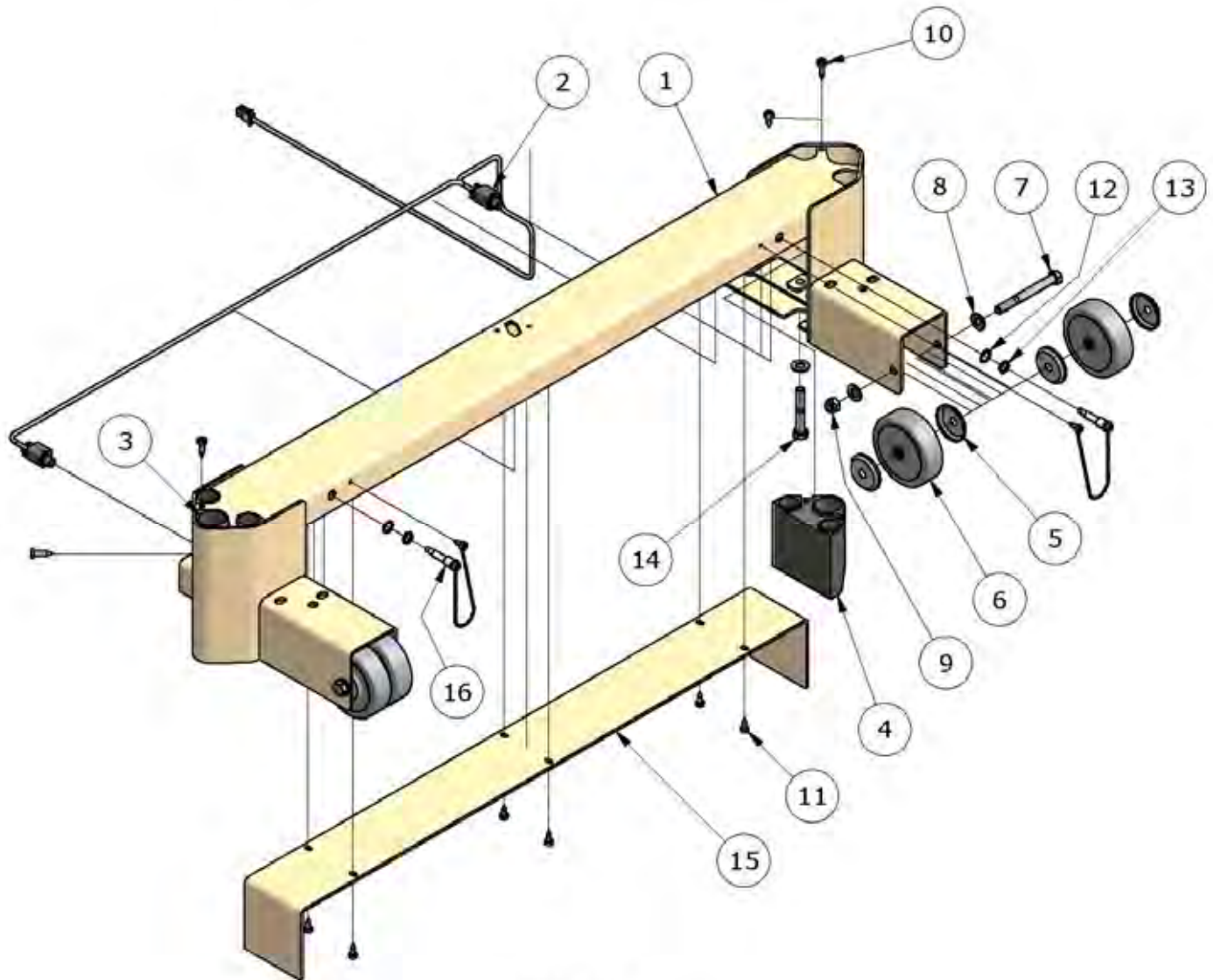
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	SPIRIT/SPIRIT PLUS FOOT GATCH - PAINTED (<i>SHOWN</i>); OR SPIRIT SELECT FOOT GATCH - PAINTED (<i>NOT SHOWN</i>)	G0914P (<i>SHOWN</i>); OR G1360P (<i>NOT SHOWN</i>)	1
2	ROUND TUBE GATCH SOCKET 1.5 INCH 11GA	G0910	2
3	PIVOT PIN	G0909	2
4	1/4-20 X 1-1/2 HEX HEAD BOLT GRADE 2	F0037	2
5	2 INCH PLASTIC WHEEL	C0031	2
6	1/4-20 NYLON LOCK NUT	F0013	2

4.8.6 Spirit Plus™ & Spirit Select™ Footboard Bracket Assembly (P/N: G1166)



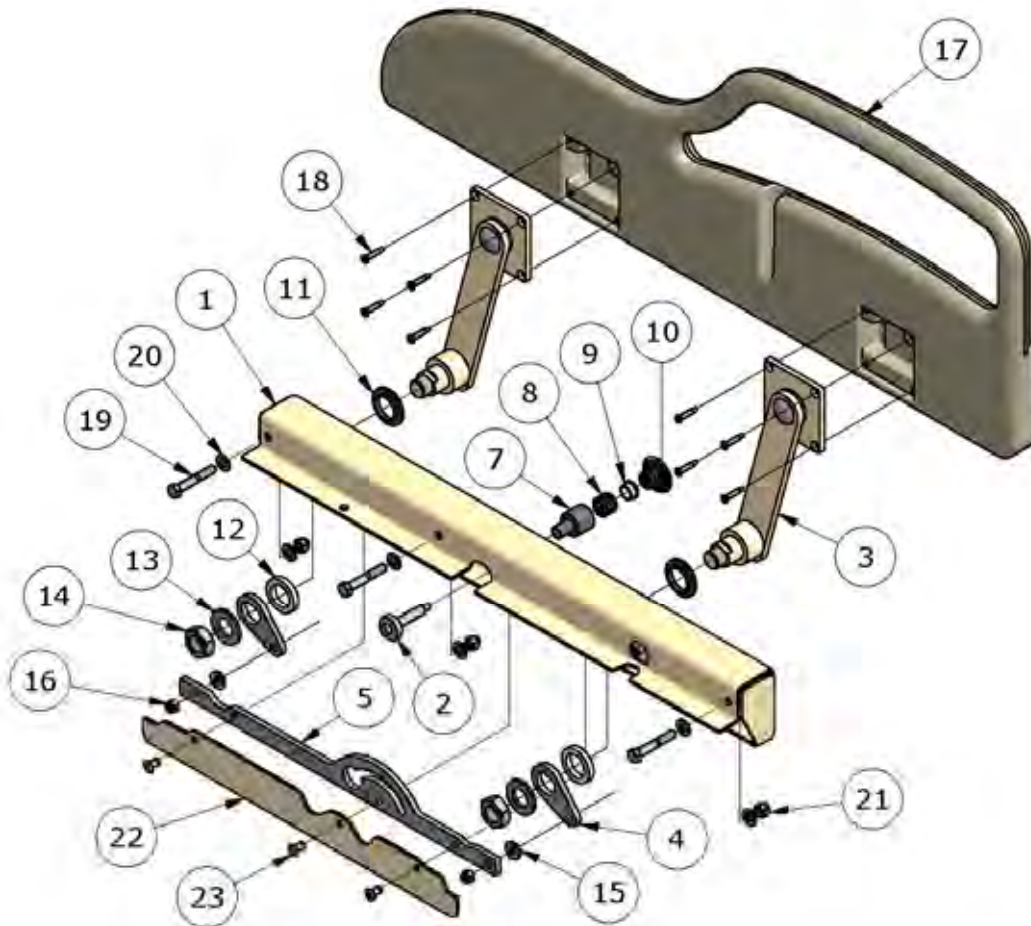
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	FOOT BOARD BRKT	G1245	1
2	FOOT BOARD BRACKET COVER	G1203	1
3	BLINDMATE ELEC. PLUG	G1145	1
4	#10X3/4" PHILLIPS PAN HEAD TEK SCREW	F0005	4
5	5/16 X 2 HEX HEAD MACHINE SCREW	F0011	2
6	5/16 TYPE A PLAIN WASHER	F0008	2
7	#8X1/2 TYPE F PHIL PAN HEAD SCREW	F0010	6
8	BLINDMATE SPRING	G1246	2
9	M4-0.7 HEX NUT	F0015	2
10	BLINDMATE SHOULDER SCREW - M4	F0021	2
11	FOOT BOARD BRKT INSERT - PR	G1130	1
12	FOOT BOARD BRKT INSERT - PL	G1131	1

4.8.7 Spirit Plus™ & Spirit Select™ Headboard Bracket Assembly (P/N: G1167)



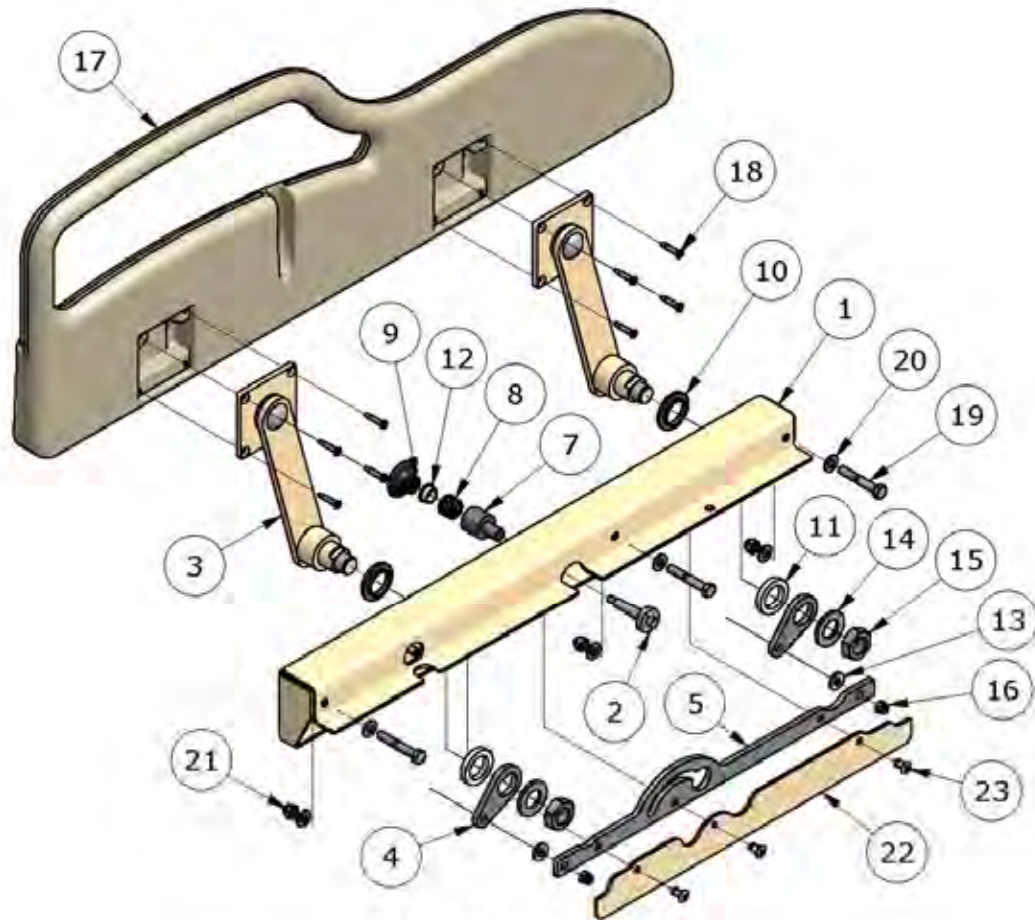
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	HEAD BOARD BRKT	G1158	1
2	NURSE CALL JACK CABLE	G1233	1
3	HEAD BOARD BRKT INSERT - PL	G1164	1
4	HEAD BOARD BRKT INSERT - PR	G1165	1
5	RHOMBUS 75mm CAP	G1240	8
6	RHOMBUS 75mm WHEEL	G1241	4
7	5/16X3" HEX HEAD MACH SCREW	F0007	2
8	5/16 TYPE A PLAIN WASHER	F0008	6
9	5/16 -18 NYLOCK HEX NUT	F0009	2
10	#10X3/4" PHILLIPS PAN HEAD TEK SCREW	F0005	4
11	#8X1/2 TYPE F PHIL PAN HEAD SCREW	F0010	8
12	5/8 MAX. DIA. WASHER	F0022	2
13	3/8-32 UNEF-2A HEX NUT	F0023	2
14	5/16 X 2 HEX HEAD MACHINE SCREW	F0011	2
15	HEAD BOARD BRACKET COVER	G1212	1
16	DUMMY PLUG ASSEMBLY	G1235	2

4.8.8 Spirit Plus™ & Spirit Select™ Foot Rail Assembly – Patient Left (P/N: G1236)



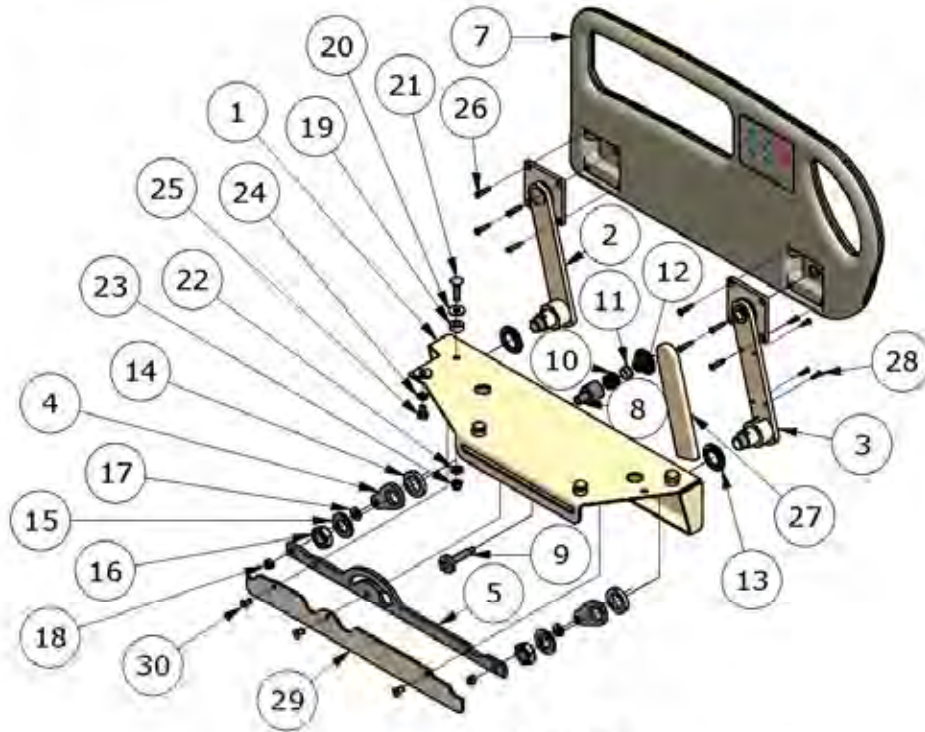
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	FOOT RAIL BRACKET	G1201	1
2	SIDE RAIL LATCH PIN	G1210	1
3	SIDE RAIL ARM ASSEMBLY (STD)	G1238	2
4	SIDE RAIL OFFSET LOBE A	G1211	2
5	SIDE RAIL ARM LINKAGE	G1209	1
6	SIDE RAIL PLATE (STD)	G1159	2
7	LATCH PIN SPRING BUSHING	G1121	1
8	LATCH PIN SPRING	G1248	1
9	SIDE RAIL PLATE BUSHING	G1168	1
10	PUSH/PULL KNOB	G1038	1
11	SIDE RAIL BRACKET BUSHING	G1176	2
12	SIDE RAIL BRACKET WASHER	G1177	2
13	3/4" SAE FLAT WASHER	F0012	2
14	3/4"-16 2-WAY CENTER LOCK JAM NUT	F0004	2
15	SIDE RAIL OFFSET LINKAGE SPACER	G1186	2
16	1/4-20 NYLOCK NUT	F0013	2
17	FOOT RAIL - PL	G1107	1
18	#10-16 X 1" PHILLIPS FLAT HEAD SCREW TYPE AB	F0014	8
19	5/16 X 2 HEX HEAD MACHINE SCREW	F0011	3
20	5/16 TYPE A PLAIN WASHER	F0008	6
21	5/16 -18 NYLOCK HEX NUT	F0009	3
22	RAIL LINKAGE SHIELD	G1256	1
23	1/4" POP RIVET	F0024	3

4.8.9 Spirit Plus™ & Spirit Select™ Foot Rail Assembly – Patient Right (P/N: G1247)



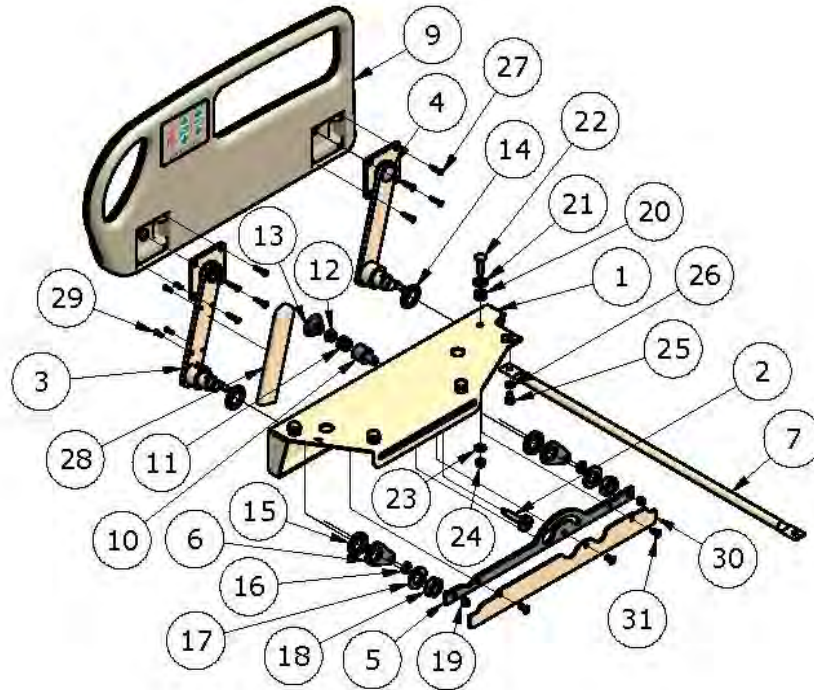
ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	FOOT RAIL BRACKET	G1192	1
2	SIDE RAIL LATCH PIN	G1210	1
3	SIDE RAIL ARM ASSEMBLY (STD)	G1238	2
4	SIDE RAIL OFFSET LOBE B	G1215	2
5	SIDE RAIL ARM LINKAGE	G1209	1
6	SIDE RAIL PLATE (STD)	G1159	2
7	LATCH PIN SPRING BUSHING	G1121	1
8	LATCH PIN SPRING	G1248	1
9	PUSH/PULL KNOB	G1038	1
10	SIDE RAIL BRACKET BUSHING	G1176	2
11	SIDE RAIL BRACKET WASHER	G1177	2
12	SIDE RAIL PLATE BUSHING	G1168	1
13	SIDE RAIL OFFSET LINKAGE SPACER	G1186	2
14	3/4" SAE FLAT WASHER	F0012	2
15	3/4"-16 2-WAY CENTER LOCK JAM NUT	F0004	2
16	1/4-20 NYLOCK NUT	F0013	2
17	FOOT RAIL - PR	G1106	1
18	#10-16 X 1" PHILLIPS FLAT HEAD SCREW TYPE AB	F0014	8
19	5/16 X 2 HEX HEAD MACHINE SCREW	F0011	3
20	5/16 TYPE A PLAIN WASHER	F0008	6
21	5/16 -18 NYLOCK HEX NUT	F0009	3
22	RAIL LINKAGE SHIELD	G1256	1
23	1/4" POP RIVET	F0024	3

4.8.10 Spirit Plus™ & Spirit Select™ Head Rail Assembly – Patient Left (P/N: G1250)



ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	HEAD RAIL BRACKET	G1200	1
2	SIDE RAIL ARM ASSEMBLY (STD)	G1238	1
3	SIDE RAIL ARM ASSEMBLY (CABLE)	G1239	1
4	SIDE RAIL OFFSET LOBE B	G1215	2
5	SIDE RAIL ARM LINKAGE	G1209	1
6	SIDE RAIL PLATE (CABLE)	G1184	1
7	HEAD RAIL SUB-ASSEMBLY - PL	G1255	1
8	LATCH PIN SPRING BUSHING	G1121	1
9	SIDE RAIL LATCH PIN	G1120	1
10	LATCH PIN SPRING	G1248	1
11	SIDE RAIL PLATE BUSHING	G1168	1
12	PUSH/PULL KNOB	G1038	1
13	SIDE RAIL BRACKET BUSHING	G1176	2
14	SIDE RAIL BRACKET WASHER	G1177	2
15	3/4" SAE FLAT WASHER	F0012	2
16	3/4"-16 2-WAY CENTER LOCK JAM NUT	F0004	2
17	SIDE RAIL OFFSET LINKAGE SPACER	G1186	2
18	1/4-20 NYLOCK NUT	F0013	2
19	HEAD RAIL BRKT SPACER 3125	G1251	4
20	HEAD RAIL BRKT SPACER 062	G1252	2
21	5/16-18 X 1-1/4 CARRIAGE BOLT	F0016	4
22	5/16 TYPE A PLAIN WASHER	F0008	4
23	5/16 -18 NYLOCK HEX NUT	F0009	4
24	5/16 SPLIT LOCK WASHER	F0018	1
25	5/16-18 X 1/2 HEX HEAD MACHINE SCREW	F0017	1
26	#10-16 X 1" PHILLIPS FLAT HEAD SCREW TYPE AB	F0014	8
27	RAIL ARM CABLE COVER	G1122	1
28	#8 X 5/8 PHILLIPS FLAT HEAD SCREW TYPE AB	F0019	4
29	RAIL LINKAGE SHIELD	G1256	1
30	1/4" POP RIVET	F0024	3

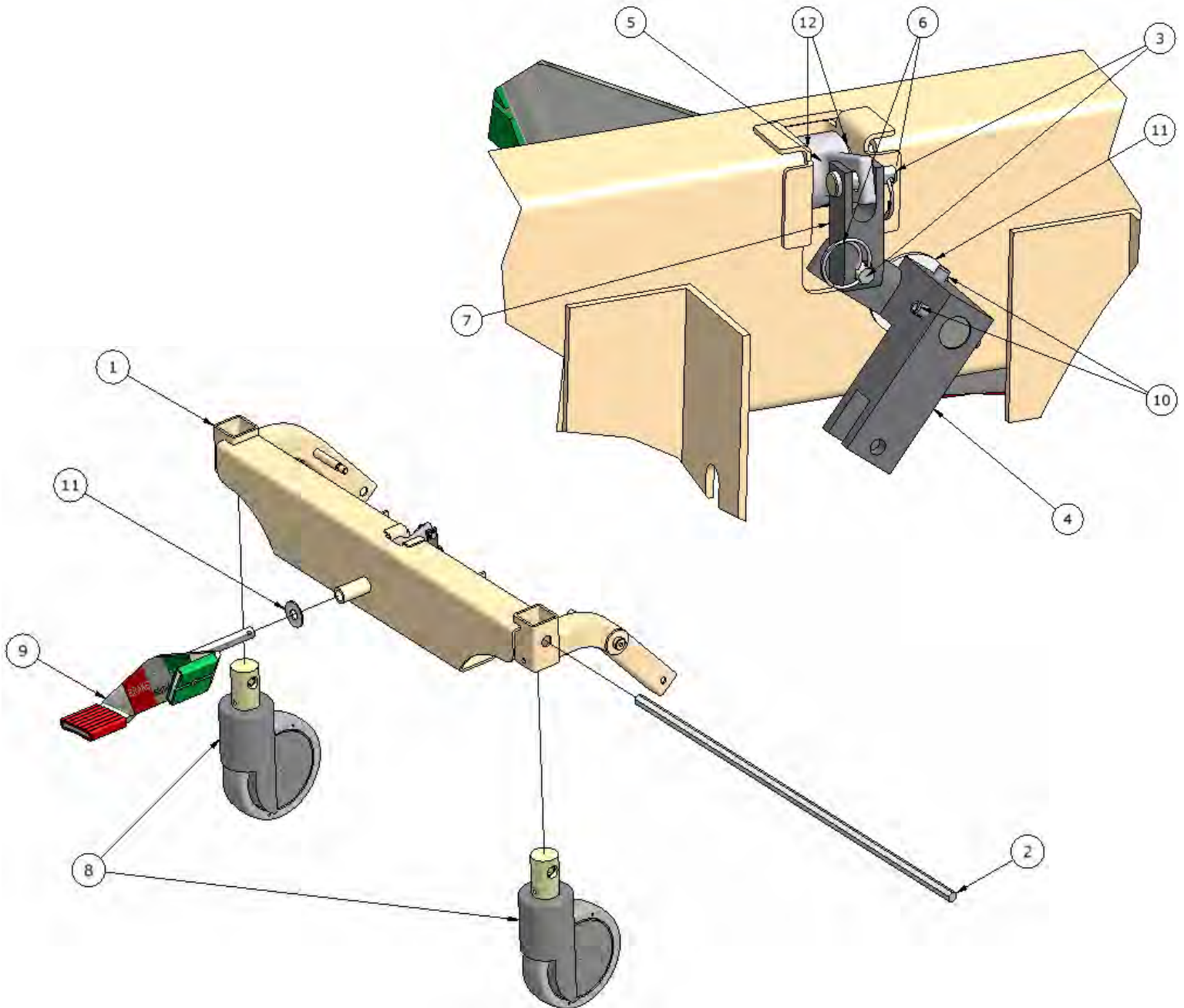
4.8.11 Spirit Plus™ & Spirit Select™ Head Rail Assembly – Patient Right (P/N: G1249)



ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	HEAD RAIL BRACKET	G1190	1
2	SIDE RAIL LATCH PIN	G1210	1
3	SIDE RAIL ARM ASSEMBLY (CABLE)	G1239	1
4	SIDE RAIL ARM ASSEMBLY (STD)	G1238	1
5	SIDE RAIL ARM LINKAGE	G1209	1
6	SIDE RAIL OFFSET LOBE A	G1211	2
7	HEAD RAIL SWAY BAR	G1140	1
8	SIDE RAIL PLATE (STD)	G1159	1
9	HEAD RAIL SUB ASSEMBLY - PR	G1254	1
10	LATCH PIN SPRING BUSHING	G1121	1
11	LATCH PIN SPRING	G1248	1
12	SIDE RAIL PLATE BUSHING	G1168	1
13	PUSH/PULL KNOB	G1038	1
14	SIDE RAIL BRACKET BUSHING	G1176	2
15	SIDE RAIL BRACKET WASHER	G1177	2
16	SIDE RAIL OFFSET LINKAGE SPACER	G1186	2
17	3/4" SAE FLAT WASHER	F0012	2
18	3/4"-16 2-WAY CENTER LOCK JAM NUT	F0004	2
19	1/4-20 NYLOCK NUT	F0013	2
20	HEAD RAIL BRKT SPACER 3125	G1251	4
21	HEAD RAIL BRKT SPACER 062	G1252	2
22	5/16-18 X 1-1/4 CARRIAGE BOLT	F0016	4
23	5/16 TYPE A PLAIN WASHER	F0008	4
24	5/16 -18 NYLOCK HEX NUT	F0009	4
25	5/16-18 X 1/2 HEX HEAD MACHINE SCREW	F0017	1
26	5/16 SPLIT LOCK WASHER	F0018	1
27	#10-16 X 1" PHILLIPS FLAT HEAD SCREW TYPE AB	F0014	8
28	RAIL ARM CABLE COVER	G1122	1
29	#8 X 5/8 PHILLIPS FLAT HEAD SCREW TYPE AB	F0019	4
30	RAIL LINKAGE SHIELD	G1256	1
31	1/4" POP RIVET	F0024	3

4.8.12 Central "Lock & Steer" Actuation Mechanism

**Head and Foot end assemblies are identical except for caster types (ITEM 8)*



ITEM	PART DESCRIPTION	PART NUMBER	QTY
1	CASTER WELDMENT PAINTED - FOOT END	G0980P	1
2	HEX ROD	G0918	1
3	0.25 CLEVIS PIN	G0901	1
4	FOOT PEDAL CABLE LEVER WELDMENT	G0902	1
5	TENTE - CHANGE LEVER	G0900	1
6	3/4" CIRCLE COTTERPIN	C0046	2
7	PEDAL LEVER LINKAGE	G1343	1
8	FOOT END STEER CASTER	C0020	2
9	BRAKE PEDAL ASSEMBLY - FOOT END	G0987	1
10	3/16 X 1.25" SLOTTED SPRING PIN	F0084	2
11	1-1/4 OD x1/2 ID x1/16 THK NYLON WASHER	F0067	2
12	SIDE RAIL PLATE BUSHING	G1168	2

4.8.13 Caster and Stem Specifications

General Information:

Manufacturer: Tente Casters, Inc.

Stamped steel frame, yellow zinc plated

Precision ball bearings in both the wheel and the swivel head

Swivel head welded to the steel frame

Synthetic plastic housing cover

Wheel Center: Polyamide

Tread: Polyurethane (Hardness: Shore D40)

Caster Specifications:

Head Mounted Caster	2046 UAP 125 R36-32S 30	Swivel Caster with total lock
Foot Mounted Caster	2044 UAP 125 R36-32S 30	Swivel Caster with total or directional lock

Stem Specifications:

R36-32S 30 M6
Standard Fitting

The stem is designed to fit tubing with an inner diameter of 32 mm. Two M6 threaded mounting holes are located in the line of travel, 7 mm from the top of the caster to the center of the mounting hole. The cam hole is positioned 90° from the direction of travel.

