



Hillrom™

Centrella® Smart+ Bed

Service Manual

Product No. P7900



Includes optional patient safety applications available in select countries:

- ***Heart and Respiration Rate Monitoring System powered by EarlySense***
- ***NaviCare® Patient Safety Application***
- ***WatchCare® Incontinence Management System***

193588 REV 12

REVISION

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Reference Documents

Centrella® Smart+ Bed Instructions for Use (193587)

Centrella® Smart+ Bed Unpacking Instructions (193589)

Centrella® Smart+ Bed Service Tool App Instructions for Use (205987) (Hill-Rom technicians only)

Centrella® Smart+ Bed Service Tool App User Guide (212326) (facility technicians)

pro+ Mattress Instructions for Use (209196)

pro+ Mattress Service Manual (209197)

WatchCare® Incontinence Management System Instructions for Use and Service Manual (196414)

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Chapter 1

Introduction

1

PURPOSE

This manual contains instructions for the operation and maintenance of the Centrella® Smart+ Bed. It also includes parts lists (in chapter 5) for you to order replacement parts.

AUDIENCE

This manual is intended for use by trained or facility-authorized persons only. To ignore this restriction could cause severe injury to people and serious damage to equipment.

REFERENCE DOCUMENTS

For more information (such as operating instructions, features, product symbols, and specifications), refer to the applicable manual:

- *Centrella® Smart+ Bed Instructions for Use (193587)*
- *pro+ Mattress Instructions for Use (209196)*
- *WatchCare® Incontinence Management System Instructions for Use and Service Manual (196414)*

DOCUMENT SYMBOLS

This manual contains different typefaces and symbols to make the content easier to read and understand:

- Standard text—used for regular data.
- **Boldface text**—emphasizes a word or phrase.
- **NOTE**—sets apart special data or important instruction clarification.
- WARNING or CAUTION



- A WARNING identifies situations or actions that may have an effect on patient or user safety. To ignore a warning could cause patient or user injury.
- A CAUTION identifies special procedures or precautions that persons must obey to help prevent equipment damage.

ACRONYMS

Acronym	Description
ACB	Air Control P.C. Board
BCB	Battery Charge P.C. Board
CPR	Cardiopulmonary Resuscitation
DCB	Drive Control P.C. Board

Acronym	Description
EAP	Extensible Authentication Code
ESD	Electrostatic Discharge
GCI or FUD	Graphical Caregiver Interface (GCI) [®] control (also known as Flip Up Display)
HFB	Headrail Fixed P.C. Board
HOB	Head of Bed
HR	Heart Rate
IFU	Instructions for Use
ILD	Indentation Load Deflection
MCB	Master Control P.C. Board
MCM	Microclimate Management [®]
MVT	Moisture Vapor Transmission
NA	North America
NAWI	Non-Automatic Weighing Instruments
OIML	International Organization of Legal Metrology
P.C.	Printed Circuit
PED	Personal Electronic Device
PWR	Power (for power drive)
RFID	Radio-frequency identification
RR	Respiration Rate
SCB or SCM	SideCom [®] P.C. Board
SOM	System on Module P.C. Board
SSID	Service Set Identifier
USB	Universal Serial Bus
UTV	Universal Television

NOTE:

The Heart and Respiration Rate (HR/RR) Monitoring System is identified as vitals in several instances throughout this manual.

MODEL IDENTIFICATION

Model Number	Description
P7900	Centrella® Smart+ Bed
P7920	Centrella® core mattress
P7921	Centrella® pro mattress
P7922	Centrella® max mattress
P7923	Centrella® pro+ mattress (integrated)
P7924	Centrella® pro+ mattress (non-integrated)
P200898	HR/RR Monitoring System*
P00697905	WatchCare® reader and antennas

a. Beds with the HR/RR Monitoring System are equipped with a sensor under the mattress on the head section.

NOTE:

In February of 2019, the base frame was redesigned. All beds prior to P7900B1 have a different base frame.

SAFETY INSTRUCTIONS



WARNING:

Obey all **warnings** throughout the manual and also those below to help prevent injury and/or equipment damage:

- **Warning**—To help prevent the risk of hospital bed fires, make sure facility persons follow the safety tips in the *FDA Public Health Notification: Safety Tips for Preventing Hospital Bed Fires*. (US only)
- **Warning**—Only Hill-Rom or facility authorized persons should service the bed.
- **Warning**—Always use correct body mechanics and correctly maintained tools when you service the bed.
- **Warning**—Do not make unauthorized modifications to the bed.
- **Warning**—Do not service or do preventive maintenance while the bed is in use.
- **Warning**—Unplug the power cord and auxiliary outlet (if installed) before you service the bed.
- **Warning**—Obey all applicable infection control policies and procedures.
- **Warning**—Do not work under an unsupported load. Install applicable temporary supports.
- **Warning**—Do not expose the unit to excessive moisture.
- **Warning**—Failure to wear protective gloves may cause injury.
- **Warning**—Failure to wear eye protection may cause eye injury.
- **Warning**—Incorrect use or handling of the power cord may cause damage to the power cord. If damage has occurred to the power cord or any of its components, immediately remove the unit from service, and contact the applicable maintenance persons.
- **Warning**—The potential for electrical shock exists with electrical equipment. Failure to follow facility protocols may cause death or serious injury.
- **Warning**—Improper connection of the grounding conductor can cause electrical shock. Obey these:
 - Do not use a ground adapter plug to connect the bed to a power outlet which does not have a ground connection.
 - Do not attempt any maintenance function which is not specifically called out in the service procedures.
 - Make sure the outlet is correctly grounded.
- **Warning**—Take care to minimize the risk of tripping over the power cord by carefully locating the cord from the bed to its power source.
- **Warning**—High voltage may be present. Use extreme care or personal injury could occur.
- **Warning**—Voltage may be present on exposed electrical connectors when the power is on. Use care when you work close to exposed connectors.
- **Warning**—A capacitor can hold charge even when the power is turned off and the bed is not connected to a power source. Use extreme caution or allow the capacitor to discharge when you work on or around the capacitor.
- **Warning**—Use the appropriate accessory equipment.
- **Warning**—Powered bed mechanisms can cause serious injury. Operate the bed only with persons clear of moving bed surfaces.



WARNING:

(Warnings continued) Obey all **warnings** throughout the manual and also those below to help prevent injury and/or equipment damage:

- **Warning**—Make sure that you do not leave any foreign objects in the patient zone of the bed.
- **Warning**—To prevent the materials in this product from contributing to potentially serious health and/or environmental hazards, consult your local regulations and facility protocol to safely dispose of electronic equipment. Do not dispose of as unsorted municipal waste. See your local distributor for return or collection systems available in your country.
- **Warning**—This product can expose you to chemicals including Lead and Di(2-ethylhexyl) phthalate (DEHP), which are known to the State of California to cause cancer, and Lead and Di(2-ethylhexyl) phthalate (DEHP) which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.
- **Warning**—The pro+ mattress product can expose you to chemicals including Cadmium, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to P65Warnings.ca.gov.



CAUTION:

Obey all **cautions** throughout the manual and also those below to help prevent equipment damage:

- **Caution**—Before you move the unit, make sure the power cord(s), hoses, and other equipment are correctly stowed.
- **Caution**—Do not push or pull the unit by IV poles, siderails, or other equipment. Use the transport handles, footboard, or other designated location.
- **Caution**—During transport, make sure that you do not push the bed into other objects.

NOTES:

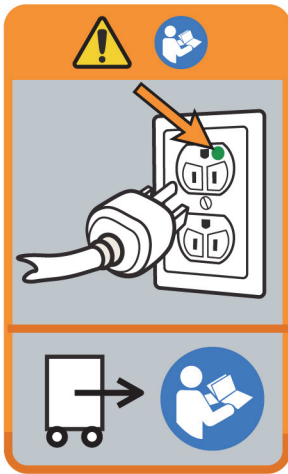
- To **remove all power** from the bed, do the Removal steps of Procedure 4.29 on page 4-63.
- To make sure grounding is reliable, fully insert the power cord plug into the power source.
- Make sure the position of the bed is such that you can quickly, without obstruction, unplug the power cord(s) from the main power supply if necessary.

WARNING AND CAUTION LABELS

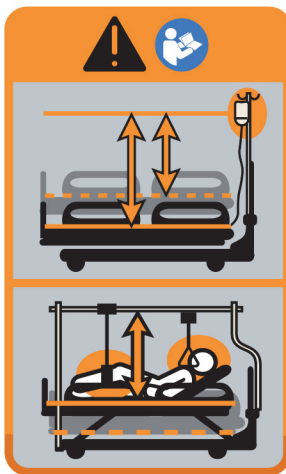
NOTE:

For the warning and caution labels on the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

200010



209754 x2



209756



209755



196108



17173401



195886101



196527



196525

AUXILIARY RECEPTACLE

- NO BATTERY BACK-UP.
- FOR NON-LIFE SUPPORT MEDICAL EQUIPMENT ONLY.

EN

195897

195885

195880

Hill-Rom, Inc.
1069 State Route 46 East
Batesville, IN 47006, USA
Bed Model P790xr
100-240Vac, 10A, 50-60Hz, 2 Min. On / 18 Min. Off

MEDICAL - GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH AAMI ES60601-1, IEC60601-1-1, IEC60601-2-52, CAN/CSA-C22.2 No. 60601-1 AND IEC60601-2-49.

IPX4

= 32 - 227 kg (70 - 500 lb)

= 295 kg (650 lb)

+ + ≥ 146 cm BMI ≥ 17

YYYY-MM-DD

200940

EarlySense
Sensing Unit/Unité de détection
Hill-Rom PN P200898

Manufactured by / Fabriqué par
EarlySense for Hill-Rom / EarlySense pour Hill-Rom

Hill-Rom
1069 State Route 46 East, Batesville, IN 47006

Warning: To be used only with the Hill-Rom Centrella Bed / Avertissement: À utiliser uniquement avec le lit Hill-Rom Centrella

Consult accompanying document / Consultez le document d'accompagnement

Serial Number/Numéro de série
SN 4VMMYXXXX

Date of Manufacture/Date de fabrication
YYYY-MM-01

(01)00887761985155
(11)YMM01
(21)4VMMYXXXX

IPX4 Splash-proof / Accessoire anti-éclaboussures
accessory

MR Unsafe / Incompatible avec la RM Rx Only/Rx seulement
200898

MLB-00206 US Rev05

NOTES:

Chapter 2

Troubleshooting

2

GETTING STARTED



WARNING:

Warning—Only facility-authorized persons should service the Centrella® Smart+ Bed. Service by unauthorized persons could cause injury or equipment damage.

1. Do one of these:
 - To isolate or identify a problem, go to “Function Checks” on page 2-1.
 - If an error code shows on the GCI, go to “Service Required Indicator—Error Codes” on page 2-4.
2. Do the solution (repair analysis procedure (RAP), part replacement, etc.) that is shown for the problem.
3. To make sure the problem has been corrected, do the “Function Checks” on page 2-1.

NOTES:

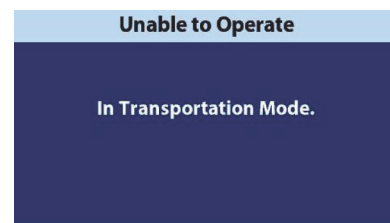
- If the troubleshooting procedures do not identify the problem, contact Hill-Rom Technical Support.
- For troubleshooting the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

FUNCTION CHECKS

Do the function checks as applicable for your bed. If the bed passes all of the checks for its configuration, do the necessary administrative tasks, and prepare the bed to be put into service. If the bed does not pass all of the checks, repair or replace the part as applicable. Do not put the bed into service until it passes all of the checks.

NOTES:

- Use the controls on both sides of the bed, the GCI, and the hand held remote control (pendant), if available, to do the functions checks. Do the checks at one location, and then another until all control locations have been through the checks.
- If the controls do not operate, the bed may be in transportation mode. To disable the transportation mode, go to “Disable and Enable the Transportation Mode” on page 4-4. On some beds, this screen will show for a few seconds if you press a control on a bed that it is in transportation mode.



Pass / Fail	Task	If Fail, Go To
1. From all control areas, these bed controls and their indicators (as applicable) operate correctly:		
	Trendelenburg, Reverse Trendelenburg, and Boost® Position	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Lockouts for head, knee, bed up and down, Trendelenburg, Reverse Trendelenburg, and Boost® Position	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Bed, head, and knee sections raise and lower (make sure these operate on battery power also)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Alert Silence (on the caregiver control panel and GCI)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Foot longer and shorter (on the GCI only)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Dining Chair® Position (on the GCI only)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Bed Flat (on the GCI only)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Stand Assist (on the GCI only)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Head angle <30° Limit (on the GCI only)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Nurse call (if available)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5 or "0x4XXX-0x5XXX: Flip Up Display (FUD/GCI) Board—Error Codes and Solutions" on page 2-19
	CPR	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Brake and steer	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	IllumiGuide® Siderail Handgrip	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Night light	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Pendant (handheld remote; if available)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5

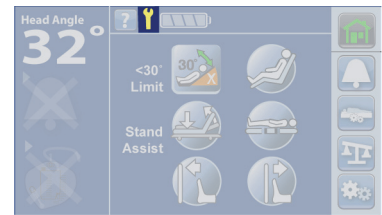
2

Pass / Fail	Task	If Fail, Go To
2. These alerts (as applicable) operate correctly:		
	Set Brake Alert	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Bed Exit Alert System	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	SafeView®+ Alerts	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Voice Alerts	"0x2XXX: SideCom® Board (SCB)—Error Codes and Solutions" on page 2-13
3. These features (as applicable) operate correctly:		
	Siderails ^a	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Wireless connectivity	"0x2XXX: SideCom® Board (SCB)—Error Codes and Solutions" on page 2-13
	IntelliDrive® Transport System	"0xFXXX: SOM Board" on page 2-23
	SideCom® Communication System	"0x4XXX-0x5XXX: Flip Up Display (FUD/GCI) Board—Error Codes and Solutions" on page 2-19
	Scale System (see "Specified Checks" on page 6-3 for an accuracy check)	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	Foley Position Limit	"0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5
	USB charging port on the siderail	"0x9XXX-0xAXXX: Headrail Fixed Board (HFB)—Error Codes and Solutions" on page 2-19
	Heart and Respiration Rate Monitoring System	"Wireless Connectivity Malfunction" on page 2-26
	Obstacle Detect® System	"Wireless Connectivity Malfunction" on page 2-26
	WatchCare® Incontinence Management System	"WatchCare® Incontinence Management System Malfunctions" on page 2-25
	Bedside Association	"Bedside Association Malfunctions" on page 2-26
4. The mattress (as applicable) operates correctly:		
	max mattress (Normal, Max Inflate, and right and left Turn Assists)	"0x3XXX: max Mattress Air Control Board (ACB)—Error Codes and Solutions" on page 2-16
	pro+ mattress, integrated (Normal, MCM, and status indicator on the GCI)	"0xCXXX: pro+ Mattress Blower Board" on page 2-22

a. Make sure to test the up switches for all four siderails, either by changing the SafeView®+ Alerts protocol or using the Turn Assist feature.

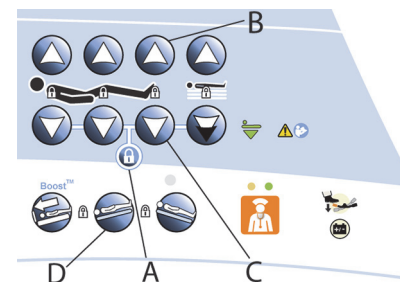
SERVICE REQUIRED INDICATOR—ERROR CODES

- When the Service indicator on the GCI is **on**, get access to the Diagnostics screen to determine what the issue is and the error code associated with it (see “Diagnostics—View and Clear Errors” on page 4-9).



- Clear the error (see “Diagnostics—View and Clear Errors” on page 4-9).
- Unplug the power cords for the bed and the auxiliary outlet (if installed).
- Shut down the bed as follows:

- Press and hold the **Lockout** control (A) until you hear a beep (approximately 20 seconds). This puts the bed in Service mode.
- Press and hold these controls at the same time until you hear a beep: **Foot Up** (B), **Foot Down** (C), and **Trendelenburg** (D). The bed should shut down within 5 seconds after you release the controls.



Caregiver Control Panel

- Plug the bed in.
- If the error still shows, refer to the applicable Error Codes and Solutions table shown below. Do solution (1) first, and then if necessary, do solution (2), and so on until the problem is fixed. If the solutions do not fix the problem, contact Technical Support.
 - “0x1XXX: Master Control Board (MCB)—Error Codes and Solutions” on page 2-5
 - “0x2XXX: SideCom® Board (SCB)—Error Codes and Solutions” on page 2-13
 - “0x3XXX: max Mattress Air Control Board (ACB)—Error Codes and Solutions” on page 2-16
 - “0x4XXX-0x5XXX: Flip Up Display (FUD/GCI) Board—Error Codes and Solutions” on page 2-19
 - “0x9XXX-0xAXXX: Headrail Fixed Board (HFB)—Error Codes and Solutions” on page 2-19
 - “0xBXXX: Drive Control Board (DCB)—Error Codes and Solutions” on page 2-20
 - “0xCXXX: pro+ Mattress Blower Board” on page 2-22
 - “0xFXXX: SOM Board” on page 2-23

NOTES:

- For a bed with the SafeView®+ Alerts option, there are two or three control boards for the SafeView®+ Alerts:
 - SafeView®2 control board (198430)
 - SafeView®2 light board (198433)
 - SafeView®2 ES light board (198436)
- Before you replace parts as identified in the solutions, make sure of these:
 - The cables are not damaged and are connected correctly.
 - There are no parts that are binding.
- For part replacement, see chapter 4.

7. If you replace the GCI or any of these P.C. boards—MCB, SOM, ACB or pro+ mattress blower board, DCB, SCB, HFB (right and left)—the bed software versions may not match. Make sure you update the software as necessary.
8. After you repair the bed, do the “Function Checks” on page 2-1.

NOTE:

If multiple boards have an error, the most recent error will show first.

0x1XXX: MASTER CONTROL BOARD (MCB)—ERROR CODES AND SOLUTIONS

Code	GCI Error Report	Solution
0x1000	No error	N/A
0x1006	ERR_MCB_OIML_ACCEL_CALIBRATION_ERROR	(1) Calibrate the accelerometer. Repeat the calibration a few times, if necessary. (2) Make sure the correct MCB is installed. The part number should be 208195. (3) Replace the OIML scale MCB.
0x1F01	ERR_MCB_INCONSISTENT_SW	(1) Reboot the bed. (2) Wait for 3 minutes after reboot to see if the error still persists or if it is cleared. (3) If the error persists, update the firmware and reboot the bed.
0x11C0	ERR_MCB_OHA_BUTTON_STUCK_CRITICAL	Replace the overhead arm.
0x11C1	ERR_MCB_OHA_BUTTON_STUCK_MODERATE	Replace the overhead arm.
0x11C2	ERR_MCB_OHA_PED_ALERT	(1) Reboot the bed. (2) Wait for 3 minutes after reboot to see if the error still persists or if it is cleared. (3) If the error persists, replace the overhead arm.
0xB009	ERR_DCB_AC_RET_TIMEOUT	(1) Make sure the deployment actuator cable is not damaged and it is fully connected to P16 on the DCB. Try to extend and then retract actuator (remove AC power and activate steer pedal then reapply power). (2) Replace the actuator.
Power System		
0x1040	Bad battery / charge error	(1) Charge the bed overnight. (2) Replace the batteries with new ones. (3) Replace the BCB.
0x1041	BCB AVref error	Replace the BCB.
0x1042	Power supply over current	(1) Check the cables to the batteries for kinks, damage, and connections. Replace or connect the cables as necessary. (2) Replace the BCB.

Code	GCI Error Report	Solution
0x1043	Power supply over voltage	Replace the BCB.
0x1045	Power supply overheated	(1) Check the cable connection between the MCB and BCB. Replace or connect the cable as necessary. (2) Replace the BCB.
0x1046	BCB connectivity lost	(1) Check the cable connection between the MCB and BCB. Replace or connect the cable as necessary. (2) Replace the BCB.
0x1047	Invalid BCB hardware	Replace the BCB.
0x1048	Battery temperature exceeded	(1) This error will not clear if the bed is outside the operational range of 5°C to 35°C (41°F to 95°F). If bed is within this temperature range, check the cable connection between the MCB and BCB. Replace or connect the cable as necessary. (2) Replace the BCB.
0x1049	DCB power error	(1) Check the cable connection between the MCB and DCB. Replace or connect the cable as necessary. (2) Replace the DCB. (3) Replace the MCB.
0x104A	Battery charger timeout Trickle	Replace the bed batteries.
0x104B	Battery charger timeout Bulk	Replace the bed batteries.
0x104C	Battery charger timeout Boost	Replace the bed batteries.
0x104D	Battery charger error	(1) Replace the bed batteries. (2) Replace the BCB.
0x104E	Battery under 12 V	(1) Check the cables to the bed batteries. Replace the cables as necessary. (2) Check the battery fuse. Replace the fuse as necessary. (3) Measure the bed battery voltage. If the voltage is under 12 V, replace the bed batteries.
0x1050	Power supply under voltage	(1) Check the cable connection between the MCB and BCB. Replace or connect the cable as necessary. (2) Replace the BCB.
0x1051	Power supply over voltage	Replace the BCB.
0x1052	Battery under voltage	(1) Charge the bed overnight. (2) Replace the batteries with new ones. (3) Replace the BCB.
0x1054	Power supply over current	Replace the BCB.

Code	GCI Error Report	Solution
0x1055	Improper shutdown	(1) Do Step 3 through Step 5 on page 2-4 to reset the bed. (2) Check the cables to the bed batteries. Replace the cables as necessary. (3) Check the battery fuse. Replace the fuse as necessary. (4) Replace the bed batteries.
0x1056	ERR_MCB_OBSTACLE_HARDWARE_LEFT	(1) Check the cable connections between the MCB and BCB and between the BCB and the left Obstacle Detect® transmitter and receiver. Replace or connect the cables as necessary. (2) Replace the left Obstacle Detect® transmitter and/or receiver P.C.board. (3) Replace the BCB.
0x1057	ERR_MCB_OBSTACLE_HARDWARE_RIGHT	(1) Check the cable connections between the MCB and BCB and between the BCB and the right Obstacle Detect® transmitter and receiver. Replace or connect the cables as necessary. (2) Replace the right Obstacle Detect® transmitter and/or receiver P.C. board. (3) Replace the BCB.
File System and EEPROM		
0x1080	File system init	Replace the MCB.
0x1081	File system write	(1) Use the Centrella® service tool app to reformat the file system. (2) Replace the MCB.
0x1082	File system read	(1) Calibrate the scale and bed articulations if possible. (2) Use the Centrella® service tool app to reformat the file system. (3) Replace the MCB.
0x1083	File system data	(1) Calibrate the scale and bed articulations if possible. (2) Use the Centrella® service tool app to reformat the file system. (3) Replace the MCB.
0x1084	Stored motor position lost	(1) Calibrate the bed articulations if possible. (2) Check the cable connections for all actuators. Replace or connect cables as necessary. (3) Replace any actuator that has a position error. (4) Replace the MCB.

Code	GCI Error Report	Solution
External		
0x10C0	CPR switch failure	(1) Check the cable connections between the CPR switch and the MCB. Replace or connect the cable as necessary. (2) Replace the CPR switch.
External Heartbeat		
0x1100	MCB Heart Beat	(1) Do Step 3 through Step 5 on page 2-4 to reset the bed. (2) Check the cable connection between the HFB and MCB. Replace or connect the cable as necessary. (3) Use the Centrella® service tool app to update the bed's software. (4) Replace the MCB.
Motor		
0x1140	H-bridge error	Replace the MCB.
0x1142	HILO head sense current	(1) Check the head hilow actuator and its cable connection. Connect the cable or replace the actuator as necessary. (2) Replace the MCB.
0x1143	HILO foot sense current	(1) Check the foot hilow actuator and its cable connection. Connect the cable or replace the actuator as necessary. (2) Replace the MCB.
0x1144	Head sense current	(1) Check the head actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.
0x1145	Knee sense current	(1) Check the thigh actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.
0x1146	FlexFoot sense current	(1) Check the foot extension actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.
0x1147	Foot sense current	(1) Check the foot actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.

Code	GCI Error Report	Solution
0x1148	HILO head position error	(1) Use the Bed Up/Down controls to articulate the bed to its limits: fully raised, fully lowered, and then fully raised again. This resets the bed position sensor. (2) Calibrate the bed articulations. (3) Replace the head hilow actuator (the position sensor is inside the actuator). (4) Replace the MCB.
0x1149	HILO foot position error	(1) Use the Bed Up/Down controls to articulate the bed to its limits: fully raised, fully lowered, and then fully raised again. This resets the bed position sensor. (2) Calibrate the bed articulations. (3) Replace foot hilow actuator (the position sensor is inside the drive). (4) Replace the MCB.
0x114A	Head position error	(1) Calibrate the bed articulations. (2) Replace the head actuator (the position sensor is inside the actuator). (3) Replace the MCB.
0x114C	Knee over current	(1) Check the thigh actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.
0x114D	Foot over current	(1) Check the foot actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.
0x114E	HILO head over current	(1) Check the head hilow actuator and its cable connection. Connect the cable or replace the actuator as necessary. (2) Replace the MCB.
0x114F	HILO foot over current	(1) Check the foot hilow actuator and its cable connection. Connect the cable or replace the actuator as necessary. (2) Replace the MCB.
0x1150	HOB over current	(1) Check the head actuator and its cable connections. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.
0x1151	FlexFoot over current	(1) Check the foot extension actuator and its cable connection. Connect the cable, replace the cable (if possible), or replace the actuator as necessary. (2) Replace the MCB.

Code	GCI Error Report	Solution
0x1153	Knee position error	(1) Calibrate the bed articulations. (2) Replace the thigh actuator. (3) Replace the MCB.
0x1154	Foot position error	(1) Calibrate the bed articulations. (2) Replace the foot actuator. (3) Replace the MCB.
0x1155	FlexFoot position error	(1) Calibrate the bed articulations. (2) Replace the foot extension actuator. (3) Replace the MCB.
0x1157	ERR_MCB_HEAD_CALIBRATION	(1) Calibrate the bed articulations. (2) Replace the head actuator. (3) Replace the MCB.
0x1158	ERR_MCB_HILOHD_CALIBRATION	(1) Calibrate the bed articulations. (2) Replace the head hilow actuator. (3) Replace the MCB.
0x1159	ERR_MCB_HILOFT_CALIBRATION	(1) Calibrate the bed articulations. (2) Replace the foot hilow actuator. (3) Replace the MCB.
0x115A	ERR_MCB_KNEE_CALIBRATION	(1) Calibrate the bed articulations. (2) Replace the thigh actuator. (3) Replace the MCB.
0x115B	ERR_MCB_FOOT_CALIBRATION	(1) Calibrate the bed articulations. (2) Replace the foot actuator. (3) Replace the MCB.
0x115C	Head thermal error	(1) Do not use the articulation controls for 10 minutes. (2) Replace the head actuator.
0x115D	HILO head thermal error	(1) Do not use the articulation controls for 10 minutes. (2) Replace the head hilow actuator.
0x115E	HILO foot thermal error	(1) Do not use the articulation controls for 10 minutes. (2) Replace the foot hilow actuator.
0x115F	Knee thermal error	(1) Do not use the articulation controls for 10 minutes. (2) Replace the thigh actuator.
0x1160	Foot thermal error	(1) Do not use the articulation controls for 10 minutes. (2) Replace the foot actuator.
0x1161	FlexFoot thermal error	(1) Do not use the articulation controls for 10 minutes. (2) Replace the foot extension actuator.
0x1162	ERR_MCB_HEAD_GENERAL	(1) Calibrate the bed articulations. (2) Replace the head actuator.

Code	GCI Error Report	Solution
0x1163	ERR_MCB_HILOHD_GENERAL	(1) Calibrate the bed articulations. (2) Replace the head hilow actuator.
0x1164	ERR_MCB_HILOFT_GENERAL	(1) Calibrate the bed articulations. (2) Replace the foot hilow actuator.
0x1165	ERR_MCB_KNEE_GENERAL	(1) Calibrate the bed articulations. (2) Replace the thigh actuator.
0x1166	ERR_MCB_FOOT_GENERAL	(1) Calibrate the bed articulations. (2) Replace the foot actuator.
0x1167	ERR_MCB_FLEXFOOT_GENERAL	(1) Calibrate the bed articulations. (2) Replace the foot extension actuator.
0x9223	ERR_LF_HFB_CG_MEMBRANE	Replace the membrane.
0x9224	ERR_LF_HFB_PT_MEMBRANE	Replace the membrane.
0xA223	ERR_RH_HFB_CG_MEMBRANE	Replace the membrane.
0xA224	ERR_RH_HFB_PT_MEMBRANE	Replace the membrane.
Scale		
0x1180	Scale calibration	(1) Calibrate the scale. (2) Replace the MCB.
0x1181	Scale zero load error	(1) Zero the scale if possible. (2) Calibrate the scale. (3) Replace the MCB.
0x1182	LH load beam error	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Check the cable connection for the left-head (LH) load beam. Connect the cable or replace the load beam as necessary.
0x1183	LF load beam error	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Check the cable connection for the left-foot (LF) load beam. Connect the cable or replace the load beam as necessary.
0x1184	RF load beam error	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Check the cable connection for the right-foot (RF) load beam. Connect the cable or replace the load beam as necessary.
0x1185	RH load beam error	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Check the cable connection for the right-head (RH) load beam. Connect the cable or replace the load beam as necessary.

Code	GCI Error Report	Solution
0x1186	Analog scale	(1) Calibrate and zero the scale. (2) Replace the MCB.
0x1187	Scale circuit power error	(1) Check the cable connections for the load beams. Connect the cables or replace the load beams as necessary. (2) Replace the load beam.
0x1188	Scale ADC clock error	Replace the MCB.
0x1189	Scale circuit damage channel 1	(1) Check the cable connection for the load beam. Connect the cable or replace the load beam as necessary. (2) Replace the MCB.
0x118A	Scale circuit damage channel 2	(1) Check the cable connection for the load beam. Connect the cable or replace the load beam as necessary. (2) Replace the MCB.
0x118B	Scale circuit damage channel 3	(1) Check the cable connection for the load beam. Connect the cable or replace the load beam as necessary. (2) Replace the MCB.
0x118C	Scale circuit damage channel 4	(1) Check the cable connection for the load beam. Connect the cable or replace the load beam as necessary. (2) Replace the MCB.
0x118D	Load beam 1	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Replace load beam 1.
0x118E	Load beam 2	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Replace load beam 2.
0x118F	Load beam 3	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Replace load beam 3.
0x1190	Load beam 4	(1) Check the bed for obstructions that may cause an inaccurate weight. Remove obstructions as necessary. (2) Replace load beam 4.
Pendant (hand held remote control)		
0x11A0	L-Pendant button stuck - Critical	Replace the pendant.
0x11A1	R-Pendant button stuck - Critical	Replace the pendant.
0x11A2	L-Pendant button stuck - Moderate	Replace the pendant.
0x11A3	R-Pendant button stuck - Moderate	Replace the pendant.

Code	GCI Error Report	Solution
SafeView®+ Alerts and IllumiGuide® Siderail Handgrip		
0x1E01	ERR_MCB_SAFEVIEW_SPI_COMM_ERROR	(1) Check the cable connections between the SafeView®2 boards. Replace or connect the cables as necessary. (2) Replace a board one at a time until the error clears.
0x1E02	ERR_MCB_SAFEVIEW_CB_FAULT	Replace the SafeView®2 control board.
0x1E03	ERR_MCB_SAFEVIEW_LB_FAULT	Replace the SafeView®2 light board.
0x1E05	ERR_MCB_SAFEVIEW_HARDWARE_FAULT	(1) Check the cable connections between the SafeView®2 boards. Replace or connect the cables as necessary. (2) Replace a board one at a time until the error clears.
0x1E06	ERR_MCB_SAFEVIEW_SPI_COMM_HARDWARE_ERROR	Replace the SafeView® cable assembly.
0x1E07	SafeView power error	Replace the MCB.
NOTES:		
<ul style="list-style-type: none"> If one of the SafeView®+ Alerts projectors is on when it should be off, there is a problem with one of the SafeView®2 boards. If the SafeView®+ Alerts projectors are on when there is no weight on the bed, zero the scale. 		

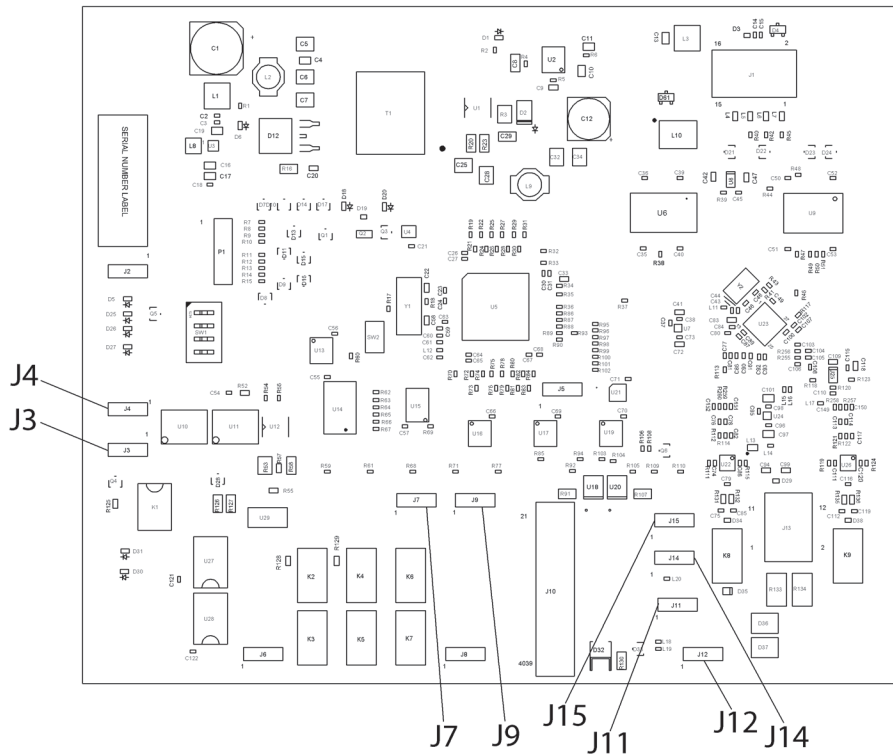
0x2XXX: SIDECOM® BOARD (SCB)—ERROR CODES AND SOLUTIONS

Code	GCI Error Report	Solution
External Heartbeat		
0x2001	SR audio codec driver failed	(1) Make sure the SOM board is fully installed on the MCB. Check the cables between the SCB and the MCB for damage or loose connector contacts. Connect or replace the cables as necessary. (2) Replace the SCB.
0x2002	SR audio codec config error	Replace the SCB.
0x2003	SideCom audio settings missing	Replace the SCB.
0x2004	SideCom IO error	Replace the SCB.
0x2005	SideCom EEPROM read error	Replace the SCB.
0x2006	SideCom EEPROM write error	Replace the SCB.
0x2007	SideCom EBSIS failure	Replace the SCB.
0x2008	SideCom EBSIS command not sent	Replace the SCB.
0x2009	SideCom EBSIS request not found	Replace the SCB.
0x200A	SideCom EBSIS SPI state error	Replace the SCB.
0x200B	SideCom UTV setting corrupt	Replace the SCB.
0x200C	SideCom RPCA network error	Replace the SCB.

Code	GCI Error Report	Solution
0x2100	SCM Heart Beat	(1) Check the cable between the SCB and the MCB for damage or loose connector contacts. Connect or replace the cable as necessary. (2) Replace the SCB.

SCB Jumper Configuration

The SCB includes several on-board jumpers for the configuration of the 37-pin room and Nurse Call interface. Refer to the figure and table below for the jumper configuration to make sure the bed is configured to correctly interface with room devices and Nurse Call system.



193588_1_236

Jumper (Reference Designator)	Description	Pins
Universal TV (J3)	Television control via digital commands supporting three types of televisions (LG/Zenith, Philips, GE/RCA). Default television control configuration.	2-3 = ENABLED (DEFAULT)
Non-UTV (J4)	Standard television control via contact closure. To enable standard television control, move UTV Jumper J3 to Non-UTV Jumper J4.	2-3 = ENABLED
Nurse Call Bunting Configuration (J7)	Nurse Call systems are either Normally Open, Non-Bunting call interface systems or Normally Closed, Bunting systems. This bed's Nurse Call relay operates as a Normally Open device by default.	1-2 = Normally Open, Non-Bunting (DEFAULT) 2-3 = Normally Closed, Bunting

Jumper (Reference Designator)	Description	Pins
Bed Exit Bunting Configuration (J9)	Nurse Call systems are either Normally Open, Non-Bunting call interface systems or Normally Closed, Bunting systems. This bed's Bed Exit relay operates as a Normally Open device by default.	1-2 = Normally Open, Non-Bunting (DEFAULT) 2-3 = Normally Closed, Bunting
Nurse Call Detect (J14)	Enables detection of Nurse Call system connection. Disable if problems occur with the Nurse Call system interface (for example, if a bed Nurse Call is constantly being placed).	1-2 = ENABLED (DEFAULT) 2-3 = DISABLED
Bed Exit Detect (J15)	Enables detection of Bed Exit system connection. Disable if problems occur with the Bed Exit system interface (for example, if a Bed Exit alert is constantly being placed).	1-2 = ENABLED (DEFAULT) 2-3 = DISABLED
Nurse Call Microphone Output Reference (J11)	Allows selection of Analog Ground or Digital Ground for the Nurse Call microphone output reference. Select Analog Ground if the Nurse Call system provides a separate analog ground for the microphone. Select Digital Ground if no analog ground is provided by the Nurse Call system, which connects the microphone reference to 37-Pin Connector Pin 31. Note, digital ground is much more susceptible to system and cable noise. Remove the jumper shunt if microphone signals on the 37-Pin connector (Pins 17 and 32) are used for other applications by the Nurse Call or entertainment system.	1-2 = Digital Ground 2-3 = Analog Ground (DEFAULT)
Speaker Shield Connection (J12)	Allows selection of Shield Drain from the 37-Pin cable or SideCom Ground reference for the Nurse Call/Entertainment speaker cable shield. If the bed speakers seem to be picking up noise from cables or other room devices, try moving the jumper shunt to the VSS position or removing the shunt connection to improve noise response.	1-2 = Drain (DEFAULT) 2-3 = VSS, SideCom Ground

0x3XXX: MAX MATTRESS AIR CONTROL BOARD (ACB)—ERROR CODES AND SOLUTIONS

Code	GCI Error Report	Solution
File System and EEPROM		
0x3083	ACB EEPROM Write	Replace the ACB.
0x3084	ACB EEPROM Read	Replace the ACB.
External Heartbeat		
0x3100	ACB Heart Beat	(1) Check the cable connections between the MCB and ACB. Replace or connect the cable as necessary. (2) Replace the ACB.
Mattress ACB Related		
0x3201	Note: Support Surface Operational (SSO) Compromised State	(1) Check the load beam weight accuracy. Replace the load beam as necessary. (2) Check the head of bed angle accuracy. If the angle is not correct, make sure the head actuator position is correct. (3) Calibrate the bed articulations.
0x3202	Turn Assist Non-Operational Deflation (TADNO) Compromised Function State	Connect the service tool and clear the error. Make sure the TA valves are in good condition and the sense and fill tubes are not kinked or damaged. Replace the valves or tubes or connect the tubes as necessary.
0x3204	Head inflate timeout	(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected. (2) Check the head bladder for leaks, and replace the bladder if necessary. (3) Check the head sense and fill tubes for kinks, correct color connections, or disconnections. Replace or connect the tubes as necessary. (4) Do Step 3 through Step 5 on page 2-4 to reset the bed. (5) Go to "0x3204, 0x3205, 0x3206, or 0x3207 Troubleshooting Continued (max Mattress)" on page 2-35.
0x3205	Head deflate timeout	(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected. (2) Check the head sense and fill tubes for kinks. Replace or connect the tubes as necessary. (3) Do Step 3 through Step 5 on page 2-4 to reset the bed. (4) Go to "0x3204, 0x3205, 0x3206, or 0x3207 Troubleshooting Continued (max Mattress)" on page 2-35.

Code	GCI Error Report	Solution
0x3206	Seat inflate timeout	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) Check the seat bladder for leaks, and replace the bladder as necessary.</p> <p>(3) Check the seat sense and fill tubes for kinks, correct color connections, or disconnections. Replace or connect the tubes as necessary.</p> <p>(4) Do Step 3 through Step 5 on page 2-4 to reset the bed.</p> <p>(5) Go to “0x3204, 0x3205, 0x3206, or 0x3207 Troubleshooting Continued (max Mattress)” on page 2-35.</p>
0x3207	Seat deflate timeout	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) Check the seat sense and fill tubes for kinks. Replace the tubes as necessary.</p> <p>(3) Do Step 3 through Step 5 on page 2-4 to reset the bed.</p> <p>(4) Go to “0x3204, 0x3205, 0x3206, or 0x3207 Troubleshooting Continued (max Mattress)” on page 2-35.</p>
0x3208	LTA inflate timeout	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) Check the left TA bladder for leaks, and replace the bladder as necessary.</p> <p>(3) Check the left TA sense and fill tubes for kinks, correct color connections, or disconnections. Replace or connect the tubes as necessary.</p> <p>(4) Do Step 3 through Step 5 on page 2-4 to reset the bed.</p> <p>(5) Go to “0x3208 or 0x320A Troubleshooting Continued (max Mattress)” on page 2-37.</p>
0x3209	LTA deflate timeout	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) At the GCI, get access to the Diagnostics screen and clear the error. Then, do Step 3 through Step 5 on page 2-4 to reset the bed.</p> <p>(3) Check the left TA sense and fill tubes for kinks. Replace the tubes as necessary.</p> <p>(4) Disconnect the left TA fill tube from the interface connector assembly. Put the mattress in the Max Inflate mode. If pressurized air comes out of the fill tube connector, the valve is stuck. Replace the manifold.</p>

Code	GCI Error Report	Solution
0x320A	RTA inflate timeout	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) Check the right TA bladder for leaks, and replace the bladder as necessary.</p> <p>(3) Check the right TA sense and fill tubes for kinks, correct color connections, or disconnections. Replace or connect the tubes as necessary.</p> <p>(4) Do Step 3 through Step 5 on page 2-4 to reset the bed.</p> <p>(5) Go to “0x3208 or 0x320A Troubleshooting Continued (max Mattress)” on page 2-37.</p>
0x320B	RTA deflate timeout	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) At the GCI, get access to the Diagnostics screen and clear the error. Then, do Step 3 through Step 5 on page 2-4 to reset the bed.</p> <p>(3) Check the right TA sense and fill tubes for kinks. Replace the tubes as necessary.</p> <p>(4) Disconnect the right TA fill tube from the interface connector assembly. Put the mattress in the Max Inflate mode. If pressurized air comes out of the fill tube connector, the valve is stuck. Replace the manifold.</p>
0x320C	Blower over temperature	<p>(1) Make sure the latch tabs on both sides of the interface connector assembly are fully connected to the pneumatic box. Pull on the interface connector assembly. If it is easy to remove, then the latch tabs are not fully connected.</p> <p>(2) Look at the Error Log for previous inflate errors, and fix any inflate errors.</p> <p>(2) Check the MCM tube for kinks, damage, and connections. Replace or connect the tube as necessary.</p> <p>(3) Make sure the blower rotor operates correctly. Replace the blower as necessary.</p>
0x320D	Blower non-operational	<p>(1) Check the blower cable connections. Replace or connect the cable as necessary.</p> <p>(2) Make sure the blower operates correctly. Replace the blower as necessary.</p> <p>(3) Replace the ACB.</p>
0x3214	Valve SW low current	<p>(1) Check the ACB for damage, and replace it as necessary.</p> <p>(2) Check the cable connections between the manifold and the ACB. Connect the cables as necessary. If the cables are kinked or damaged, or the error continues, replace the manifold.</p>
0x3215	Valve SW over current	Replace the ACB.
0x3216	Valve HW over current	Replace the manifold.

Code	GCI Error Report	Solution
0x3217	Mattress absence	(1) Make sure a max mattress is connected to the manifold. Connect the mattress as necessary. (2) Check the cable connections for the Hall Effect sensor. Replace or connect the cable as necessary.

0x4XXX-0x5XXX: FLIP UP DISPLAY (FUD/GCI) BOARD—ERROR CODES AND SOLUTIONS

Code	GCI Error Report	Solution
External Heartbeat and Base		
0x4100	L-FUD Heart Beat	(1) Check the cable connections between the GCI and the head fixed board (HFB). Connect the cable as necessary. (2) Replace the left GCI.
0x4300	ERR_LF_FUD_EXTFLASH_INCAPABLE	Replace the GCI.
0x5100	R-FUD Heart Beat	(1) Check the cable connections between the GCI and the HFB. Connect the cable as necessary. (2) Replace the right GCI.
0x5300	ERR_RT_FUD_EXTFLASH_INCAPABLE	Replace the GCI.

0x9XXX-0xAXXX: HEADRAIL FIXED BOARD (HFB)—ERROR CODES AND SOLUTIONS

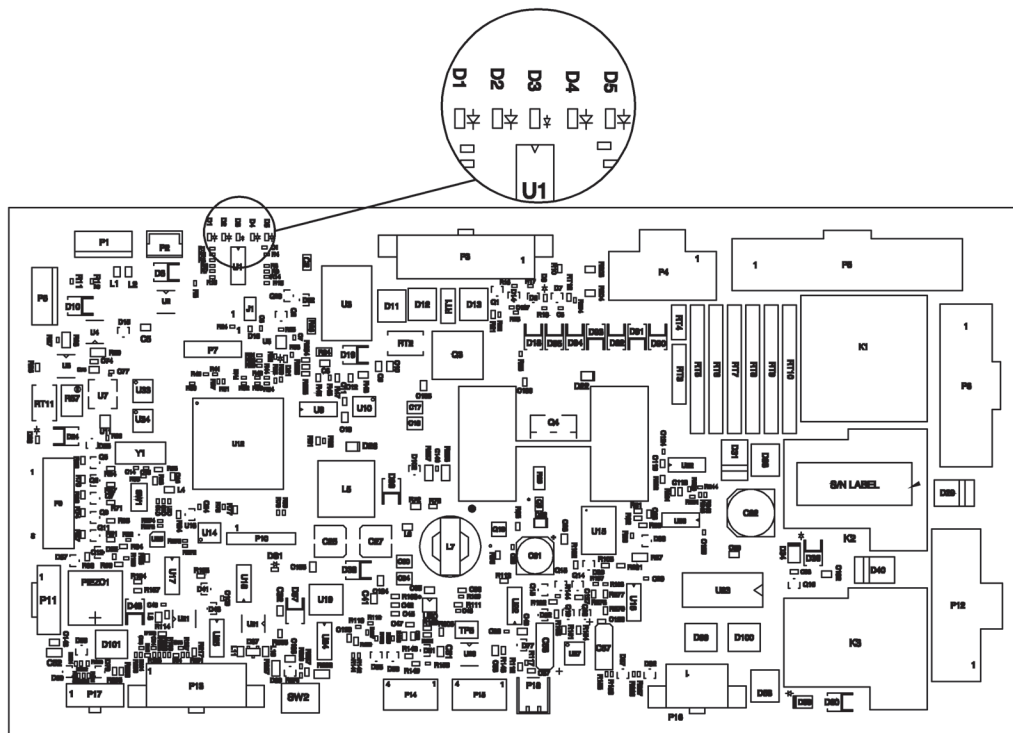
Code	GCI Error Report	Solution
External Heartbeat and Base		
0x9100	L-HFB Heart Beat	(1) Check the cable between the HFB and MCB for damage or loose connector contacts. (Note, if the cable is the issue, the GCI should also show a L-FUD Heart Beat error.) Connect or replace the cable as necessary. (2) Replace the left HFB.
0x9221	L-HFB Caregiver Panel Button Stuck	Replace the left caregiver control panel.
0x9222	L-HFB Patient Panel Button Stuck	Replace the left patient control panel.
0xA100	R-HFB Heart Beat	(1) Check the cable between the HFB and MCB for damage or loose connector contacts. (Note, if the cable is the issue and the siderail has a GCI, the GCI should also show a R-FUD Heart Beat error.) Connect or replace the cable as necessary. (2) Replace the right HFB.

Code	GCI Error Report	Solution
0xA220	ERR_HFB_PED_ALERT (Sent from Right HFB if PED alerts)	(1) Disconnect any PED from the charging port. After 1 second, at the GCI, go to the Settings menu, select Bed Service , and then select Diagnostics . See if the error still shows. (2) At the GCI, go to the Settings menu, select Bed Features , and then select USB . Set USB Charging to Off . Wait for 5 seconds, and then set USB Charging to On . Go to the Settings menu, select Bed Service , select Diagnostics . See if the error still shows. (2) Replace the right HFB.
0xA221	R-HFB Caregiver Panel Button Stuck	Replace the right caregiver control panel.
0xA222	R-HFB Patient Panel Button Stuck	Replace the right patient control panel.

0xBXXX: DRIVE CONTROL BOARD (DCB)—ERROR CODES AND SOLUTIONS

If all four LEDs are flashing on the transport pod's battery charge indicator, there is a problem with the DCB or the transport system. To identify the problem, look at the diagnostic LEDs D2 through D5 on the DCB and reference the table below.

Diagnostic LEDs on the DCB



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Error Codes and Solutions

NOTES:

- Before you replace parts as identified, make sure cables are fully connected and are not damaged. Also, make sure the mechanical override for the power drive motor is not engaged (the handle on the power drive module's foot end is completely pushed in).
- After you replace a part, make sure to connect the battery cable **before** you plug the bed in; otherwise, the battery charge indicator will not report/show the correct status.

D2 Green	D3 Blue	D4 Yellow	D5 Red	GCI Code	GCI Error Message	Solution
			X	0xB005	PWR drive hardware rev. error	(1) The DCB may be damaged. Do Step 3 through Step 5 on page 2-4 to reset the bed. (2) Replace the DCB.
		X		0xB001	PWR drive enable switch error	An Enable switch may be stuck in the On position. See RAP 2.4 on page 2-33.
		X	X	0xB004	PWR drive limit switch error	(1) Make sure the deployment actuator cable is not damaged and it is fully connected to P16 on the DCB. (2) Replace the deployment actuator.
	X			0xB007	PWR drive thermal limit error	The deployment actuator may have run too many times. Give the actuator time to rest and cool down.
	X		X	0xB002	PWR drive deploy limit error	(1) Make sure the deployment actuator cable is not damaged and it is fully connected to P16 on the DCB. Try to retract and then deploy the actuator (set the bed's brake, and then put the bed in steer). (2) Replace the actuator.
	X	X		0xB003	PWR drive retract limit error	(1) Make sure the deployment actuator cable is not damaged and it is fully connected to P16 on the DCB. Try to deploy and then retract the actuator (put the bed in steer, and then set the bed's brake). (2) Replace the actuator.
	X	X	X	0xB006	PWR drive controller error	(1) Make sure the motor controller cables are not damaged and they are fully connected to P3, P5, and P8 on the DCB. (2) Do Step 3 through Step 5 on page 2-4 to reset the bed. (3) Replace the motor controller.
X			X	0xB100	DCB Heart Beat	(1) Make sure the DCB-to-MCB cable is not damaged and it is fully connected to P13 on the DCB and P1 on the MCB. (2) Make sure the MCB operates correctly. (3) Replace the DCB.

D2 Green	D3 Blue	D4 Yellow	D5 Red	GCI Code	GCI Error Message	Solution
X				0xB008	PWR drive charge temp error	(1) Let the bed acclimate to the room temperature. (2) Replace the DCB.

0xCXXX: PRO+ MATTRESS BLOWER BOARD

To check, replace, or order parts for the pro+ mattress, see its service manual (209197).

Code	GCI Error Report	Solution
0xC001	Blower Over Current	(1) Replace the blower. (2) Replace the blower board.
0xC002	Blower Low Voltage	(1) Check the cable connections, and replace the blower enclosure as necessary. (2) Replace the blower board. (3) Replace the MCB.
0xC003	Blower Over Voltage	(1) Replace the blower board. (2) Replace the MCB.
0xC004	Over Temperature	(1) Check for blockages in the inlet vents. (2) Check for blockages in the outlet vents. (3) Replace the blower. (4) Replace the blower board.
0xC005	Locked Rotor	(1) Make sure the blower operates correctly and outputs airflow. (2) Replace the blower. (3) Replace the blower board.
0xC006	MCM Timeout	(1) Check for blockages in the inlet vents. (2) Make sure all intake hoses are fully connected to the blower enclosure. (3) Make sure the MCM connector is fully connected to the blower enclosure. (4) Make sure the blower operates correctly. If the blower operates too slowly under nominal conditions and is not building enough pressure in the mattress, replace the blower.
0xC007	Intake Blockage	(1) Make sure all connections to the blower enclosure are fully connected. (2) Make sure the intake is not blocked.
0xC009	Pressure Calibration Error	(1) Replace the blower board.
0xC100	Blower Board Communication Error	(1) Make sure the mattress cable is fully connected to the frame connection cable. (2) Make sure the frame connection cable is fully connected to the MCB. (3) Make sure the mattress cable is fully connected to the blower board. (4) Replace the blower board. (5) Replace the connection cable.

0xFXXX: SOM BOARD

Code	GCI Error Report	Solution
File System and EEPROM		
0xF085	SOM File System Write	Replace the SOM board.
0xF086	SOM File System Read	Replace the SOM board.
External Heartbeat		
0xF100	SOM Heart Beat	(1) Make sure the SOM board is correctly installed on the MCB. If necessary, remove the SOM board and re-install it. Then, do Step 3 through Step 5 on page 2-4 to reset the bed. (2) Replace the SOM board.
Base		
0xF381	SOM wireless malfunction	(1) Replace the SOM board.

2**OTHER INTELLIDRIVE® TRANSPORT SYSTEM MALFUNCTIONS**

For malfunctions that are not identified by the diagnostic LEDs and error codes, use the table below to determine the solutions.

NOTES:

- Do solution (1) first, and then if necessary, do solution (2), and so on until the malfunction is fixed. If the solutions do not fix the malfunction, contact Technical Support.
- Before you replace parts as identified, make sure cables are fully connected and are not damaged. Also, make sure the mechanical override for the power drive motor is not engaged (the handle on the power drive module's foot end is completely pushed in).
- After you replace a part, make sure to connect the battery cable **before** you plug the bed in; otherwise, the battery charge indicator will not report/show the correct status.

Malfunction	Solution
Steer is engaged, but the Ready indicator on the transport pod is not green.	Make sure— (1) The steer switch operates correctly, and its cables are fully connected and not damaged. (2) All power drive cables (especially connector P18 on the DCB) are fully connected and not damaged. (3) The steer switch is installed correctly, and the switch activates when you put the bed in steer.
None of the transport pod indicators come on (these should come on when you put the bed in steer, press an Enable switch, or plug the bed into AC/mains power).	Make sure— (1) The power drive batteries are charged (VBAT > 24.5 V). (2) All power drive cables (especially connectors P4 and P13 on the DCB) are fully connected and not damaged. (3) The power drive fuse is not damaged.

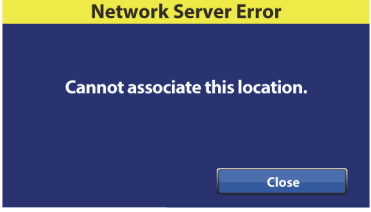
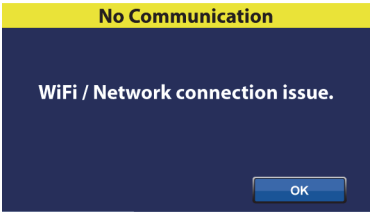
Malfunction	Solution
Transport pod indicators show the transport system is deployed (the drive wheel lowered), but the system will not drive.	<p>Make sure—</p> <ul style="list-style-type: none"> (1) The cable to the motor (especially connector P12 on the DCB) is fully connected and not damaged. (2) The motor is in good condition. (3) The mechanical override on the motor is not engaged. <p>If the error continues, replace the DCB.</p>
Battery charge is low or the batteries do not appear to be charging.	<p>Make sure—</p> <ul style="list-style-type: none"> (1) The battery cable is fully connected and not damaged. (2) The power drive fuse is not damaged. (3) Connectors P13 on the DCB and P1 on the MCB are fully connected and not damaged. (4) The voltage from P13.1 to P13.2 on the DCB is > 26 V DC. <p>If the error continues, replace the DCB.</p>
Push handle troubleshooting.	See RAP 2.4 on page 2-33.
Wheel will not stow.	<p>Make sure—</p> <ul style="list-style-type: none"> (1) The steer switch operates correctly and its cables are fully connected and not damaged. (2) All power drive cables (especially connectors P16 and P18 on the DCB) are fully connected and not damaged. (3) The steer switch is installed correctly, and the switch deactivates when you set the brake or put the bed in neutral.
The transport system operates, but the LEDs on the POD are not On.	Make sure the POD cable (especially connector P9 on the DCB) is fully connected and not damaged.

WATCHCARE® INCONTINENCE MANAGEMENT SYSTEM MALFUNCTIONS**CAUTION:**

Caution—Do not connect the WatchCare® power cable to the MCB while the bed is plugged in. To do so will cause damage to the SOM.

Malfunction	Solution
The WatchCare® indicator light is off even though the bed is plugged in.	<ol style="list-style-type: none"> (1) Check the GCI for an error code. (2) Do Step 3 through Step 5 on page 2-4 to reset the bed. (3) Remove all power (AC and battery) from the bed (see “Remove all Power from the Bed” on page 4-63), and make sure the WatchCare® power cable is fully connected to J7 on the MCB. (4) If the bed has the HR/RR monitoring system, and its light is On, replace the SOM. If the bed does not have the HR/RR monitoring system— <ol style="list-style-type: none"> a. Make sure the SafeView® cables are fully connected and not damaged, replace the cables as necessary. b. Replace the SafeView®2 ES light board c. Replace the SOM.
An alert call was not sent for an incontinence event.	<ol style="list-style-type: none"> (1) At the GCI, make sure the correct nurse call selection was made (see “WatchCare® Incontinence Management System—Select the Nurse Call System” on page 4-57). (2) Make sure the SideCom® cable (bed with the NaviCare® System) or WatchCare® adapter cable (bed without the NaviCare® System) is not damaged and is fully connected to the facility’s 37-pin ASBC or equipment call jack. Replace the cable as necessary. (3) If the bed has the NaviCare® System, make sure that messages are being sent. Troubleshoot the SideCom® Communication System or NaviCare® System as necessary.
A new smart pad is not detected; the light is white.	<ol style="list-style-type: none"> (1) Make sure the pad is in the correct orientation. (2) Try a different pad. (3) Make sure the antenna cables are not damaged and are fully connected to the antenna-reader cables. (4) Do Step 3 through Step 5 on page 2-4 to reset the bed.

BEDSIDE ASSOCIATION MALFUNCTIONS

Error Screen	Solution
	<p>If either of these screens show, press Close or OK, then go to "Configure the WiFi" on page 4-34. If the error continues to show, contact Care Communications.</p>
	

WIRELESS CONNECTIVITY MALFUNCTION

Malfunction	Solution
No SDC connection icon but WiFi signal is showing.	<ol style="list-style-type: none"> 1. Make sure the date and time are accurate on the bed. 2. At the GCI, make sure the bed/patient locating is turned on in the service menu. 3. At the GCI, make sure the bed serial number is showing. (The serial number may be missing if MCB was replaced.) 4. Make sure the bed has an IP address. (This can be found on the WiFi menu.) 5. Make sure the bed is NOT on battery power. 6. If the SOM was replaced, make sure a config file was pushed to the bed. 7. Hard reset.
No WiFi indicator on the GCI.	<ol style="list-style-type: none"> 1. Make sure the correct WiFi profile is active. 2. Hard reset.



OTHER BED MALFUNCTIONS

For malfunctions not shown above, use the table below to identify the applicable troubleshooting procedure.

Do solution (1) first, and then if necessary, do solution (2), and so on until the malfunction is fixed. If the solutions do not fix the malfunction, contact Technical Support. Batteries

Malfunction	Solution
No AC power with the bed plugged in.	<ol style="list-style-type: none"> (1) Make sure there is power at the outlet. (2) Make sure the power cord is not damaged and it is connected to the bed. Replace the power cord as necessary. (3) Check the AC inlet to PSM cable assembly for kinks, damage, and connections. Replace or connect the cable as necessary. (4) Measure the DC voltage output from the power supply. The voltage should be $28\text{ V} \pm 5\%$ (26.6 V to 29.4 V) (the inner connector row is +, and the outer connector row is -). If voltage is not present, disconnect the 6-pin connector from the power supply, and measure the voltage again. If voltage is still not present, replace the power supply. If voltage is present, contact Hill-Rom Technical Support.
No DC (battery) power.	See RAP 2.1 on page 2-30.
The siderail controls do not operate on battery power.	<ol style="list-style-type: none"> (1) If the battery turns off within five seconds after you press a control or unplug the bed, the bed is in transportation mode. Disable the mode. (2) Make sure the battery has sufficient power to operate the controls.
Hilow head or foot actuator—unexpected motion.	<ol style="list-style-type: none"> (1) Calibrate the bed articulations. (2) Check the actuator cable for kinks, damage, and connections. Replace or connect the cable as necessary. (3) Replace the MCB.
Head, head hilow, knee, thigh, foot, foot extension, or foot hilow actuator—unexpected motion.	<ol style="list-style-type: none"> (1) Calibrate the bed articulations. (2) Check the actuator cable for kinks, damage, and connections. Replace or connect the cable as necessary. (3) Replace the MCB.
Brake not set alert does not sound when the bed is plugged in and the brake is not set.	<ol style="list-style-type: none"> (1) Check the condition and connections (as applicable) of the brake cable, switch, and mounting hardware. Replace the parts or connect the cable as necessary. (2) Replace the BCB.

Malfunction	Solution
A siderail does not latch.	(1) Remove the siderail, and get access to the latch assembly. Make sure all parts of the latch assembly are clean and in good condition. Clean and/or replace parts as necessary. (2) Replace the siderail.
The siderail controls do not operate on AC power.	See RAP 2.2 on page 2-31.
The pendant is not operating correctly.	(1) Make sure the pendant cable is fully connected to the pendant port. (2) Connect the pendant to the port on the other side of the bed. If the pendant operates correctly, replace the applicable cable assembly: for the patient-left port, replace the HOB harness cable assembly (211393); for the patient-right port, replace the patient pendant/MCB cable assembly (194636). If the pendant does not operate correctly, replace the pendant.
The SideCom® Communication System is not operating correctly.	See RAP 2.3 on page 2-32.
The GCI screen is blank.	(1) If the other controls on the siderail operate correctly, make sure the GCI cable is fully connected to the HFB. (2) Replace the HFB. (3) Replace the siderail.
The Foley Position Limit is not operating or is not operating correctly.	Make sure the feature is enabled through the GCI. If it is enabled, see "0x1XXX: Master Control Board (MCB)—Error Codes and Solutions" on page 2-5.
The Voice Alerts are not operating.	(1) Make sure the alerts are enabled through the GCI. (2) Make sure the speaker cable is fully connected to J2 on the MCB. (3) Replace the SOM.
The USB port on the siderail is not operating correctly.	Use a USB tester to check if the port is operational. If the port is not operating, make sure the port is enabled through the GCI. If the port is enabled, check the USB cable connection at J1 on the HFB. Measure pin 1 referenced to pin 4 (VSS), and make sure it is 5 V DC \pm 5%. If it is 5 V DC \pm 5%, replace the USB cable. If it is not 5 V DC \pm 5%, replace the HFB.
The GCI shows "Bed Sensor Error."	(1) Make sure the cable for the HR/RR monitoring sensor is fully connected to the vitals jack on the back of the head deck panel. (2) Make sure the vitals jack cable is fully connected to J1 on the MCB. (3) Replace the vitals jack cable. (4) Replace the HR/RR monitoring sensor. (5) Replace the MCB.

Malfunction	Solution
The Heart and Respiration Rate Monitoring System is not operating correctly.	<ol style="list-style-type: none"> 1) Make sure the HR/RR monitoring sensor is activated (see Procedure 4.74 on page 4-213). 2) Make sure the mechanical tab has been removed (see Procedure 4.74 on page 4-213). 3) Make sure the patient has been quietly lying still for a minute or two and is centered (left to right) on the bed. And if possible, the bed's head angle is at or below 30°. The system begins to monitor the patient's heart and respiration rate within one to two minutes of the patient quietly lying still. 4) Check the GCI for any SOM board error codes (see "0xFXXX: SOM Board" on page 2-23).
The Experience Pod® Device does not stay in position or does not move into position correctly.	See "Experience Pod® Device—Locknut Adjustment" on page 2-39.
The Obstacle Detect® System is not operating correctly.	<ol style="list-style-type: none"> (1) Make sure the base covers are not damaged and are aligned and installed correctly. (2) Make sure the Obstacle Detect® lens is not discolored or cloudy. The lens should be clear with a slight yellow tint. (3) Make sure the sensor mount is not damaged and is aligned and installed correctly.
The GCI shows the Demo Mode screen.	The demo mode deactivates after 30 minutes. To deactivate the mode before the 30 minutes has passed, press any menu control. When the Demo Mode Exit screen shows, press Yes (see Procedure 4.21 on page 4-51 for more detail).
The Demo Mode is not available on the bed.	Make sure the firmware version is 1.27 or later and the SOM label shows EarlySense software version 3.13.038 or later. If necessary, replace the SOM.

BED SYSTEM BATTERY

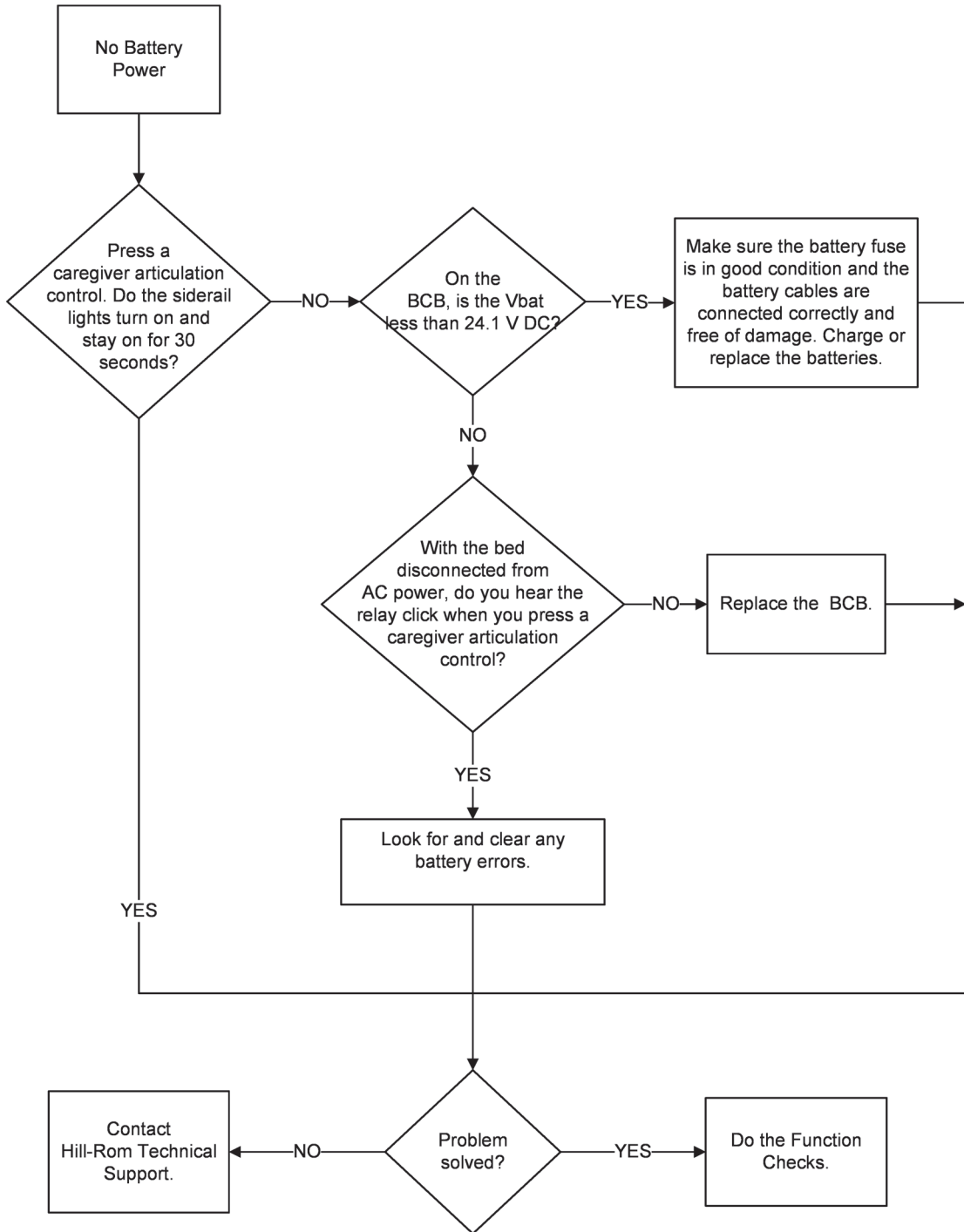
Replace the battery if any of these conditions occur (see "Bed Batteries and Battery Bracket—Replacement" on page 4-89):

- The battery indicator does not come on within 3 minutes of bed connection to power.
- The battery indicator does not stop flashing (low condition) within 12 hours of bed connection to power.
- Successive transports of 4 hours or less cause the battery to discharge to low condition as indicated by the battery gauge.

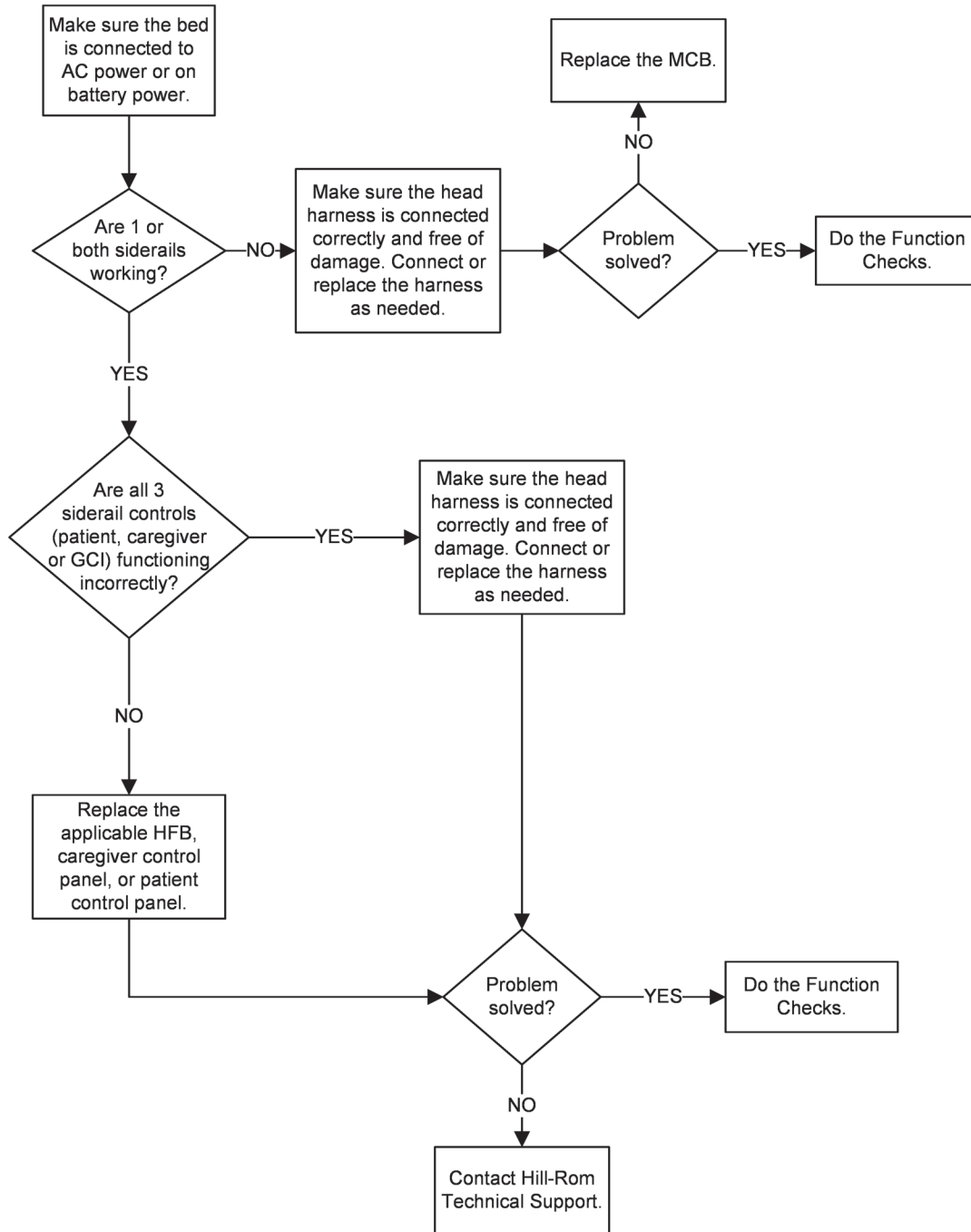
POWERED TRANSPORT SYSTEM BATTERIES

Replace the batteries if the transport system automatically shuts down power before the final battery charge indicator flashes (see "IntelliDrive® Transport System Components—Replacement" on page 4-101).

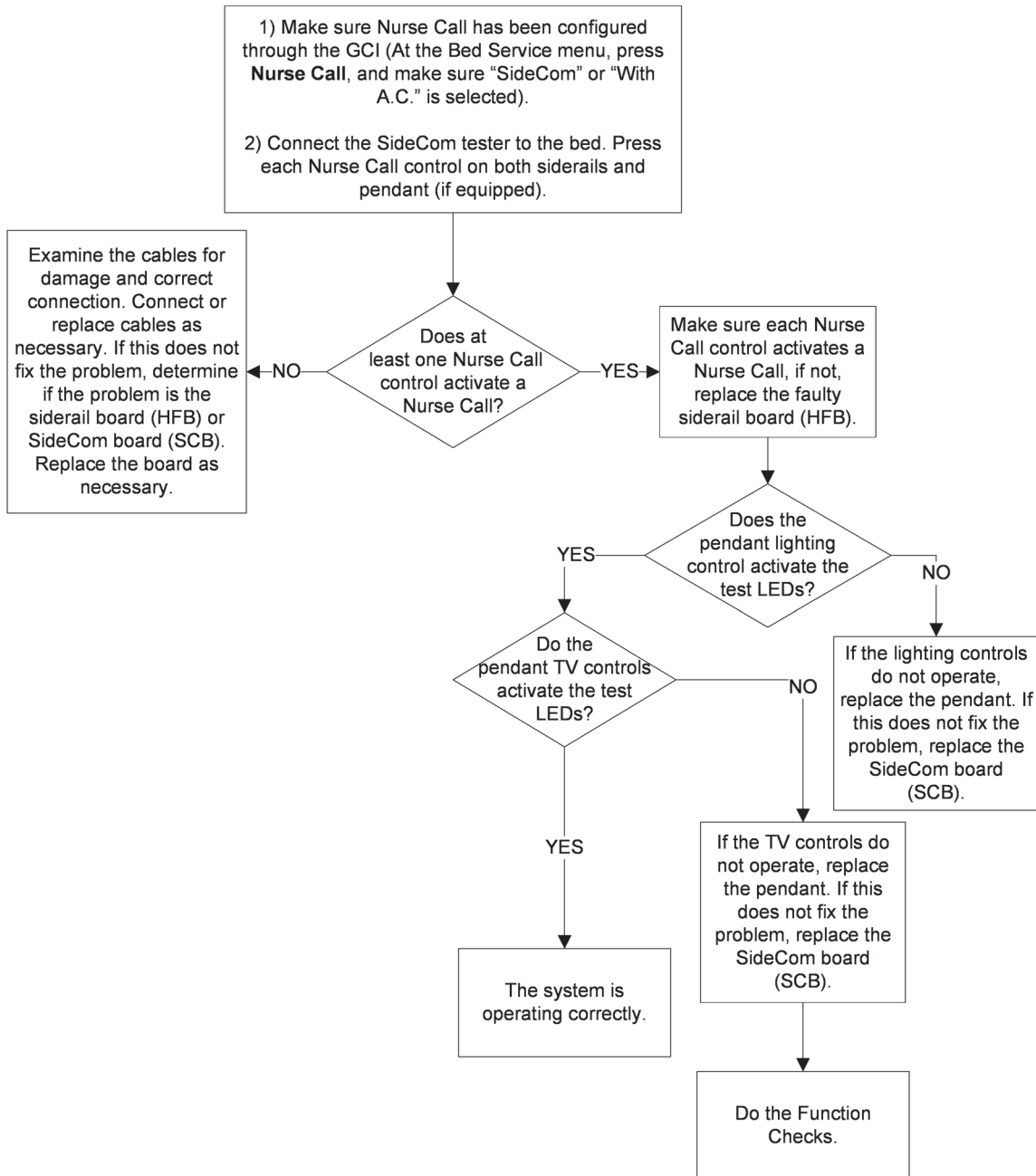
2.1 No DC (Battery) Power



2.2 Siderail Controls Do Not Operate on AC Power



2.3 SideCom® Communication System Does Not Operate



2.4 Push Handle Troubleshooting—IntelliDrive® Transport System



WARNING:

Warning—Use extreme caution when you service the IntelliDrive® Transport System. Whenever you measure voltages or make adjustments to the handle signals, we suggest that you take the bed out of the steer position, which will prevent the bed from moving. Squeeze and release the enable switches to make sure the transport system is awake. Failure to do so could cause injury or equipment damage.

ENABLE SWITCHES

The enable switches are installed in the handles at the handle grip. If either switch is depressed, while force is applied to the handles, the bed will move. If the handles are pushed towards the patient, the bed will move forward. If the handles are pulled away from the patient, the bed will move backwards. To check the enable switches, first get access to the power drive box (see “IntelliDrive® Transport System Components—Replacement” on page 4-101), and make sure both enable switches are connected to the DCB at P14 and P15. The switches are connected in parallel, or combined on the DCB. These voltages will be monitored on a working system.

- P14.1, 2.8 to 3.3 V
- P14.2, 0 to 0.7 V when the switch is opened
- P14.2, 2.8 to 3.3 V when the switch is depressed or closed

If you suspect a switch is not working correctly, you can disconnect the switches at P14 and P15, and use a meter to measure switch continuity from the end of the switch cable. A working switch will close only when the switch is depressed. If it is always opened, or always closed, the switch or cable is defective. In either case, replace the handle assembly. The bed will operate if only one switch functions. You can disconnect the defective switch from the DCB and verify the power drive system operates when you use the working switch.

If there is not a voltage of 2.8 to 3.3 V at P14.1, verify the battery voltage or the battery charging voltage is present. The battery voltage can be measured at P4.1. This voltage will be greater than 24 V when the bed is plugged into the AC wall outlet. When the bed is unplugged from the AC outlet, the battery voltage at P4.1 will be greater than 22 V, if the batteries are charged. If no voltage is present, or the battery voltage is low, make sure power drive batteries and fuse are in good condition.

THROTTLE DEBUGGING

The base part of the handle that connects to the frame contains a strain element that provides an output signal proportional to the force applied to the handle. The handles are very similar to the load beams used in the scale system. The DCB amplifies this signal and provides an output to the motor controller.

Verify the output signal is correct at P2.1. P2.2 is used as a ground reference for measuring signals. When no force is applied to the handle, the output signal should measure 2.4 V to 2.6 V DC. The voltage output can be adjusted by turning potentiometer R57 until the output signal measures 2.5 V. When either handle is pushed, the output signal will increase until it reaches 4.0 V to 4.5 V. When either handle is pulled, the output signal will decrease until it reaches 0.5 V to 1.5 V. This indicates the throttle circuit is operating correctly.

Before you make any adjustments, verify the excitation voltages. The excitation voltage at P1.5 will measure 10 to 12 V on a working system. If no voltage is present, or the battery voltage is low, make sure the power drive batteries and fuse are in good condition.

Also, the signal voltages at P1.3, P1.4, P 6.3, and P6.4 will be approximately $\frac{1}{2}$ the voltage measured at P1.5. These are the green and white wires on the handle connectors P1 and P6. If the excitation voltage is lower than 10 V, disconnect the connectors P1 and P5 one at a time to see if the voltage comes into range. If this occurs, one of the handles is probably damaged and needs to be replaced. If the voltage never comes into range, replace the DCB.

If the output voltage at P2.1 can not be adjusted to within 2.4 V to 2.6 V using the potentiometer R57, with no force applied to the handles, the strain element may be damaged. The bed will operate with a single handle after the output is adjusted. To check the handles, disconnect one of the handles and see if R57 can be adjusted so the output signal is 2.5 V. The handle that will not allow adjustment of the potentiometer to bring the output signal to 2.5 V is the damaged handle. Replace the damaged handle, and calibrate the system (see "IntelliDrive® Transport System Components—Replacement" on page 4-101).

2.5 0x3204, 0x3205, 0x3206, or 0x3207 Troubleshooting Continued (max Mattress)

NOTE:

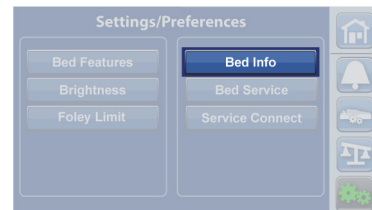
Before you do these steps, make sure you have done the steps listed for the applicable error code:

- 0x3204 or 0x3205—see page 2-16
- 0x3206 or 0x3207—see page 2-17

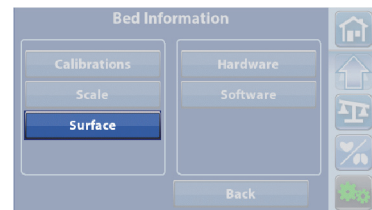
1. Press the **Settings** menu control on the GCI.



2. Press **Bed Info**.



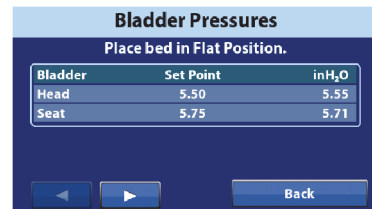
3. Press **Surface**.



4. Make sure the bed is in the flat position.

5. If the mattress looks inflated, make sure you can view the head and seat pressure readings on the GCI. Then, do as follows to make sure the ACB receives pressure reading feed back:

- Press on the head section bladder, and make sure the pressure reading for the head bladder increases.
- Press on the seat section bladder, and make sure the pressure reading for the seat bladder increases.



6. If the pressure readings for both bladders increased, go to Step 7. Otherwise, replace the ACB.

7. Get access to the pneumatic box. See “core, pro, and max Mattresses—Removal” on page 4-149.

8. Do as follows to make sure the manifold operates correctly:
 - a. Disconnect the white head fill tube and red seat fill tube from the interface connector assembly, let the air release for a few seconds, then put the mattress in the Max Inflate mode, Make sure pressurized air comes out of the connector for the head fill tube.
 - b. Connect the head fill tube, and at the GCI, make sure the head bladder reaches its set point. Then, make sure pressurized air comes out of the connector for the seat fill tube.
 - c. Connect the seat fill tube, and make sure the seat bladder reaches its set point.
9. If the head and/or seat bladder does not reach its pressure set point, replace the manifold. Otherwise, put the mattress in Normal mode, and make sure the error has cleared.

NOTE:

If the bed showed a **0x3205** or **0x3207** error, let the mattress stabilize for 10 minutes in Normal mode, and then make sure the error has cleared.

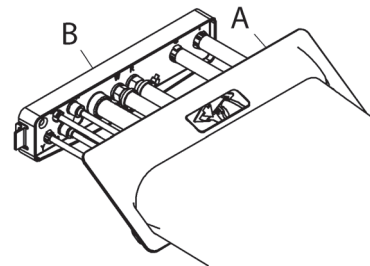
2.6 0x3208 or 0x320A Troubleshooting Continued (max Mattress)

NOTE:

Before you do these steps, make sure you have done the steps listed for the applicable error code:

- 0x3208—see page 2-17
- 0x320A—see page 2-18

1. Disconnect the mattress's two foot-end knobs from the bed frame, and fold the foot end of the mattress over the head end.
2. Pull up on the heel cover (A) to release it, and then turn it as necessary to fully disconnect the cover from its opening.
3. Pull the cover (A) back toward the sleeve to get access to the interface connector assembly (B).



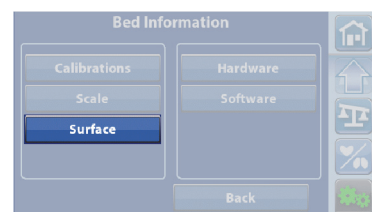
4. Disconnect the left or right turn fill tube (left is the larger green tube; right is the larger yellow tube) from the interface connector assembly.
5. Put the mattress in the applicable Left or Right Turn mode. Make sure pressurized air comes out of the connector for the fill tube.
6. If pressurized air does **not** come out of the connector, replace the manifold. Otherwise, go to Step 7.
7. At the GCI, press the **Settings** menu control on the GCI.



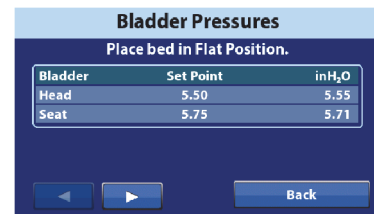
8. Press **Bed Info**.



9. Press **Surface**.

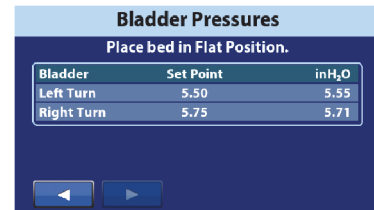


10. Press the right arrow to go the Turn bladders screen.



The screenshot shows a screen titled "Bladder Pressures" with the instruction "Place bed in Flat Position." Below this is a table with three columns: "Bladder", "Set Point", and "inH₂O". The table contains two rows of data: "Head" with a set point of 5.50 and a pressure of 5.55, and "Seat" with a set point of 5.75 and a pressure of 5.71. At the bottom of the screen are three buttons: a left arrow, a right arrow, and a "Back" button.

Bladder	Set Point	inH ₂ O
Head	5.50	5.55
Seat	5.75	5.71



The screenshot shows a screen titled "Bladder Pressures" with the instruction "Place bed in Flat Position." Below this is a table with three columns: "Bladder", "Set Point", and "inH₂O". The table contains two rows of data: "Left Turn" with a set point of 5.50 and a pressure of 5.55, and "Right Turn" with a set point of 5.75 and a pressure of 5.71. At the bottom of the screen are two buttons: a left arrow and a right arrow.

Bladder	Set Point	inH ₂ O
Left Turn	5.50	5.55
Right Turn	5.75	5.71

11. Connect the fill tube.

12. As the bladder inflates, look at the GCI, and make sure the pressure increases. If the pressure does **not** increase, replace the ACB. Otherwise, go to Step 13.

13. Let the mattress complete the turn and go into Normal mode. At the GCI, make sure the error has cleared.

2.7 Experience Pod® Device—Locknut Adjustment

Tools: Needle nose pliers

1. Make sure the brake is set.

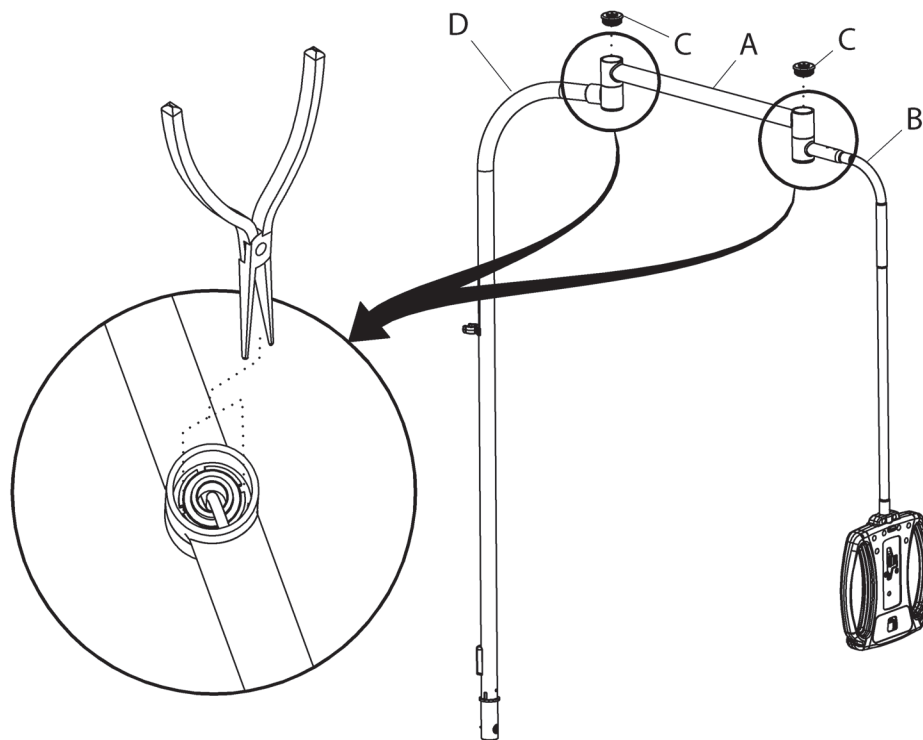


WARNING:

Failure to unplug the bed could cause injury or equipment damage.

2. Unplug the bed.
3. Disconnect the Experience Pod® Device cable from its port on the power supply (see “Experience Pod® Device Components—Replacement” on page 4-200).
4. Determine which arm needs adjusted: swivel arm (A) or pod’s flex arm (B) (see Figure 2-1 on page 2-39).

Figure 2-1. Locknut Adjustment



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5. With the Experience Pod® Device arm installed on the bed, gently pry the applicable upper pivot cap (C) free from the swivel arm (A):

NOTE:

The bumper plug can be pulled free from the upper pivot cap if necessary.

- Removal of the upper pivot cap (C) that is closer to the flex arm (B) permits adjustment of the flex arm.
- Removal of the upper pivot cap (C) that is closer to the base tube (D) permits adjustment of the swivel arm (A).

6. Put the needle nose pliers into the slots of the locknut.

7. Turn the locknut clockwise in small increments until the swivel arm (A) or flex arm (B) has the correct amount of stability.

Chapter 3

Theory of Operation

INTRODUCTION

There are three subsystems that make up the Centrella® Smart+ Bed:

- Mechanical
- Electrical
- Mattress

The interaction between these subsystems lets all the operational functions be used.

Each of the subsystems is described separately in the sections that follow. The schematic diagrams are at the end of this chapter.

NOTE:

For the theory of operation for the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

MECHANICAL SYSTEM

The mechanical subsystem includes these connected systems:

- Lower Frame Module
- Upper Frame Module
- User Interface Module
- End Panel Module

LOWER FRAME MODULE

Base Frame

The base frame module includes the base frame, casters, brake and steer components, night light, and if equipped, Obstacle Detect® System components. The base frame also provides a mounting location for the powered transport system and the two lift arms.

The base frame provides mounting locations for these:

Wide extension, headboard, patient helper, Experience Pod® Device, manual or powered transport push handles, IV pole, head-end bumpers, traction frame, BCB, power supply, bed batteries, auxiliary outlet and its AC inlet connector, bed mains AC inlet connector, sip-n-puff connector, SideCom® 37-pin connector, brake/steer, powered transport, 5th wheel steer, night light, and shipping brace.

The brake and steer components include user interfaces on both sides of the product at the head and foot ends. Operating the brake/steer system from any of the user interfaces will articulate the entire brake/steer system.

The brake/steer system contains four casters and caster sockets, two full brake/steer pedals, two half brake/steer pedals, two torque tubes, brake/steer link assembly, brake/steer limit switch cam, and brake/steer limit switch mounting bracket. This system has two brake and two steer casters as standard,

or has four brake casters when either the powered transport or 5th wheel steer option is present. The brake caster on the patient-right, head end is an ESD caster.

The optional 5th wheel steer mechanism has a spring arm that is always in contact with the floor. The spring arm rotates freely when the brake/steer mechanism is in brake or neutral. When the brake/steer mechanism is put into the steer position, the mechanical cable connected to the brake/steer link pulls the 5th wheel rotational latch into the lock position. The spring arm can lock into one of two positions in line with the frame of the bed once the rotational latch is in the lock position. When locked, the spring arm will not rotate, providing a fixed point of reference to steer the bed. Putting the brake/steer pedal into the neutral or brake position releases the rotational lock, allowing the spring arm to rotate freely again.

The auxiliary outlet option provides a US-style duplex AC outlet with over-current protection. The option includes a mounting bracket, outlet box, hospital-grade duplex receptacle, circuit breaker, faceplate, gasket, faceplate cover, AC mains inlet receptacle, and related wiring. The outlet box holds the duplex receptacle, circuit breaker, and related wiring connections.

The bed electronics, such as the batteries and power supply, are attached to the base frame and enclosed by shrouds.

Intermediate Frame

The intermediate frame provides mounting for the hilow actuators, lift arms, WatchCare® reader, and SideCom® enclosure. The intermediate frame supports the upper frame at the corners via the load beam blocks. The intermediate frame tolerance and stiffness limits the amount of out of plane deflection at the load beam blocks to support the scale function.

The system contains two identical lift arms pinned to the Intermediate frame and driven by identical 8000N hilow actuators. The foot lift arm is anchored to the base frame by a pair of ground links so that when the upper frame is put into trend or reverse trend, the head end of the upper frame moves in an arc away from the head end of the base frame.

The intermediate frame provides secure mounting locations for various electrical cables. The main electrical cable from the base enclosure passes up the head lift arm, along the intermediate frame to the upper frame, and on to the MCB. A number of cables cross from the intermediate frame to the upper frame. A secure mounting location is provided for a custom cable clamp (198789) where these cables cross. This transition is extremely important to the scale function as any mechanical forces carried across this boundary affect scale accuracy.

UPPER FRAME MODULE

The upper frame module includes a segmented deck on which the mattress rests. The deck is segmented into four sections: head, seat, thigh, and foot. The head, thigh, and foot sections articulate by electrically powered actuators.

The upper frame includes a sliding foot section which is extended and retracted by an electrically powered actuator. This sliding foot section is independent of the deck foot section. The sliding foot section supports the footboard.

The head and foot ends of the upper frame have accessory mounting provisions at the corners.

On each side of the upper frame, between the head and intermediate siderails, is a CPR handle that, when pulled, lowers the head section to the flat position and levels the upper frame.

The upper frame provides mounting for the HR/RR monitoring sensor and WatchCare® antennas.

USER INTERFACE MODULE

The user interface module includes the siderails, caregiver controls, and patient controls. The siderails may be lowered to permit the patient to enter or exit the bed, or give a caregiver unobstructed access to the patient. The caregiver controls and patient controls are mounted on the head-end siderails, on the optional pendant, and on the optional Experience Pod® Device.

END PANEL MODULE

The end panel module includes a headboard and a footboard.

The headboard is a flat, non-stationary panel vertically affixed to the base frame, near the head end. The headboard can be quickly removed by a caregiver for CPR or to gain access to the patient's head from the head end.

The footboard is at the foot end. It is affixed to the extending foot section of the upper frame in such a way that it remains perpendicular to the foot section. The foot panel can be removed in a single step without the use of tools. The foot panel's intended functions are to—

- Support the bottoms of the patient's feet in the chair and bed modes to prevent foot drop.
- Provide support for the patient to adjust his/her position.
- Provide grip areas for caregivers to use during transport.
- Keep the patient from slipping off the foot end.
- Help prevent unauthorized patient exit from the foot end.

3

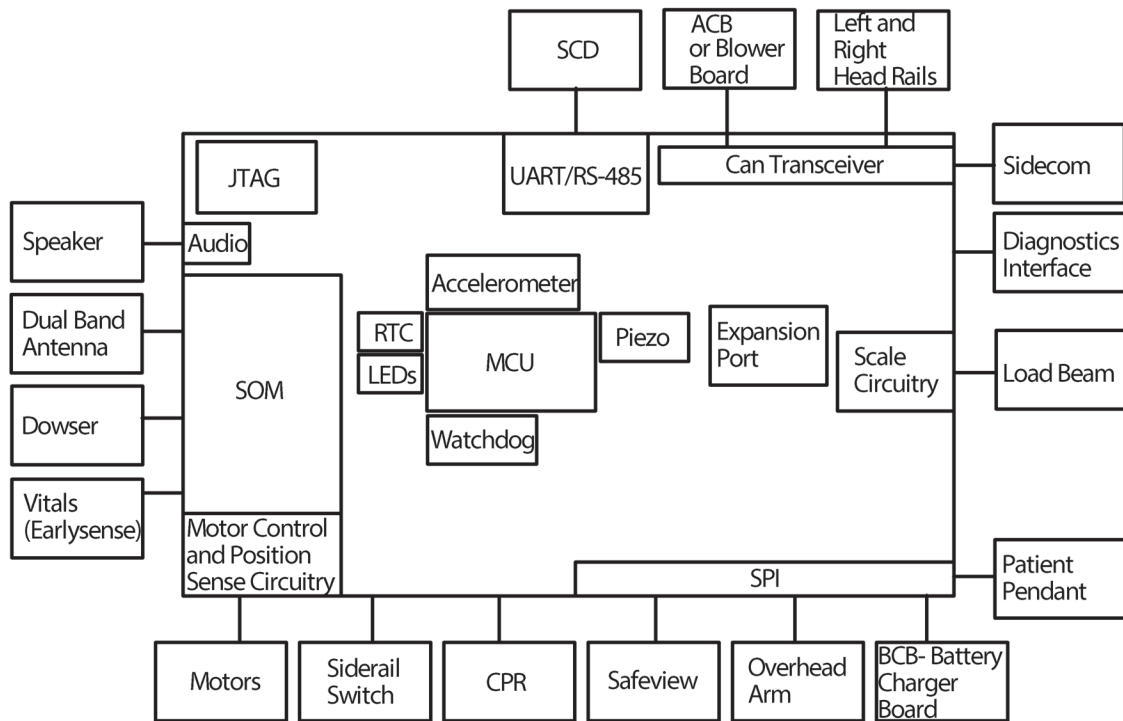
ELECTRICAL SYSTEM

MCB

The MCB is the main board for the Centrella® Smart+ Bed. It serves as the interface to numerous boards and as a carrier board to a SOM, which extends the overall functionality of bed. The MCB is located in the head most section of the intermediate frame.

The functionality of the MCB can be divided into the following functions, which are further detailed below (also see "MCB Block Diagram" on page 3-4):

- Processors
- Motor control
- Scale
- WatchCare® System
- Power regulators
- Bed status sensors
- Board interfaces
- Audio

Figure 3-1. MCB Block Diagram

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Processors

There are two processors that are directly or indirectly on the MCB.

The first is the microcontroller unit (MCU) for the MCB. This is the main logical controller of the board and houses logic to control the scale, motors, diagnostics, and power to some peripheral boards and modules like the SOM, SafeView®, caregiver and patient controls, DCB, and pendant. The MCU is a CAN node, so the MCU is able to communicate directly with other CAN nodes.

The other processor is the system-on-module (SOM). The SOM is an optional board to be used on some bed configurations. The SOM can drive the third speaker and communicate to outside networks and peripherals via Bluetooth and WiFi.

Motor (Actuator) Controls

There is an interface for six motors on the MCB:

- Hilow foot
- Hilow head
- Foot
- Thigh
- Foot extension
- Head

The motor control circuitry for a given motor consists of an H-bridge, a dedicated motor controller IC that drives the H-bridge, and a discreet overcurrent detection circuit. Each motor controller IC must be enabled by the MCU and send a PWM signal to control the speed at which the motor operates. There are

two error status pins that are sent back as inputs to the MCU so that faults in both the motor controller IC and overcurrent conditions can be detected. The controller has built-in dead time to assure there is never a short between VMOT and ground. The H-bridge is a standard H-bridge topology with N-channel FETs used as switches. The overcurrent detection circuit is a current-to-voltage transducer that makes use of a low-resistance sense resistor (shunt) that is in-line with the H-bridge. The induced voltage across the shunt is amplified by a difference amplifier, which is run into a comparator that has its reference tuned to produce a high output when the current in the shunt exceeds a unfavorable current for each motor. The output of the comparator is run to the input of a S/R latch, so the condition can be latched in until reset by the MCU. This output also is ANDed to the enable line of the motor controller so the motor controller can not be truly enabled by the MCU until the latched condition is reset. The topology of the motor control circuitry is copied for each motor.

While not always used, all six motors have an interface to accept a potentiometer as positional feedback. In addition, all motors except the head motor have the option to use encoder style positional feedback. Finally, the foot motor is unique in that it has the ability to read the status of a switch that indicates a half-way point.

Scale

The scale system is mostly comprised of a 24-bit A/D that digitizes the ratiometric output of the load beams, which are plugged in directly to the MCB. The MCB has a dedicated 5 V supply that provides the power input to the load beams and analog-to-digital converter. In this fashion, any voltage fluctuations in the regulator are common to both the sensor (and thus its output) and the A/D reference. The regulator is current-limiting so if the wires or connectors of the load beams are shorted, the regulator will fold back and prevent any thermal excursions.

Samples are taken by the A/D, which are read by the MCU via SPI (serial) interface to the A/D. The samples are read and averaged. Calibration constants, which are calculated during a scale calibration routine, are applied to get the load each load beam “sees” in pounds or kilograms, which are in-turn used by the scale and Bed Exit features.

WatchCare® Incontinence Management System

The MCB to the WatchCare® reader (reader) interface consists of 6 signals on J7; 5 are used by the reader.

The communication channel to the reader is a USB bus running at 2.0 MBPS. Power to the reader is supplied via a current limited +28 V DC connection.

The WatchCare® System sounder uses the bed’s integrated speaker, and the WatchCare® status indicator uses the integrated SafeView®+ Alert indicators.

Two important communication links enable the WatchCare® System functionality on the bed:

- SOM with STM32F437, U19
- SOM with the reader

The SOM with STM32F427 communication link is an asynchronous communication interface which allows communication of information from the SOM to the SafeView®+ Alerts interface, via the SPI bus from the U19 CPU to the SafeView® P.C. boards. This implements the status display portion of the WatchCare® System interface.

The USB link from the reader to the SOM allows information about the state of the incontinence pad(s) (present/not present, dry/wet). Based on the state of the pad, the WatchCare® light on the SafeView®+ interface is illuminated (white = no pad present, green = dry pad present, flashing amber = wet pad present).

A third interface is necessary for the implementation of the WatchCare® System. The third speaker, which connects to J2 on the MCB, is where the .WAV file for the WatchCare® beep is played.

Power Regulators

In addition to the scale system regulator mentioned above, the MCB has an additional five regulators to provide various rail voltages for circuitry around the board. U33 is an 8.25 V switching power supply that acts as a step-down for the scale regulator, the 3.3 V regulator, and the 5.0 V linear regulator. U33 also powers the piezo buzzer. U32 is a linear regulator that provides a 3.3 V rail to numerous circuits on the board. U31 is also a linear regulator, in parallel with U32, that provides a 5.0 V rail to numerous circuits on the board and modules that interface to the board (see “Board Interfaces” on page 3-6). All of these regulators are on by default and are not under software or MCU control.

U30 is a dedicated 5 V switching supply for the SOM which provides switched 5 V through a low-side P-chan FET to the dedicated 3.3 V linear supply (U34) for the SOM. The P-chan FET is switched by the MCU so it can conditionally turn on power to the SOM.

Bed Status Sensors

The MCB has the ability to sense the status of the head and intermediate siderails through simple switches that are buffered and run into the MCU. In addition, a double-pole-single-throw switch is used to sense the status of the CPR lever when the bed is powered. Both normally-open and normally-closed sides of the switch are independently buffered and monitored by the software. If they both switch at the same time, CPR mode is evoked in the MCU. If there is a mismatch (for example, both switches were open at the same time), this would be a failure case and the appropriate error condition would be thrown.

Board Interfaces

As seen in the block diagram above, the MCB interfaces to many different modules.

- SOM—the SOM is interfaced directly to the MCB via a DIMM style connector. A UART communication channel, as well as power and reset, is provided. As discussed above, the MCU on the MCB can optionally assert/deassert power to the SOM and reset it when needed.
- SCB—the SCB is provided CAN, I2S, and a 5 V and 28 V rail.
- Pendant—the pendant is provided SPI and a 5 V rail.
- ACB or blower board—the ACB or blower board is provided a 28 V pass-through connection from the BCB and a CAN bus interface.
- BCB—the BCB provides 28 V logic, 28 V Vmot, and 28 V for the ACB. These are inputs to the MCB for power and logic on the board, the motor, and the pass-through to the ACB. Also included

are two SPI channels that are used to control and monitor ICs on the BCB, as well as interface to the Experience Pod® Device module.

- DCB—the DCB is provided CAN and 28 V. There is also a pin on the connector to sense the presence of the DCB module.
- SafeView®2 Control P.C. Board—the SafeView® board is provided 28 V and SPI.
- Head connector—the head connector, J5, interfaces to many boards and signals:
 - Head siderail switches (see “Bed Status Sensors” on page 3-6)
 - CPR switches (see “Bed Status Sensors” on page 3-6)
 - 28 V and CAN for the HFBs and GCIs
- EarlySense—the EarlySense® module is provided a 5 V interface, as well as a RS232 serial interface.
- WatchCare® module via the USB communications port

Audio

There are two functional blocks that can produce audio. The first is an interface to the “third speaker,” which includes an amplifier to amplify the line-level output from the SOM to speaker-level that connects to J2. The second interface is a simple piezo buzzer that is located on-board. Both the SOM and the MCU can drive the piezo directly and independent of one another.

BCB

The BCB supplies these functions:

- Power
 - MCB connection
 - Power supply connection
 - Power source switching
- Battery charger
- Night light control
- Sip-n-puff connection
- Experience Pod® Device connection
- Brake switch monitoring
- Obstacle detection

Power and Power Connections

Power is supplied from an AC/DC power supply or from the batteries. AC/DC supplies are either 750 W or 900 W depending on the bed configuration. The batteries form a 24 V source and are the same across all bed configurations. Power is then supplied to the MCB for further dispersal.

NOTE:

The 750 W and 900 W power supplies were obsoleted after bed serial number U115PF7899. These beds have a common 28 V supply which is compatible with all beds before U115PF7899.

Power Switching

Power switching is accomplished via relays that have control circuits that are interlocked so only one source can provide power at any time. Additionally, the motors have a dedicated relay to select between battery or AC/DC supply.

Battery Charging

The battery charger is an integrated charger that maintains the life and health of the batteries. It is autonomous and requires no maintenance. It has four stages:

- Trickle charge—for deeply discharged batteries, the charger will trickle charge to a safe level before performing bulk charging.
- Bulk charge—this is most of the charging service.
- Boost charge—this is a cell maintenance phase to top off the cells using a boosted voltage.
- Float—this is not a charge, but a monitoring phase. The batteries are at or near full charge when in this phase.

Night Light

The night light has Off and four brightness levels commanded from the MCB, but implemented in the BCB through the SPI bus.

Sip-n-Puff

The sip-n-puff is the auxiliary Nurse Call connection. When a device is plugged into the sip-n-puff port at the head of bed, this circuit converts contact closures to signals on the SPI bus.

Experience Pod® Device

The Experience Pod® Device circuit provides a communication pass through as well as power to the Experience Pod® Device option.

Brake Monitor

The brake monitor converts the switch inputs from the brake actuator to signals read across the SPI bus.

Obstacle Detect® System

The Obstacle Detect® modules sense and prevent the bed from lowering if an object is resting on either side tube of the base frame. These modules transmit an infrared (IR) beam at a height of .75" (2 cm) above the side tube from the foot end of the frame to the head end and approximately .5" (1.3 cm) in from the outside edge of the frame (with respect to the bottom of the upper frame as it comes to down to meet the lower frame). The location of the IR beam is such that it has a clear line of sight from the foot to the head of the frame when the upper frame is in any position.

SAFEVIEW®+ ALERTS

Overview

The SafeView®+ Alerts system lights up foot-end, front facing indicators and floor projections using LEDs. Which LED(s) are lit is at the command of the MCB through an SPI communications bus.

Different color LEDs are lit up depending on the state of the indicator to be shown: green for normal and amber for an active indication requiring Caregiver intervention. There is a blue Bed Exit color indication when Bed Exit has been deactivated. Other LED colors are used for Heart and Respiration Rate Monitoring: green indicates that the monitoring is active, flashing yellow indicates that a heart or respiration rate measurement is outside the set thresholds, solid amber indicates that an active heart or respiration rate alarm is silenced, and white indicates that the system is On, but either the patient is not in the bed or the system can not detect the patient's HR/RR.

The LEDs used for the floor projections are of the high-power type. These use a current regulator chip for drive to assure accuracy in brightness. These LEDs also produce a considerable amount of heat, dissipating up to 1.5 watts of heat, each. Therefore, special steps were taken in the P.C. board design to transfer the heat from the top-side of the P.C. board to the bottom side, then transfer that heat from the backside of the P.C. board with a thermal pad to the metal foot rail itself.

The brightness of the floor projection LEDs is adjustable. For brightness control, the current regulator chip has an analog voltage adjustment input that is translated internally to a PWM duty cycle of the fixed (500 mA) current at the output. The analog intensity adjustment voltage is governed by a Digital-to-Analog converter, also controlled by the MCB.

Fault Detection

The SafeView®+ Alerts system is also a safety element, showing high level status information to the Caregiver. With that safety element there is risk if the status information provided is incorrect. Therefore, the system also contains error detection logic.

The primary fault for an LED is one that burns out and becomes an open circuit (similar to a light bulb). Logic detectors are contained in the system's circuitry to detect if an LED that is supposed to be on is an open circuit. If an LED fault is detected, an error status bit is set, sent via the SPI MISO to the MCB, and an error is shown on the GCI.

A second common fault is the corruption of the SPI MOSI command sent from the MCB. This corruption can be due to many things, including EMI, EMC, ESD, and others. Therefore, an SPI MOSI command error must be detected. To do this, the MOSI command is fed back to the MCB via the MISO bit stream. The microprocessor in the MCB simply verifies the control data sent is received back correctly. If it is not received back correctly, the same command data is repeated up to 10 times. After failing a correct command message after 10 tries, a new command message is sent to shut off all SafeView®+ Alert lights. The software will repeat the OFF message until the interference clears and a valid return message is received, then turn the LEDs back on to the correct setting.

SafeView® Cable to MCB Connection

The SafeView®+ Alerts system interfaces with the MCB with one 8 wire cable. The cable provides 4 wires for SPI communications, two grounds, and two wires for primary +28 V DC power. This cable is routed over a strain relief underneath the movable foot end of the bed. That area of the cable may receive much flexing and should be checked if a communications error to the SafeView®+ Alerts system shows on the GCI.

HFB

The HFB is housed within the head siderail of the bed. There is a left and right version which are mirror images of one another. Electrically, they are very similar.

The HFB is primarily responsible for showing the discrete user interface (UI) information (LED indicators) on the caregiver and patient membrane overlay panels. The HFB also controls the siderail light strips for

the IllumiGuide® Siderail Handgrip which can generate amber and blue indications. The HFB is also responsible for detecting a pressed switch on one of the UI's membrane overlay panels.

In addition to the indicator outputs and switch inputs, the HFB also houses the ambient light sensor. This signal is used by software to dim various indicators on the bed. These dimmable indicators include the siderail light strips.

The HFB right (HFB-R) also features an option for a USB charger. This charger offers a Type A USB connector such that patient supplied charging cords can be used. The charging port supports 170 mA up to 2.4 A of current and is compatible with many portable USB devices. P/N 207608 is HFB-R with USB, 207609 is HFB-R without USB, and 207611 is an HFB-L. 207609 uses the same bare board as 207608 and does not populate the USB charging circuits.

The GCI touchscreen panel is also connected through the HFB. The GCI receives DC power and the CAN bus from the HFB.

Several optional interfaces exist with the HFB design. These are currently not populated and include an NFC radio and RFID interface.

The heart of the HFB is a micro-processor that communicates with the bed using CAN bus. The HFB also acts as the HW termination for the CAN bus. All LED indicators and switch inputs terminate into this processor. Dimming of the various indicators uses pulse width modulation (PWM) channels within the processor. The USB charging circuit uses a medically isolated switch mode power supply along with a USB DCP controller to emulate the various charging modes for these USB devices.

The HFB receives 28 V DC power from the bed. The 28 V DC is converted into 3.3 V and 5.5 V using switch mode power converters.

Many of the articulation switches on the caregiver membrane panel will cause a bed Wake-Up event. When the bed is unplugged from AC power, the bed shuts down when idle to conserve battery power. Pressing any articulation control on the caregiver panel will wake up the bed. The Nurse Call controls also can wake up the bed.

SIDECOM® COMMUNICATION SYSTEM

The SideCom® Communication System implements the following functionality:

- An interface between the bed and a hospital's Nurse Call system
- An interface between the bed and an Entertainment Control system (lights, TV, radio, etc.)
- An SPI interface between the bed and wired network connectivity devices (NIU, NaviCare® System, etc.)
- Audio conversion and interface between the bed's head siderail speakers and microphones and the on-bed wireless module

The SideCom® Communication System provides the wired interface between the bed electronics and the Nurse Call system's wall device, as well as providing the audio portion of the wireless interface between the bed and Nurse Call. Bulk 28 V DC power is supplied to the communication system from the MCB, which is then converted to 5 V DC via an isolated power supply. The MCB and communication system communicate via the bed's CAN interface, and the wireless audio interface is supported via I2S digital audio to the SOM which is located on the MCB. All functions of the communication system are managed by the ARM Cortex-M4 microcontroller, which processes and controls Nurse Call input and output, audio configuration and routing, CAN communication, LEDs, and configuration switches. An audio codec is used for converting I2S digital audio data from the SOM to analog audio for amplification to the bed's speakers, as well as routing and filtering for the bed's microphones in the head siderails.

Solid State relays are used to implement contact closure control for Nurse Call, Bed Exit, room lighting, radio, and standard television, while the on-bed television volume control uses mechanical relays. The UTV (Universal Television) digital command interface is provided by a high-speed optocoupler, with the Nurse Call Bed Status implemented via the traditional current loop SPI optocouplers.

The SideCom® Communication System has 3 electrical cable connections: power and communications cable to and from the MCB, speaker and microphone audio cable to and from the head siderails, and the 37-pin cable interface. The standard 37-pin male D-Sub connector bed interface is provided for via a cable from the communication system module in the intermediate frame to the base frame located near the AC inlet and sip-n-puff connectors.

INTELLIDRIVE® TRANSPORT SYSTEM

User Interface Pod

The user interface Pod is located at the top of the right-side push handle. The Pod has a green LED to indicate the transport deployment status and a four segment LED bar graph to show the transport battery capacity and fault status. Each segment represents approximately 25% of the battery capacity. A single flashing LED indicates the transport battery is low and needs to be charged. The four LEDs are lit in a scrolling pattern when the bed is plugged in and the batteries are charging. The four LEDs flashing at the same time indicate a transport system fault.

Push Handles

The push handles incorporate strain gauge elements to sense the force applied by a caregiver in either a forward or reverse direction. The strain gauges are connected to the DCB. Each push handle also incorporates an enable switch. The enable switches are connected to the DCB.

DCB

The DCB is a printed circuit board that supplies these functions:

- Push handle circuitry
- Battery charger
- Deployment control
- Enable switch logic and control
- Battery shut-off

Push Handle Circuitry

The DCB produces a regulated 12 V DC signal from the battery voltage to excite the strain gauges in the push handles to produce a signal in response to applied pressure. The strain gauge signals are then combined such that the forces applied to each handle are added together. A net push causes a positive signal; a net pull causes a negative signal. The DCB also contains amplifier circuitry to convert these signals from the strain gauges into a throttle signal for the drive motor controller. A positive signal results in a forward throttle signal to the motor controller. A negative signal yields a reverse throttle signal to the motor controller. The full scale forward throttle signal is about 4.0 V and the full scale reverse throttle signal is about 1.0 V. A signal of 2.4 to 2.6 V is neutral. These levels make sure that the throttle signal to the motor controller is never out of range for a correctly connected system.

The DCB has connectors for the enable switches in the handles, paralleling the enable switches to produce one enable signal for the logic circuitry.

Battery Charger

The battery charger operates from the main regulated 28 V DC power supply whenever the bed is plugged in. This charger has three modes of operation: trickle charge, bulk charge, and float charge.

The trickle charge mode produces a low current to bring the battery voltage up to 22.5 V. In the event a battery has a defective cell, this low level current will not produce a hazardous situation. If the battery is capable of taking a charge, its voltage will eventually come up to 22.5 V. (If the battery has been deeply discharged, this may take several days.) Once the voltage is above the trickle threshold, the charger circuit changes to mode 2. In this mode, bulk charging occurs during which current is limited to a constant level, approximately 800 mA. The charger stays in this mode until the battery voltage is approximately 29 to 30 V. At this point the current slowly drops off as the battery nears full charge, and the charger enters mode 3, the float charge mode. In this mode, the charger output drops to 27.8 V to keep the battery topped off.

Deployment Control

The transport system is deployed by putting the brake pedal into the steer position and unplugging the bed. The linear actuator is then extended to its limit, forcing the wheel to the floor. When fully deployed the system is ready to drive, as indicated by the wheel indicator on the Pod coming on steady.

If the brake pedal is taken out of the steer position, or the bed is plugged in, the linear actuator retracts, lifting the wheel off the floor. While retracted, the wheel is prevented from driving.

The DCB employs enable switch fault protection. If the enable switch is activated while the pedal is transitioning to the steer position, an enable switch fault is detected. This causes the Pod battery status LEDs to flash and will not allow the transport system to deploy or drive. This fault is cleared by releasing the enable switch. All of this control circuitry is located on the DCB.

Enable Switch Logic and Control

The enable switch, when closed while the drive mechanism is deployed, provides an input to the logic which removes the /INHIBIT input to the motor controller. At the same time, a relay is energized which connects the drive motor to the motor controller output, allowing the controller to excite the drive motor. When the enable switch is subsequently opened, the logic again asserts the /INHIBIT signal to the motor controller, causing it to decelerate the drive motor to a stop. The relay opens after a three second delay, allowing the motor controller time to stop the motor before disconnecting the motor from the controller. The relay then shorts the motor to produce a further braking effect. This effect will stop the drive motor even if the battery becomes disconnected.

Battery Shut-Off

A fifteen-minute timer is employed to help conserve battery power. If the bed is unplugged and inactive (the enable switches are not engaged) for approximately fifteen minutes, the transport system will go to sleep, turning off all its indicators. It will wake up if the enable switches are activated, the brake pedal is transitioned to steer, or the bed is plugged in.

Drive Motor

The drive motor is a 24 V DC, 850 W, insulation class H, permanent magnet gear motor, rated for continuous duty.

Motor Controller

The motor controller is an electronic module that provides these functions:

- Motor speed control
- Battery charge gauge
- Fault detection

Motor Speed Control

Based on the throttle signal and the enable signal inputs, the motor controller provides a PWM output to the motor. This output drives the motor to obtain the desired speed, acceleration, and deceleration.

Battery Charge Gauge

The motor controller monitors the battery voltage to determine the available battery capacity. The controller sends this data to the DCB, which drives the four Pod battery indicators with their status information.

Fault Detection

The motor controller has the ability to detect faults and inhibit driving if appropriate. The fault status is shown by flashing the four Pod battery indicators.



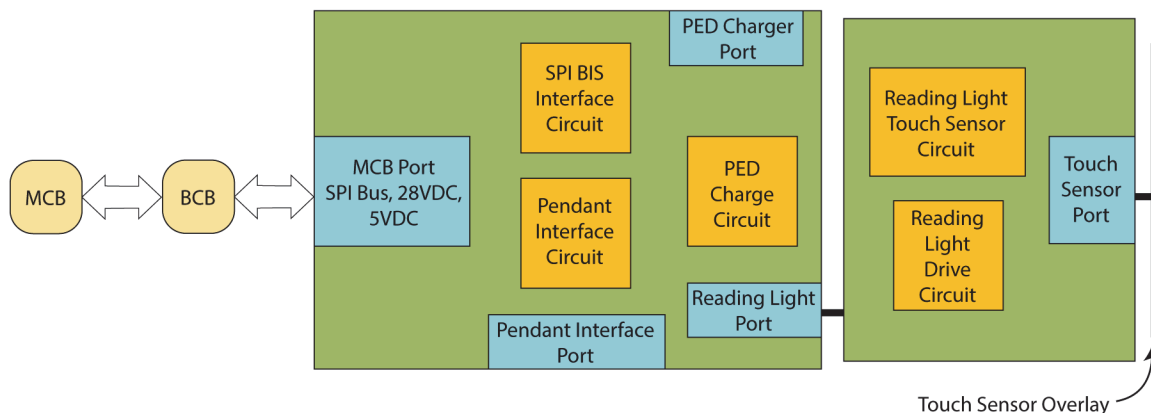
EXPERIENCE POD® DEVICE

Overview

The Experience Pod® Device electronics provide an integral USB/PED charger port for the patient. Models P7926A03 through P7926A06 also provide these three functions:

- A pendant (handheld remote) function that is on the back side of the pod housing assembly
- A patient reading light
- A touch sensor control for the reading light

Figure 3-2. Experience Pod® Device Block Diagram (Note: the right-side block does not apply to the P7926A07)



USB/PED Charger Port

The USB/PED charger port is not designed for devices that require less than 170 mA of power such as USB reading lights, but can provide up to 2.4 A of charging current. Most any USB chargeable device can be plugged into the charge port for charging (device dependent). The patient must supply their own USB cable.

Pendant (Handheld Remote) Control

The Experience Pod® Device electronics provide all the sensor and control with a pendant overlay via SPI control to and from the MCB, through the BCB. This allows the patient to control the basic articulation functions of the bed without requiring a separate pendant (handheld remote).

Patient Reading Light with Touch Sensor Control

The Experience Pod® Device assembly includes a small LED board, mounted perpendicular to the main board, with two white LEDs mounted on the bottom side. These LEDs are installed in such a way that they shine through clear covered holes in the bottom of the assembly. An overlay is used to block off the holes in the housing, for IPX, that enables the light to shine through. The overlay also contains a conductive layer within that is used for a capacitive touch sensor to activate the overhead light function. The overhead light electronics provide three light levels, plus off, at a touch of the capacitive touch sensor.

HEART AND RESPIRATION RATE MONITORING SYSTEM

The Heart and Respiration Rate (HR/RR) Monitoring System provides contact-free, passive monitoring capabilities, with no need for patient activation. When enabled, the system continuously monitors the patient's heart and respiration rate. The data acquired by the system is continuously logged in the bed and is presented in a time-stamped format on the GCI. The data provided by the system is intended to aid in the evaluation process of the patient's clinical status and should be interpreted by a Healthcare Practitioner only.

The system includes a sensing unit that is installed beneath the mattress on the head deck panel of the bed. The sensing unit detects physiological and motion signals generated by the patient. The sensing unit communicates to the bed by way of a cable that connects to a port on the back of the bed's head deck panel. Through the bed's GCI, the system is activated, its options set, and its collected data viewed.

NOTE:

The HR/RR monitoring sensing unit (sensor) connects to the MCB, but communicates directly from the SOM.

The default heart rate (HR) threshold is set to 40 BPM for the low setting and 130 BPM for the high setting. The default respiration rate (RR) threshold is set to 8 breaths per minute for the low setting and 32 breaths per minute for the high setting.

NOTE:

The system detects a heart rate that is greater than 1.8 times of the respiration rate.

The total system accuracy including undetected signals is 90% for HR and RR. The total system accuracy was measured as +/- 10% of the predicate device.

The system design allows the operator to adjust the settings of the threshold parameters or other parameters, as available in the specifically installed software. The user can adjust the alarm thresholds

for heart and respiration rate and to notify the caregiver when the heart or respiration rate, averaged over time, exceeds the set thresholds.

Through the Heart and Respiration Rate Monitoring menu, a **user** can do these:

- Adjust the thresholds within the default threshold range.
- Adjust the alarm volume.
- Turn the monitoring On and Off.
- See the sensor's expiration date.

Through the Heart and Respiration Rate Monitoring menu, a **facility-authorized service person** can do these:

- Change the alarm tone.
- Change the default alarm thresholds.
- Turn the "out-room" alarm On and Off.

3

CORE, PRO, PRO+ INTEGRATED, AND MAX MATTRESSES

This section discusses the core, pro, pro+ integrated, and max mattresses only. For the theory of operation for the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

The core mattress is a foam mattress, the pro is a non-powered dynamic air mattress, and the max is a powered air mattress.

These mattresses attach to the upper frame deck in four locations via post attachments at the foot and head sections.

The knobs on the attachment posts fit into slots in the upper frame deck at the foot end and the head end.

CORE MATTRESS

The core mattress consists of a top and bottom cover, a foam core with side bolsters, a foam foot section that can extend and retract, and a fire barrier. The core mattress supports the patient and provides therapeutic benefit as well as comfort.

The mattress subsystem is solely a foam mattress. It supports the patient via the foam core, foam crib, and heel foam. This mattress provides therapeutic benefit by reducing interface pressure.

The foam core section of the mattress provides support for the patient's head, shoulders, back, seat, and thigh sections. This section of the mattress provides low interface pressure while also accommodating a wide range of patient weights.

The foam crib section provides support to the patient as the patient gets in and out of bed, as well as side sitting.

The foam foot section provides support for the patient's calves and heels. Vertical oval cutouts allow the foam to extend and retract.

PRO MATTRESS

The pro mattress consists of a top and bottom cover, a foam core with side bolsters, a foam filled bladder system, a foam foot section that can extend and retract, and a fire barrier. The pro mattress is a non-

powered dynamic air mattress that supports the patient and provides therapeutic benefit as well as patient comfort.

The pro mattress supports the patient via one layer of viscoelastic foam, one layer of conventional foam, self-adjusting foam filled bladders in the head and seat sections, and a foam foot section. The foam core section provides support for the patient's head, shoulders, back, seat, and thigh sections. This section aids in patient comfort as well as reducing interface pressure

The stiff side bolsters of the foam crib provide support to the patient as the patient gets in and out of bed, as well as side sitting.

The foam filled support bladder assembly contains eight bladders (foam bladders). The assembly provides support for the patient's head, back, seat, and thigh sections. There are two types of foam configurations inside the foam bladders which are different indentation load deflections (ILDs) to help with patient comfort and reduce interface pressure. Both of the foam bladder configurations are made of two layers of conventional foam. The foam bladders help to reduce interface pressure and make sure the patient does not bottom out.

A port is at each end of the bladder. On one end of the bladder there is a check valve in the port. This check valve opens and closes when pressure is applied to it. This makes the bladder assembly self-adjusting. On the other end of the bladder, the tubing assembly is connected to the port. At the end of the tubing assembly there is a check valve that lets air release from the bladders. The tubing assembly is routed in a straight line and connects all of the bladders together.

PRO+ INTEGRATED MATTRESS

The pro+ mattress provides these two primary therapeutic mattress functions:

- Pressure redistribution
- MCM

The mattress uses foams of different densities with various constructions and zones to optimize patient support and comfort while distributing interface pressure (patient weight) over as much patient contact area as possible. The mattress provides self-adjusting technology to achieve inner core pressure redistribution when a patient is on/off the mattress.

The mattress also provides an optional MCM® feature that helps decrease localized heat and moisture buildup that occurs between the patient and the mattress.

The mattress has an optional x-ray sleeve that provides an area of the mattress that may be opened for the temporary placement of an x-ray cassette underneath the patient.

The MCM® feature is turned off and on through the GCI. You can also set MCM to always On (this hides the MCM menu control; do this per facility request only).

The MCM indicator on the GCI lets you know the operational status—

- MCM is On and operating correctly—the indicator is green.
- MCM is Off—the indicator is not lit and it has an "X."
- MCM has experienced an error—the wrench indicator is on and an error screen shows.

The mattress assembly includes these major components:

- Support mattress
- Pneumatics System
- Control and indication of the MCM status

Support Mattress

The support mattress consists of a top cover, MCM layer, an optional x-ray sleeve, an inner core, a fire barrier, and a bottom cover.

Top Cover

The top cover is the interface between the patient and the rest of the mattress. The breathable material of the top cover allows moisture vapor to cross the membrane, but not water molecules. The top cover has a 360° zipper(s) that connects to the mattress core.

MCM Layer

The MCM layer is an assembly of several parts that allows airflow through the assembly and underneath the patient to remove heat and moisture from the skin-mattress interface. The MCM layer has a top layer of 3-dimensional spacer material, a perforated panel to allow airflow beneath the patient, a bottom 3-dimensional spacer material, and a bottom insulating panel that forces air through the top panel. The MCM layer assembly also provides a means to connect to the pneumatic system so that air can flow through the layer.

X-Ray Sleeve

The x-ray sleeve is an optional feature of the mattress that provides an easy to access area for the user to place a standard x-ray cassette for in-bed x-rays. This region extends from the head section to the mid-lower back region, allowing for in-bed chest and abdominal x-rays. The sleeve has two zippers, one on each side of the mattress.

The top cover of configurations with this feature have logos above each access point to show where the sleeve is.

Inner Core

The inner core is comprised of several subsystems, including the foam core, heel foam, and foam/air bladder assembly. These subsystems work together to help provide patient comfort, optimal pressure redistribution, and sufficient stability for activities of daily living.

- **Foam Core**—the foam core is comprised of a top layer of conventional high density foam, stiff side bolsters, a knee bolster to improve side sitting stability and help during ingress/egress, and a stiff head bolster.
- **Heel Foam**—the heel foam is a layer of soft foam that extends from the patient knee area down to the foot end of the bed. The foam has a slight downward slope/contour that helps offload pressure on the heels by supporting the calves of the patient. The heel foam also contains several rows of punched holes which allow the foot section to retract and extend with the frame.
- **Foam/Air Bladder Assembly**—the foam/air bladder assembly is beneath the top layer of the foam core. The bladder assembly is comprised of several foam filled support bladders. The bladders contain layered foam inside of a coated fabric that is welded shut so that it can build up pressure inside of it without leaking. There is one port on either side of the bladder—an inlet port and an outlet port. The ports have an anti-choke feature so they are not blocked during product use. Each foam filled support bladder inlet port has a check valve that will only open at a certain vacuum pressure to allow air back into the bladder. All the bladder outlet ports are connected to a single outlet pathway on the other side, which contains two check valves, one at each head and foot end of the assembly. These same valves are found on the inlets but

directionally reversed, which allows a buildup of pressure in the system before opening to atmospheric pressure.

Fire Barrier

The fire barrier protects the mattress components from fire.

Bottom Cover

The bottom cover of the mattress is the interfacing sub-system between the mattress and the frame deck. The bottom cover encases the internal components of the mattress and connects to the top cover by a 360° zipper(s). The bottom cover has features on it to attach to the frame deck, aid in mattress transport, and help to retain linens.

Pneumatic System

The pneumatic system contains the components that generate and control the airflow that is supplied to the mattress. The pneumatic system has three subsystems:

- Electrical
- Pneumatic
- Mechanical

Electrical

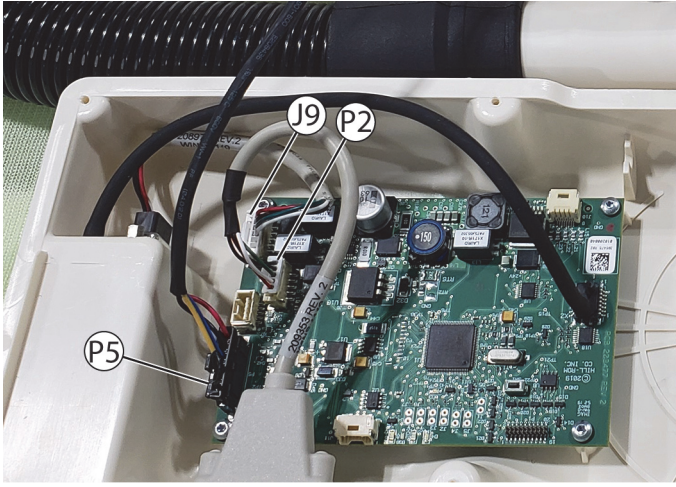
The main electronic component inside the pneumatics enclosure is the blower board. The blower board supplies the communication and controls for the DC blower and status indication. The blower board's main function is to monitor pressure inside the pneumatics enclosure and determine the blower speed and diagnostics. The blower board contains one pressure transducer. See Figure on page 3-18 for the blower board layout.

The blower board consists of 6 functional blocks:

- Microcontroller—this block contains the processor and its associated circuitry.
- Pressure transducer—this block contains the circuitry necessary for reading the blower output pressure using SPI connections from the pressure sensor.
- Blower motor drive—this block contains the brushless DC motor control and interface.
- Controller area network (CAN)—this block contains the CAN network interface.
- User interface—this block contains four separate low side drivers to turn on light emitting diode (LED) banks for the user interface to display if there is an error or if the blower board is correctly functioning.
- Power supplies—this block contains the 24 V switching supply, 7 V switching supply, 5 V low-dropout (LDO), and the 3.3 V LDO.

Direct current (DC) voltage is applied to the pneumatics enclosure by a cable from the Centrella® MCB. The unit receives power as soon as the cable is connected to the MCB. 28 volt (V) +/-5% is applied to the blower board and stepped down to 24 V through a step down converter on the blower board. See Table 3-1 on page 3-19 for the blower board connections.

Table 3-1. Blower Board Connections—pro+ Integrated

Blower Board	Pin/ Jumper	Cable
	P5	Blower cable (207899)
	P2	Panel mount USB cable (209353)
	J9	Integrated enclosure/board cable (208976)



Pneumatic

The pneumatic system is a closed loop system. A pressure transducer on the blower board monitors the discharge pressure. The blower board adjusts the blower speed to maintain the discharge pressure within a certain limit. The discharge pressure in the system is set for 0.25+/-0.1inH2O. The pressure transducer is a differential pressure transducer which can measure both negative and positive pressure. One input of the pressure transducer is connected to the atmosphere and the other end is open in the chamber.

In addition to monitoring the discharge pressure and adjusting the speed, the blower board also monitors the faults such as over temperature, over current, intake blockage, timeout (in the event of failing to reach the set point pressure within a certain amount of time), and such. At any time, when these faults occur, the blower board sends a signal to the user interface to indicate that the product has a fault that needs service.

See Figure 3-3 on page 3-20 for the Centrella® integrated block diagram.

Pneumatic System Enclosure

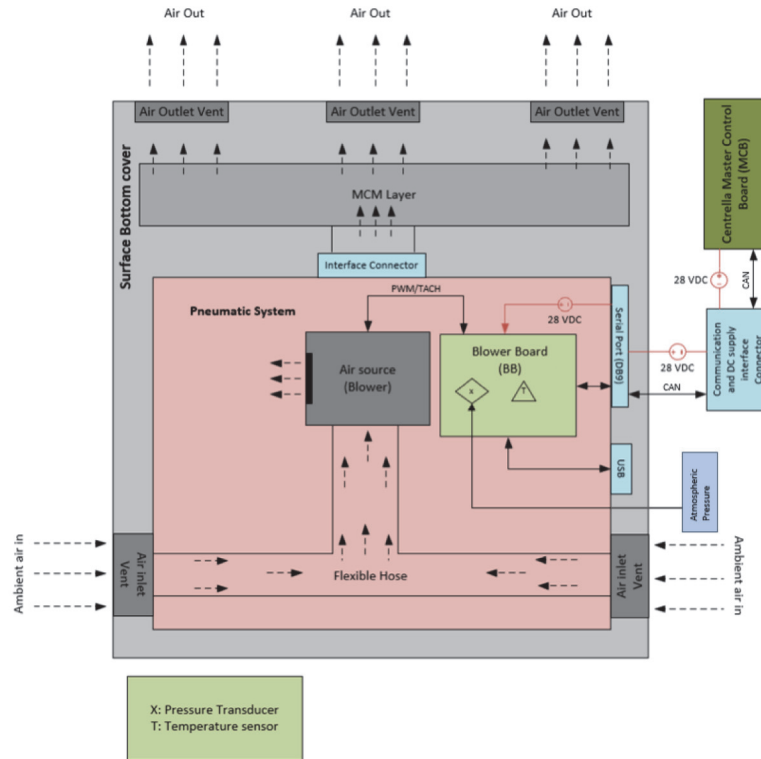
The pneumatic system is a pressurized enclosure system that provides the necessary air flow for the MCM® function. The system includes the power supply, an air source (blower), and blower board. The system prevents the direct accessibility to electrical components without the aid of a tool.

The pneumatic system enclosure has two major compartments, the intake housing and the exhaust housing.

- The intake housing provides the necessary air passage to allow the ambient air to enter into the pneumatic system. There are two flexible hoses that connect the intake housing to the intake vents on the patient-left and -right sides of the bottom cover. The blower mounts to the intake housing, against a gasket, to seal the intake air passage from the discharge air passage.
- The exhaust housing provides the mounting locations for the various components of the pneumatic system enclosure, with the exception of the blower. These include the blower board,

and cables. The exhaust housing connects directly to the MCM layer and provides an airflow pathway.

Figure 3-3. pro+ Integrated Block Diagram



Mechanical

Intake Housing

The blower and blower gasket attach to the intake housing. There is also a cable retainment feature molded into the housing to allow the blower cable to be routed correctly without interfering with part assemblies.

The plenum cover is on the bottom of the intake housing.

Two foam pads are on the bottom of the intake housing. These keep the enclosure off the frame to prevent damage during handling and minimize noise and vibration.

Exhaust Housing

The exhaust housing is the top of the pneumatic enclosure. The blower board, MCM connector, and DB9 connector are attached to this housing.

On the side of the housing where the frame connection cable connect, is a molded barb on the inside of the housing, with access to the outside. A sense tube (70752) is routed from the pressure sensor on the blower board to this barb, to monitor the pressure outside the box. This allows the system to detect intake blockage.

The blower board controls the MCM® feature and the fault detection.

The DB9 connector mounts to the exhaust housing on the patient-left side of the mattress. The connector connects the frame communication cable.

There are two gaskets—

- One gasket is between the blower and the intake housing assembly. It reduces vibrations transmitted from the blower to the enclosure and provides a uniform seal for airflow.
- The second gasket is on the front of the exhaust housing, around the MCM exit port. It seals the MCM connector in the MCM layer to the enclosure to minimize air leakage.

There are two Velcro® strips—

- The Velcro® strip on top of the exhaust housing attaches to the strip on the foam core/bucket.
- The Velcro® strip on the bottom of the plenum cover attaches to the strip on the MCM assembly and acts as a secondary connection of the MCM layer to the enclosure.

Communication

Data bus communication allows for—

- Configuration for the bed frame (service port)
- Compatibility with the communication protocol for the bed (GCI)
- Transfer of data between the mattress and the service port on the bed
- Mattress information to show on the GCI:
 - Software version number
 - MCM status
 - Patient occupancy data

MAX MATTRESS

The max mattress supports the patient via an MCM layer, support bladder with head and seat zones, and foam foot section. This mattress provides therapeutic benefit by optimizing pressure redistribution as well as removal of heat and moisture from the patient's skin. The max mattress also provides a turn assist function which allows the caregiver to do wound care checks and patient positioning with greater ease.

The MCM layer includes a top fabric with high moisture vapor transmission (MVT), a spacer layer, and a bottom fabric with low MVT. This provides a thin layer of support for the patient above the support bladder.

- The spacer within this layer has some crush resistance which allows for dynamic air to pass under the patient.
- Moisture vapor and heat from the patient passes through the top fabric where it can be removed by the air flow.
- The top fabric has a series of holes in the seat section to direct air flow to the highest risk area on the patient.
- Air flow enters at the thigh and exits at the head end of the mattress.
- The bottom fabric keeps the moisture vapor from entering the remaining parts of the mattress.

The support bladder section is a continuous bladder that supports the patient's upper body from the thigh to the head. The bladder maintains static air at a pressure suitable to support the patient over the greatest practical area.

- The internal bladder pressure is determined based on patient weight and angle of head elevation. Pressure is continuously monitored and automatically adjusted for changes in patient position and head elevation.
- Bladder pressure can be adjusted by the user when necessary for patient comfort.
- Bladder pressure can be maximized to provide a stable surface when necessary for repositioning the patient, lateral transfer of the patient, and CPR.

The foam foot section, which can extend and retract, provides support for the patient's calves and heels. A lateral bolster below the calf area extends the support for the patient to get in and out of the bed.

The turn assist feature includes a head assembly and seat assembly. These assemblies provide a means of tilting the mattress laterally, and therefore the patient, to a given angle.

- The internal bladder pressure is determined based on patient weight.
- The internal bladder pressure will achieve a predetermined angle of turn.
- The turn assist feature can be placed on hold or stopped at any time during use.

The bottom cover provides an encasement that covers all internal components on the bottom and sides of the mattress. The cover has two bellows, one in the head section and the other in the seat section, that contain a portion of the turn assist plates. These bellows allow for increased turn angle without putting stress on the top and bottom covers.

The bottom cover has an umbilical tube (sleeve) that fully covers the tube exit and interface connector assembly. The interface connector assembly has a heel cover which snaps into the frame to protect the fittings from any loads applied by the patient or caregivers.

The turn assist plates provide the means for the turn assist bladder to achieve enhanced turn performance by distributing the load on the mattress across the entire width as well as moving the pivot point of the turn to the outer most edge of the mattress.

- The mattress has two turn plates, one in the head section and the other in the seat section (194490 and 194491).
- Each plate has three layers. The top layer during a left turn will solely support the weight of the mattress and patient. The middle layer during a right turn shares the load with the top layer. The bottom layer always remains flat and supported by the upper frame.
- The bottom plate is shorter in length and chamfered opposite the hinge to make assembly into the bottom cover bellow easier.
- The head plate is slightly larger than the seat plate in the mattress length direction. This is driven by seat and head pan space in the frame as well as support area needed for a patient on the mattress.

The Turn Assist bladders turn the mattress to the left or the right. There are four bladders per mattress, two head bladders and two seat bladders (194623 and 194624).

- The side-specific bladders operate at the same time and share the same air supply.
- Each bladder consists of two cells stacked on top of one another. This design allows the bladder to match the shape of the bottom cover bellows where the bladder resides. The correct assembly of the bladders into the bottom cover and on to turn plates is necessary so the bottom cover can expand to allow full turn angle. If the bladder is not in the correct location, it will cause the bottom cover to slow the turn bladder expansion and reach the pressure set point too soon; this will reduce the achievable turn angle.

Air Deck Module (Pneumatic Assembly)

The air deck module provides the necessary pressurized air to achieve the following functions when used with the max mattress: patient support function, turn assist, and MCM. The MCB communicates the user inputs from the GCI, hand held remote control, or caregiver controls to the ACB. The ACB then initiates the necessary action of the air deck. These commands help drive the functionality of the air deck module, which can be separated into three major functions: MCM, patient support inflation and deflation, and turn assist inflation and deflation.

- **MCM**—the module provides air flow through the top layer of the mattress to help manage temperature and humidity as part of the effort to reduce deep tissue injury occurrence and severity.
- **Patient Support**—the module provides the pressurized air to inflate support bladders to perform the patient support functions such as pressure redistribution, Max Inflate, CPR assist, Boost®, comfort adjust, side-exit assist, and side-sitting detect. The required set points for these functions are controlled via the set point equations implemented in the software.
- **Turn Assist**—the module provides the pressurized air to inflate the turn assist bladders and helps accelerate the deflation of the bladder by creating a passive suction in the bladders during deflation. The required pressure is determined by the set point equations implemented in the software.

The functional elements of the air deck module are:

- Air source (blower)
- Manifold
- ACB
- Surface detect sensor
- Pressure sensors
- Air deck enclosure
- Blower mounting plate
- Frame attachment isolators
- Blower mounting isolators
- Sound dampening foam
- Frame attachment bracket
- IPX4 cover
- Gaskets, air filter, and tubes

The air deck module is installed underneath the foot section of the bed and, through an interface connector, is connected to tubes routed through the mattress to various zone bladders.

The MCB receives commands from the user control interface and sends the appropriate signals to the ACB to control the air deck module. When a function is requested by the control interface, the ACB energizes the appropriate solenoid valve(s) on the manifold and sets the appropriate pulse width modulation (PWM) for the blower. The power budget for the air deck module is approximately 160 watts.

Air enters the air deck module through the inlet air filter. The air travels over the ACB and into the blower inlet orifice. The blower is then able to push air through the manifold and tube routings to the appropriate bladder(s).

Each bladder has a pressure tap that is routed back to the air deck module. These pressure taps are routed to the manifold and are connected to the pressure sensors through sense lines on the ACB for feedback of pressure levels inside the bladders. For example, if pressures in the head or seat zone bladders move outside of tolerance range requirements, the pressure sensors sense the bladder pressures, provide feedback to the ACB, and the bladder pressures are adjusted accordingly. The system is closed-loop and feedback dependent.

The output air flow from the blower flows through a discharge hose into the inlet of the manifold. A pressure tap is in the manifold body and a sense line connects to the manifold pressure sensor on the ACB from the pressure tap. This pressure corresponds to the blower's output. This allows the ACB to regulate the speed of the blower in correlation to pressure. For example, it is required that the blower discharge pressure be 6 ± 1 " H₂O for MCM function. The microcontroller is able to communicate to the blower controller so that appropriate PWM settings are fixed in order to establish the correct pressure and flow output from the blower.

In order to deflate the turn assist bladders in a time frame that meets requirements, a pressure gradient must be established to create suction so the blower is able to deflate the bladders faster. The blower inlet orifice creates a restriction and pressure differential so suction may be applied to turn assist deflation. A return hose is routed from the manifold to the blower chamber so the air may be drawn from the turn assist bladders while the blower is at a maximum PWM.

All of the tube routings and sense lines from the bladders are connected to the mattress interface connector, along with the mattress detect sensor. The sensor is a hall effect sensor that changes its output voltage when it senses a magnetic field. A magnet is attached to the mattress interface connector and excites the hall effect sensor when connected to the air deck module. This change in voltage from the mattress detect sensor is sent to the ACB. The ACB then realizes a mattress has been connected to the air deck and sends power to the air deck components to begin regulating mattress bladders.

The ACB determines the activities the air deck needs to perform based on the input from the interfacing components. The ACB has the driver to run the blower and pressure sensors, which read the pressure from the bladder as well as the blower's discharge pressure. A microprocessor in the board determines the function to be executed based on the inputs from other interfacing elements.

The air source in the air deck module is the 3-phase, brushless, direct-driven, centrifugal DC motor. The blower speed is controlled through PWM. A blower controller on the ACB controls the PWM for the blower motor. The blower is responsible for supplying air to the various bladders and zones of the mattress.

A thermistor is also installed on the blower as a means for thermal protection. The output of the thermistor is used to determine the blower's casing temperature. The blower is capable of providing 23 CFM flow at an unrestricted condition and 55" H₂O static discharge pressure at fully restricted condition.

The manifold assembly consists of individual valves that regulate the air supply to different zones. The manifold assembly directs air flow from the blower to specific zones of the surface by energizing the appropriate solenoid valve(s). The manifold contains 6 valves: MCM, head, seat, zone 3 (extra), right turn assist, and left turn assist.

The manifold responds appropriately to the specific functions requested:

- MCM operation—the MCM valve is a normally open valve since the air deck operates 99% of the time in MCM mode. For the remaining 1% of the time, the air deck provides the air supply to the patient support bladders and turn assist bladders.
- Patient support bladder inflation—the patient support bladder valves are normally closed in order to seal the air in the bladders and prevent leaks. When an air supply is required to fill the support bladder, the MCM valve is energized; which closes the MCM valve to build the back pressure. Once the back pressure has been generated, the corresponding support bladder valve is opened to allow pressurized air to fill the bladder.
- Patient support bladder deflation—when deflation is required to release air from the support bladders, the blower speed is reduced followed by opening the support bladder valve. This allows the air from the support bladder to escape through the MCM valve since the MCM valve is normally open.
- Turn assist inflation—the turn assist valve is a three-way valve, which is normally closed in the fill direction and normally open in the vent direction. There are individual valves for both the left and right turn assist functions. When inflation is required, the MCM valve is energized (closed), followed by energizing the appropriate turn assist valve. When the turn assist valve is energized, the valve opens the fill direction and closes the vent direction. The blower speed is then increased to route the pressurized air to the turn assist bladders. When required to hold the turn assist bladders, the blower speed is then reduced to zero. A check valve is used in the manifold which allows the air to pass in the fill direction and seals the air in the return direction towards the inlet.

3

The surface detect sensor is on the interface plate of the manifold assembly and is electrically connected to the ACB via the hall sensor cable (195954). The purpose of the hall effect sensor is to detect the magnet on the mattress interface connector and send appropriate signals to the ACB signifying that a compatible max mattress has been connected. If the hall sensor does not sense a magnetic field, the blower will remain in the OFF state. The interface plate contains a depression to easily secure the hall switch and cable retainer to retain the sensor cable.

The blower inlet orifice is the main inlet to the blower suction and is integrated into the turn assist return hose (193799). The orifice creates an intended pressure restriction through the main inlet, which is higher than the pressure restriction through the turn assist return passage, up to a certain flow. This enables the blower to preferentially create suction through the turn assist return passage. The orifice provides around a 2.8" H₂O pressure drop from ambient when no air flow from the turn assist bladder is available. A total pressure difference of 10" H₂O, with respect to turn assist bladder, is equal to the lowest patient set point when the bladders are filled with pressurized air.

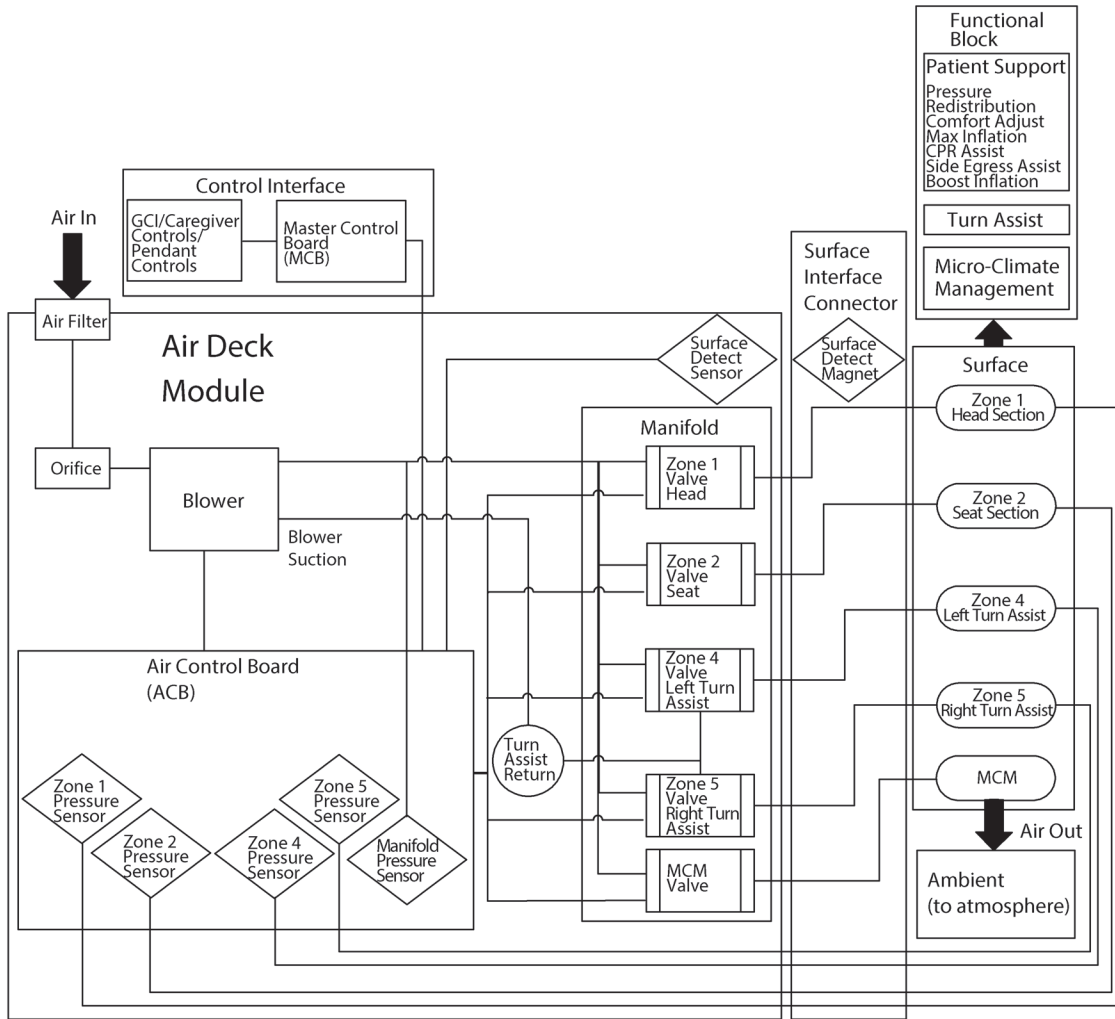
The air inlet filter is in a removable compartment on the air deck.

All of the powered components inside of the air deck module are connected to the ACB with positive latch connectors. The system also monitors for external faults.

The ACB has a total of 6 electrical connections: power cable, CAN communications cable, blower cable, manifold turn assist solenoids cable, support bladders and MCM solenoids cable, and hall sensor cable. The power cable and CAN communications cable are combined into the same cable harness (211335), but connect to the ACB in two different connectors. This cable comes out of the air deck enclosure and connects to the MCB.

The manifold makes two connections to the ACB with two different cables. One cable is for turn assist solenoids and the other is for MCM and support bladder solenoids.

Figure 3-4. Air System Block Diagram



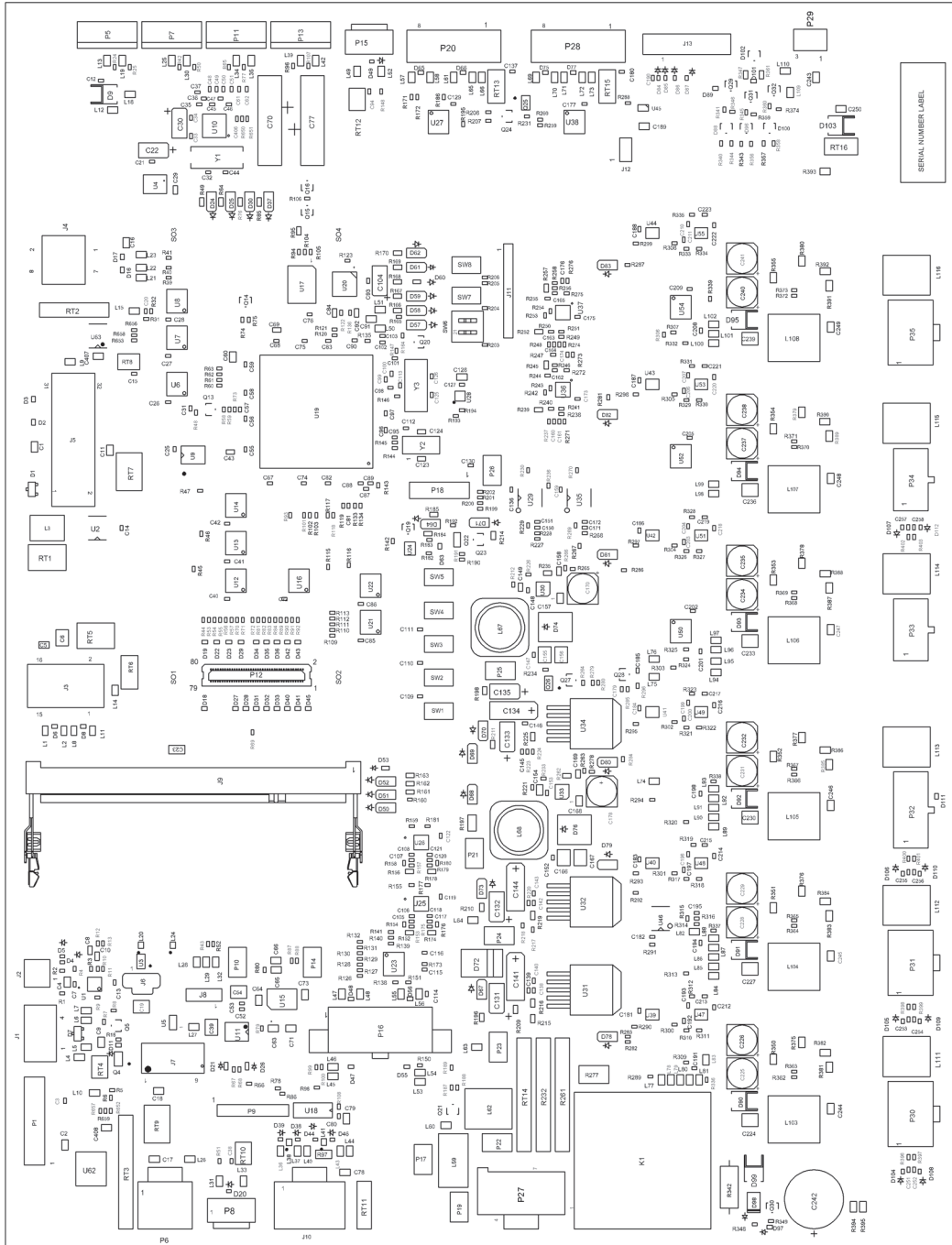
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P.C. BOARD LAYOUTS AND WIRING DIAGRAMS

P.C. Board/Wiring Diagram	Part Number	Page
MCB, standard (NA) scale	192022	3-28 and 3-29
MCB, OIML EN 45501 Class scale	208195	
BCB	195549	3-30
HFB, left	207611	3-30
HFB, right, with USB	207608	3-31
HFB, right, without USB	207609	3-31
DCB	195237	3-32
SCB	192025	3-32
ACB	192177	3-33
SafeView®2 control P.C. board	198430	3-34
SafeView®2 light P.C. board	198433	3-34
SafeView®2 ES light P.C. board	198436	3-35
Experience Pod® Device P.C. board	194895	3-35
pro+ integrated mattress blower board	2084785	3-36
Unit wiring diagram—beds before serial number V024PF2897	194664	FO 1*
Unit wiring diagram—beds with serial number V024PF2897 and higher	194664	FO 2.1 and FO 2.2*

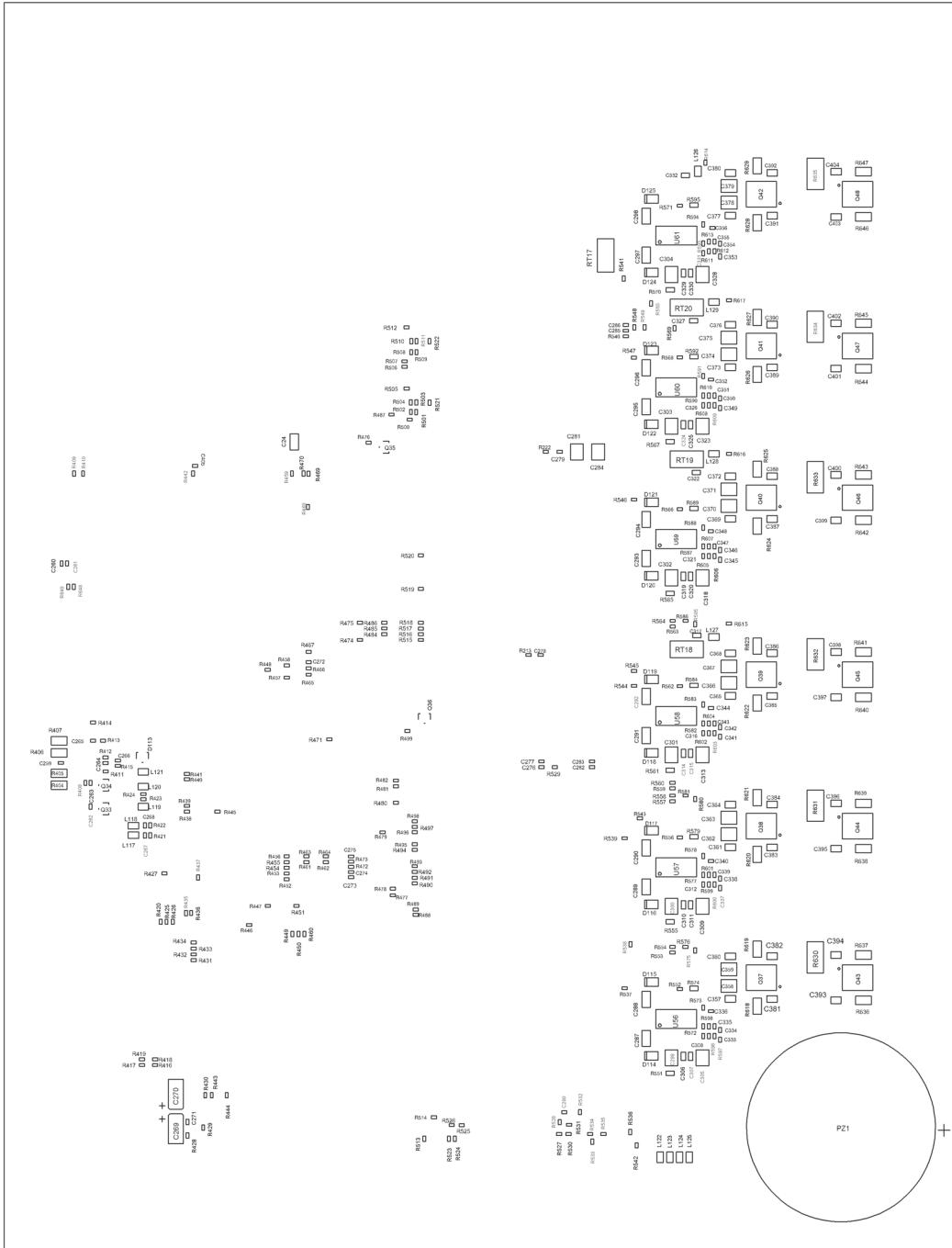
* The wiring diagrams are on fold-out pages at the rear of this manual.

MCB—TOP



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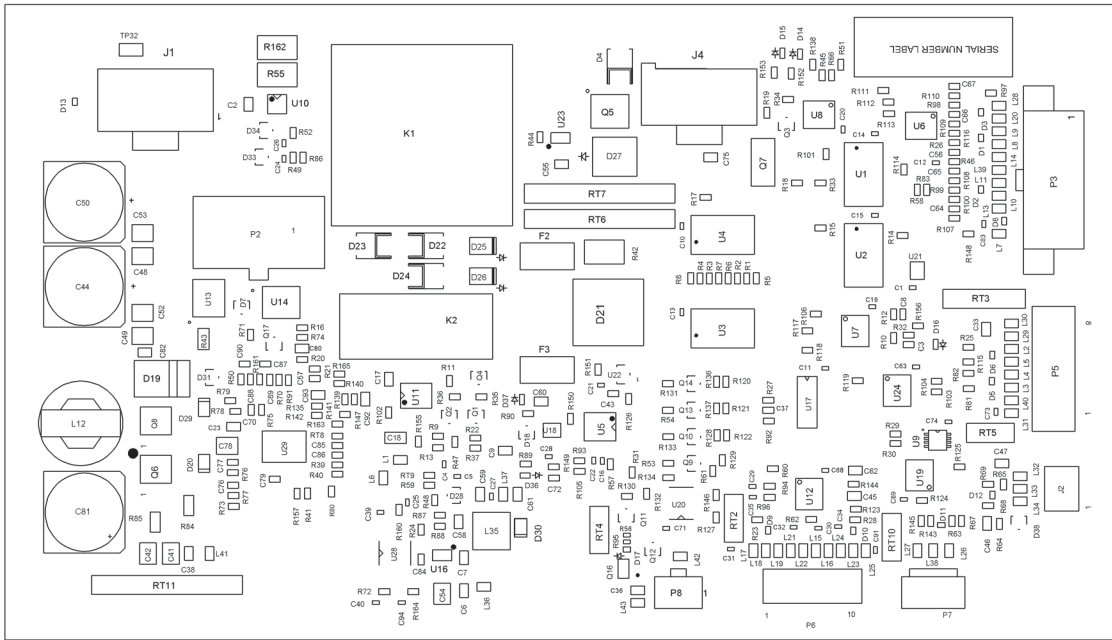
MCB—BOTTOM



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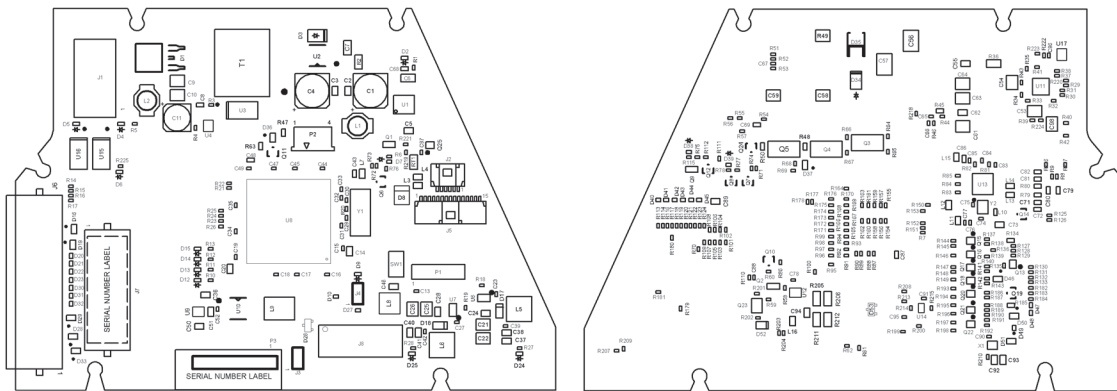


BCB



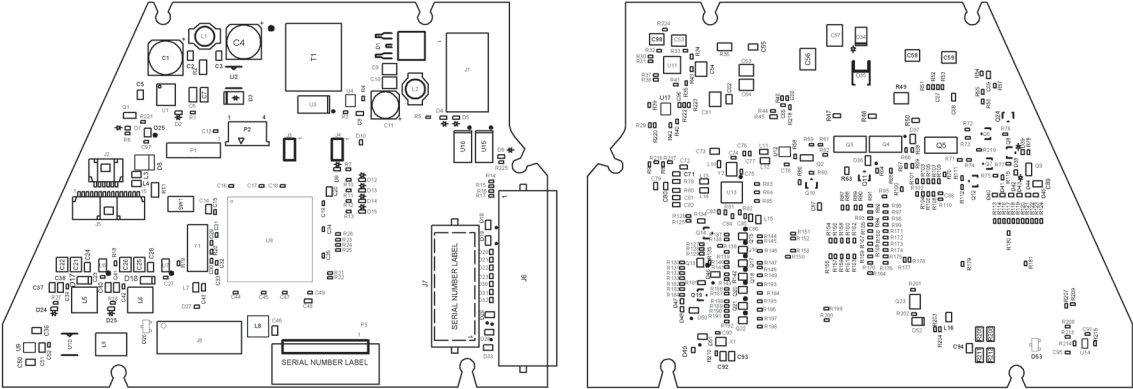
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HFB—LEFT (TOP AND BOTTOM)



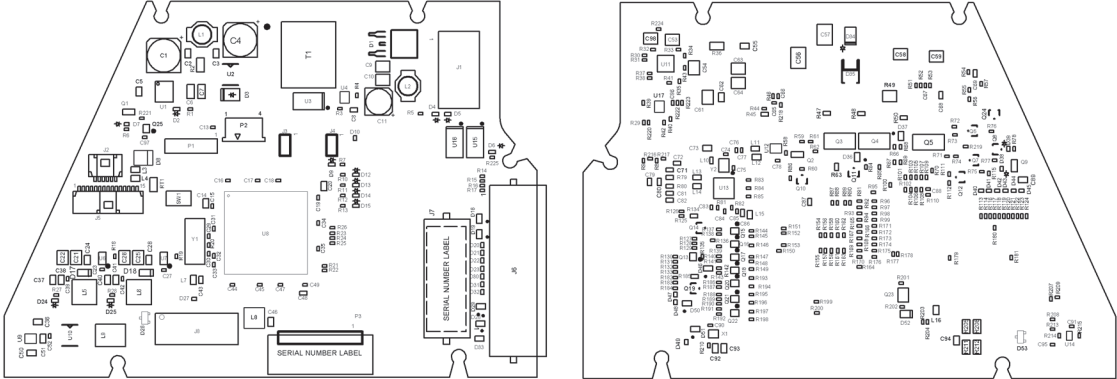
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HFB—RIGHT, WITH USB (TOP AND BOTTOM)



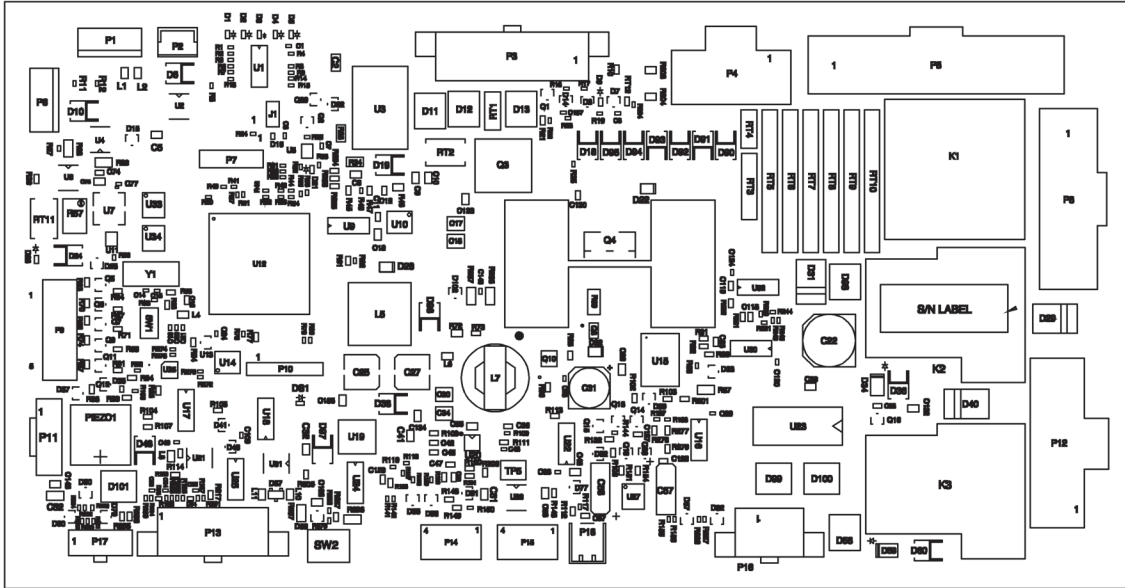
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HFB—RIGHT, WITHOUT USB (TOP AND BOTTOM)



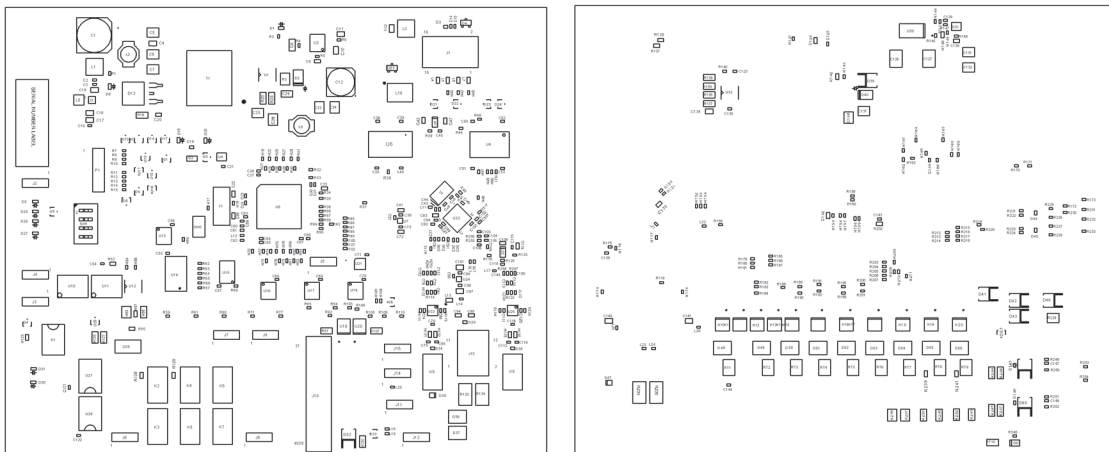
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DCB



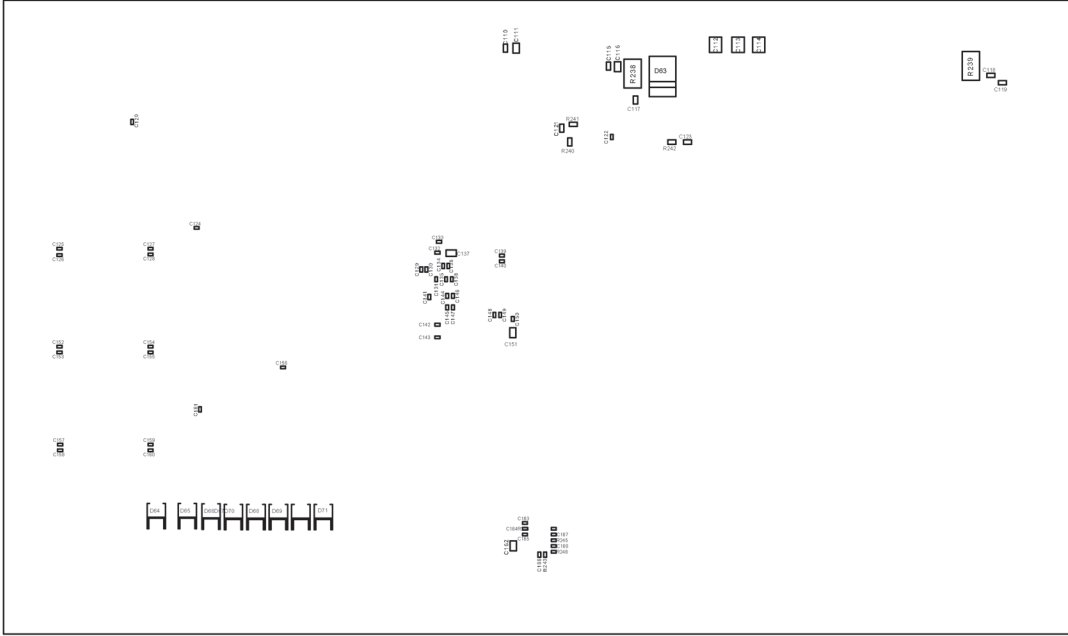
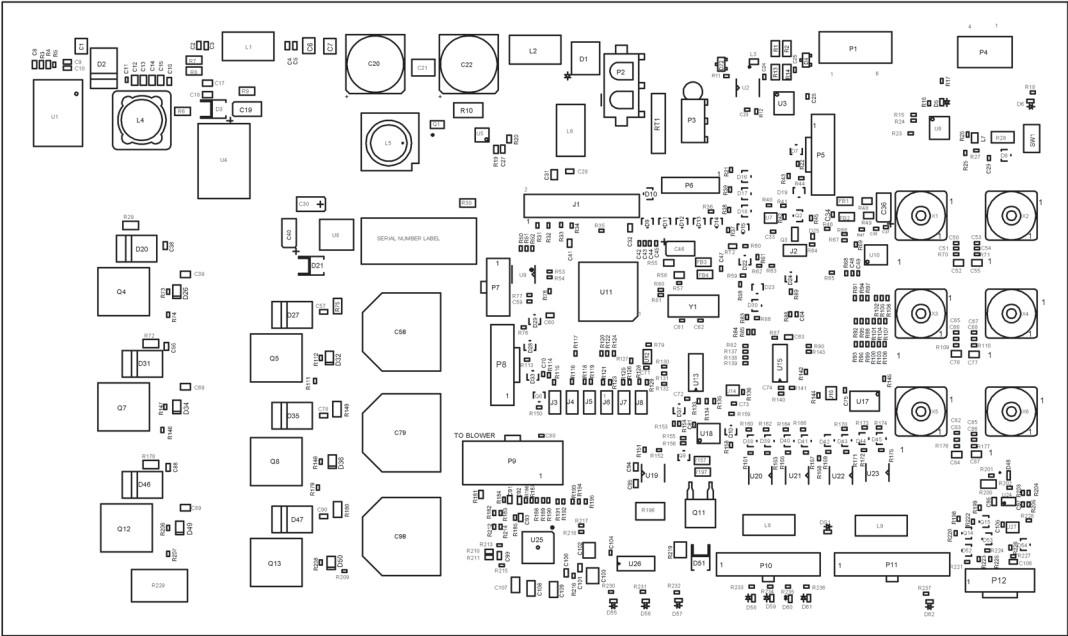
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SCB (TOP AND BOTTOM)



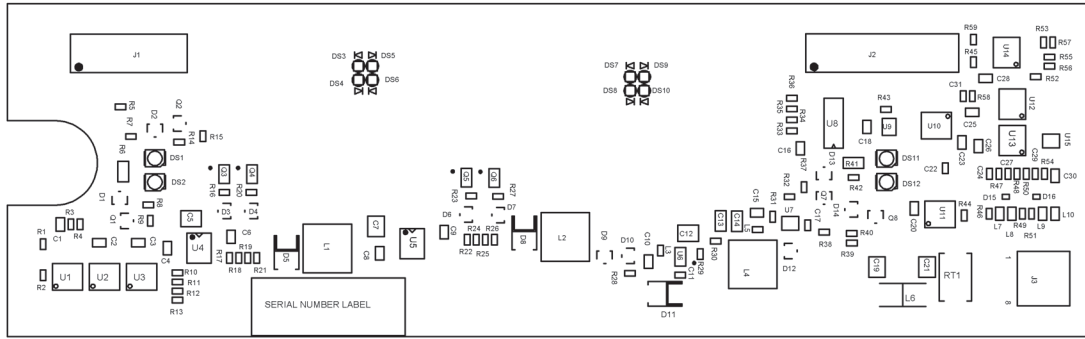
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ACB



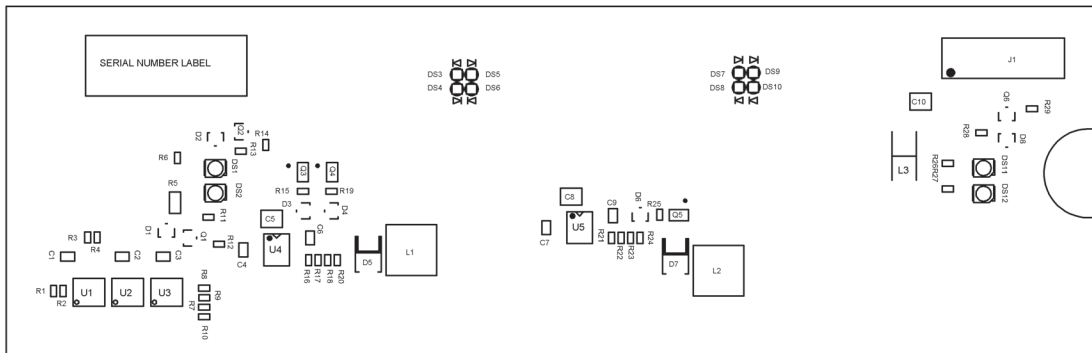
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SAFEVIEW®2 CONTROL BOARD



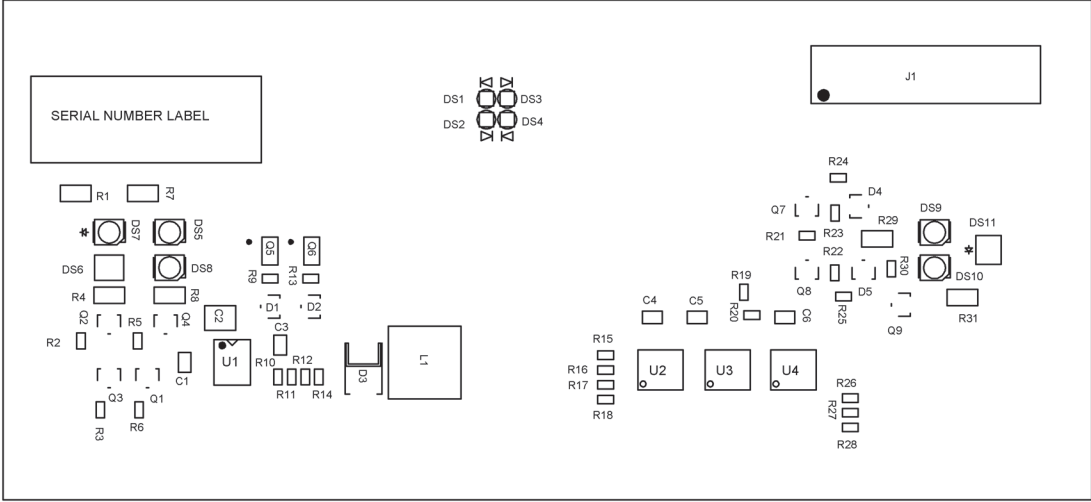
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SAFEVIEW®2 LIGHT BOARD



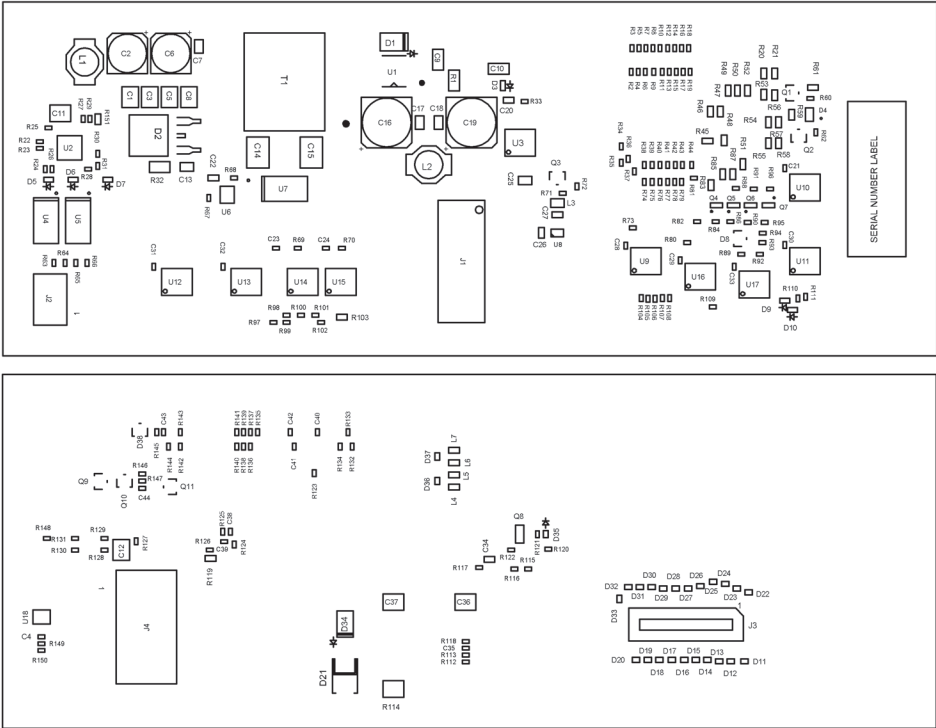
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SAFEVIEW®2 ES LIGHT BOARD



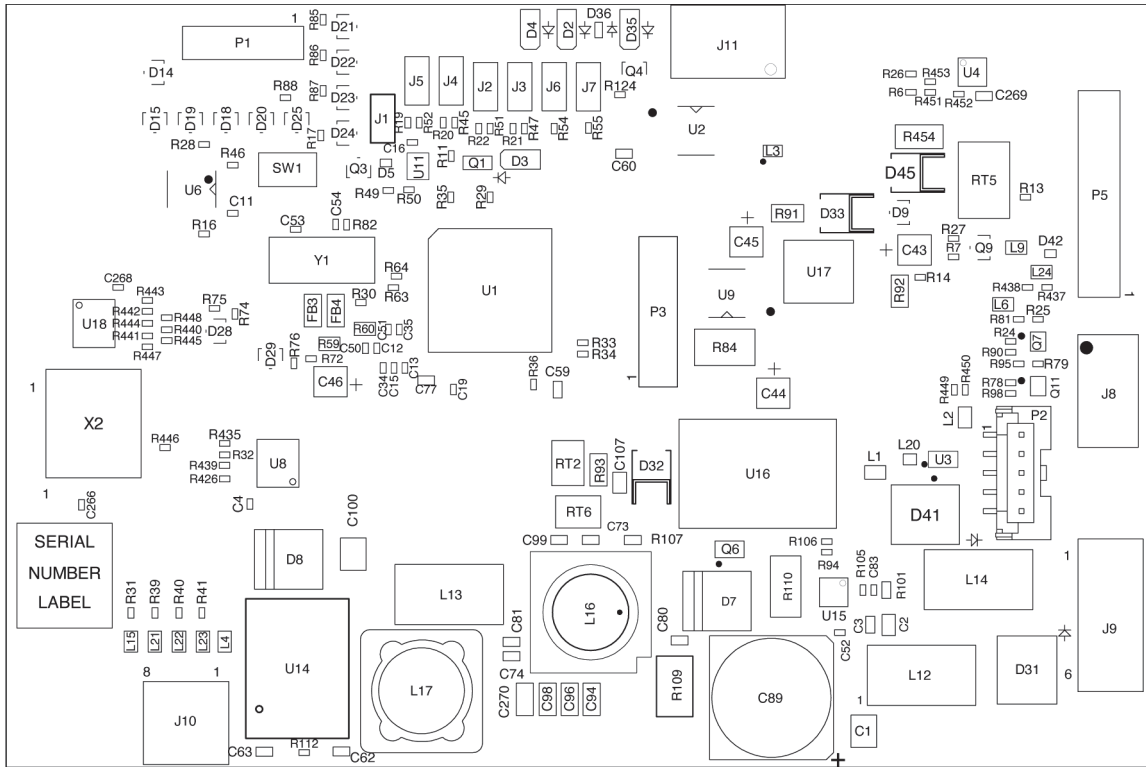
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EXPERIENCE POD® DEVICE BOARD (TOP AND BOTTOM)



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PRO+ INTEGRATED MATTRESS BLOWER BOARD



Chapter 4

Procedures

TOOL AND SUPPLY REQUIREMENTS

- Drift punch
- Punch
- 3/4" wrench
- 9/16" open end wrench
- 5 mm, 10 mm, 12 mm, and (2) 13 mm wrenches
- 2 mm, 2.5 mm, 4 mm, 5 mm, 10 mm, and (2) 13 mm hex wrenches
- 4 mm and 5 mm T-handle hex wrenches
- 3/16" nut driver
- T10, T15, T20, T25, and T30 Torx® screwdrivers
- T25 Torx® short screwdriver
- Torque wrench
- T25 Torx® socket
- Torx® screwdriver extension
- 7 mm, 8 mm, 10 mm, and 13 mm sockets
- Right-angle bit driver
- Needle nose pliers
- Wire cutters
- Ratchet
- (2) head stop bracket (P/N 202004)
- Hammer
- Small screwdriver
- Screwdriver
- Phillips head screwdriver
- Jewelers screwdriver
- Weight, 100 lb (45.359 kg)
- Alcohol-based cleaner
- Isopropyl alcohol
- Soft cloth
- Antistatic strap
- String, approximately 10' (305 cm)
- Tape
- Centrella® service tool
- Wheel wedge supports or equivalent
- (2) jack stands
- Cable puller (come-along)

- Safety stand kit (M01976)
- Cable tie gun
- Dry WatchCare® smart pad
- Protective covering (for siderails)

REQUIRED TOOLS AND SUPPLIES FOR A BED WITH THE EN 45501 (OIML) SCALE

- Weight set, 250 kg, Class M1 or better, which should include these:
 - (1) 500 g
 - (1) 200 g
 - (10) 50 g
 - (2) 15 kg
 - (20) 10 kg
 - (4) 5 kg
 - (4) 1 kg
- Thin-blade screwdriver
- White gloves with rubber facing
- Calculator
- Digital protractor (inclinometer; P/N 209177 or equivalent)

COMPONENT HANDLING



CAUTION:

To prevent equipment damage, obey the **cautions** below:

- **Caution**—To prevent component damage, make sure your hands are clean, and handle the P.C. board by its edges **only**.
- **Caution**—Wear an antistatic strap when you handle electronic components.
- **Caution**—For shipping and storage, put the removed P.C. board in an antistatic protective bag.

P.C. BOARD

Be careful with the P.C. board when you service it, or these problems could occur:

- P.C. board damage
- Shortened P.C. board life
- Unit malfunctions

When you service the P.C. board, do as follows:

- Make sure your hands are clean and free of moisture, oily liquids, etc.
- Touch the P.C. board by its outer edges **only**.
- Do not touch the P.C. board components. Finger contact with the board surface and/or with its components can leave a deposit that could cause board (and component) deterioration.
- When you work with electronics, wear an applicable antistatic strap, and make sure it is correctly grounded.
- Service the removed P.C. board at a static-free workstation that is correctly grounded.
- For shipping and storage, put the removed P.C. board in an antistatic protective bag.

LUBRICATION REQUIREMENTS



CAUTION:

Failure to obey these cautions could cause equipment damage:

- **Caution**—Use lubrication products in accordance with the manufacturer's instructions.
- **Caution**—Do not use silicone-based lubricants.

Oilite® bearings and bushings are used in several locations on the system. By retaining oil, the pores give a self-lubricating quality to the bearings and bushings. If any silicone-based lubricant is applied to the bearings and bushings or anywhere else on the system, this self-lubricating quality is neutralized.

It is safe to apply these lubricants to the system:

Part Number	Description
8252 (100)	2 oz m-1 oil (apply to Oilite® bearings and bushings)
SA3351 (100)	4 oz lithium grease
34950	Grease, lithium base, red

4.1 Disable and Enable the Transportation Mode

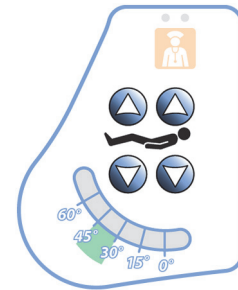
NOTE:

This mode is intended for bed shipment.

DISABLE

On the **patient** controls (inside of the siderail), press the **Head Up** and **Head Down** controls at the same time (see Figure 4-1 on page 4-4). When the bed beeps, release both controls.

Figure 4-1. Patient Controls



ENABLE

1. On the caregiver control panel, press and hold the **Lockout** control for approximately 20 seconds. A beep lets you know the bed is in Service mode (see Figure 4-2 on page 4-4).
2. On the patient controls (inside of the siderail), press the **Knee Up** and **Knee Down** controls for approximately 5 seconds (see Figure 4-1 on page 4-4). A single beep lets you know the bed is in transportation mode.
3. Unplug the bed.

Figure 4-2. Caregiver Lockout Control



4.2 Service Mode Procedures

NOTE:

All of the controls mentioned in this section are on the caregiver control panel.

ENTER AND EXIT THE SERVICE MODE

- **Enter**—press and hold the **Lockout** control for approximately 20 seconds. A beep lets you know the bed is in Service mode.
- **Exit**—when no controls have been pressed for approximately 30 seconds, or you press the **Lockout** control, the bed exits the Service mode.

DISCONNECT ALL POWER WHEN OPERATING ON BATTERY POWER

1. Enter the Service Mode (see above).
2. Press and hold these controls at the same time until you hear a beep: **Foot Up**, **Foot Down**, and **Trendelenburg**. The bed should shut down within 5 seconds after you release the controls.

ENABLE AND USE THE MANUAL ARTICULATION MODE

1. Enter the Service Mode (see above).
2. Press and hold these controls at the same time until you hear a beep: **Trendelenburg** and **Reverse Trendelenburg**. The bed should enter should enter the Manual Articulation mode within 5 seconds after you release the controls.
3. Press the control(s) as necessary for the articulation you need:

Articulation	Press:
Bed Up	Bed Up
Bed Down	Bed Down
Head hilow extend	Bed Up and Trendelenburg
Head hilow retract	Bed Down and Trendelenburg
Foot hilow extend	Bed Up and Reverse Trendelenburg
Foot hilow retract	Bed Down and Reverse Trendelenburg
Head Up	Head Up
Head Down	Head Down
Knee Up	Knee Up
Knee Down	Knee Down
Foot Up	Foot Up
Foot Down	Foot Down
FlexAfoot™ Extend*	Foot Up and Reverse Trendelenburg
FlexAfoot™ Retract*	Foot Down and Reverse Trendelenburg

*The FlexAfoot™ controls are on the GCI.

4. To exit the manual articulation mode, press these controls at the same time: **Trendelenburg** and **Boost®**.

4.3 Set the GCI's Language, Time and Date, and Scale Units on a Bed with the Standard (NA) Scale

NOTE:

For an international bed with a standard (NA) scale, the instructions for setting the time and date are the same as those for a bed with an EN 45501 Class Scale (OIML). See "Set the GCI's Time and Date on an International Bed" on page 4-8.

From the **Bed Service** screen, you can make these GCI changes:

- Select the language shown.
- Adjust the time, date, and select daylight savings time or standard time.
- Change the scale units to show kilogram (kg) or pound (lb) and enable a control that when pressed shows the alternate unit.

NOTE:

The screen images below may not match your screen exactly; however, the highlighted controls are the same.

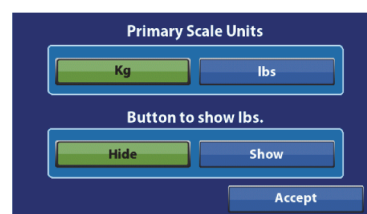
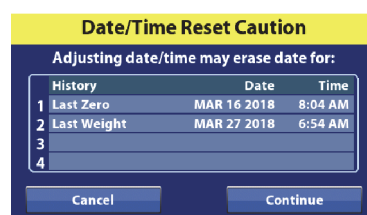
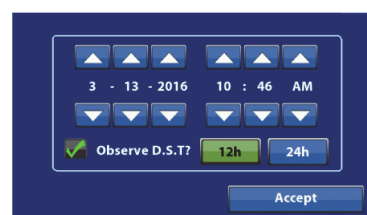
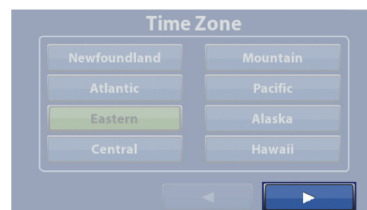
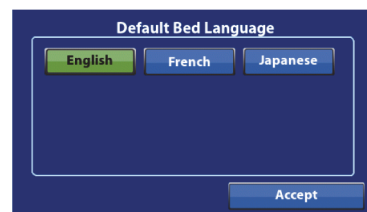
1. Press the **Settings** menu control on the GCI to get access to the Bed Service screen.
2. Press **Bed Service**.
3. Enter **812**, and press **Enter**.
4. The Bed Service screen shows. Press the feature that you want to adjust:



- **Language**—press the applicable language, and then press **Accept**.

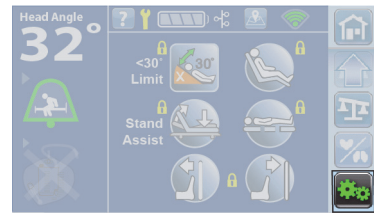
- **Adjust Time/Date**—
 - a. At the **Time Zone** screen, make sure the correct time zone is selected. If it is not, press the correct time zone to select it.
 - b. Press the **right arrow** control to access the date and time adjustment screen.
 - c. If the facility wants the time to automatically change for Daylight Savings Time, press the gray **check mark** box that is next to **Observe D.S.T.** A green check mark will show to confirm the time is to automatically change for Daylight Savings Time.
 - d. Press **12h** or **24h**, per the facility's request.
 - e. Press the **Up** and **Down** arrows to adjust the date and time to the current date and time, and then press **Accept**.
 - f. A caution screen shows to let you know the date and/or time may be erased for some of the information that is kept in the History.
 - If you do not want to erase the date and/or time, press **Cancel**. The Bed Service screen will show.
 - If you want to continue with the date and/or time adjustment, press **Continue**.

- **Scale Units**—
 - a. Press **kg** or **lbs** to select the primary scale units.
 - b. If you would like to enable the option to view the alternate unit, press **Show**. A control will be available on the Weigh screen for the user to press and hold to see the weight in the alternate unit. Otherwise, press **Hide** to not enable the option.
 - c. Press **Accept**.

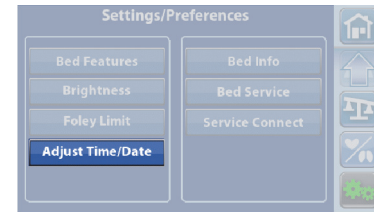


4.4 Set the GCI's Time and Date on an International Bed

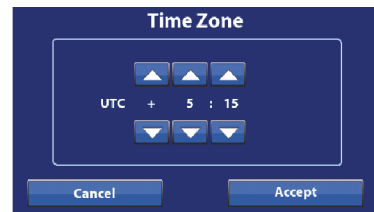
1. At the GCI, press the **Settings** menu control.



2. Press **Adjust Time/Date**.

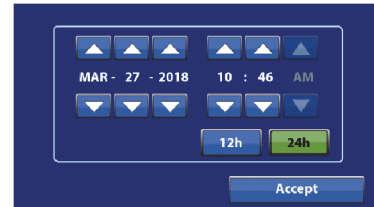


3. At the **Time Zone** screen, press the **Up** and **Down** arrows to set the local time zone per Universal Time Code (UTC) standards, and then press **Accept**. The date screen will show.



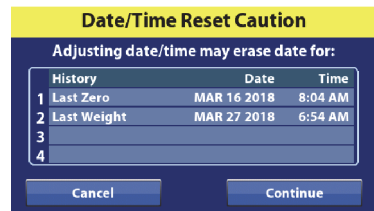
4. Press **12h** or **24h**.

5. Press the **Up** and **Down** arrows to adjust the date to the current date, and then press **Accept**.



6. A caution screen shows to let you know the date and/or time may be erased for some of the information that is kept in the History. You have these options:

- **Cancel**—press this if you do not want to erase the dates and/or times for the listed entries.
- **Continue**—press this if you want to continue with the date and/or time adjustment,



The Settings/Preferences screen will show.

4.5 Diagnostics—View and Clear Errors

NOTE:

To get access to the full service diagnostics using the Centrella® service tool app, go to Procedure 4.26 on page 4-60.

1. Press the **Settings** menu control on the GCI.



2. Press **Bed Service**.



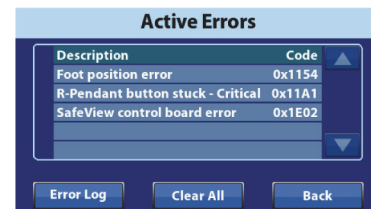
3. Enter **812**, and then press **Enter**.



4. Press **Diagnostics**.



5. The **Active Errors** screen shows with a description of the error(s) and the diagnostic code associated with error. Use the up/down arrow to scroll through the active errors. You have these options:

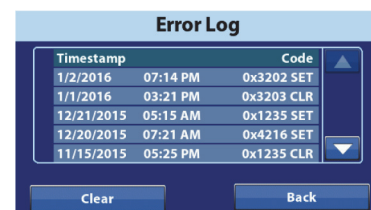


- **Error Log**—shows the dates and times the error occurred and the diagnostic code for each occurrence. To see the error log associated with the active error, select the error, and then press **Error Log**. See “Error Log” on page 4-9.
- **Clear All**—if applicable, press **Clear** to clear all of the active errors.
- **Back**—the GCI returns to the Bed Service screen.

ERROR LOG

At the **Error Log** screen, you have these options:

- **Clear**—if applicable, select the instance you want to clear, and then press **Clear** to clear the error.
- **Back**—the GCI returns to the Active Errors screen.



4.6 Calibrate the Scale—Standard (NA)

Tools: Weight, 100 lb

The scale calibration weight must be 100 lb ± 0.1 lb (45.359 kg ± 45 g).



WARNING:

Warning—Follow each step carefully to properly calibrate the scale. If each step is not followed, patient/user injury and/or equipment damage could occur.

BED SETUP

1. Make sure the bed is plugged into AC power.
2. Set the brake.
3. At the GCI, make sure the Home screen shows.

NOTE:

We recommend that you remove the mattress; go to the applicable procedure:

- “core, pro, and max Mattresses—Removal” on page 4-149
- “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
- “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167

CALIBRATION PROCEDURE

NOTE:

The GCI will time out if you have not touched the screen for a period of time. During the calibration procedure, you may need to touch the screen to prevent the procedure from being interrupted.

1. At the GCI, press the **Settings** menu control.



2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



4. Press **Calibrate Scale**.5. Make sure the bed is in its flat and highest positions, press **Continue**.**NOTE:**

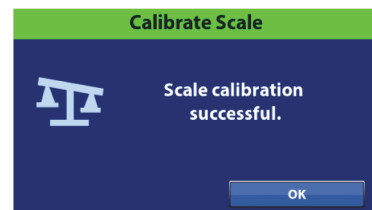
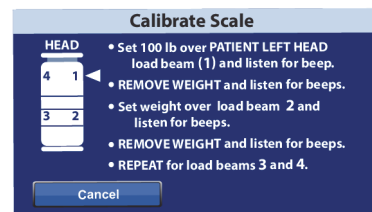
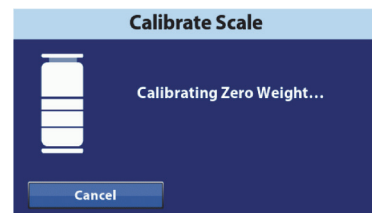
The siderails can be raised or lowered.

The bed will calculate a zero weight, and then sound a beep.

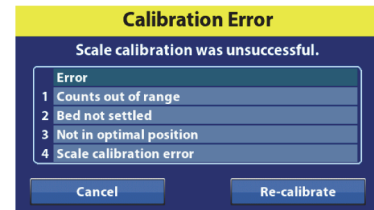
6. Set the calibration weight (100 lb) on the bed over the **patient left, head-end** load beam (location 1), and listen for one beep.
7. **Remove the weight** from the bed, and listen for two beeps.
8. Set the weight on the bed over the **patient left, foot-end** load beam (location 2), and listen for another two beeps.
9. **Remove the weight** from the bed, and listen for three beeps.
10. Set the weight on the bed over the **patient right, foot-end** load beam (location 3), and listen for another three beeps.
11. **Remove the weight** from the bed, and listen for four beeps.
12. Set the weight on the bed over the **patient right, head-end** load beam (location 4), and listen for one beep. (This beep indicates that the calibration completed successfully.)
13. **Remove the weight** from the bed.
14. The screen will show "Scale calibration successful." Press **OK** to return to the Bed Service screen.

NOTES:

- If the bed beeps before you have set all of the calibration weight on the bed, press **Cancel** to return to the Bed Service screen, and then start the calibration process again.



- If an error occurs during the calibration, the **Calibration Error** screen will show. Press **Cancel** to return to the Bed Service screen and address the error, or press **Re-calibrate** to start the calibration process again.



15. Do as follows to confirm the calibration:
 - a. Set 100 lb of weight on the bed.
 - b. Press **Weigh**.
 - c. Make sure the GCI shows approximately 100 lb.

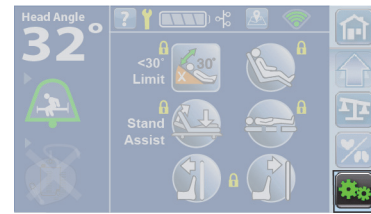
NOTE:

The scale accuracy in the recommended bed position is 1.1 lb (0.5 kg) or 0.5% of patient weight, whichever is greater. The scale accuracy in the not optimum position is 2.2 lb (1.0 kg) or 1% of patient weight, whichever is greater.

16. If the mattress was removed, replace it. See the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
17. Do the “Function Checks” on page 2-1.

4.7 Zero the Standard (NA) Scale with or without Resetting the Bed

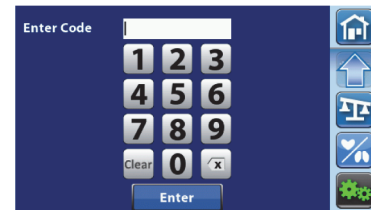
1. Press the **Settings** menu control on the GCI.



2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



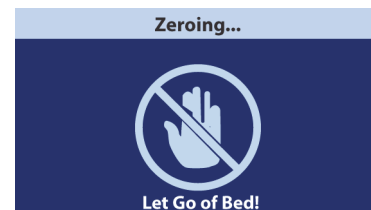
4. Press **Zero Scale**.



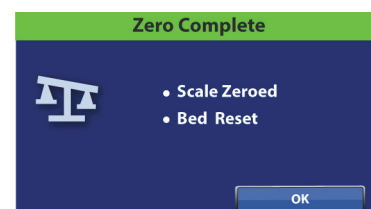
5. Press the applicable option:
 - **Zero/Reset**—this zeroes the scale and resets the bed.
 - **Zero**—this zeroes the scale without resetting the bed.



6. The zero process will begin. Do not touch the bed during the process.

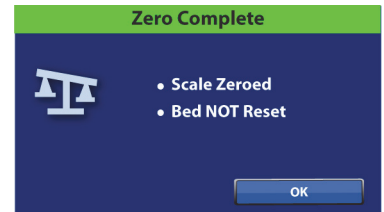


7. When the zero process is complete, you will see one of these screens:
 - Scale zeroed and bed reset



4

- Scale zeroed and bed not reset



8. Press **OK**. The GCI returns to the Bed Service screen.

4.8 Calibrate the Scale—EN 45501 Class Scale (OIML)

Tools: Verification Weight set, 250 kg, Class M1 or better
 White gloves with rubber facing Thin blade screwdriver
 Calculator

Parts: Replacement OIML scale board seal (see the second note below)



WARNING:

Failure to obey these warnings could cause injury and/or equipment damage:

- **Warning**—A representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the OIML EN 45501 class scale, if installed.
- **Warning**—Follow each step carefully to properly calibrate the scale. If each step is not followed, patient/user injury and/or equipment damage could occur.

NOTES:

- Whenever the MCB, MCB speaker, or a load beam is replaced, you must calibrate the scale.
- The Notified Body or AHJ representative will provide a replacement OIML scale board seal and verification of the weights.

The recommended verification weight set, 250 kg, should include these:

- (1) 500 g
- (1) 200 g
- (10) 50 g
- (2) 15 kg
- (20) 10 kg
- (4) 5 kg
- (4) 1 kg

The recommended weights can be substituted with equivalent incremental weight amounts given the totals are equivalent. For example, one 100 g weight may be substituted for two 50 g weights. However, you must have a minimum of two 15 kg weights and seven 10 kg weights.

The Scale Calibration procedure includes—

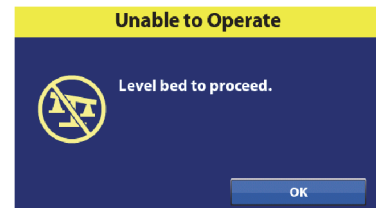
- Setup
- Crunch Procedure (only if a load beam has been replaced)
- Calibration Procedure
- Zeroing the Scale and Weighing Procedure
- Verification Report Form
- Final Steps

SETUP

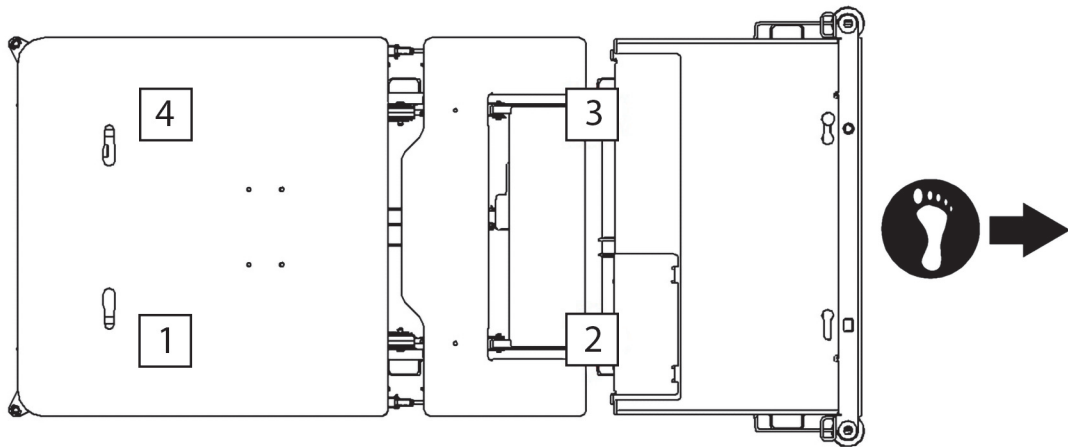
1. Make sure the bed is in this configuration:
 - The bed is plugged into AC power.
 - The brake is set.
 - The bed is in its flat and highest positions,
 - The foot section is fully extended.
 - The siderails are lowered.
 - The headboard and footboard are removed.
 - The mattress is removed; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
2. At the GCI, make sure the Home screen shows. If error messages show, press **Close** until the home screen shows.

NOTES:

- It is only necessary to do the Crunch Procedure if a load beam or other weigh frame part has been replaced. If parts were not replaced, ignore the Crunch Procedure, and go to “Calibration Procedure” on page 4-17.
- Do not move the bed during the crunch and calibration procedures.
- If at any time during the procedure, the **Unable to Operate** screen shows, press **OK**, and then at the Home screen, press the Flat and Level control. The GCI will return to the Test Weight screen for you to start the test again.

**CRUNCH PROCEDURE**

1. Put 200 kg at location 1 (see Figure 4-3 on page 4-17).
2. Remove the weight.
3. Put 200 kg at location 2.
4. Remove the weight.
5. Put 200 kg at location 3.
6. Remove the weight.
7. Put 200 kg at location 4.
8. Remove the weight.

Figure 4-3. Weight Locations—Crunch Procedure**CALIBRATION PROCEDURE****WARNING:**

Warning—A broken seal on the scale board housing invalidates the bed's compliance with the NAWI directive. Additionally, a representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the OIML EN 45501 class scale.

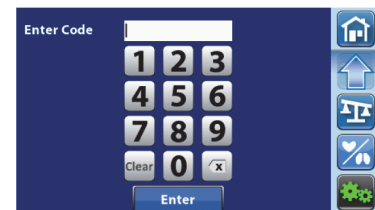
1. At the GCI, press the **Settings** menu control.



2. Press **Bed Service**.



3. Enter **722532**, and then press **Enter**.

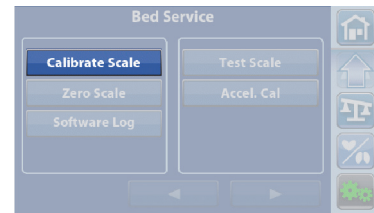


4

4. Press **Continue**.



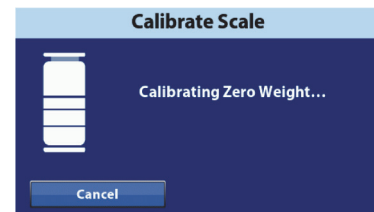
5. Press **Calibrate Scale**.



6. Make sure the bed is in this configuration, and then press **Continue**:

- The bed is in its flat and highest positions.
- The foot section is fully extended.
- The siderails are lowered.
- The headboard and footboard are removed.
- The mattress is removed.

The bed will calculate a zero weight, and then sound a beep.



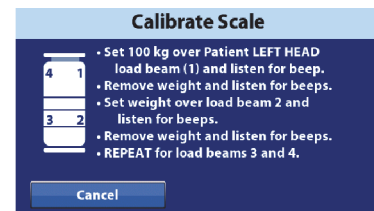
CAUTION:

Caution—For the scale calibration, use 100 kg of weight in increments of two 15 kg weights and seven 10 kg weights in the order specified. Otherwise, repeatability of the scale system could be affected.

NOTE:

For each set and removal step (Step 7 through Step 14), it is important that you set and remove the 100 kg of weight in this order: (1) 15 kg, (7) 10 kg, and (1) 15 kg.

7. Set the calibration weight on the bed over the **patient left, head-end** load beam (location 1), and listen for one beep.
8. **Remove the weight** from the bed, and listen for two beeps.
9. Set the calibration weight on the bed over the **patient left, foot-end** load beam (location 2), and listen for another two beeps.
10. **Remove the weight** from the bed, and listen for three beeps.



11. Set the calibration weight on the bed over the **patient right, foot-end** load beam (location 3), and listen for another three beeps.
12. **Remove the weight** from the bed, and listen for four beeps.
13. Set the calibration weight on the bed over the **patient right, head-end** load beam (location 4), and listen for one beep. (This beep indicates that the calibration completed successfully.)
14. **Remove the weight** from the bed.

NOTES:

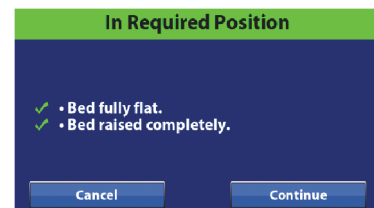
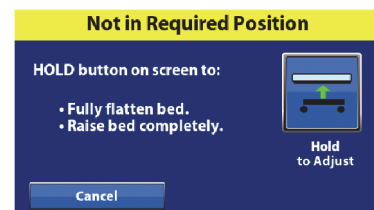
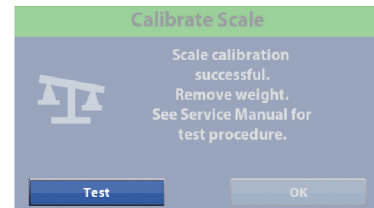
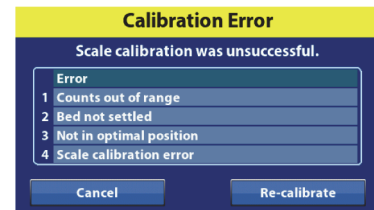
- If the bed beeps before you have set all of the calibration weight on the bed, press **Cancel** to return to the Bed Service screen, and then start the calibration process again.
- If an error occurs during the calibration, the **Calibration Error** screen will show. Press **Cancel** to return to the Bed Service screen and address the error, or press **Re-calibrate** to start the calibration process again.
- The time and date of successful scale calibrations are entered into the scale calibration log.

15. When the calibration completes successfully, press **Test** to start the test procedure.

16. Press **Zero/Tare**.

NOTE:

If the **Not in Required Position** screen shows, to continue with the zero/tare, press and hold the **Hold to Adjust** button until the **In Required Position** screen shows. Then, press **Continue**.



4

17. Follow the on-screen instructions. When the Zero/Tare is complete, the GCI will return to the Test Weight screen.



18. Set 50 kg of weight on the bed. Look at the weight shown on the screen. The difference of the measured weight and the weight shown on the screen should be less than ± 0.5 kg. If the difference is more than ± 0.5 kg, make sure there are no cables that cross between the upper frame and the weigh frame that can affect the weight reading, and then calibrate the scale again.
19. Remove the weight.
20. Go to “Scale Verification Report Form—EN 45501 Class Scale” on page 4-20. The representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must complete the header and test sections of the form on page 4-22.

SCALE VERIFICATION REPORT FORM—EN 45501 CLASS SCALE



WARNING:

Warning—A representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the OIML EN 45501 class scale.

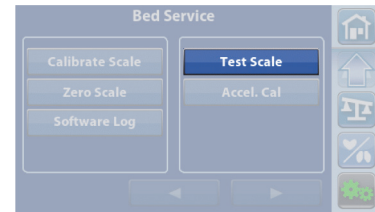
1. Make sure the bed is in this configuration:
 - The bed is in its flat and highest positions.
 - The foot section is fully extended.
 - The siderails are lowered.
 - The headboard and footboard are removed.

NOTE:

The bed must be in this configuration for the Scale Accuracy Test to collect data for the Scale Verification Report Form on page 4-22.

2. Make sure you have zeroed the bed.
3. Set 50 kg of weight on the center of the bed. Look at the weight shown on the screen. The difference of the measured weight and the weight shown on the screen should be less than ± 0.5 kg. If the difference is more than ± 0.5 kg, make sure there are no cables that cross between the upper frame and the weigh frame that can affect the weight reading, and then calibrate the scale.
4. Do Step 1 on page 4-17 through Step 4 on page 4-18 to get access the Test Scale screen.

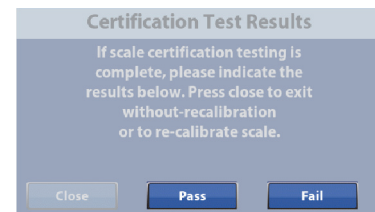
5. Press **Test Scale**.



6. Press **Hi Res**. This puts the scale in the high resolution test mode for the Scale Accuracy test.
7. Refer to the form, and continue to do all of the tests shown.

NOTES:

- Not all tests for the 3rd-party certification need to be in the Hi Res test weight resolution. Some tests will be in the Standard test weight resolution (scale icon button). The table title identifies the weight resolution needed to complete each table.
 - Between each test, remove the weight and Zero/Tare the scale.
8. After all the tests and the Scale Verification Report Form have been completed, press **Pass** or **Fail** on the **Certification Test Results** screen. Then, enter the results of the certification testing.



9. Do the "Final Steps" on page 4-21.

FINAL STEPS

NOTE:

The representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must install the scale seal (Step 3).

1. **Technician**—if a load beam was replaced, replace the load beam connector cover and clip. See "Load Beam—Replacement" on page 4-118.
2. **Technician**—Make sure the MCB cover is removed. See "MCB Speaker, SOM, and WiFi Components—Replacement" on page 4-71.
3. **Representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country**—install the scale seal.
4. **Technician**—install the MCB cover. See "MCB Speaker, SOM, and WiFi Components—Replacement" on page 4-71.
5. **Technician**—do the "Function Checks" on page 2-1.

REPORT FORM—EN 45501 CLASS SCALE ONLY

Bed Model #	Date
Bed Serial #	Time
Inspector #	
Temperature	Humidity
Latitude	Altitude
Gravity Constant	
Visual Inspection (Requirement 8.3.2)	
Pass	Fail

Table 4-1. Repeatability (Requirement 3.6.1, Test A.4.10)—High Resolution Test Setting

Load of ½MAX = 125 kg				Load of MAX = 250 kg			
	Indication of zero (I ₀)	Scale Reading/ Indication (I)	P = I - I ₀		Indication of zero (I ₀)	Scale Reading/ Indication (I)	P = I - I ₀
1				4			
2				5			
3				6			
P _{MAX} - P _{MIN} =				P _{MAX} - P _{MIN} =			
MPE 0.25 kg				MPE 0.25 kg			
PASS (P _{MAX} - P _{MIN} for either test ≤ MPE)							
FAIL (P _{MAX} - P _{MIN} for either test > MPE)							

NOTE:

Remove the weight, and Zero/Tare the scale before you do the next test.

Table 4-2. Accuracy of Tare Device (Requirement 4.7.3, Test 4.6.2)—Standard Resolution Test Setting

Load (L)	Pre-Tare Indication	Scale Reading/ Indication (I)	ΔL	Error (E = 250 g - ΔL)	MPE
25 kg					125 kg
PASS ($E \leq MPE$)					
FAIL ($E > MPE$)					

NOTE:

Remove the weight, and Zero/Tare the scale before you do the next test.

Table 4-3. Eccentricity (Requirement 3.6.2, Test A.4.7)—High Resolution Test Setting

Zone	Load (L)	Scale Reading/ Indication (I)	Error (E = I - L)	Corrected Error ($E_C = E - E_0$, with $E_0 =$ Error calculated at 0)	MPE
1	0		E_0		
	80 kg		-80.00	-80.00	0.25 kg
2	80 kg		-80.00	-80.00	0.25 kg
3	80 kg		-80.00	-80.00	0.25 kg
4	80 kg		-80.00	-80.00	0.25 kg
5	80 kg		-80.00	-80.00	0.25 kg
PASS ($E_C \leq MPE$)					
FAIL ($E_C > MPE$)					

NOTE:

Remove the weight, and Zero/Tare the scale before you do the next test.

**Table 4-4. Errors of Indication (Weighing Performance Test)
(Requirements 3.5.1, 3.5.3, and 3.5.3.4, Tests A.4.4 to A.4.6)—High Resolution Test Setting**

Load (L)	Interval Weights	Indication of 50 kg before tare:			MPE
		Load Indication (I)	Error (E = I - L)	Corrected Error (E _C = E - E ₀ , with E ₀ = Error calculated at 0)	
0 kg	0		E ₀		0.125 kg
5 kg	+5		-5.00	-5.00	0.25 kg
25 kg	+20		-25.00	-25.00	0.25 kg
50 kg	+20, +5		-50.00	-50.00	0.25 kg
100 kg	+50		-100.00	-100.00	0.25 kg
150 kg	+50		-150.00	-150.00	0.25 kg
250 kg	+100		-250.00	-250.00	0.25 kg
150 kg	-100		-150.00	-150.00	0.25 kg
100 kg	-50		-100.00	-100.00	0.25 kg
50 kg	-50		-50.00	-50.00	0.25 kg
25 kg	-20, -5		-25.00	-25.00	0.25 kg
5 kg	-20		-5.00	-5.00	0.25 kg
0 kg	-5		0.00	0.00	0.125 kg
PASS (E _C ≤ MPE)					
FAIL (E _C > MPE)					

Sealing, Stamping, and Markings:	
Pass	Fail
Conformity (Requirement 8.3.1 and EC-type approval):	
Pass	Fail

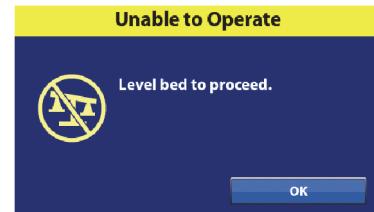
PASS (values of corrected error for all loads are less than or equal to the MPE)	
FAIL (value of corrected error for any load is greater than the MPE)	

Results of all tests within specified limits	Yes or No
--	-----------

Signature of Observer

4.9 Zero the EN 45501 Class Scale (OIML) with or without Resetting the Bed

If at any time during the procedure, the **Unable to Operate** screen shows, press the **Trendelenburg** or **reverse Trendelenburg** control on the caregiver control panel to adjust the bed to the level position. When the bed is level, press **OK** on the GCI. The GCI will return to the Test Weight screen for you to start the test again.



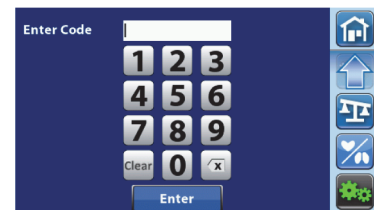
1. At the GCI, press the **Settings** menu control.



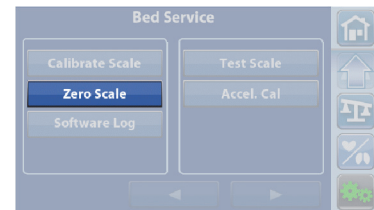
2. Press **Bed Service**.



3. Enter **722532**, and then press **Enter**.



4. Press **Zero Scale**.

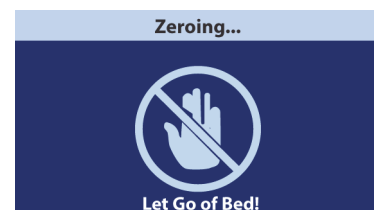


5. Press the applicable option:

- **Zero/Reset**—this zeroes the scale and resets the bed.
- **Zero**—this zeroes the scale without resetting the bed.



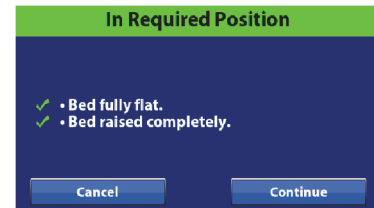
6. The zero process will begin. Do not touch the bed during the process.



4

NOTE:

If the **Not in Required Position** screen shows, to continue with the zero/tare, press and hold the **Hold to Adjust** button until the **In Required Position** screen shows. Then, press **Continue**.



7. When the zero process is complete, you will see one of these screens:

- Scale zeroed and bed reset
- Scale zeroed and bed not reset



8. Press **OK**. The GCI returns to the Bed Service screen.

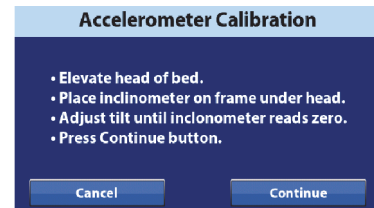
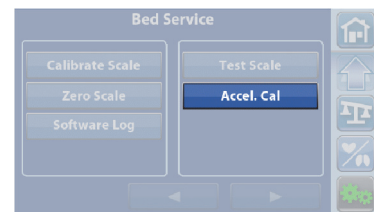
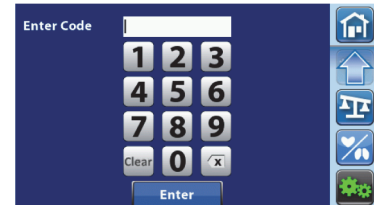
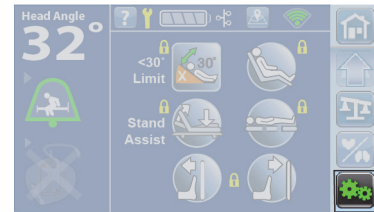
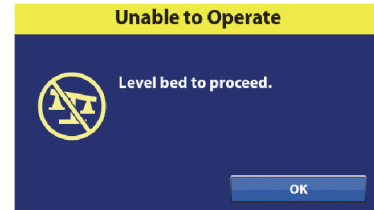
4.10 Calibrate the Accelerometer—EN 45501 Class Scale (OIML)

Tools: Digital protractor (inclinometer; P/N 209177 or equivalent)

NOTE:

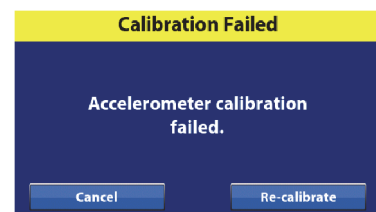
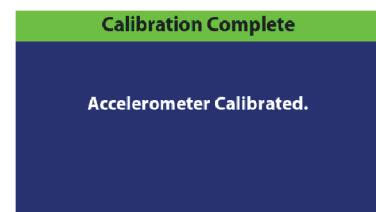
If at any time during the procedure, the **Unable to Operate** screen shows, at the caregiver control panel, press the **Trendelenburg** or **reverse Trendelenburg** control to adjust the bed to the level position. When the bed is level, at the GCI, press **OK**. The GCI will return to the Test Weight screen for you to start the test again.

1. At the GCI, press the **Settings** menu control.
2. Press **Bed Service**.
3. Enter **722532**, and then press **Enter**.
4. Press **Accel. Cal**, and follow the on-screen instructions:
 - a. Raise the head section to its highest position.



4

- b. Put the digital protractor (inclinometer) on the weigh frame, near one of the head-end load beams.
- c. At the caregiver control panel, press **Trendelenburg** or **Reverse Trendelenburg** (adjust tilt) until the inclinometer shows **00.00 ± 0.15**.
- d. Remove the digital protractor (inclinometer).
- e. Press **Continue**.



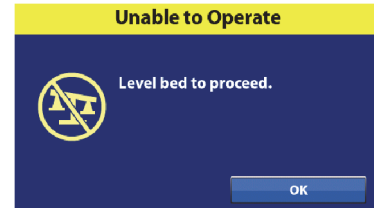
- If the calibration is successful, the **Calibration Complete** screen will show temporarily and then the **Scale Calibration** log screen will show.
- If the calibration is not successful, the **Calibration Failed** screen will show. You have these options:
 - **Cancel**—the GCI returns to the Bed Service screen.
 - **Re-calibrate**—the GCI returns to the Accelerometer Calibration screen.

4.11 Scale Test—EN 45501 Class Scale (OIML)

Tools: Verification Weight set, 50 kg, Class M1 or better or Verification Weight set, 250 kg, Class M1 or better

NOTE:

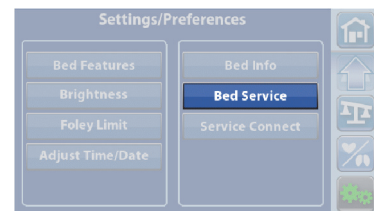
If at any time during the procedure, the **Unable to Operate** screen shows, on the caregiver control panel, press the **Trendelenburg** or **reverse Trendelenburg** control to adjust the bed to the level position. When the bed is level, at the GCI, press **OK**. The GCI will return to the Test Weight screen for you to start the test again.



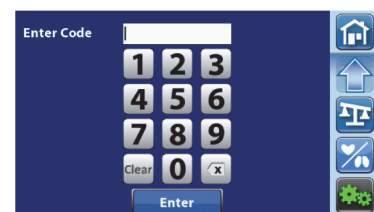
1. Make sure the bed is in this configuration:
 - The bed is plugged into AC power.
 - The brake is set.
 - The bed is in its flat and highest positions.
 - The foot section is fully extended.
 - The siderails are lowered.
 - The headboard and footboard are removed.
 - The mattress is removed.
2. At the GCI, press the **Settings** menu control.



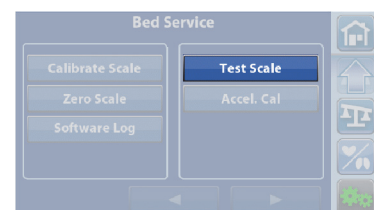
3. Press **Bed Service**.



4. Enter **722532**, and then press **Enter**.



5. Press **Test Scale**.



4

6. Press **Zero/Tare**.

NOTE:

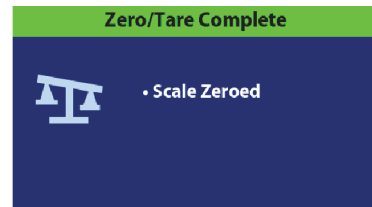
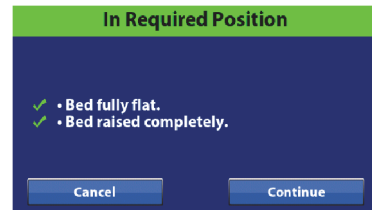
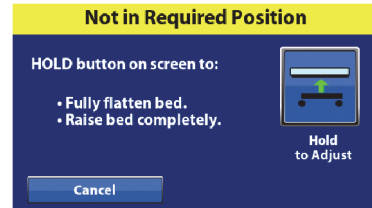
If the **Not in Required Position** screen shows, to continue with the zero/tare, press and hold the **Hold to Adjust** button until the **In Required Position** screen shows. Then, press **Continue**.

7. Follow the on-screen instructions. When the Zero/Tare is complete, the GCI will return to the Test Weight screen.

8. Set 50 k of weight on the bed. Look at the weight shown on the screen. The difference of the measured weight and the weight shown on the screen should be less than ± 0.5 kg. If the difference is more than ± 0.5 kg, calibrate the scale. See “Calibrate the Scale—EN 45501 Class Scale (OIML)” on page 4-15.

9. Remove the weight.

10. Press **Hi Res**. This puts the scale in the high resolution test mode for the Scale Accuracy test.



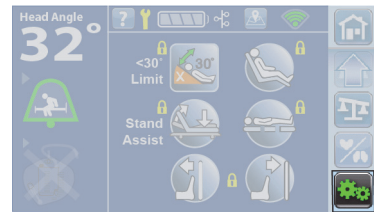
11. Go to “Scale Verification Report Form—EN 45501 Class Scale” on page 4-20, and do the tests shown on the form.

NOTES:

- Not all tests for the 3rd-party certification need to be in the Hi Res test weight resolution. Some tests will be in the Standard test weight resolution (scale icon button). The table title identifies the weight resolution needed to complete each table.
- Between each test, remove the weight and Zero/Tare the scale.

4.12 View the Software Log on a Bed with the EN 45501 Class Scale (OIML)

1. At the GCI, press the **Settings** menu control.



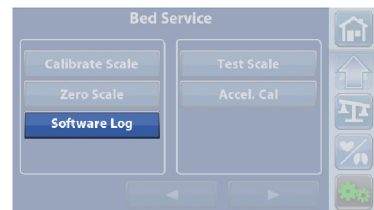
2. Press **Bed Service**.



3. Enter **722532**, and then press **Enter**.



4. Press **Software Log**.



5. Use the up/down arrow to scroll through the log. You have these options:

- **Cancel**—returns the GCI to the Home screen.
- **Back**—returns the GCI to the Bed Service screen.



4.13 Configure the TV Audio

1. Press the **Settings** menu control on the GCI.



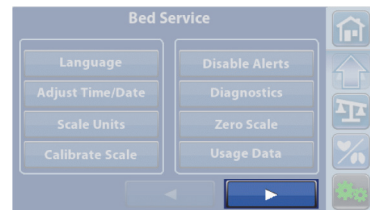
2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **TV Audio**.



6. Press the applicable option, and then press **Accept**:

- **UTV**—the bed sends UTV volume codes to the television that adjust the television's volume to the bed or at the television speakers.
- **On Bed**—the bed adjusts television audio volume to the bed's speakers with on-bed volume control.
- **Other**—a non-bed device, such as a pillow speaker, is used to adjust the television volume.



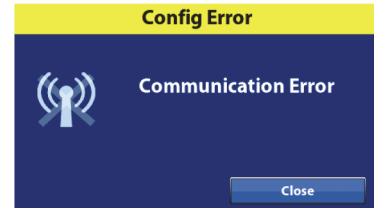
4

4.14 Configure the WiFi

NOTES:

- The current firmware for the Centrella® Smart+ Beds WiFi interface does not support 802.11r fast transition authentication key management (AKM)—fast transition-pre-shared key (FT-PSK) or 802.1x-FT. Cisco/Meraki wireless local area networks (WLANs) on which Centrella® Smart+ Beds will be connected that use 802.11r must have their AKM modified to Fast Transition: Adaptive. For other WiFi vendors, please refer to their documentation for adaptive, fast transition AKM strategies.
- The “Communication Error” screen will show if the GCI can not communicate with the SOM. This could be caused by a loss of the WiFi connection or the SOM not operating (no heartbeat found). If the SOM is not operating, an error code will show on the GCI (see “Service Required Indicator—Error Codes” on page 2-4).

1. Press the **Settings** menu control on the GCI.



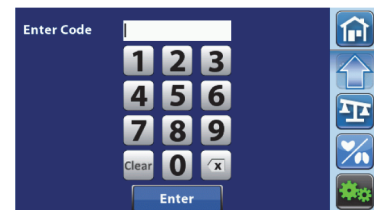
2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



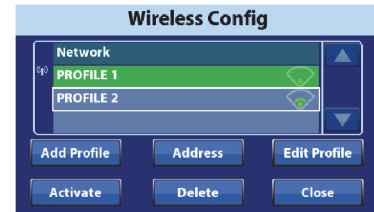
4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **WiFi**.



6. At the Wireless Config screen, you have these options:
 - **Activate** a listed network—see page 4-35.
 - **Delete** a listed network—see page 4-35.
 - **Edit Profile** for a listed network—see page 4-37.
 - **Add Profile** for a network—see page 4-36.
 - **Address**—to see the IP and MAC addresses.
 - **Close**—to return to the Service screen.

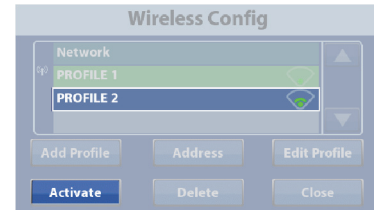


ACTIVATE A LISTED NETWORK

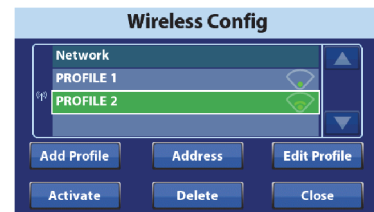
NOTE:

Before you connect the bed to the network, check with the facility to make sure the secure shell (SSH) protocol is disabled on the network used by the bed.

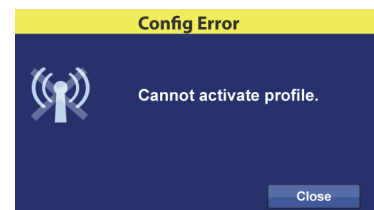
Select the Network you want to activate, and then press **Activate**.



The activated network will show in green. When connected, the WiFi connected symbol will show.

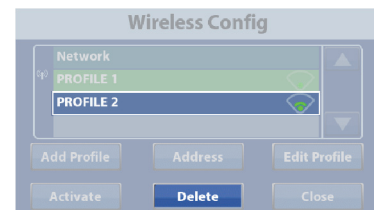


If there is an issue with activating the network, a Config Error screen shows. Press **Close** to return to the Wireless Config network screen.

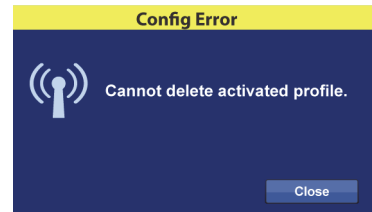


DELETE A LISTED NETWORK

1. Select the network, and then press **Delete**.
2. A confirmation screen shows. You have these options:
 - Press **No** to return to the previous screen.
 - Press **Yes** to continue with deleting the network:

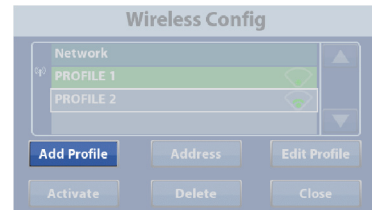


- If deleting is not successful, a Config Error screen shows, press **Close** to return the Wireless Config network screen.
- If deleting is successful, the Wireless Config network screen shows. The deleted network is no longer listed.



ADD PROFILE

1. Press **Add Profile**.

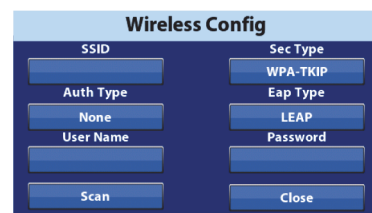


2. Use the keyboard to enter the profile name, and then press **Enter**.

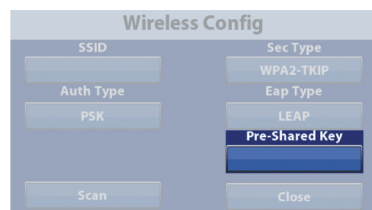


3. Press each control to enter the information or select the correct option:

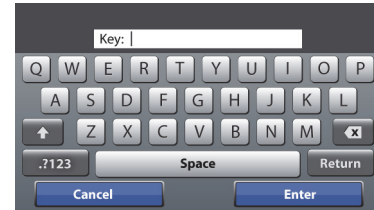
- **SSID**
- **Sec Type**
- **Auth Type** (only shows if there is a Sec Type)
- **Eap Type** (only shows if the Auth Type is defined)
- **User Name** (only shows if applicable)
- **Password** (only shows if applicable)
- **Pre-Shared Key** (only shows if applicable)
- **Scan**—a list of secured networks will show. If you select one, all of the fields will be filled except User Name, Password, and Pre-Shared Key
- **Close**—to return to the Bed Service screen



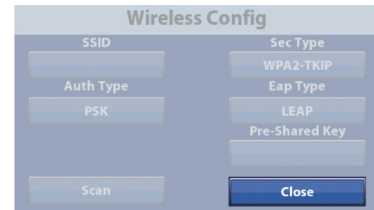
4. When you have entered or selected the necessary information, this screen will show. Each control will show the information you entered or selected. Press **Pre-Shared Key**.



5. Enter the key, and press **Enter**.

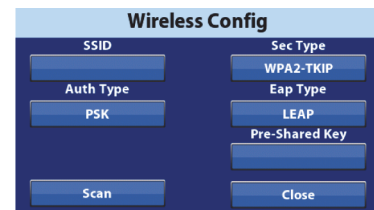
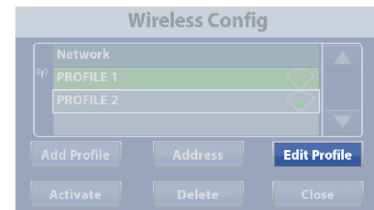


6. If everything is correct, press **Close**.



EDIT PROFILE

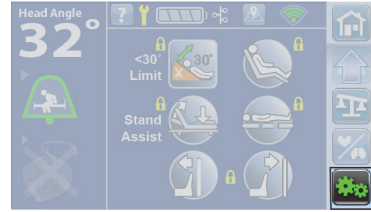
1. Select the network profile you want to edit, and then press **Edit Profile**.
2. Press the applicable control, edit the information as necessary, and then press **Close**.



4.15 Bed Serial Number

If you replace the MCB, you will need to enter the bed's serial number on the GCI.

1. Press the **Settings** menu control on the GCI.



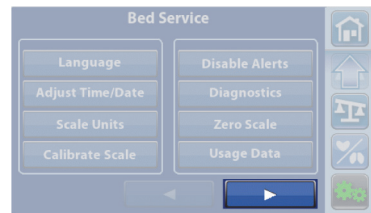
2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



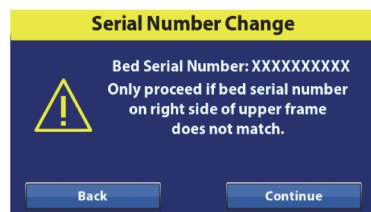
4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **Bed SN**.



6. If the serial number shown on the GCI is different from that on the bed, press **Continue**.

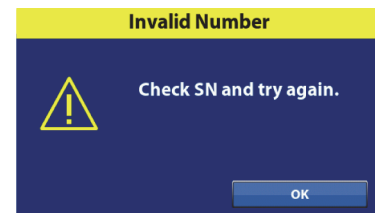
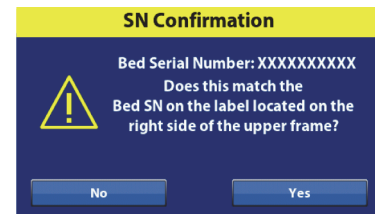


7. Enter the bed's serial number, and then press **Enter**.



One of these screens will show:

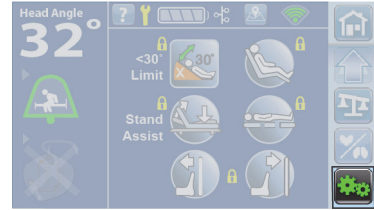
- **SN Confirmation**—make sure the serial number on the screen matches the bed's serial number. If the numbers match, press **Yes**. The GCI will return to the Bed Service screen. If the numbers do not match, press **No**. The GCI will return to the keyboard screen for you to enter the correct number.
- **Invalid Number**—this screen will show if the number you entered has too few or too many characters. Press **OK**. The GCI will return to the keyboard screen for you to enter the correct number.



4.16 Update Software through WiFi

Do these steps after you have installed bed software using the Centrella® service tool app.

1. Press the **Settings** menu control on the GCI.



2. Press **Bed Service**.



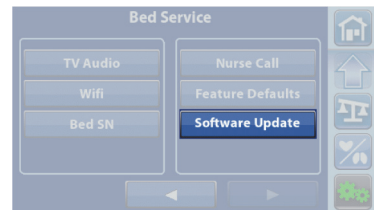
3. Enter **812**, and then press **Enter**.



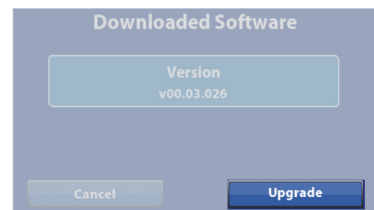
4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **Software Update**.

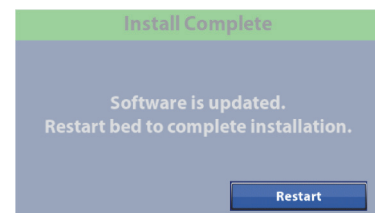
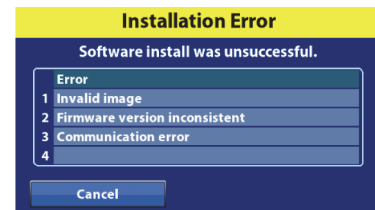
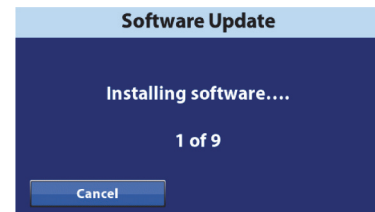


6. The software version will show on the screen. Press **Upgrade** to start the installation.



A screen will show the installation progress.

- If there is an issue, the “Installation Error” screen will show. Press **Cancel**. The GCI will return to the install screen for you to try the installation again.
- If the installation is successful, the “Install Complete” screen will show. Press **Restart**. The bed will shut itself down and restart to complete the installation.



7. Do the “Function Checks” on page 2-1.

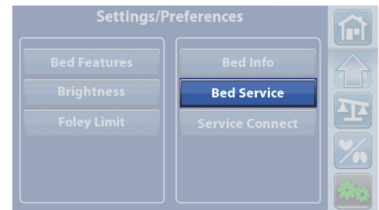
4.17 Configure the Nurse Call

The Nurse Call controls on the bed are hidden if a Nurse Call system is not connected or sensed. If a Hill-Rom or another compatible Nurse Call system is connected and sensed, the Nurse Call controls will be illuminated. If the bed is connected to a non-compatible system, the Nurse Call controls may not be illuminated, but may operate. You can configure the bed to have the Nurse Call controls illuminated whenever the bed is plugged into AC power.

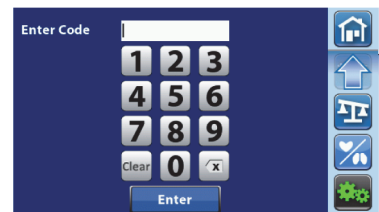
1. Press the **Settings** menu control on the GCI.



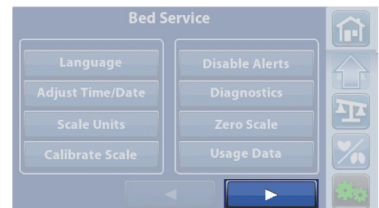
2. Press **Bed Service**.



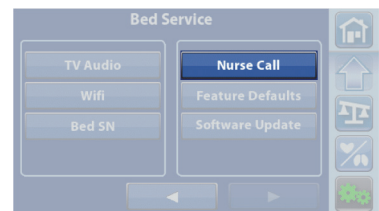
3. Enter **812**, and then press **Enter**.



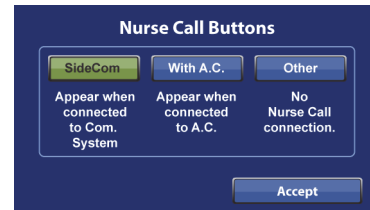
4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **Nurse Call**.



6. Press the applicable option, and then press **Accept**:
- **SideCom**[®]—the Nurse Call control shows when the bed is connected to the facility's communication system.
 - **With A.C.**—the Nurse Call control shows whenever the bed is connected to AC power.
 - **Other**—if the facility wants to use a pillow speaker instead of the siderail Nurse Call system, select this option. The Nurse Call controls will not be on and will not operate. However, if the bed is connected to a Nurse Call system and Bed Exit is armed and alerting, a call will be placed.



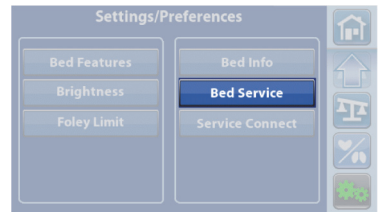
4.18 Configure Feature Defaults

The bed comes from the factory with certain feature default settings. Some of the default settings can be changed if they do not match the facility's protocols.

1. Press the **Settings** menu control on the GCI.



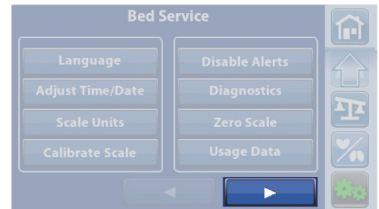
2. Press **Bed Service**.



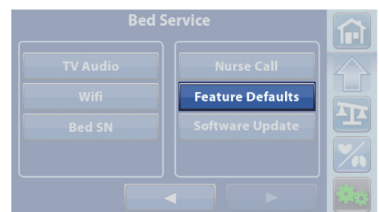
3. Enter **812**, and then press **Enter**.



4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **Feature Defaults**.



6. Press the feature control for which you want to change the default (per facility request):

- **IllumiGuide® Siderail Handgrip**—the factory default is blue light is **on**.

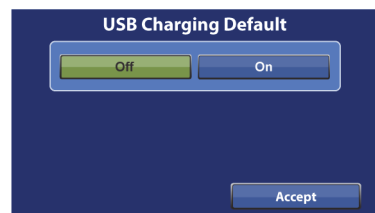
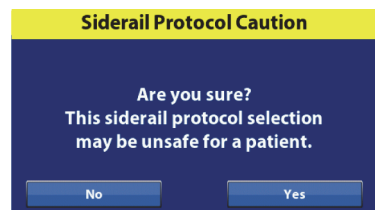
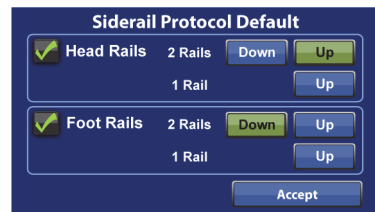
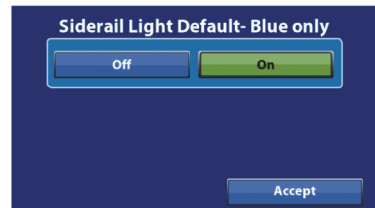
- **SafeView®**—the factory default is floor projection is **on**.

- **Rail Protocol**—the factory default is **two head rails up** and **two foot rails down**.

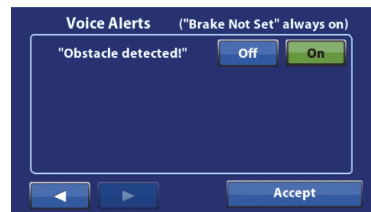
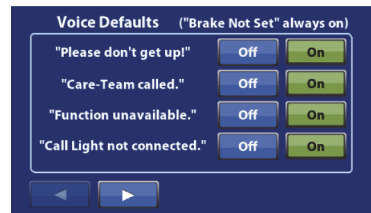
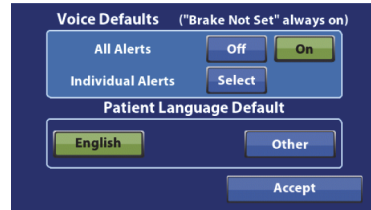
NOTES:

- If there is a gray box and not a green check mark next to Head Rails or Foot Rails, then the facility has requested that those rails not be included in the protocol.
- If you change the protocol to be 3 or 4 siderails down, this caution screen will show for you to confirm the siderail protocol change.

- **USB**—the factory default is charging capability is **off**.



- **Voice Alerts**—the factory default is all of the alerts are **on** and the language is **English**. At the facility's request, you can turn all of the alerts off, or you can press **Select** to turn individual alerts off. Also, at the facility's request, you can change the language. To do so, press **Other**, press the facility-requested patient language, and then press Accept.

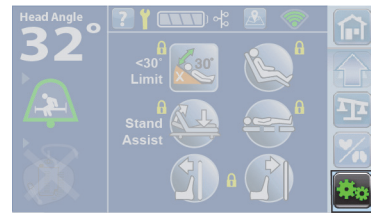


NOTES:

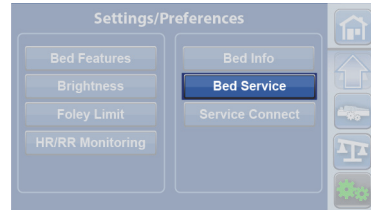
- The voice alert for Brake Not Set **can not** be turned off.
- "Please don't get up" sounds when there is a Bed Exit Alert condition.
- "Care-Team has been called" sounds when a Nurse Call control is pressed and when a Bed Exit Alert is activated.
- "Call light not connected" sounds 30 seconds after the bed has been plugged into AC power and the bed does not sense a Nurse Call system.
- "Obstacle detected" sounds when a bed equipped with the Obstacle Detect® System senses an object between the upper frame and base frame while the bed is lowering.
- **Back**—the GCI returns to the Settings/Preferences screen.

4.19 Remote Service—Change the Settings

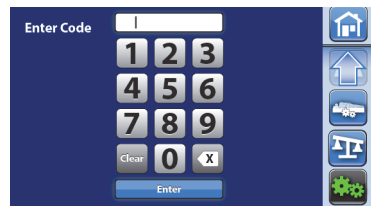
1. Press the **Settings** menu control on the GCI.



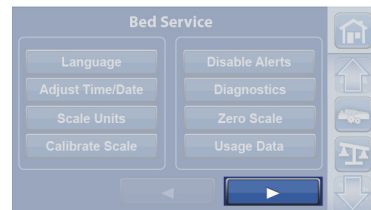
2. Press **Bed Service**.



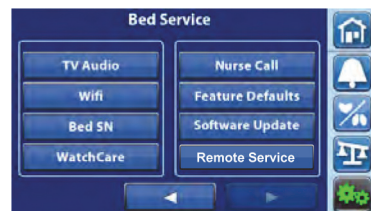
3. Enter **812**, and then press **Enter**.



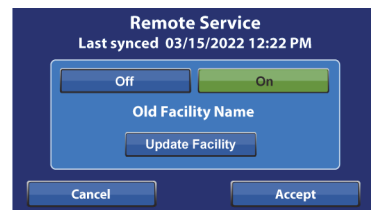
4. Press the right **arrow** to get access to the second Bed Service screen.



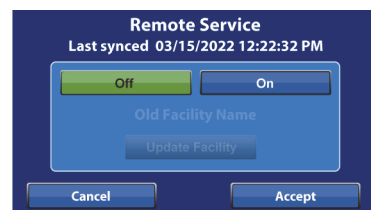
5. Press **Remote Service**.



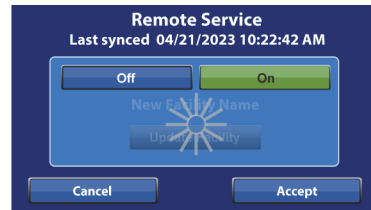
6. Press the setting control to turn **ON** or **OFF** the Remote Service.



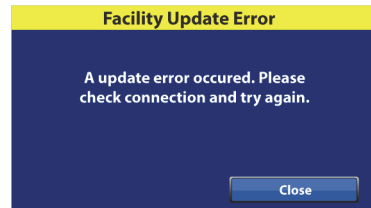
7. When Remote Service is turned **OFF**, Facility Information is not available.



- When Remote Service is updating, a spinning icon will appear for up to 30 seconds.

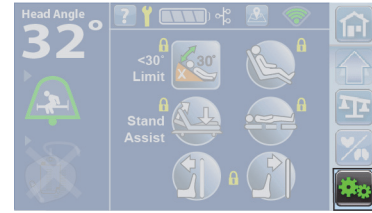


- If Remote Service update fails, a Facility Update Error will appear. Check the connection and try again.

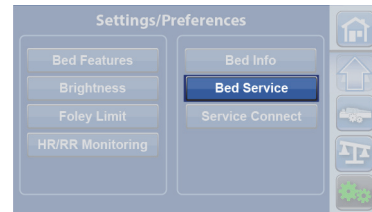


4.20 HR/RR Monitoring—Change the Settings for Out-Room Alarms, Default Thresholds, and Alarms Tone

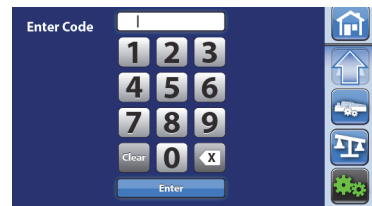
1. Press the **Settings** menu control on the GCI.



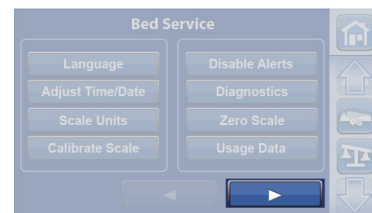
2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



4. Press the right **arrow** to get access to the second Bed Service screen.



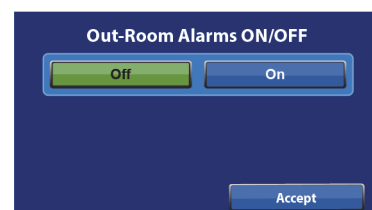
5. Press **HR/RR Monitoring**.



6. Press the setting control for the default (per facility request) that you want to change:

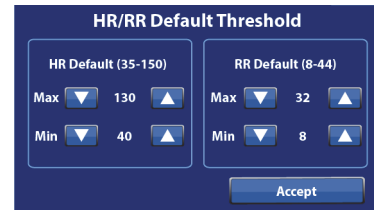


- **Out-Room Alarms**—if the bed is connected to the facility's equipment alert jack, the setting defaults to **on**.



4

- **HR/RR Default Threshold**—
 - **HR factory set thresholds**—low is 40 BPM; high is 130 BPM
 - **HR maximum settable thresholds**—low is 35 BPM; high is 150 BPM
 - **RR factory set thresholds**—low is 8 breaths per minute; high is 32 breaths per minute
 - **RR maximum settable thresholds**—low is 8 breaths per minute; high is 44 breaths per minute
- **Alarms Tone**—there are three different tones for the in-room HR/RR alarms. The factory default tone is **1**.



- **Back**—the GCI returns to the Settings/Preferences screen.

4.21 HR/RR Monitoring—Activate/Deactivate the Demonstration Mode

Firmware versions 1.27 and later include a demonstration (demo) mode for the HR/RR monitoring system. The demo mode is activated from the Bed Service screen. Once activated, the demo mode times out after 30 minutes. When the demo mode is active, the watermark "DEMO" shows on the HR/RR screen.

NOTES:

- Along with the correct firmware version, the SOM must be EarlySense software version 3.13.038 or later.
- The bed must be empty to activate the Demo mode.

Activate

1. If the protective tab is not removed from the HR/RR monitoring sensor, remove it.



NOTE:

To remove the protective tab, you will need to get access to the head panel of the bed.



2. At the GCI, press the **Settings** menu control.



3. Press **Bed Service**.



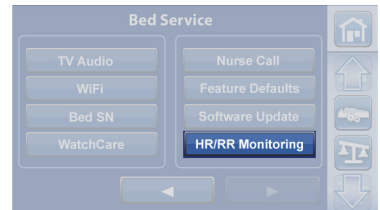
4. Enter **812**, and then press **Enter**.



5. Press the right **arrow** to get access to the second Bed Service screen.

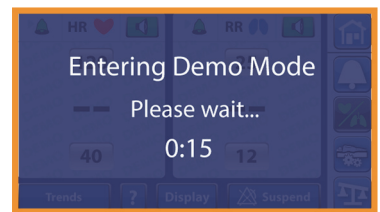
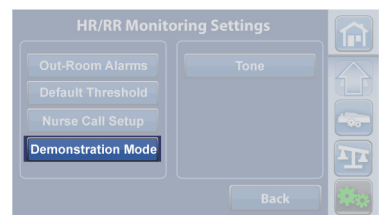


6. Press **HR/RR Monitoring**.



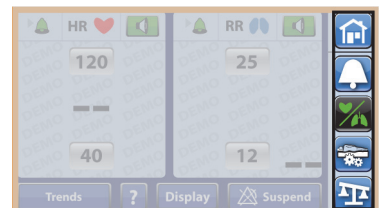
7. Press **Demonstration Mode**.

A 15-second countdown screen shows, then the HR/RR "Demo" screen shows.



Deactivate

1. Press any menu control.



2. At the Exit Demo Mode confirmation screen, press **Yes**. The Home screen shows.



- If the HR/RR monitoring system was **not active** before you activated the demo mode, install the protective tab into the HR/RR monitoring sensor.
- If HR/RR monitoring was **active** before the demonstration, the monitoring continues.



4.22 HR/RR Monitoring—Activate the Trial Mode

Firmware versions 1.30 and later include a trial mode for the HR/RR monitoring system. The trial mode is activated from the HR/RR menu control. Once the trial mode is activated, the monitoring stops after 90 days of use. When the trial mode is active, the watermark “TRIAL” shows on the HR/RR screen.

NOTES:

- Along with the correct firmware version, the SOM must be EarlySense software version 3.13.038 or later.
- The facility’s Hill-Rom representative provides the activation code.
- The bed must be empty to activate the Trial mode.

Activate

1. If the protective tab is not removed from the HR/RR monitoring sensor, remove it.



NOTE:

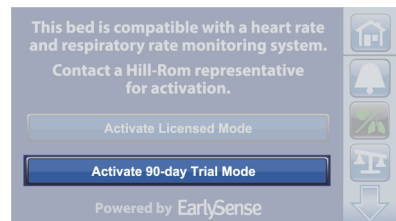
To remove the protective tab, you will need to get access to the head panel of the bed.



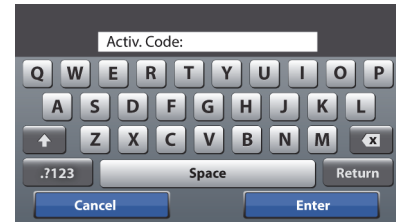
2. Press the **HR/RR** menu control.



3. Press **Activate 90-day Trial Mode**.



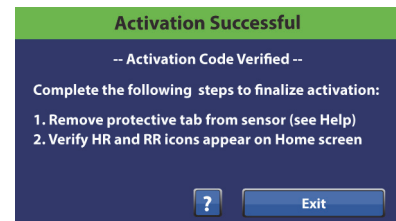
4. Enter the activation code and press **Enter**.



5. Follow the on-screen instructions and press **Exit** when complete.

NOTE:

The protective tab should have been removed in Step 1.



The HR/RR "Trial" screen shows.



6. Press the **Home** menu control. The HR and RR symbols will show in the bed indicators section of the Home screen.

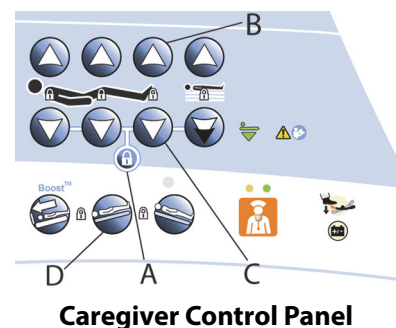
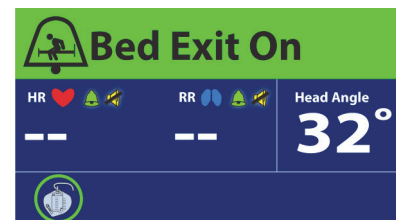
NOTES:

- The HR/RR values will show by default when a patient is in the bed. To turn off the HR/RR display per facility request, see "Turn Off the HR/RR Display—Software Version 1.30 and Later" on page 4-218.
- After approximately five minutes, the touchscreen will default to the Status screen.



7. Reset the bed as follows:

- Unplug the bed.
- Press and hold the Lockout control (A) until you hear a beep (approximately 20 seconds). This puts the bed in Service mode.
- Press and hold these controls at the same time until you hear a beep: Foot Up (B), Foot Down (C), and Trendelenburg (D). The bed should shut down within 5 seconds after you release the controls.
- Plug the bed in.

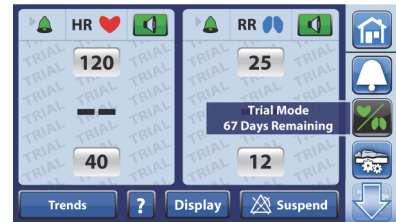


8. To check the HR and RR Monitoring System in-room alarm, do as follows:
 - a. Move the brake or steer pedal to the level position.
 - b. Listen for the alarm to sound.

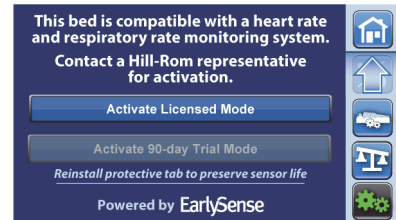
NOTE:

The HR/RR Monitoring System uses the same speaker as the Brake Not Set Alert for the in-room alarm.

9. To see the number of trial days that remain, press the **HR/RR** menu control. The number of days will show for 3 seconds.

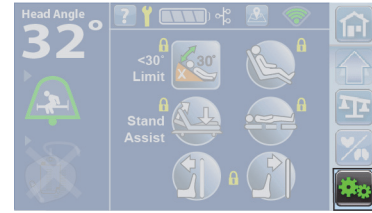
**NOTES:**

- Once the trial mode is activated, the trial mode control will be gray and not operate.
- To deactivate the trial mode, you must use the service tool app.

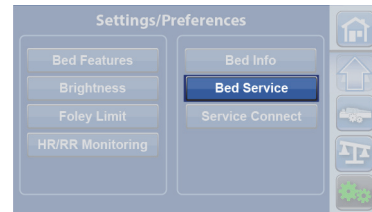


4.23 WatchCare® Incontinence Management System—Select the Nurse Call System

1. Press the **Settings** menu control on the GCI.



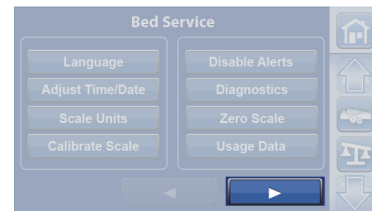
2. Press **Bed Service**.



3. Enter **812**, and then press **Enter**.



4. Press the right **arrow** to get access to the second Bed Service screen.



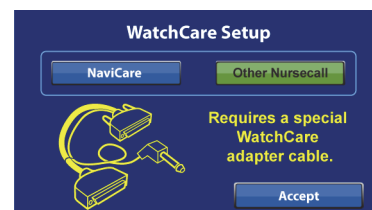
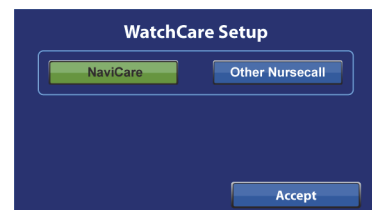
5. Press **WatchCare**.



- If the facility's Nurse Call system is the NaviCare® System, press **NaviCare**, and then press **Accept**.
- If the facility's Nurse Call system is not the NaviCare® System, press **Other Nursecall**, and then press **Accept**.

NOTE:

If you select "Other Nursecall," the screen will show that the system requires a special WatchCare® adapter cable (210211). For installation of the adapter cable, see the *Centrella® Smart+ Bed—WatchCare® System Adapter Cable Installation Instructions* (209882).



4.24 Enable Bedside Association

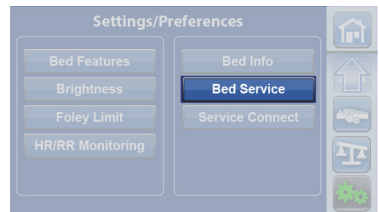
NOTES:

- Enable the bedside association feature per the request of the facility only.
- The bed must have firmware version 1.32.000 or later and must be configured for Message Queuing Telemetry Transport (MQTT). See the service tool app user guide (205987 or 212326).
- The facility must have the Hillrom™ Digital Gateway version 1.2 or later.

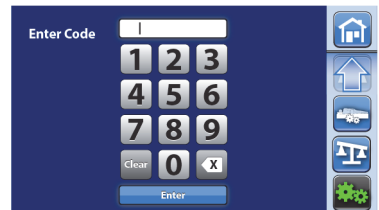
1. Press the **Settings** menu control on the GCI.



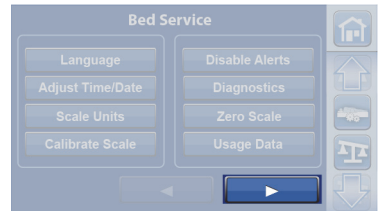
2. Press **Bed Service**.



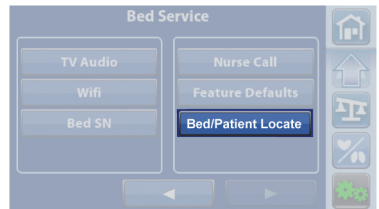
3. Enter **812**, and then press **Enter**.



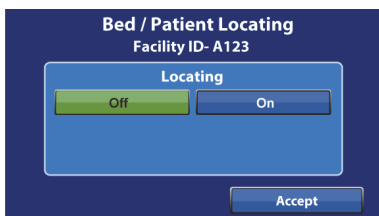
4. Press the right **arrow** to get access to the second Bed Service screen.



5. Press **Bed/Patient Locate**.



6. If the facility requests the ability to associate a room location to the bed, press **On**, then press **Accept**.

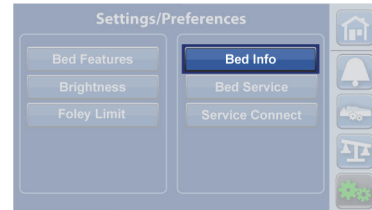


4.25 Get Access to Bed Information

1. Press the **Settings** menu control on the GCI.



2. Press **Bed Info**.



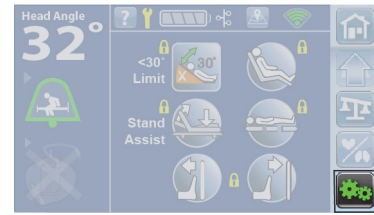
3. Press the control for the information you want to see:

- **Calibrations**—shows the last calibration date for the bed articulation and scale.
- **Scale**—shows the current weight that is on each load beam.
- **Surface**—shows the bladder pressure set point and actual pressure of the head and seat bladders in the Normal and Max Inflate modes.
- **Hardware**—shows the bed model and serial number and the P.C. boards version and serial number.
- **Software**—shows the installed software, versions, and date the software was installed.



4.26 Get Access to the Full Service Diagnostics using the Centrella® Service Tool App

1. Press the **Settings** menu control on the GCI.



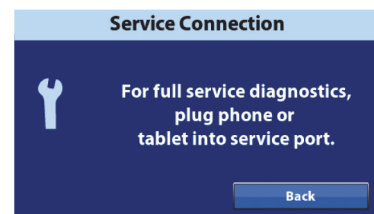
2. Press **Service Connect**.



3. Connect your phone or tablet to the service port. The Centrella® service tool app will show on your device.

NOTE:

If you press **Back**, the previous screen will show.



4.27 Calibrate the GCI Screen

If the bed determines the GCI screen needs to be calibrated, a message will show on the startup screen when the bed is powered.

NOTE:

The screen can also be calibrated through the Centrella® service tool app (see the service tool app user guide (205987 or 212326).

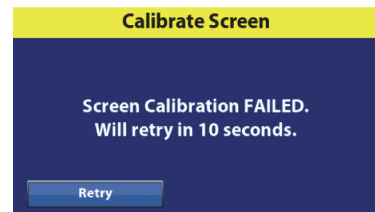
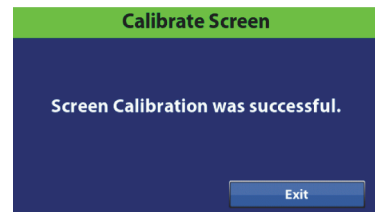
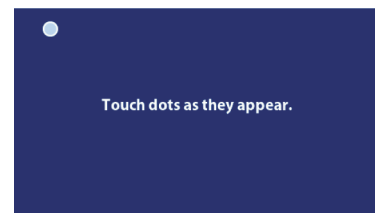
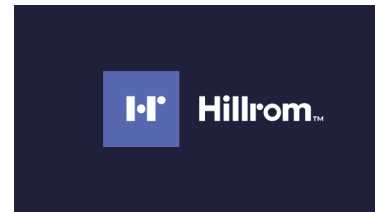


WARNING:

Warning—Follow each step carefully to properly calibrate the GCI. If each step is not followed, the GCI may not operate as intended. Injury and/or equipment damage could occur.

Follow the on-screen instructions.

- If the calibration is successful, this screen will show.
- If the calibration failed, this screen will show. Press **Retry** to go through the calibration again.



4

4.28 Calibrate the Bed Articulations (Frame)

NOTE:

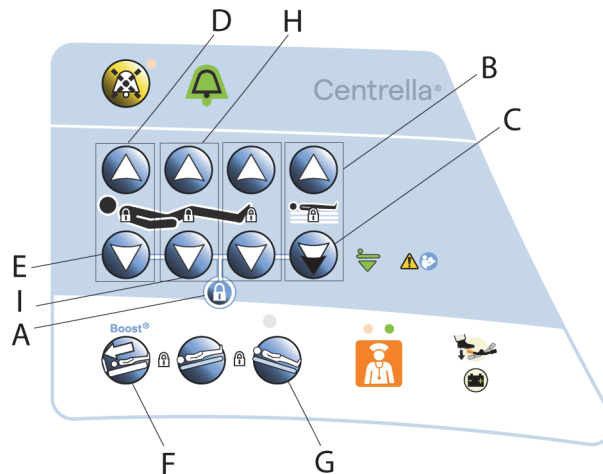
The bed articulations can be calibrated as instructed below or using the Centrella® service tool app (see the service tool app user guide (205987 or 212326).

1. Set the brake.

NOTE:

If the calibration fails, an error will show on the bed's GCI.

2. Press the **Lockout** control (A) until you hear a beep (approximately 20 seconds).



3. Press these controls at the same time until you hear a beep (approximately 5 seconds): **Bed Up** (B), **Bed Down** (C), **Head Up** (D), and **Head Down** (E).
4. Wait for 5 seconds, and then press these controls at the same time to start the calibration: **Bed Down** (C) and **Boost** (F). The bed will move through its full articulations in this order:
 - a. Thigh up
 - b. Foot up
 - c. Bed down and head up
 - d. Bed up, head down, and foot down
 - e. Foot intermediate/flat
 - f. Thigh flat

When the calibration is complete, the bed will be in the fully up and flat position.

NOTE:

To cancel the calibration, press these controls at the same time: **Bed Down** (C) and **Reverse Trendelenburg** (G).

5. Press these controls at the same time until you hear a beep (approximately 1 second) to exit the calibration mode: **Bed Up** (B), **Bed Down** (C), **Knee Up** (H), and **Knee Down** (I).

4.29 Remove all Power from the Bed

Tools: T25 Torx® screwdriver Torque wrench Antistatic strap

For most of the replacement procedures, you must shut down the bed and disconnect the battery backup so if a control gets pressed inadvertently, the bed will not operate.

NOTE:

For all power to be removed from the bed, the battery fuse (P/N 196538) must be removed. If you are replacing an IntelliDrive® Transport System component, the power drive fuse (P/N 196538) must also be removed.

REMOVAL

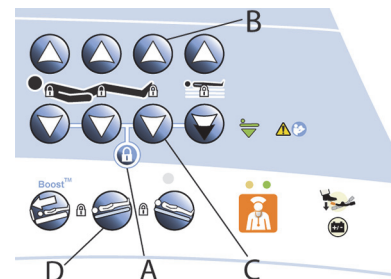
1. Make sure the brake is set.
2. Raise the bed to its highest position.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Unplug the power cords for the bed and the auxiliary outlet (if installed).
4. Shut down the bed as follows:
 - a. Press and hold the **Lockout** control (A) until you hear a beep (approximately 20 seconds). This puts the bed in Service mode.
 - b. Press and hold these controls at the same time until you hear a beep: **Foot Up** (B), **Foot Down** (C), and **Trendelenburg** (D). The bed should shut down within 5 seconds after you release the controls.



Caregiver Control Panel

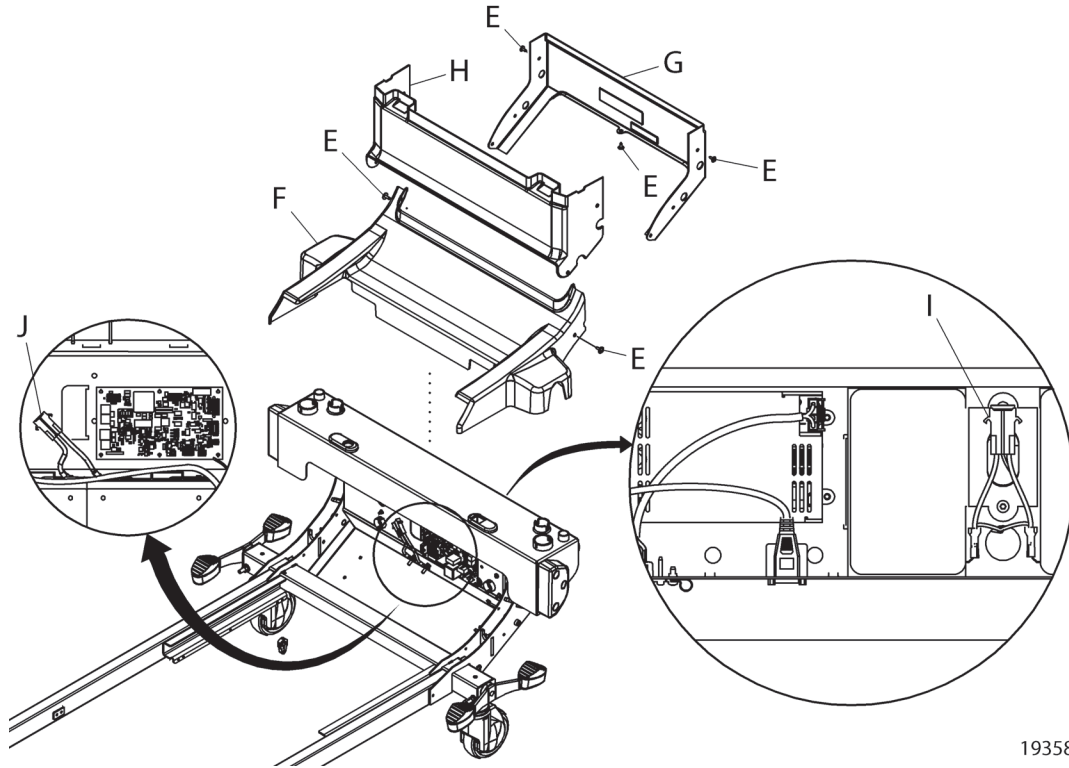


CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

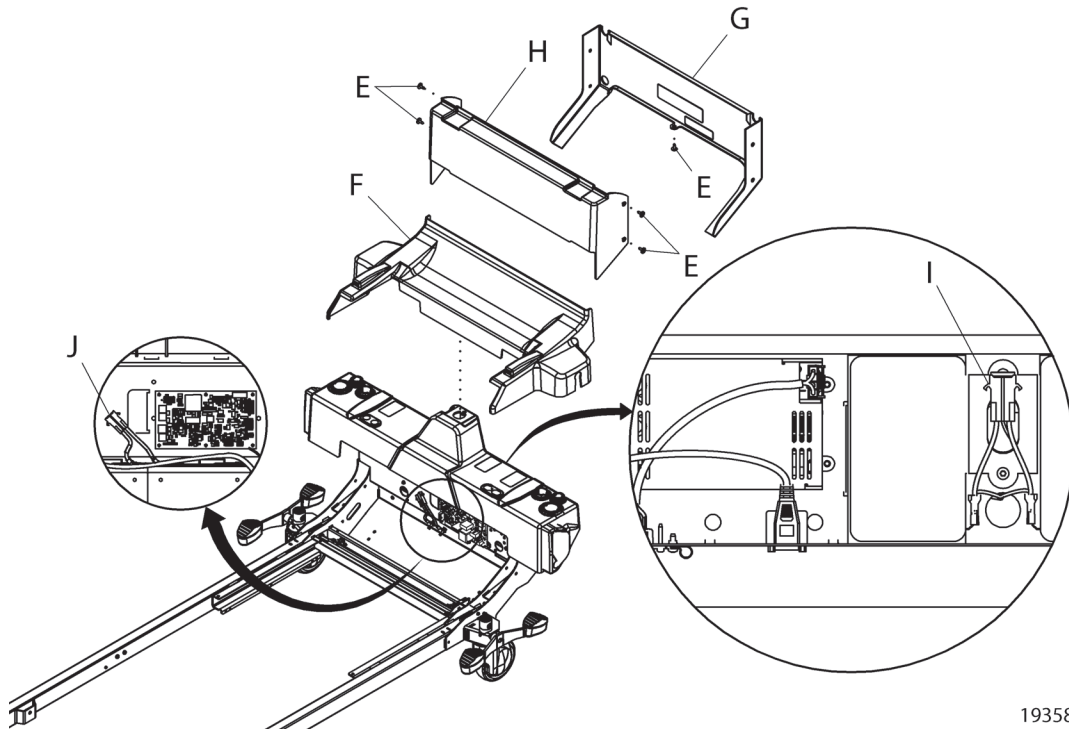
5. Put on the antistatic strap.
6. Disconnect the battery backup as follows:
 - a. Remove the five screws (E) that attach the three power supply module covers (F, G, and H) to the bed, and then remove the covers (see Figure 4-4 on page 4-64 or Figure 4-5 on page 4-64).
 - b. Remove the fuse from the battery fuse cable (I), and set the fuse in a safe location.
 - c. If you are replacing an IntelliDrive® Transport System component, remove the fuse from the power drive battery fuse holder (J), and set the fuse in a safe location.

Figure 4-4. Battery Backup Disconnection (P7900A0/P7900B0 bed)



193588_7_114

Figure 4-5. Battery Backup Disconnection (P7900B1/newer bed)



193588_7_395

REPLACEMENT

1. Install the fuse into the battery fuse cable (I).
2. If you removed the fuse from the power drive battery fuse holder (J), install it in its fuse holder.
3. Put the three power supply module covers (F, G, and H) into position on the bed, and install the five screws (E) to attach the covers to the bed. Tighten the screws to 4.5 N·m (39.8 in-lb) \pm 10% of torque.
4. Plug in the power cords for the bed and the auxiliary outlet (if installed).
5. Do the "Function Checks" on page 2-1.

4.30 Head Deck Panel and Seat Pan—Replacement

Tools: T25 Torx® screwdriver Torque wrench

REMOVAL

1. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
2. Raise the head section to approximately 40°.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

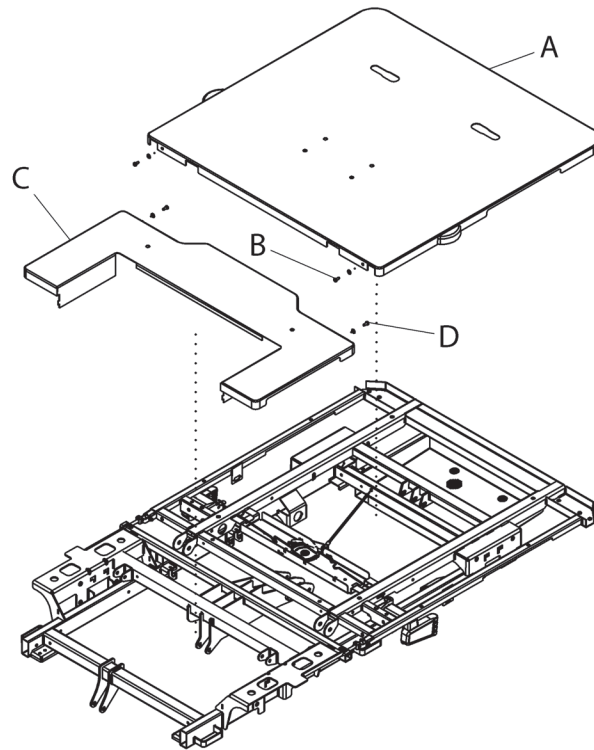
3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. Do as applicable:

Head Deck Panel

- a. From underneath the **foot** end of the panel (A), remove the two screws with washers (B) that attach the panel to the bed (see Figure 4-6 on page 4-67).
- b. Lift the panel (A) at its foot end, and slide the panel off its notches at the head end.

Seat Pan

- a. From underneath the **head** end of the seat pan (C), remove the two screws and washers (D) that attach the seat pan to the frame (see Figure 4-6 on page 4-67).
- b. Lift the pan (C) at its foot end, and slide the pan off the seat pan rods at the pan’s head end.

Figure 4-6. Head Deck Panel and Seat Pan

193588_5_241

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTE:

As you replace the part, tighten the screws (B or D) to 4.5 N·m (39.8 in-lb) ± 10% of torque.

2. Do the “Function Checks” on page 2-1.

4.31 Sliding Foot Weldment—Replacement

Tools:	T25 and T30 Torx® screwdrivers with an extension Torque wrench	Needle nose plier Screwdriver Antistatic strap
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REMOVAL

1. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
2. Remove the footboard, and set it in a safe location.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. At the foot end of the bed, remove the 10 or 12 screws (A) that attach the SafeView® cover (B) to the sliding foot weldment (C) (see Figure 4-7 on page 4-69).

NOTE:

Standard width beds have 10 screws for the SafeView® cover; wide width beds have 12 screws.

5. Do as applicable:

Bed without the SafeView®+ Alerts option—remove the cover (B) from the bed, and then go to Step 6.

Bed with the SafeView®+ Alerts option—do as follows:

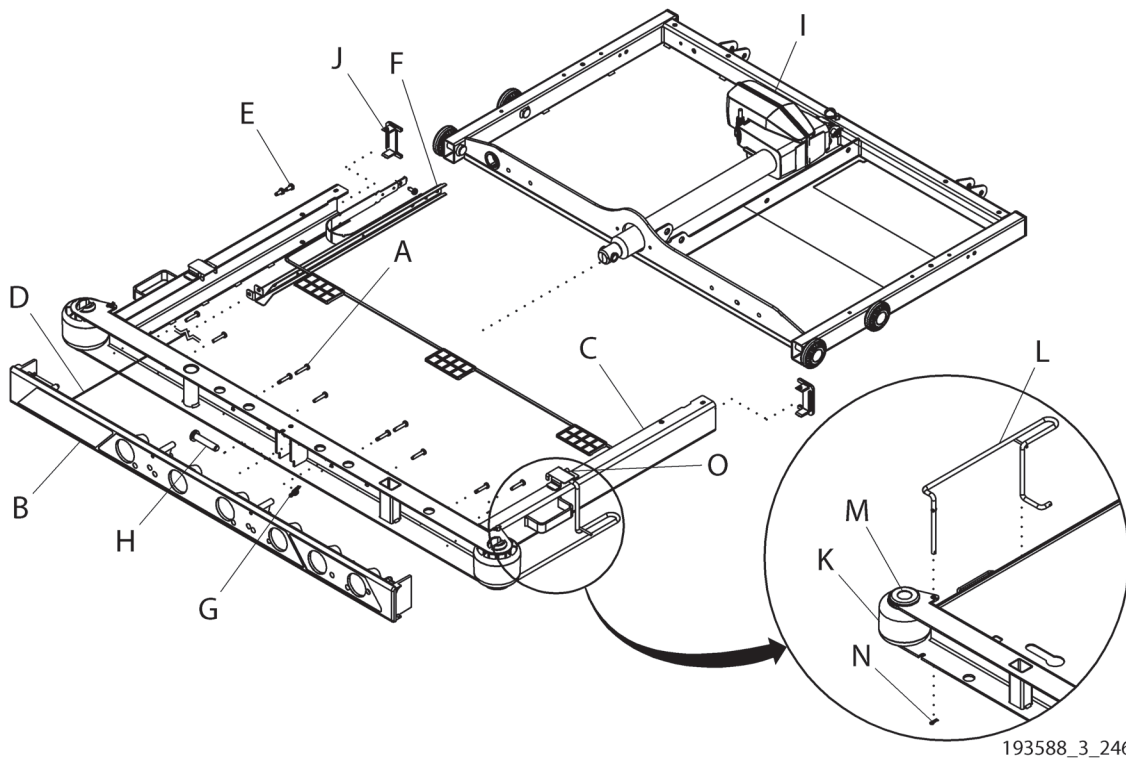


CAUTION:

Failure to wear an antistatic strap could cause equipment damage.

- a. Put on the antistatic strap.
 - b. Lay the cover (B) on the foot end of the bed, and disconnect the SafeView® cable (D) from the SafeView® board. Then, remove the cover from the bed.
 - c. Pull the SafeView® cable (D) through its opening in the sliding foot weldment (C).
6. Remove the two screws (E) that attach the wire routing (F) to the sliding foot weldment (C).
 7. Remove the ring (G) and pin (H) from the foot end of the foot extension actuator (I).
 8. On each side of the sliding foot weldment (C), remove the caps (J) from the head end of the weldment. Then, remove the sliding foot weldment from the bed.

Figure 4-7. Sliding Foot Weldment (bottom view shown), Drainage Wireform Weldments and Bumper (top view shown in the detail)



9. If the new weldment does not include the bumpers (K) and drainage wireform weldments (L), do as follows on both sides of the weldment to remove them:
 - a. Remove the tub rivet (M) that holds the bumper (K) on to the sliding foot weldment (C), and then remove the bumper.
 - b. Remove the cotter pin (N) that holds the drainage wireform weldment (L) on to the sliding foot weldment (C).
 - c. Remove the short end of the drainage wireform weldment (L) from the bracket underneath the sliding foot weldment (C). Then, remove the drainage wireform weldment from the sliding foot weldment.

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTES:

- If you are installing the drainage wireform weldments (L) on to the new sliding foot weldment (C), make sure of these:
 - The cotter pin (N) is installed sideways through the bottom of the straight post.
 - The short end of the drainage wireform weldment (L) goes through the head-end hole in the bracket (O) that is underneath the sliding foot weldment (C).
- As you replace the parts, tighten the screws to the amount of torque as follows:
 - Screws (E)— 4.5 N·m (39.8 in-lb) \pm 10%
 - Screws (A)— 2.3 N·m (20.3 in-lb) \pm 10%

2. Do the “Function Checks” on page 2-1.

4.32 MCB Speaker, SOM, and WiFi Components—Replacement

Tools: T25 Torx® screwdriver Antistatic strap Torque wrench
Centrella® service tool app

SETUP

1. Make sure the brake is set.
2. Adjust the bed to a comfortable working height.
3. Raise the head section to its highest position.

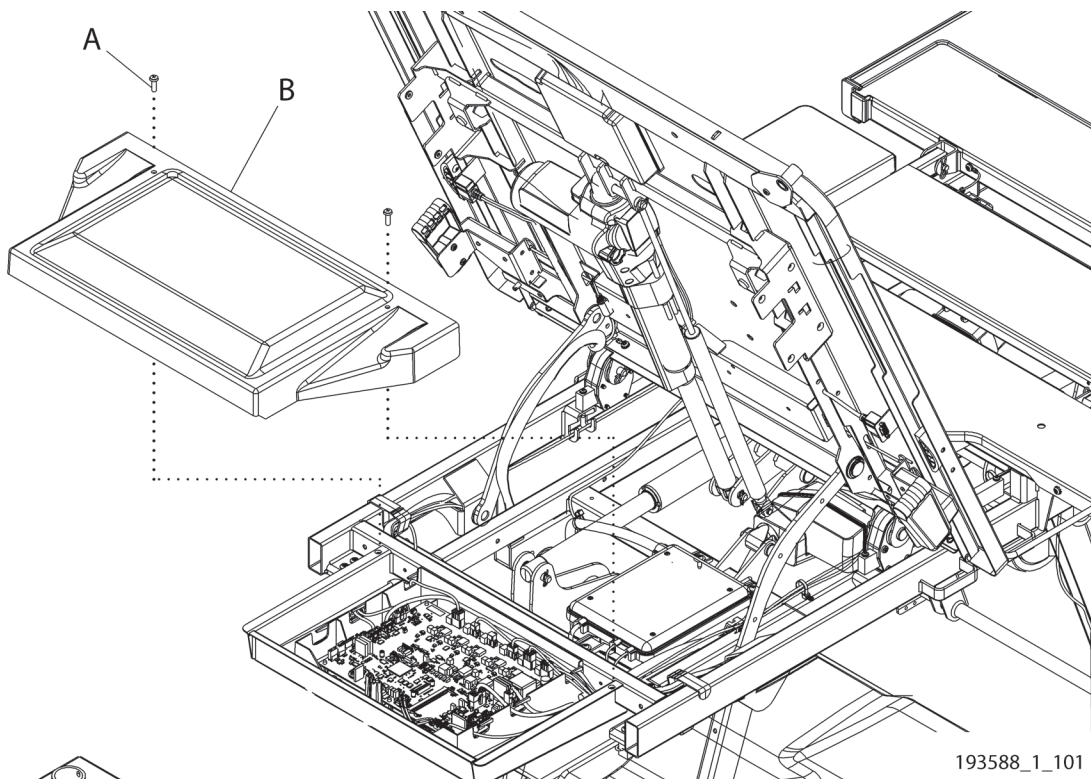


WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

4. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
5. Remove the two screws (A) that attach the MCB cover (B) to the MCB chassis, and then remove the cover (see Figure 4-8 on page 4-71).

Figure 4-8. MCB Cover



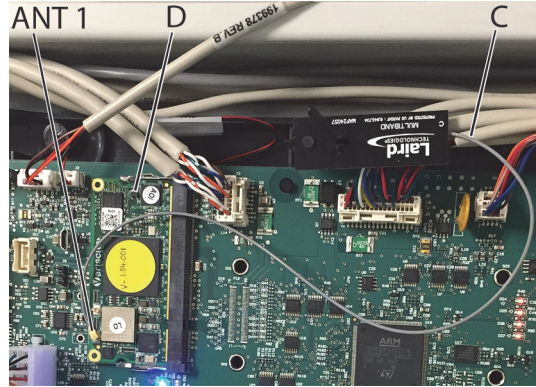
CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

6. Put on the antistatic strap.
7. Go to the applicable procedure:
 - “SOM and WiFi Cable Assembly—Removal” on page 4-72
 - “MCB Speaker—Removal” on page 4-73

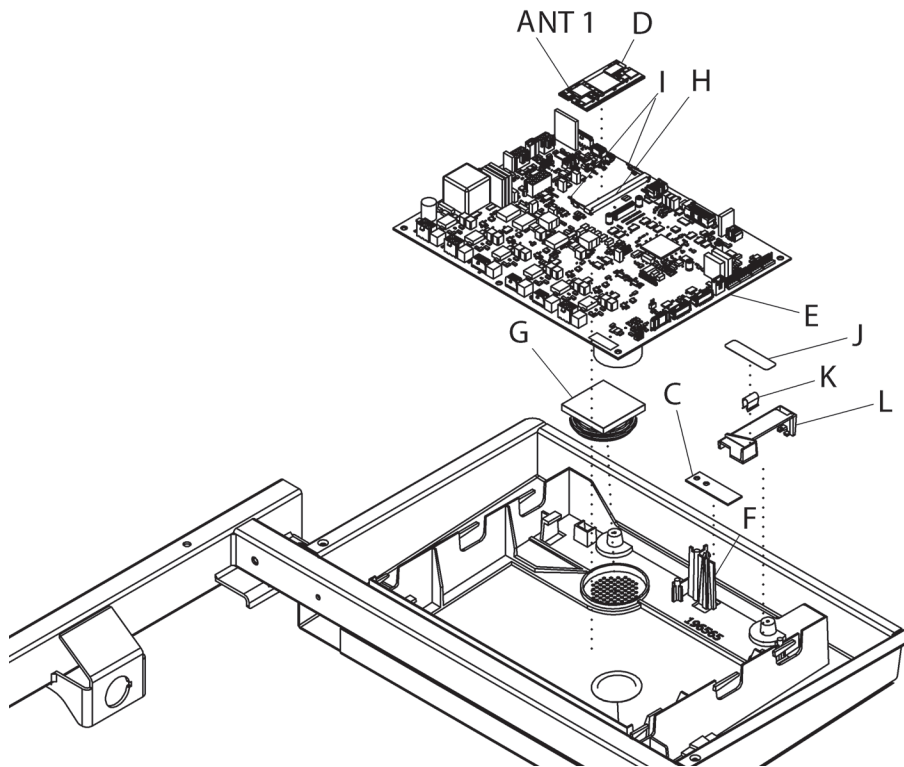
SOM and WiFi Cable Assembly—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Disconnect the WiFi cable assembly (C) from ANT 1 on the SOM (D), if applicable.



3. Do as applicable:
 - **SOM**—spread apart the supports (I) that hold the SOM (D) on the MCB (E), and then remove the SOM from the MCB (see Figure 4-9 on page 4-72).
 - **WiFi Cable Assembly**—remove the assembly (C) from its mount (F) on the MCB chassis.

Figure 4-9. MCB Speaker, SOM, and WiFi Components



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MCB Speaker—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. **Bed with the OIML EN 45501 Class Scale**—remove the scale seal (J), u-clip (K), and load beam connector cover (L) from the MCB (E).
3. Make a note of the cable connections on the MCB (E) (see Figure 4-9 on page 4-72 and “MCB Cable Connections” on page 4-79).
4. Disconnect all cables from the MCB (E).
5. Remove the MCB (E) from its chassis, and set the MCB in a safe location.

NOTE:

The MCB is held in position by plastic clips. To remove the MCB, you will need to pull up on the clips on one side of the MCB.

6. Remove the speaker (G) from the chassis.

REPLACEMENT

1. Do the applicable removal procedure in reverse order.

NOTES:

- When you install the SOM (D), make sure of these:
 - Hold the SOM (D) so its gold edge aligns with the gold edge of its slot (H) on the MCB (E).
 - The SOM (D) is held in position by the locking connectors (I) on the MCB (E).
 - For cable connections, see “MCB Cable Connections” on page 4-79.
 - When you install the MCB cover (B), tighten the screws (A) to 4.5 N·m (39.8 in·lb) \pm 10% of torque (see Figure 4-8 on page 4-71).
2. **SOM**—if you replaced the SOM, the bed software versions may not match. Use your tablet to access the Centrella® service tool app to update the software as necessary. See the service tool app user guide (205987 or 212326).
 3. If the bed is connected to SDC and the SOM is replaced, the SDC configuration file must be pushed to the SOM.



WARNING:

Speaker replacement on a Bed with the OIML EN 45501 Class Scale—A representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the scale.

4. **Speaker on a bed with the OIML EN 45501 Class Scale**—if you replaced the speaker, do these:
 - a. Calibrate the accelerometer. See page 4-27.
 - b. Calibrate the scale. See page 4-15.
5. Do the “Function Checks” on page 2-1.

4.33 MCB Replacement

Tools: T25 Torx® screwdriver Antistatic strap Centrella® service tool

NOTE:

The MCB part number differs depending on the scale type:

- 192022—MCB for the Standard (NA) scale
- 208195—MCB for the OIML EN 45501 Class scale



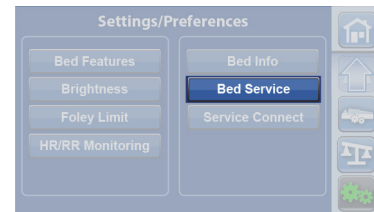
WARNING:

Bed with the OIML EN 45501 Class Scale—A representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the scale.

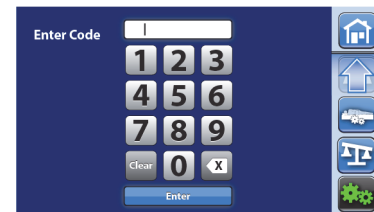
1. Make sure the brake is set.
2. Raise the bed to its highest position.
3. Raise the head section to its highest position.
4. Press the **Settings** menu control on the GCI.



5. Press **Bed Service**.



6. Enter **812**, and then press **Enter**.



7. Do the steps below to make a note of the selections for the bed features.

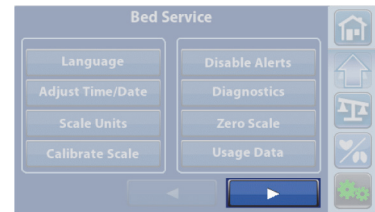
NOTE:

Not all beds will have all the features.

- a. At the Bed Service screen, select each of these features and note **all** selections for each:
 - Language
 - Adjust Time/Date (Time Zone, Observe D.S.T., 12/24 hour)
 - Scale Units (Primary Scale Units, Button to show lbs.)



- b. At the Bed Service screen, press the right **arrow** to get access to the second Bed Service screen.

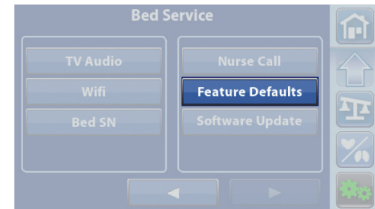


- c. At the second Bed Service screen, select each of these features and note **all** selections for each:



- TV Audio
- WiFi
- HR/RR Monitoring (Out-Room Alarms, Default Threshold—HR and RR defaults, Alarms Tone)
- Nurse Call
- WatchCare

- d. Press **Feature Defaults**.



- e. At the Bed Feature Defaults screen, select each of these features and note **all** selections for each:



- Siderail Lights
- SafeView
- Rail Protocol
- USB
- Voice Alerts (Voice Default, Patient Language Default)

- f. Press the **Home** menu control.

8. Remove the two screws (A) that attach the MCB cover (B) to the MCB chassis, and then remove the cover (see Figure 4-8 on page 4-71).
9. Make note of the configuration settings as follows:
 - a. Connect your service device to the bed, and open the Centrella® service tool app.
 - b. Tap **Advanced Functions**.
 - c. Tap **Bed Configuration**.
 - d. Make a note of the configuration settings. (You can take a screen shot of the settings.)
 - e. Disconnect the service device from the bed.



WARNING:

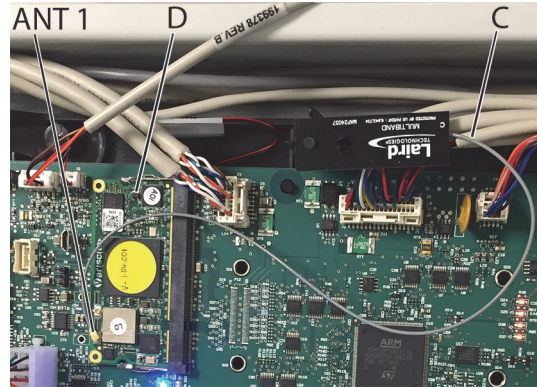
Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

10. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.

**CAUTION:**

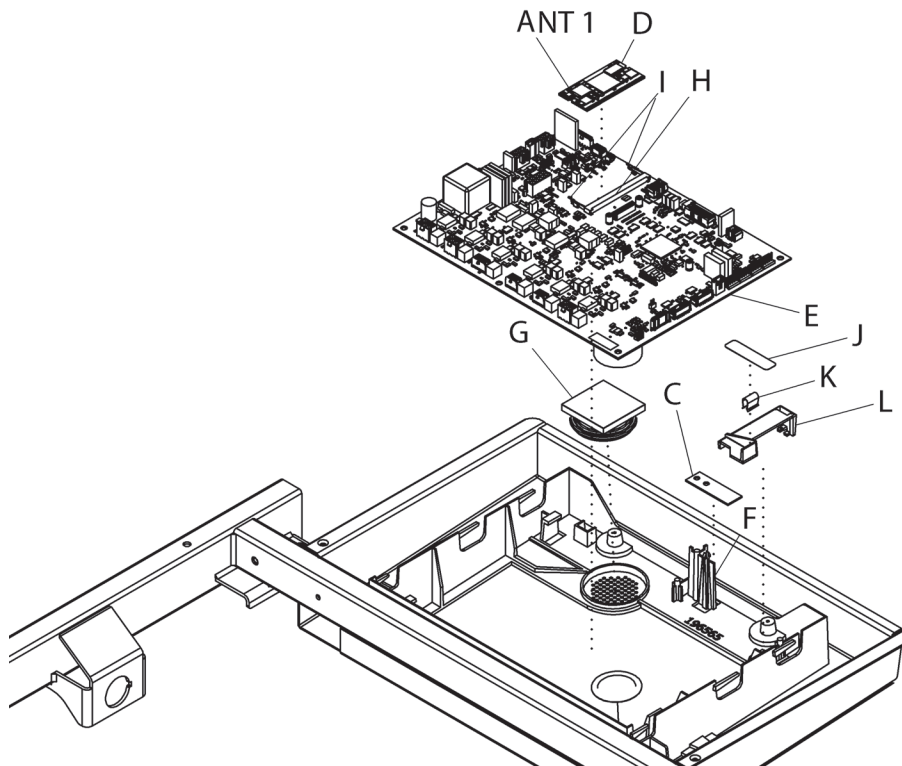
Caution—Failure to wear antistatic strap could cause equipment damage.

11. Put on the antistatic strap.
12. Disconnect the WiFi cable assembly (C) from ANT 1 on the SOM (D), if applicable.



13. Spread apart the supports (I) that hold the SOM (D) on to the MCB (E), then remove the SOM from the MCB (see Figure 4-10 on page 4-76).
14. **Bed with the OIML EN 45501 Class Scale**—remove the scale seal (J), u-clip (K), and load beam connector cover (L) from the MCB (E).

Figure 4-10. MCB



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15. Make a note of cable connections on the MCB (see Figure 4-11 on page 4-79 and Figure 4-5 on page 4-79).
16. Disconnect all cables from the MCB (E) (see Figure 4-10 on page 4-76).
17. Remove the MCB (E) from the bed.

NOTE:

The MCB is held in position by plastic clips. To remove the MCB, you will need to pull up on the clips on one side of the MCB.

18. Install the **new** MCB (E) in the bed. **Do not** connect any cables at this time.
19. Connect the WiFi antenna assembly (C) to ANT 1 on the SOM (D), if applicable.
20. Install the SOM (D) removed in Step 13 on page 4-76 on to the **new** MCB. Make sure of these:
 - Hold the SOM (D) so its gold edge aligns with the gold edge of its slot (H) on the MCB (E).
 - The SOM (D) is held in position by the locking connectors (I) on the MCB (E).
21. Connect the cables to the MCB; however, **do not** connect these cables:
 - DCB/MCB power—P1
 - SideCom® power—J3
 - HOB harness—J5
 - ACB/MCB junction—P6
22. Plug the bed in.
23. Do a software update to install the latest version of software on the **MCB only**. See the service tool app user guide (205987 or 212326).
24. Make sure that the latest version of software is on the MCB.

NOTE:

If the bed has CFCM activated and the MCB is replaced, the sensor must be reactivated using the bed serial number.

25. Unplug the bed and auxiliary outlet (if applicable).
26. Connect these cables to the MCB:
 - DCB/MCB power—P1
 - SideCom® power—J3
 - HOB harness—J5
 - ACB/MCB junction—P6
27. Return all power to bed (see the Replacement steps of Procedure 4.29 on page 4-63).
28. Do as follows to set the bed's configuration:
 - a. Connect your service device to the bed, and open the Centrella® service tool app.
 - b. Tap **Advanced Functions**.
 - c. Tap **Bed Configuration**.
 - d. Refer to your note/screen shot from Step 9 on page 4-75 and set the bed's configuration.

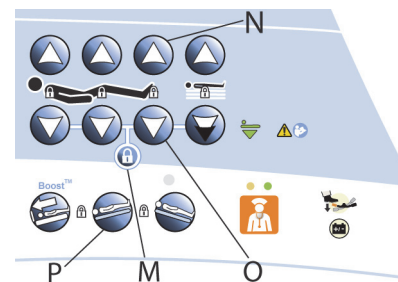
**WARNING:**

Warning—Do not install an earlier version of software. To do so could cause the loss of bed features.

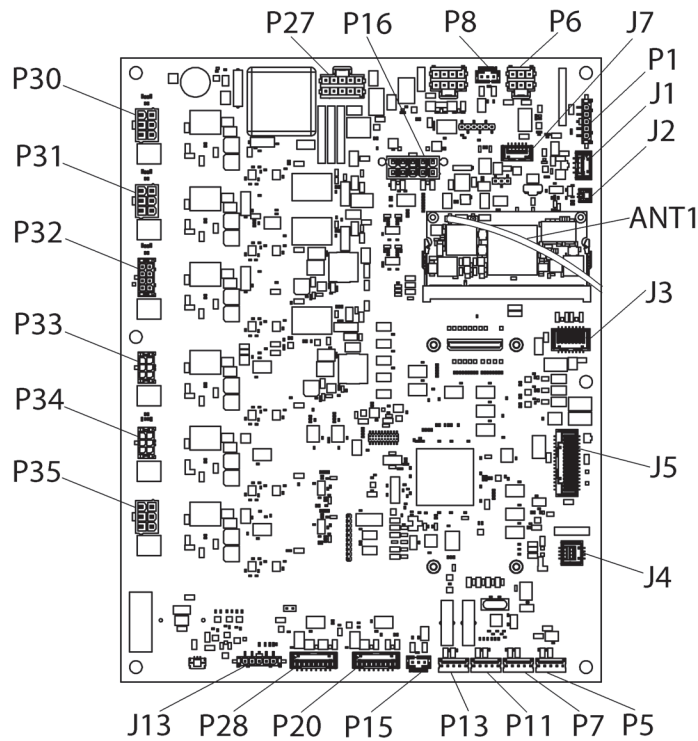
Injury or equipment damage could occur.

29. Make sure all P.C. boards show the same software version. If any software versions are different, do a full bed software upgrade. See the service tool app user guide (205987 or 212326).
30. Disconnect the service device from the bed.
31. Put the MCB cover (B) into position on the bed, and install the two screws (A) to attach the cover to the bed (see Figure 4-8 on page 4-71).
32. Set the date and time:
 - **Bed with the Standard (NA) Scale**—see “Set the GCI’s Language, Time and Date, and Scale Units on a Bed with the Standard (NA) Scale” on page 4-6.
 - **Bed with the OIML EN 45501 Class Scale**—see “Set the GCI’s Time and Date on an International Bed” on page 4-8.
33. Calibrate the bed articulations. See Procedure 4.28 on page 4-62.
34. **Bed with the OIML EN 45501 Class Scale**—calibrate the accelerometer. See page 4-27.
35. Calibrate the scale:
 - **Standard (NA) Scale**—see page 4-10.
 - **OIML EN 45501 Class Scale**—see page 4-15.
36. Refer to your note from Step 7 on page 4-74 or facility persons, and set the bed features to their previous states or as the facility requests. See “Configure Feature Defaults” on page 4-44, “Calibrate the Scale—EN 45501 Class Scale (OIML)” on page 4-15, and “Configure the Nurse Call” on page 4-42 (as applicable).
37. If the bed has HR/RR monitoring activated, the HR/RR sensor will need to be activated as though this is a new activation (see Procedure 4.74 on page 4-213). You will need to contact tech support or your Hill-Rom representative to get an activation code based on the bed serial number.
38. Unplug the bed, and shut it down as follows:

- a. Press and hold the **Lockout** (M) control until you hear a beep (approximately 20 seconds).
- b. Press and hold these controls at the same time until you hear a beep: **Foot Up** (N), **Foot Down** (O), and **Trendelenburg** (P). The bed should shut down within 5 seconds after you release the controls.



39. After the bed has fully shut down, plug the bed in.
40. Do the “Function Checks” on page 2-1.

MCB CABLE CONNECTIONS**Figure 4-11. MCB Cable Connections**

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Table 4-5. MCB Cable Connection Identification

Pin/ Jumper	Cable	Pin/ Jumper	Cable
P27 and P16	BCB/MCB power (194641, P7900A0/P7900B0 bed; 205471, P7900B1/newer bed)	P11	Load beam, foot, left (137757, standard (NA) scale; 13775701, OIML scale)
P8	Intermediate rail switch, rh (19587202)	P13	Load beam, head, left (169105, stan- dard (NA) scale; 16910501, OIML scale)
P6	ACB/MCB harness (211335) ³ or pro+ connection cable (208830)	P15	Intermediate rail switch, lh (19587202)
P1	DCB/MCB power (194884)	P20	Patient pendant/MCB (194636)
J2	Speaker (194862)	J13	USB panel mount (194651)
ANT 1 (SOM)	WiFi/Bluetooth antenna (194649)	P35	Motor extension, head (195630)
J3	SideCom [®] power (194644)	P34	Foot extension actuator (193629)
J5 and P28	HOB harness (211393)	P33	Thigh actuator (193627)
J4	SafeView [®] (194638)	P32	Foot actuator (193628)
P5	Load beam, head, right (169105, stan- dard (NA) scale; 16910501, OIML scale))	P31	Foot hilow actuator (193626)

Pin/ Jumper	Cable	Pin/ Jumper	Cable
P7	Load beam, foot, right (137757, standard (NA) scale; 13775701, OIML scale)	P30	Head hilow actuator (193626)
J7	WatchCare® power (198378)	J1	Vitals jack (199378)

- a. Part number 195598, MCB - ACB junction cable, is no longer available. The junction box has been removed. The 211335 ACB - MCB harness cable connects directly to the MCB from the ACB.

4.34 BCB and Power Supply Components—Replacement

Tools: T10, T15, and T25 Torx® screwdrivers Antistatic strap
3/16" nut driver Torque wrench

SETUP

1. Raise the bed to its highest position.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

2. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.



CAUTION:

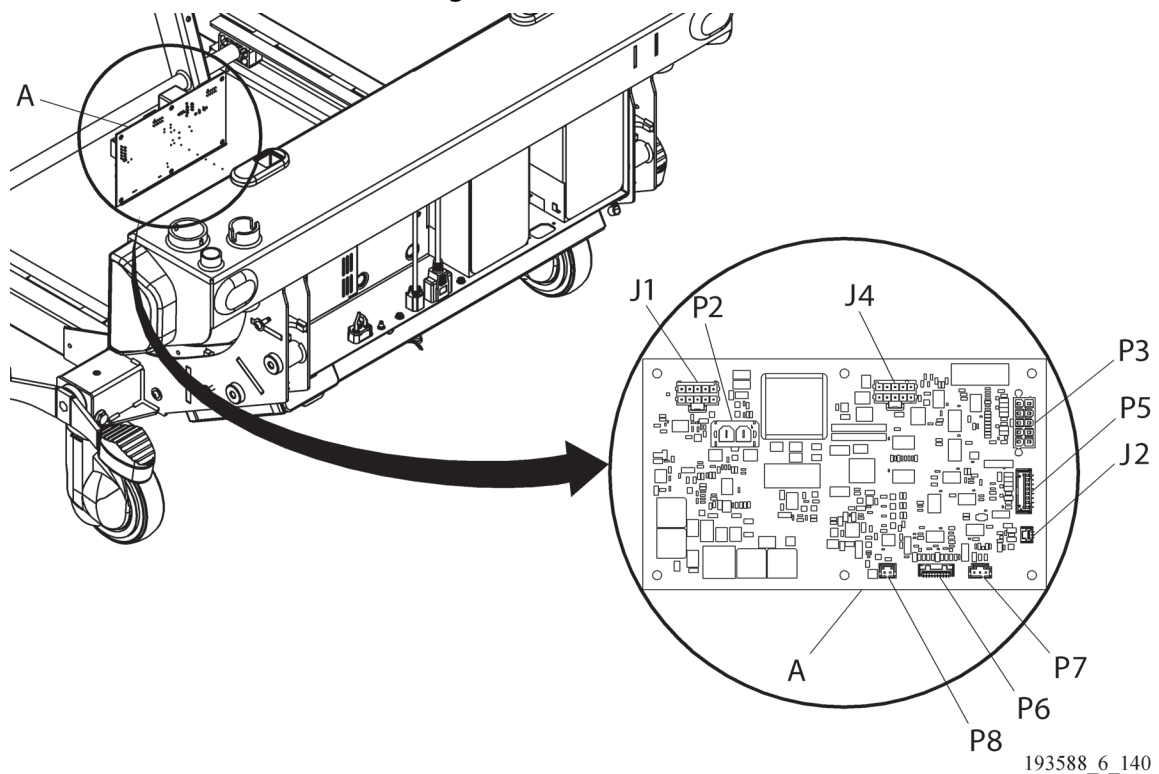
Caution—Failure to wear antistatic strap could cause equipment damage.

3. Put on the antistatic strap.
4. Go to the applicable procedure:
 - “BCB—Removal” on page 4-81
 - “Power Supply—Removal” on page 4-82
 - “AC Inlet to PSM Cable Assembly—Removal” on page 4-84

BCB—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Disconnect the cables from the BCB (A) (see Figure 4-12 on page 4-82):
 - **J1**—PSM to BCB cable assembly
 - **P2**—battery cable assembly
 - **J4**—BCB/MCB power cable assembly
 - **P3**—BCB/MCB power cable assembly
 - **P5**—Experience Pod® Device cable assembly
 - **J2**—phono jack cable assembly (bed with the SideCom® option)
 - **P6**—Obstacle Detect® cable, head-end
 - **P7**—brake switch cable
 - **P8**—night light cable
3. Remove the BCB (A) from its standoffs.

Figure 4-12. BCB Removal

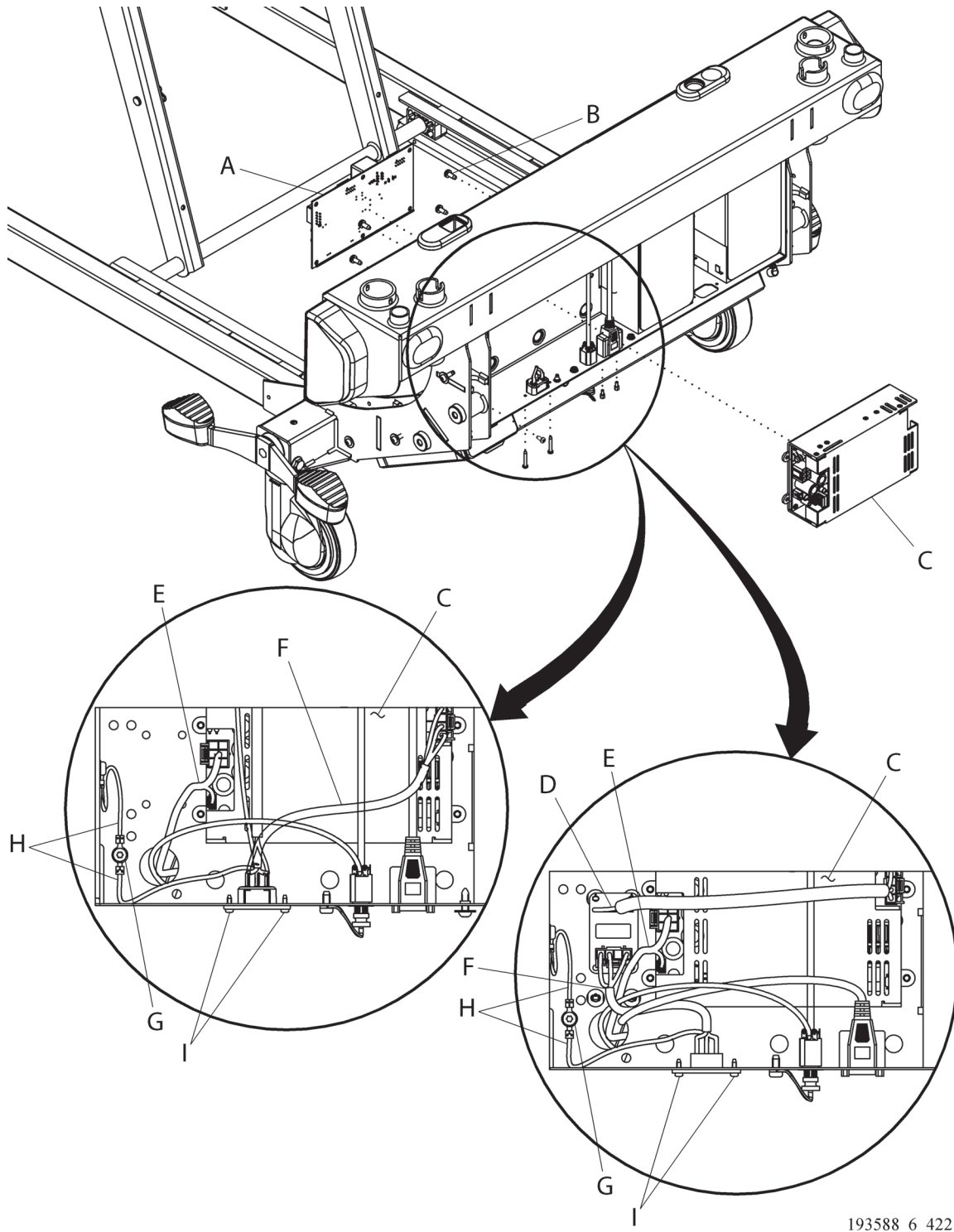


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Power Supply—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Remove the BCB (A) from its standoffs (see Figure 4-13 on page 4-83).
3. Remove the four screws (B) that attach the power supply (C) to the power supply weldment.
4. Do as applicable for your bed:
 - Bed with an **external** power line filter (D)—disconnect the cable for the power line filter (D) from the power supply (C), and disconnect the AC inlet to PSM cable assembly (F) from the power line filter (D).
 - Bed with an **internal** power line filter—disconnect the AC Inlet to PSM cable assembly (F) from the power supply (C).
5. Disconnect the PSM to BCB cable assembly (E) from the power supply (C), and then remove the power supply.

Figure 4-13. Power Supply Components (a power supply with an internal filter is shown in the detail on the left)



4

193588_6_422

AC Inlet to PSM Cable Assembly—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Unplug the bed power cord from the AC inlet to PSM cable assembly (F) (see Figure 4-13 on page 4-83).
3. Do as applicable for your bed:
 - Bed with an **external** power line filter (D)—disconnect the AC inlet to PSM cable assembly (F) from the power line filter (D).
 - Bed with an **internal** power line filter—disconnect the AC Inlet to PSM cable assembly (F) from the power supply (C).
4. Remove the screw (G) that attaches the ground wire(s) (H) to the power supply weldment.

NOTE:

P7900B1 and newer beds have an additional ground wire that connects to the side of the electronics tray.

5. Remove the two screws (I) that attach the AC inlet to PSM cable assembly (F) to the power supply weldment. Then, remove the cable assembly.

REPLACEMENT

1. Do the applicable removal procedure in reverse order.

NOTES:

- If you are replacing a power supply that has an external power line filter (D), the new power supply (C) will have an internal power line filter. The AC inlet to PSM cable assembly (F) connects to the power supply (C).
 - As you replace the parts, tighten the screws to the amount of torque as follows:
 - Screws (B and I)—1.8 N·m (15.9 in-lb) \pm 10%
 - Screw (G)—4.5 N·m (39.8 in-lb) \pm 10%
2. Do the “Function Checks” on page 2-1.

4.35 Head-End Top Cover—Replacement (P7900B1 and Newer Bed)

Tools: T25 Torx® screwdriver Wire cutters Antistatic strap

REMOVAL

1. Make sure the brake is set.
2. Raise the bed to a comfortable working height.

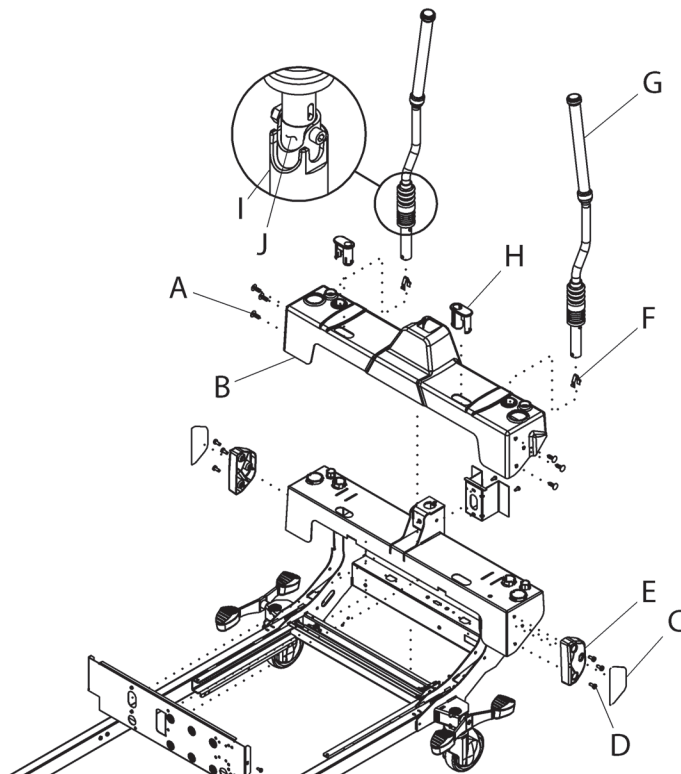


WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. Do as applicable for your bed width:
 - **Narrow**—remove the three panel fasteners (A) from each side of the head-end top cover (B).
 - **Wide**—remove the label (C), three screws (D), and extension (E) from each side of the head-end top cover (B).

Figure 4-14. Head-End Top Cover



193588_5_415

5. Do as applicable for your push handle type:
 - IntelliDrive® push handles—do the push handle—removal steps in the “IntelliDrive® Transport System Components—Replacement” on page 4-101.
 - Manual push handles—do as follows:
 - a. From underneath the head-end top cover (B), release the snap buttons (F) that attach the push handles (G) to the bed.
 - b. Remove the push handles (G).

6. Remove the head-end top cover (B) from the bed.
7. From underneath the head-end top cover (B), remove the headboard mounts (H): press the tabs on the mount inward, and pull the mount out from the top of the cover. Keep the headboard mounts. You will need to install them in the new cover.

REPLACEMENT

Do the removal procedure in reverse order.

NOTES:

- When you install the headboard mounts (H), make sure they are in the correct orientation for the bed width.
- When you install the push handles (G)—
 - Lift the blue bellows, and make sure the U-cut in the coupler shield (I) is aligned with the U-cut in the base tube (J).
 - Look under the head-end top cover (B), and make sure the snap buttons (F) are fully installed.
 - When you lower the blue bellows, make sure the rim on the coupler shield (I) is fully covered by the bellows.

4.36 SideCom® Communication System Components—Replacement

Tools: T10, T20, and T25 Torx® screwdrivers Antistatic strap
Torque wrench Small screwdriver

SETUP



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
2. Get access to the MCB. See “MCB Speaker, SOM, and WiFi Components—Replacement” on page 4-71.



CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

1. Put on the antistatic strap.
2. Go to the applicable procedure:
 - “SCB Enclosure and SCB—Removal” on page 4-87
 - “SideCom® Cable Assembly—Removal” on page 4-87

SCB Enclosure and SCB—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Remove the four screws (A) that attach the SCB enclosure cover to the enclosure (B) (see Figure 4-15 on page 4-88).
3. Make a note of the cable connections on the SCB (C).
4. Disconnect all cables from the SCB (C).
5. Remove the SCB (C) from the enclosure (B). If you are replacing the enclosure only, put the SCB in a safe location.
6. To remove the SCB enclosure (B), remove the three screws (D) that attach the enclosure to the bed, and then remove the enclosure.

SideCom® Cable Assembly—Removal

NOTE:

The SideCom® cable on a P7900A0 and P7900 B0 bed is a coiled cable (199276); on a P7900B1 and newer bed, the cable (205472) is not coiled.

1. Get access to the SCB (see the procedure above).
2. Disconnect the SideCom® cable from the SCB (C) (see Figure 4-15 on page 4-88).
3. Make a note of the routing and cable tie locations where the SideCom® cable is held on to the bed, and then remove the cable ties and snap fit P-clip (if applicable).

NOTE:

At the battery tray, there may be a snap fit P-clip or a cable tie.

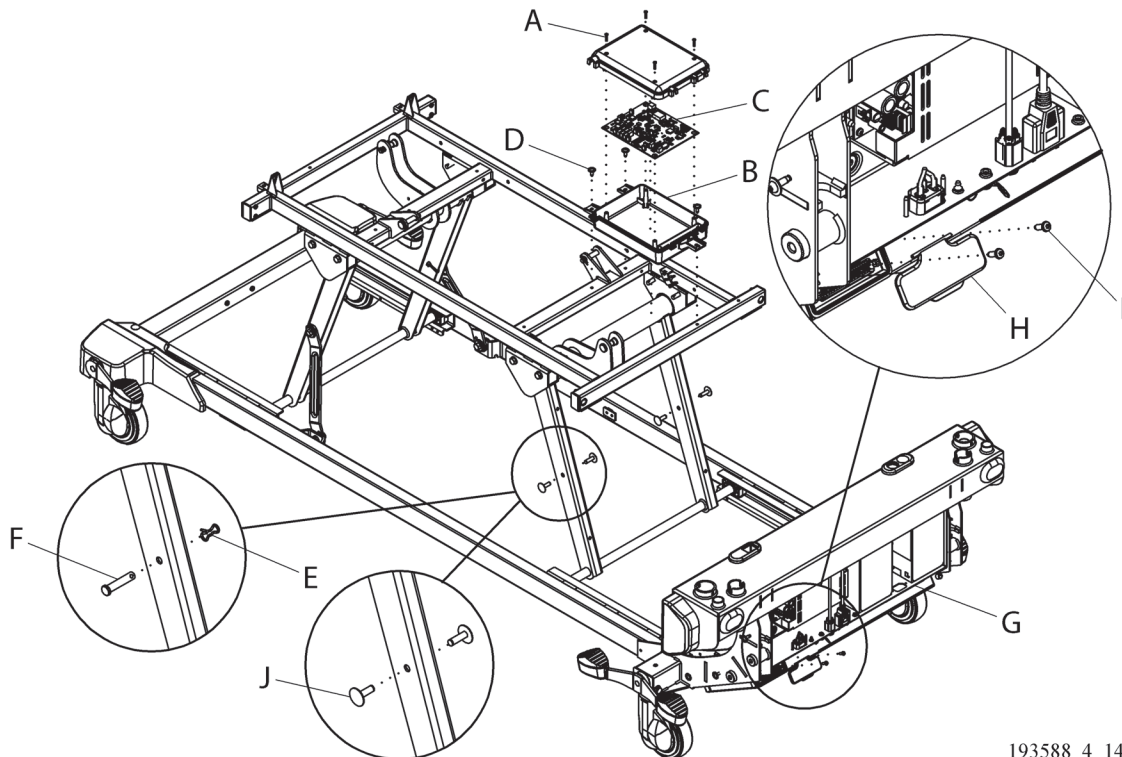
- Remove the ratchet rivet (J) or bow-tie cotter pin (E) and clevis pin (F) that holds the SideCom® cable inside the head-left lift arm.

NOTE:

The part that holds the cable at the center of the lift arm could be a ratchet rivet or bow-tie cotter pin with clevis pin.

- At the power supply weldment (G), open the SideCom® connector cover (H), and loosen the two cap screws (I) enough to release the SideCom® cable from the power supply weldment.
- Remove the SideCom® cable from the bed.

Figure 4-15. SideCom® Communication System Components (P7900A0/P7900B0 bed shown)



193588_4_141

REPLACEMENT

- Do the applicable removal procedure in reverse order.

NOTE:

As you replace the parts, tighten the screws to the amount of torque as follows:

- Screws (A)—1.0 N·m (8.9 in-lb) \pm 10%
 - Screws (D)—4.5 N·m (39.8 in-lb) \pm 10%
 - Screws (I)—0.45 N·m (4.0 in-lb) \pm 10%
- SCB**—if you replaced the SCB, the bed software versions may not match. Make sure you update the software as necessary. See the service tool app user guide (205987 or 212326).
 - Do the “Function Checks” on page 2-1.

4.37 Bed Batteries and Battery Bracket—Replacement

Tools: T10 and T25 Torx® screwdrivers Torque wrench
Needle nose pliers

REMOVAL



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
2. If the bed has the auxiliary outlet option, make a note of the cable connections on the outlet's power inlet (A), and disconnect the cables from the inlet (see Figure 4-16 on page 4-90).
3. Make a note of the battery fuse cable (B) and battery cable (C) connections on the batteries (D), and then disconnect the cables from the batteries.
4. Remove the two screws (E) that attach the battery bracket (F) to the power supply weldment, and remove the bracket.

NOTE:

There are two versions of the battery bracket. Yours may not look exactly like that shown in Figure 4-16 on page 4-90; however, the removal and replacement is the same.

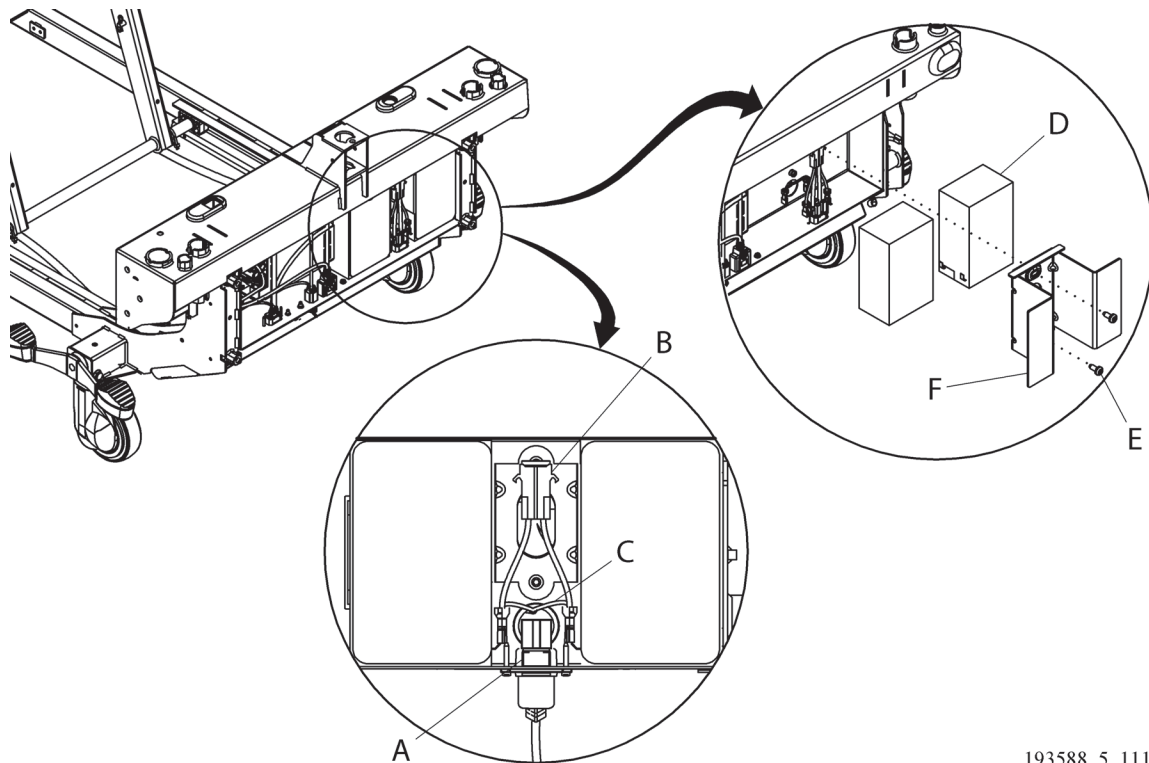
5. Pull the auxiliary outlet cable and the battery cables out from battery bracket (F).



WARNING:

Warning—If battery fluid touches skin or clothing, immediately wash it off with clean water. If battery fluid gets in your eyes, immediately flush them with water and consult a physician. Failure to do so could cause injury.

6. Remove the batteries (D).

Figure 4-16. Bed Batteries (P7900B1/newer bed shown)

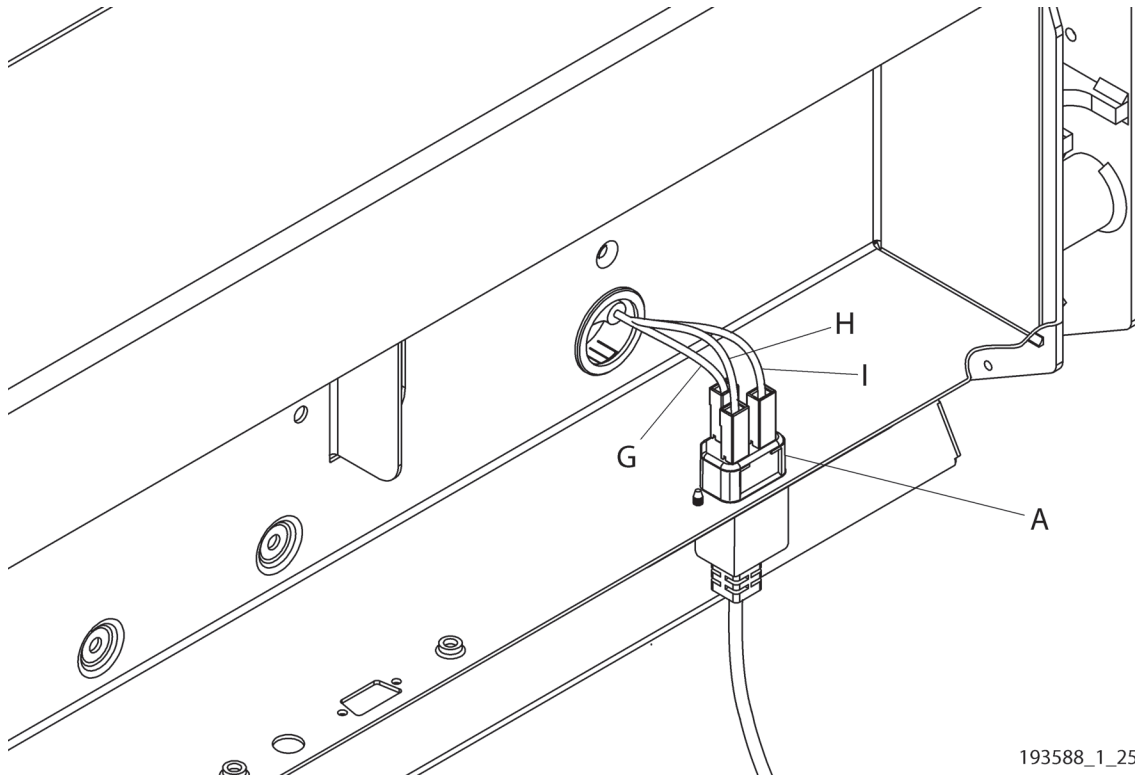
193588_5_111

REPLACEMENT**WARNING:**

Warning—Make sure the battery cable from the BCB is connected to the negative (black) terminal on the battery and the red cable is connected to the positive (red) terminal on the battery. Failure to do could cause injury or equipment damage.

1. Do the removal procedure in reverse order. As you replace the batteries (D), make sure of these:
 - You refer to your note from Step 2, and then connect the battery fuse cable (B) and battery cable (C) to their correct locations on the batteries:
 - Connect the battery fuse cable (B) to the red (+) terminal on one battery and to the black (-) terminal on the other battery. (There are labels below the terminals that identify them as red or black.)
 - Connect the red wire of the battery cable (C) to the remaining red (+) terminal and the black wire to the remaining black (-) terminal.
 - If the bed has the auxiliary outlet option, connect the auxiliary outlet cables to the correct tine locations on the auxiliary outlet power inlet (A) (see Figure 4-17 on page 4-91):
 - **G**—green
 - **H**—white
 - **I**—black
 - When you install the two screws (E), tighten them to 4.5 N·m (39.8 in-lb) ± 10% of torque.
2. Do the “Function Checks” on page 2-1.

Figure 4-17. Auxiliary Outlet Tine Locations (G—green; H—white; I—black)



193588_1_252



4.38 Caster—Replacement (P7900A0 and P7900B0 Bed)

Tools:	4 mm and 5 mm T-handle hex wrenches	(2) 13 mm hex wrenches
	T10 and T20 Torx® screwdrivers	Torque wrench
	13 mm socket	Wheel wedge supports or equivalent
	Jack stand	

REMOVAL



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
2. If you will replace a foot-end caster (E), remove the panel fastener (A) from the applicable foot base cover (B), and then remove the cover from the bed (see Figure 4-18 on page 4-92).

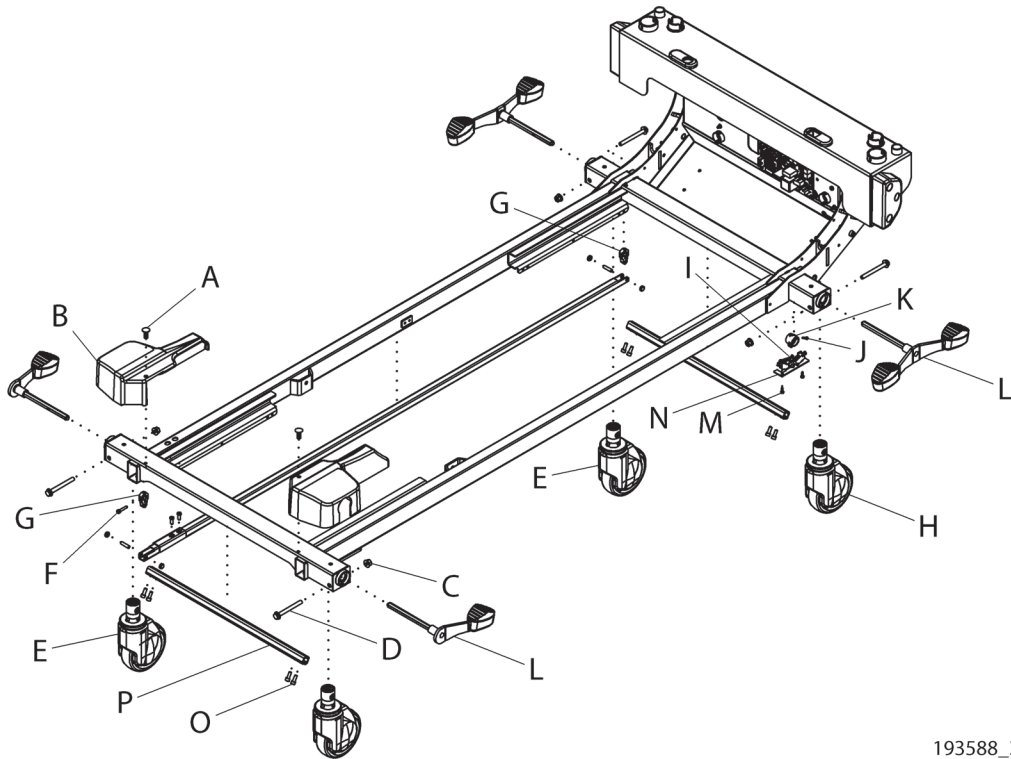


WARNING:

Warning—Make sure you install the wheel wedge supports so the bed can not move when you raise the bed. If the bed can move, injury or equipment damage can occur.

3. At the opposite end of the bed where the caster is to be replaced, put the wheel wedge supports at the casters to prevent bed movement.
4. Use a lift or jack to lift and support the end of the bed where the caster will be replaced.
5. Loosen, but do not remove the nut (C) on the bolt (D).

Figure 4-18. Caster Replacement



193588_3_072

6. Put the bed in neutral.
7. If you will replace a patient-right caster (E), remove the screw (F) on the hex bar clamp (G) at the applicable end of the bed.
8. If you will replace the head-end patient-left caster (H), do the steps that follow to remove the brake/steer switch (I):
 - a. Loosen, but do not remove the screw (J) on the brake/steer switch cam (K) on the brake/steer pedal (L).
 - b. Move the brake/steer switch cam (K) away from the brake/steer switch (I).
 - c. Remove the two screws (M) that attach the brake/steer switch bracket (N) to the bed.
 - d. Move the brake/steer switch bracket (N) to the foot end of the bed, and move it down out of the base frame.
9. Remove the two screws (O) on the center connecting tube (P). Remove only the screws at the caster you will replace.
10. Pull out the brake/steer pedal (L).
11. Make a note of the position of the caster set screw, and remove the caster.

REPLACEMENT



CAUTION:

If you are replacing a hex bar clamp, make sure of these to help prevent equipment damage:

- When you install the hex bar clamp, do not attempt to spread the clamp apart.
 - Tighten the hex bar clamp screw before you activate the brake/steer system.
1. Do the removal procedure in reverse order.

NOTES:

- If you are replacing the patient-right, head-end caster, make sure to replace it with an ESD caster, P/N 202180.
 - The caster set screw must point to the foot end of the bed.
 - As you replace the parts, tighten the bolts and screws to the amount of torque as follows:
 - Bolts (D)—13.0 N·m (115.1 in-lb) \pm 10%
 - Screw (F)—8.0 N·m (70.8 in-lb) \pm 10%
 - Screw (J)—0.8 N·m (7.1 in-lb) \pm 10%
 - Screws (M)—2.3 N·m (20.3 in-lb) \pm 10%
 - Screws (O)—tighten the outer screws first, and then the inner screws; 13.0 N·m (115.1 in-lb) \pm 10%
2. Do the “Function Checks” on page 2-1.

4.39 Caster—Replacement (P7900B1 and Newer Bed)

Tools: T25 Torx® screwdriver Torque wrench 8 mm and 13 mm sockets
Wheel wedge supports or equivalent Jack stand

REMOVAL



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
2. If you will replace a foot-end caster, remove the foot base cover (A) (see Figure 4-19 on page 4-95).

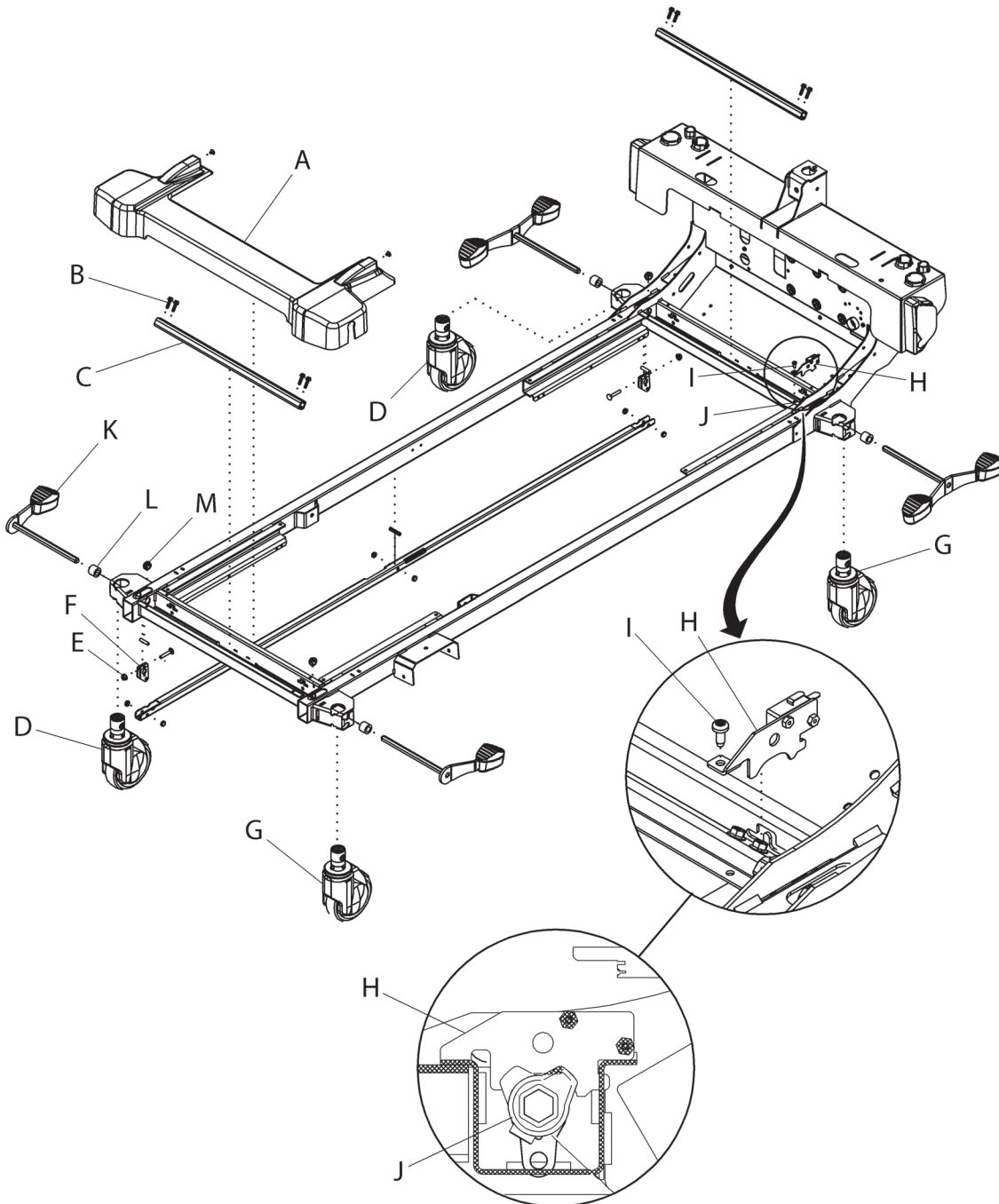


WARNING:

Warning—Make sure you install the wheel wedge supports so the bed can not move when you raise the bed. If the bed can move, injury or equipment damage can occur.

3. At the opposite end of the bed where the caster is to be replaced, put the wheel wedge supports at the casters to prevent bed movement.
4. Use a lift or jack to lift and support the end of the bed where the caster will be replaced.
5. Put the bed in steer.
6. Remove the two screws (B) from the torque tube (C). Remove only the screws at the caster you will replace.
7. If you will replace a patient-right caster (D), loosen, but do not remove the nut (E) on the brake link (F).
8. If you will replace the head-end, patient-left caster (G), do the steps that follow to remove the brake switch assembly (H):
 - a. Remove the screw (I) that attaches the brake switch assembly (H) to bed, then remove the assembly.
 - b. Put the bed in neutral; this permits the brake/switch cam (J) to rotate.
9. Pull the applicable brake/steer pedal (K) out from the bed. Make sure the spacer (L) stays on the pedal weldment.
10. Remove the caster (D or G).

Figure 4-19. Caster Replacement



4

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REPLACEMENT

Do the removal procedure in reverse order.

NOTES:

- If you are replacing the patient-right, head-end caster (D), make sure to replace it with an ESD caster (202180).
- When you install the torque tube (C), make sure the hex bushings (M) stay in their locations on the bed.
- Before you install the brake switch assembly (H), put the bed in neutral; this permits the brake switch cam (J) to rotate. Make sure that when the assembly is installed, it is between the two lobes on the brake switch cam.
- As you replace the parts, tighten the screws and nut to the amount of torque as follows:
 - Nut (E)—9.5 N·m (84.1 in-lb) \pm 10%
 - Screw (I)—3.4 N·m (30.1 in-lb) \pm 10% of torque
 - Screws (B)—tighten the outer screws first, and then the inner screws; 6.8 N·m (60.2 in-lb) \pm 10%

11. Do the “Function Checks” on page 2-1.

4.40 Brake/Steer Switch—Replacement (P7900A0 and P7900B0 Bed)

Tools: T10 and T20 Torx® screwdrivers Jack stand
Torque wrench
Wheel wedge supports or equivalent

REMOVAL



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.

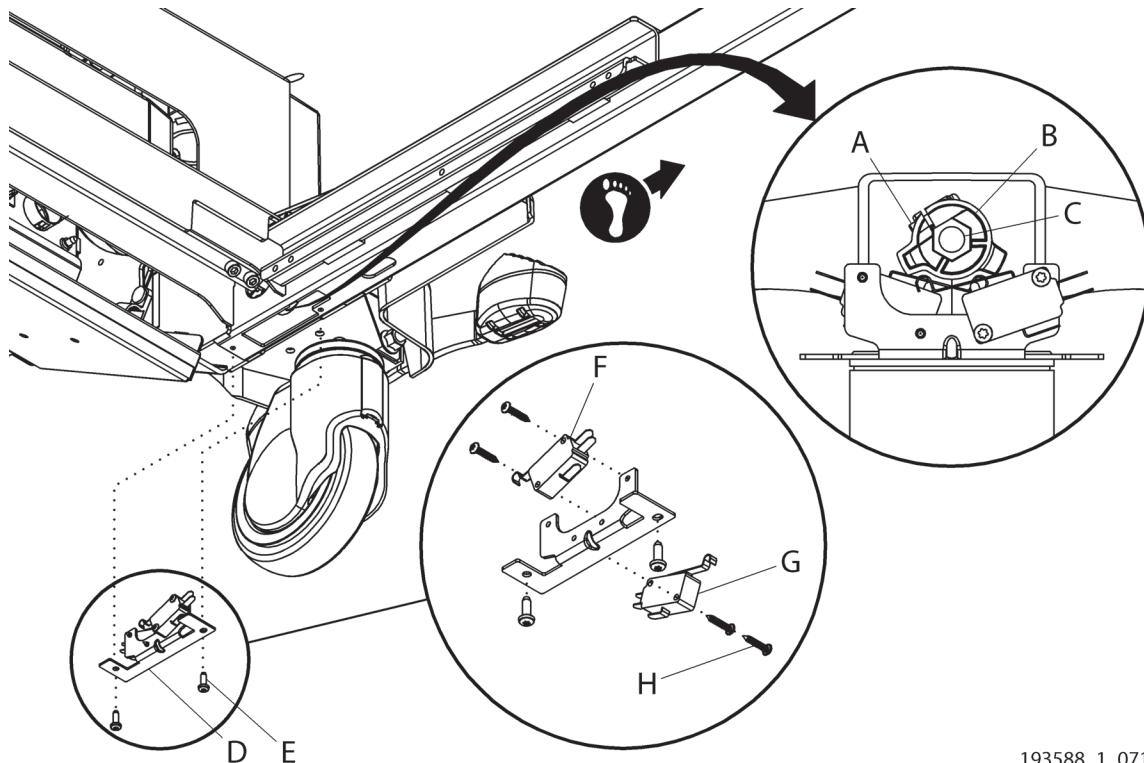


WARNING:

Warning—Make sure you install the wheel wedge supports so the bed can not move when you raise the bed. If the bed can move, injury or equipment damage can occur.

2. At the foot end of the bed, put the wheel wedge supports at the casters to prevent bed movement.
3. Use a lift or jack stand to lift and support the head end of the bed.
4. Loosen, but do not remove the screw (A) on the brake/steer switch cam (B) on the brake/steer pedal hex rod (C) (see Figure 4-20 on page 4-97).

Figure 4-20. Brake/Steer Switch Replacement



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5. Move the brake/steer switch cam (B) away from the brake/steer switch assembly (D).
6. Remove the electrical connector from the steer switch (G).

NOTE:

Only beds with power transport will have a steer switch (G).

7. Remove the two screws (E) that attach the brake/steer switch assembly (D) to the bed.
8. Move the brake/steer switch assembly (D) to the foot end of the bed, and move it down out of the base frame.
9. Remove the electrical connector from the brake switch (F).
10. Make a note of the cable routing, and remove the two screws (H) from the applicable brake (F) and/or steer (G) switch.

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTE:

As you replace the parts, tighten the bolts and screws to the amount of torque as follows:

- Screws (A) and (H)—0.9 N·m (8.0 in-lb) \pm 10%
 - Screws (E)—2.3 N·m (20.4 in-lb) \pm 10%
2. Do the “Function Checks” on page 2-1.

4.41 Brake/Steer Switch—Replacement (P7900B1 and Newer Bed)

Tools: T25 Torx® screwdriver 1/4" nut driver Phillips head screwdriver
Torque wrench Wheel wedge supports or equivalent

REMOVAL



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.

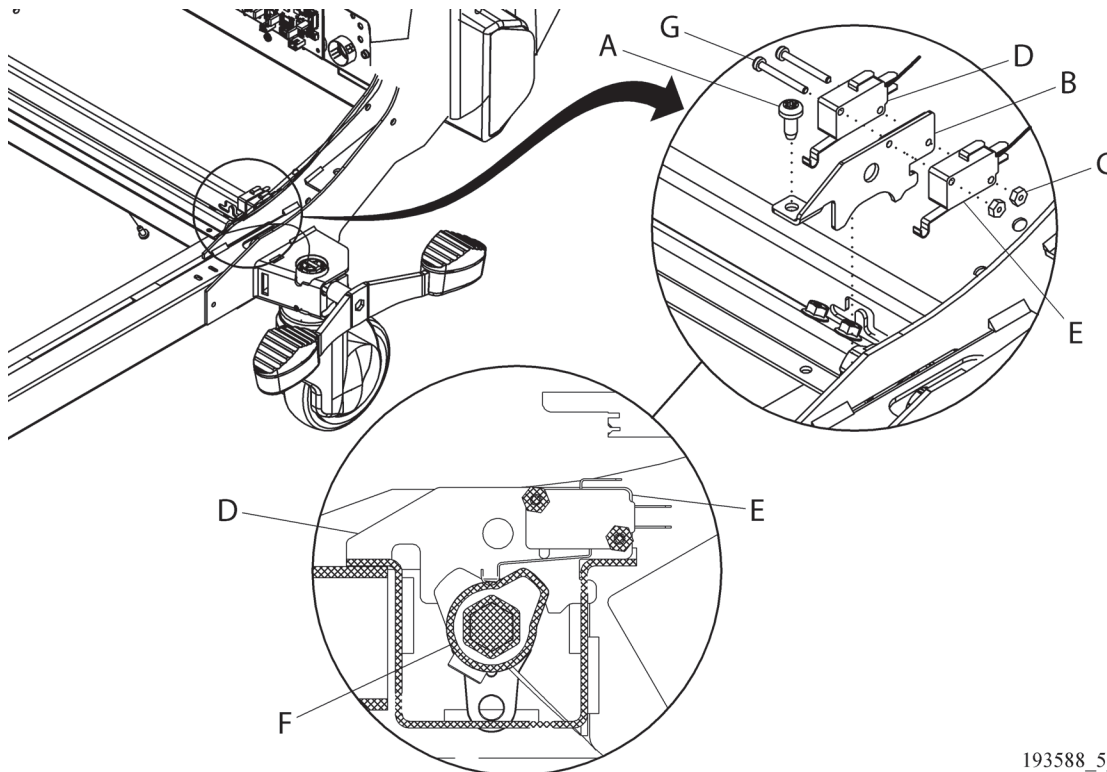


WARNING:

Warning—Make sure you install the wheel wedge supports so the bed can not move when you raise the bed. If the bed can move, injury or equipment damage can occur.

2. At the foot end of the bed, put the wheel wedge supports at the casters to prevent bed movement.
3. Remove the screw (A) from the brake switch bracket (B), then remove the bracket from the bed (see Figure 4-21 on page 4-99).

Figure 4-21. Brake/Steer Switch Replacement



193588_5_402

4. Remove the two nuts (C) from the screws (G) that attach the brake switch (D) and, if applicable, steer switch (E) to the bracket (B).
5. Remove the applicable switch (D or E) from the bracket (B).
6. Disconnect the cable from the switch (D or E) that is to be replaced.

NOTE:

Only beds with power transport will have a steer switch (E).

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTES:

- Before you install the brake switch bracket (B), put the bed in neutral; this permits the brake switch cam (F) to rotate.
 - Install the bracket (B) so that it is between the two lobes on the brake switch cam (F).
 - Tighten the screw (A) to 3.4 N·m (30.1 in-lb) +/-10% of torque.
2. Do the "Function Checks" on page 2-1.

4.42 IntelliDrive® Transport System Components—Replacement

Tools:	Antistatic strap	Torque wrench	10 mm socket
	T10, T15, T20, and T30 Torx® screwdrivers		Right-angle bit driver
	Jewelers screwdriver	Wire cutters	Phillips head screwdriver
	(2) 13 mm wrench	Drift punch	Hammer

SETUP

1. Make sure the brake is set.
2. Use the **Bed Up** control to raise the bed to its highest position.



WARNING:

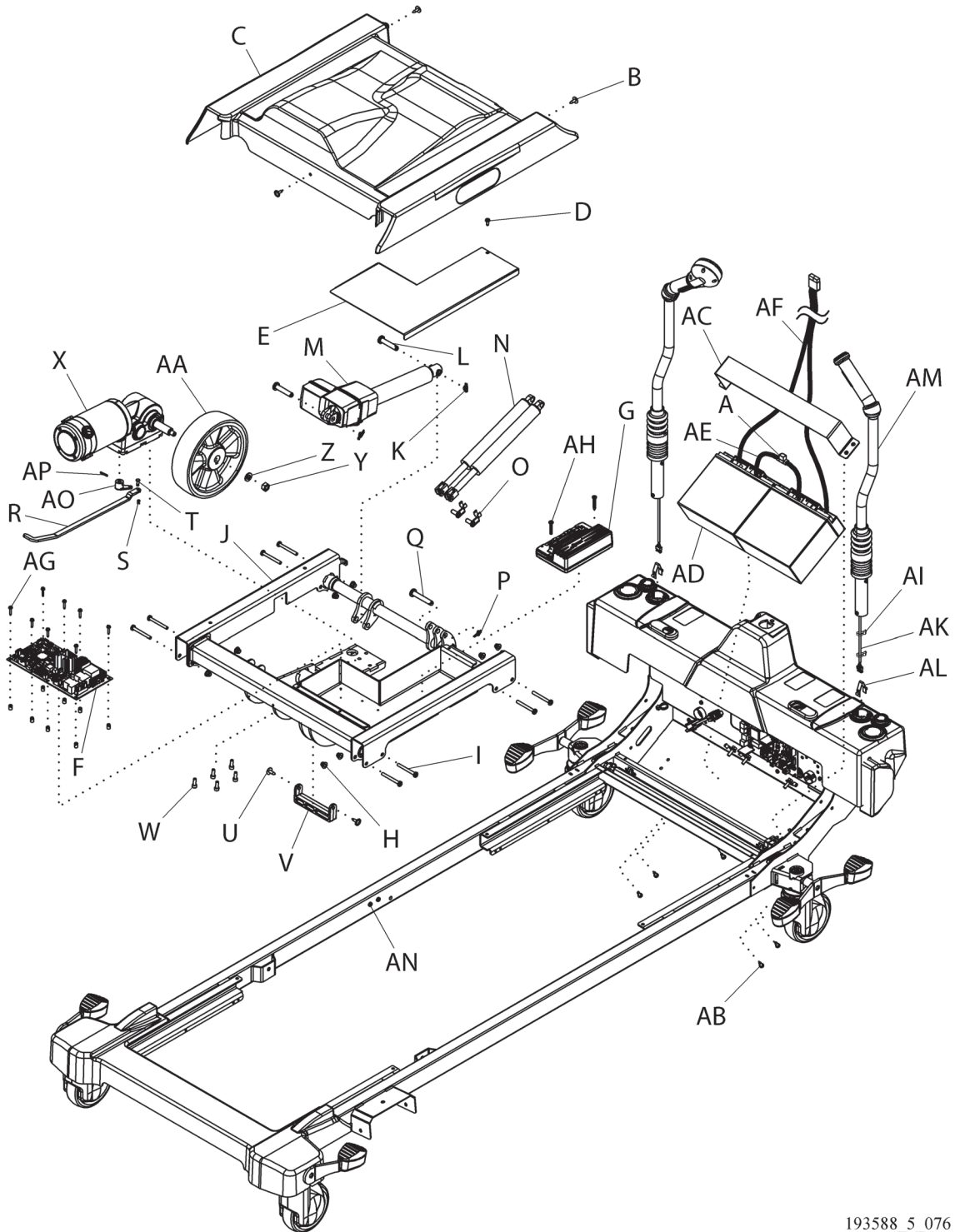
Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. Make sure you have removed the fuse from the power drive battery fuse holder (A) (see Figure 4-22 on page 4-102).
5. Remove the screws (B) that attach the power drive shroud (C), and remove the shroud.
6. Remove the screws (D) that attach the power drive electronics box cover (E), and remove the power drive electronics box cover.
7. Go to the applicable procedure:
 - “Power Drive Assembly—Removal” on page 4-101
 - “Activation Hub—Removal” on page 4-103
 - “Power Drive Actuator—Removal” on page 4-103
 - “Gas Springs—Removal” on page 4-103
 - “Drive Motor—Removal” on page 4-103
 - “Drive Wheel—Removal” on page 4-104
 - “Power Drive Batteries—Removal” on page 4-104
 - “Battery Fuse—Replacement” on page 4-104
 - “DCB—Removal” on page 4-104
 - “Motor Controller—Removal” on page 4-105
 - “Push Handle—Removal” on page 4-105

Power Drive Assembly—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.

Figure 4-22. Power Drive (P7900B1/newer bed shown)



193588_5_076

2. Disconnect these cables from the DCB (F) (see Figure 4-22 on page 4-102 and Figure 4-23 on page 4-107):
 - **P18**—steer switch cable
 - **P4**—power drive battery cable
 - **P6** and **P15**—left push handle cables
 - **P1**, **P9**, and **P14**—right push handle cables
 - **P13**—MCB/DCB power cable
3. Remove the screw that attaches the ground strap to the frame near the locator screw (AN; P7900B1/newer) or tab (P7900A0/P7900B0).
4. Remove the eight nuts (H) and eight bolts (I) that attach the power drive assembly (J), and remove the power drive assembly.

Power Drive Actuator—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Disconnect the power drive actuator cable from P16 on the DCB (F) (see Figure 4-22 on page 4-102 and Figure 4-23 on page 4-107).
3. Remove the rue rings (K) and clevis pins (L) from each end of the power drive actuator (M), and remove the power drive actuator.

Gas Springs—Removal

NOTE:

When a gas spring needs replaced, we recommend that you replace both gas springs.

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. At the foot end of the gas spring (N), release the spring folding stud (O), and remove it from the gas spring (see Figure 4-22 on page 4-102).
3. Remove the rue ring (P) and clevis pin (Q) from the head end of the gas spring, and remove the gas spring.

Drive Motor—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Disconnect the drive motor cable from P12 on the DCB (F) (see Figure 4-22 on page 4-102 and Figure 4-23 on page 4-107).
3. Move the activation arm (R) toward the foot end of the bed.
4. Remove the cotter pin (S) and clevis pin (T) from the activation arm (R).
5. Remove the two screws (U) that attach the mounting block (V), and remove the mounting block.
6. Remove the five screws (W) that attach the drive motor (X), and remove the drive motor.

Activation Hub—Removal

1. Remove the power drive assembly from the bed, and turn the assembly upside down. See “Power Drive Assembly—Removal” on page 4-101.

NOTE:

When you remove the assembly, the patient-right side of the assembly may come loose from the assembly.

2. Move the activation arm (R) toward the foot end of the bed.
3. Remove the rue ring (S) and clevis pin (T) from the activation arm (R).
4. Move the activation arm (R) away from the activation hub (AO).
5. Use the drift punch and hammer to remove the roll pin (AP) from the activation hub (AO), and remove the hub.

Drive Wheel—Removal

1. Remove the gas springs. See “Gas Springs—Removal” on page 4-103.
2. Remove the nut (Y) and washer (Z) from the drive motor (X) (see Figure 4-22 on page 4-102).
3. Remove the wheel (AA) from the drive motor (X).

Power Drive Batteries—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Remove the four screws (AB) that attach the battery bracket (AC), and remove the battery bracket (see Figure 4-22 on page 4-102).

NOTE:

The battery bracket differs depending on bed version. A P7900A0 and P7900B0 bed uses part number 195807, and a P7900B1 and newer bed uses part number 205446.

**WARNING:**

Warning—If battery fluid touches skin or clothing, immediately wash it off with clean water. If battery fluid gets in your eyes, immediately flush them with water and consult a physician. Failure to do so could cause injury.

3. Remove the batteries (AD).
4. Make a note of the connections for the battery cable (AF) and the fuse holder cable (AE) on the batteries (AD).
5. Remove the cables (AE and AF) from the batteries.

Battery Fuse—Replacement

See Step 6 of the “Setup” on page 4-101. If the fuse is damaged, install a new fuse (A) (see Figure 4-22 on page 4-102).

DCB—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.

**CAUTION:**

Caution—Failure to wear an antistatic strap could cause equipment damage.

2. Put on the antistatic strap.

3. Disconnect the electrical connectors from the DCB (F) (see Figure 4-22 on page 4-102 and Figure 4-23 on page 4-107).
4. Remove the eight screws (AG) that attach the DCB (F) to the power drive assembly (J), and remove the DCB.

Motor Controller—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.



CAUTION:

Caution—Failure to wear an antistatic strap could cause equipment damage.

1. Put on the antistatic strap.
2. Disconnect the electrical connectors from the motor controller (G) (see Figure 4-22 on page 4-102).
3. Remove the two screws (AH) that attach the motor controller (G) to the power drive assembly (J), and remove the motor controller.

Push Handle—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.



CAUTION:

Caution—Failure to wear an antistatic strap could cause equipment damage.

2. Put on the antistatic strap.
3. Disconnect the push handle cable electrical connectors from the DCB (F) (see Figure 4-22 on page 4-102 and Figure 4-23 on page 4-107).

NOTE:

The right handle cables connect to P14, P9, and P1 (labeled right). The left handle cables connect to P15 and P6 (labeled left).

4. Remove the cable ties (AI) from the push handle cables (AK).

NOTE:

A P7900A0 and P7900B0 bed has one cable tie on the handle cables; a P7900B1 and newer bed has two cable ties on the handle cables.

5. Release the clip (AL) at the base of the push handle (AM).
6. Remove the push handle (AM).

REPLACEMENT

1. Do the applicable removal procedure in reverse order.

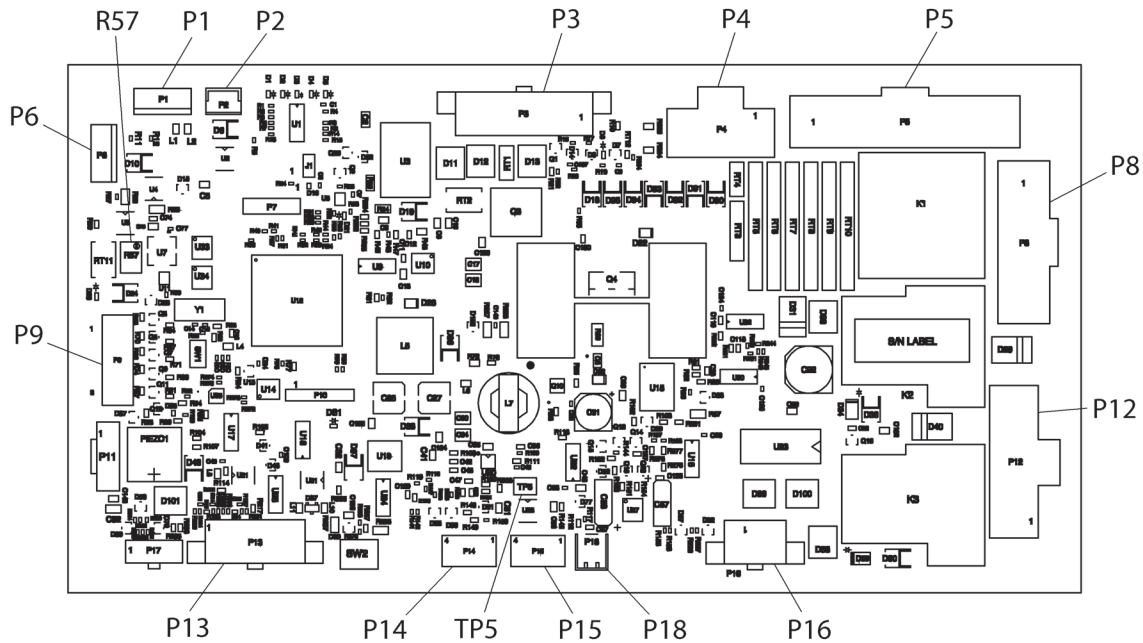
NOTES:

- **Gas springs**—you will need to adjust the length of the gas springs (N) so that the drive wheel (AA) lightly touches the power drive shroud (C). Install the inner gas spring first, and then adjust its length as follows:

- a. With one hand on top of the power drive shroud (C), turn the turnbuckle on the gas spring (N) forward or backward (as applicable) until you feel the wheel (AA) touching the shroud.
 - b. Tighten the jam nuts at both ends of the turnbuckle to 13.0 N·m (115.1 in-lb).
 - c. Remove the inner gas spring (N), and use it as a template to adjust the outer gas spring to the same length.
 - d. Install both gas springs (N).
- **Push handle**—with the release of the P7900B1 bed, the push handles have been updated. They are backwards compatible with the P7900A0 and P7900B0 beds. When you replace a push handle, make sure to do these:
 - Lift the blue bellows (AQ), and make sure the U-cut in the coupler shield (AR) is aligned with the U-cut in the base tube (AS).
 - When you lower the blue bellows (AQ), make sure the rim on the coupler shield (AR) is fully covered by the bellows.
 - Look under the head cross beam, and make sure the snap button (AL) is fully installed.
 - Install the handle cable ties (AI) in the same locations where they were removed.
 - After you replace the **push handle**, put the bed in Steer. Use TP5 as a common ground to make sure the DCB at P2.1 is 2.5 V +/- 0.1 V DC (without force applied to the push handle) (see Figure 4-23 on page 4-107). If P2.1 is not at 2.5 V +/- 0.1 V DC, adjust R57 until the voltage is in range.
 - As you replace the parts, tighten the nuts and screws to the amount of torque as follows (see Figure 4-22 on page 4-102):
 - Nuts (H)—12.7 to 14.3 N·m (113 to 126 in-lb)
 - Screws (W and ground strap screw)—7.2 to 8.8 N·m (64 to 77 in-lb)
 - Nut (Y)—16.2 to 19.8 N·m (144 to 175 in-lb)
 - Screws (AG)—2.7 to 3.3 N·m (24 to 29 in-lb)
 - Screws (AH)—4.1 to 4.9 N·m (36 to 43 in-lb)
 - For DCB cable connections, see “DCB Cable Connections” on page 4-107. Make sure you connect the **right** strain gauge connector to **P1** and the **left** strain gauge connector to **P6**.
 - If you replaced the DCB, the bed software versions may not match. Make sure you update the software as necessary. See the service tool app user guide (205987 or 212326).
2. Do the “Function Checks” on page 2-1.

DCB CABLE CONNECTIONS

Figure 4-23. DCB Cable Connections



193588_1_181

Table 4-6. DCB Cable Connection Identification

Pin	Cable	Pin	Cable
P1, P9, P14	Right push handle cables (19195402)	P13	MCB/DCB power cable (194884)
P6, P15	Left push handle cables (19195401)	P18	Steer switch cable (199491)
P4	Power drive battery cable (195015)	P16	Actuator cable (191951)
P12	Drive motor cable (191959)	P2, R57, TP5	Used for potentiometer adjustment
P3, P5, P8	Motor controller (195239)		



4.43 5th Wheel Assembly Components—Replacement

Tools:	(2) Jack stands	Punch	Hammer
	10 mm wrench	T25 and T30 Torx® screwdrivers	
	Wire cutters	13 mm wrench	13 mm socket

SETUP

1. Set the brake.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

2. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
3. Go the applicable procedure:
 - “5th Wheel—Removal” on page 4-108
 - “5th Wheel Caster—Removal” on page 4-108
 - “5th Wheel Cable and Locking System—Removal” on page 4-108

5th Wheel—Removal

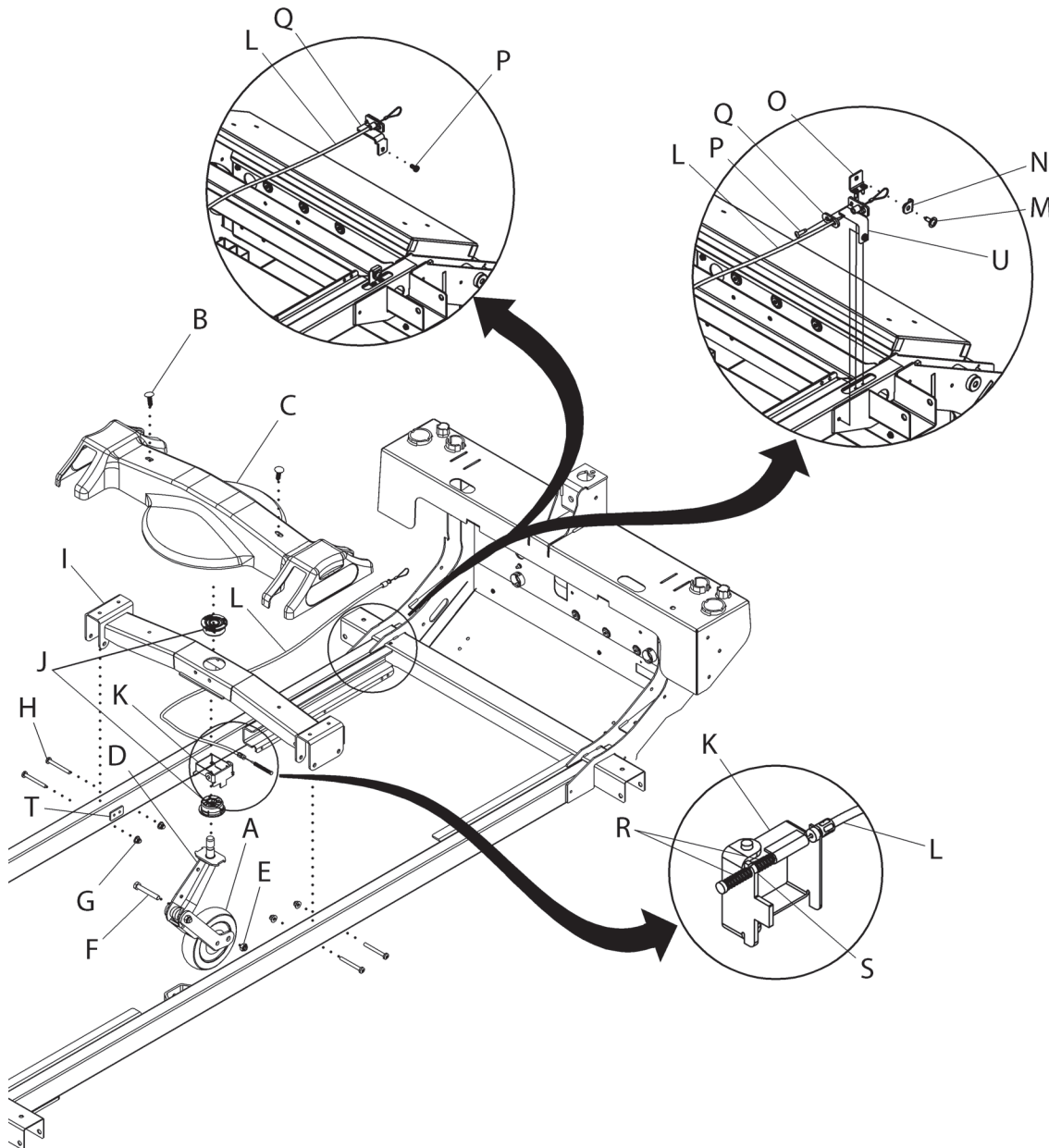
1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Use the jack stands to raise the foot end of the bed high enough so the 5th wheel caster (A) no longer touches the floor (see Figure 4-24 on page 4-109).
3. Remove the two rivets (B) that attach the 5th wheel cover (C) to the bed, and then remove the cover.
4. Use the punch and hammer to tap the top of the 5th wheel (D) to release it from the pivot system, and then remove the 5th wheel from the bed.

5th Wheel Caster—Removal

1. Remove the 5th wheel. See “5th Wheel—Removal” on page 4-108.
2. Remove the nut (E) and bolt (F) that attach the caster (A) to the 5th wheel (D), and then remove the caster (see Figure 4-24 on page 4-109).

5th Wheel Cable and Locking System—Removal

1. Remove the 5th wheel. See “5th Wheel—Removal” on page 4-108.
2. Remove the four nuts (G) and screws (H) that attach the 5th wheel weldment (I) to the bed (see Figure 4-24 on page 4-109).
3. Use the punch and hammer to remove the pivot system’s two bushings (J) from the weldment (I).
4. Turn the weldment (I) upside down.
5. On each side of the weldment (I), put a removed screw (H) through the hole on the non-cable end of the weldment to release the locking system (K) from the weldment.
6. Push the locking system (K) toward the non-cable side of the weldment (I), and remove the locking system from the bed.
7. Remove the 5th wheel cable (L) from the locking system (K).

Figure 4-24. 5th Wheel (P7900A0/P7900B0 bed is shown in the right detail view)

4

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8. If you need to replace the cable (L), do as follows from underneath the patient-right, head-end of the bed:
 - a. **P7900A0/P7900B0**—remove the screw (M) and cable end button (N) from the cable bracket (O).

NOTE:

The cable bracket is installed differently on a P7900B1/newer bed and does not need to be removed.

- b. Remove the screw (P) from the cable latch plate (Q).
- c. Release the cable (L) from the latch plate (Q).
- d. Make a note of the routing for the cable (L), and then remove the cable ties that hold the cable on to the bed.
- e. Remove the cable (L) from the bed.

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTES:

- **5th wheel cable**—if the cable latch plate (Q) was installed on the head-end side of the cable support (U), when you install the cable latch plate during replacement, install it on the foot-end side of the support. After all parts have been installed, make sure the 5th wheel function operates correctly.
 - **Locking system**—before you put the locking system (K) into the weldment (I), install the cable (L) into the locking system. Make sure a cable spring (R) is on each side of the latching stop (S).
 - **5th wheel weldment**—when you install the weldment (I), make sure the weldment is centered over its locator screw (T; P7900B1/newer) or tab (P7900A0/P7900B0) on the base frame.
 - As you replace parts, make sure the screws are tightened to the amount of torque as follows:
 - Bolt (F)—8.0 N·m (70.8 in-lb) ± 10%
 - Nuts (G)—13.0 N·m (115.1 in-lb) ± 10%
 - Screws (M and P)—4.5 N·m (39.8 in-lb) ± 10%
2. Do the “Function Checks” on page 2-1.

4.44 Night Light Assembly—Replacement

Tools: Wire cutters Antistatic strap T15 Torx® screwdriver
 String, approximately 10' (305 cm) Tape

REMOVAL



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.

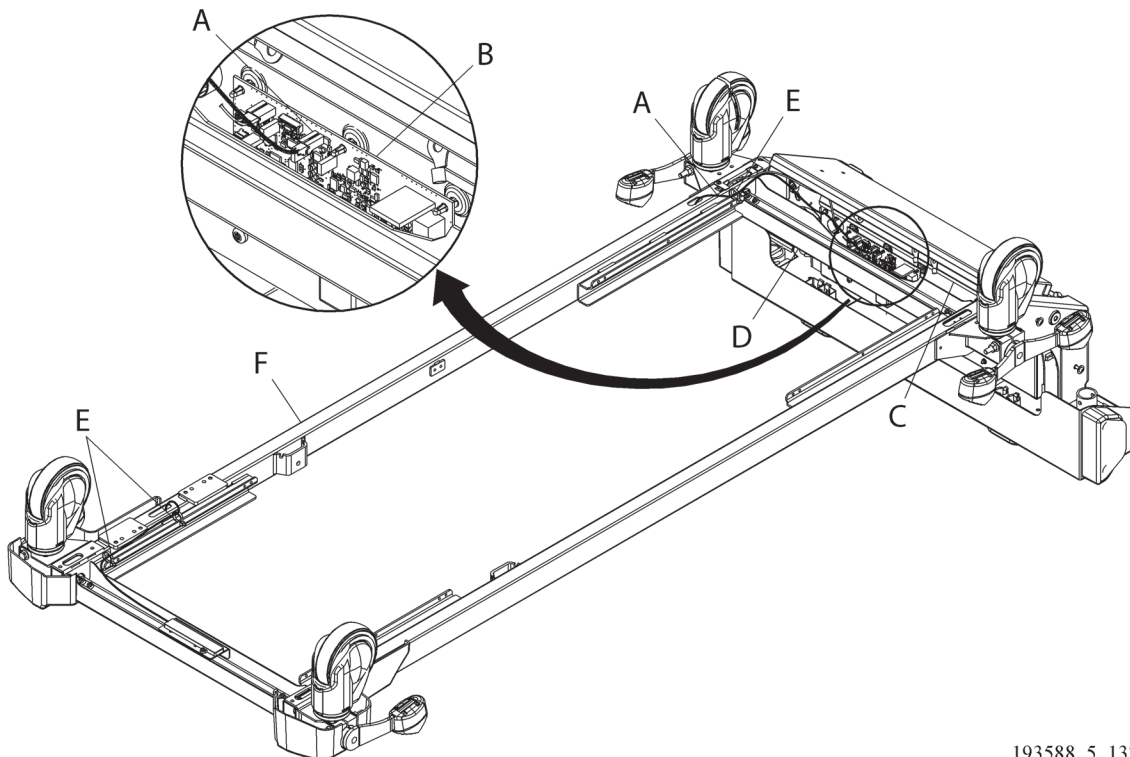


CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

2. Put on the antistatic strap.
3. Disconnect the night light cable (A) from P8 on the BCB (B) (see Figure 4-25 on page 4-111).
4. Tape the string to the cable (A). (This will help when you need to route the cable from the foot end to the head end.)

Figure 4-25. Night Light Cable (P7900A0/P7900B0 bed—bottom view shown)

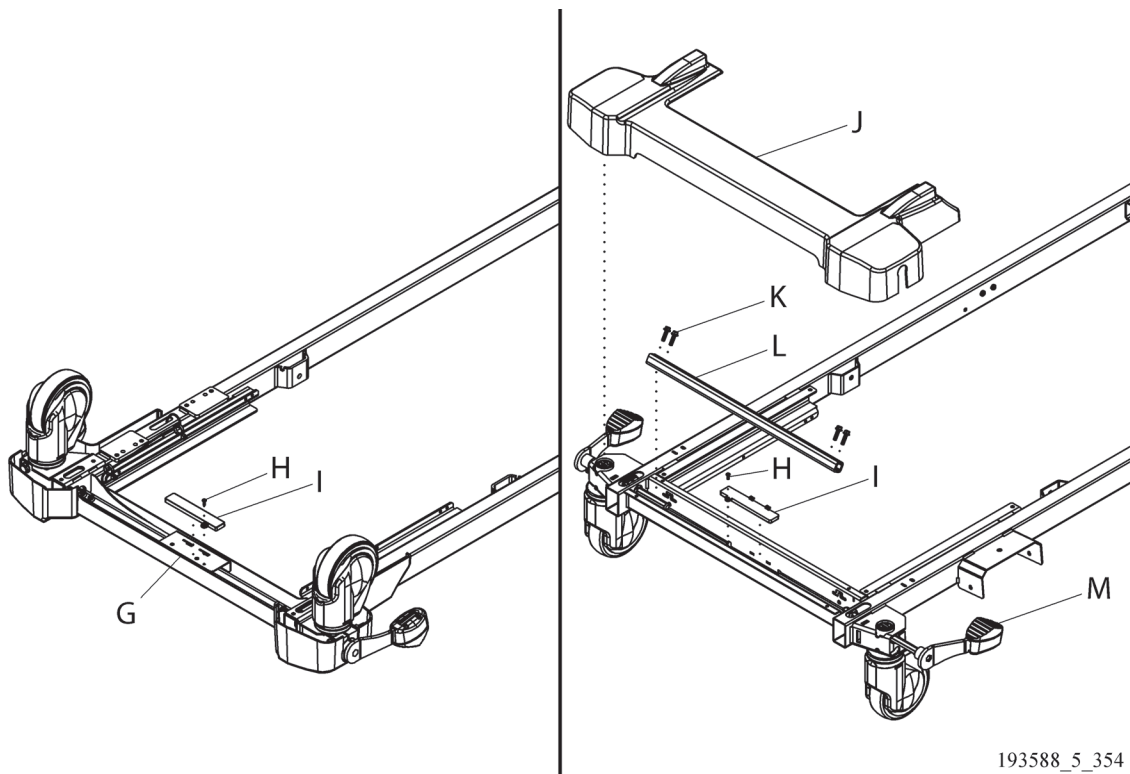


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5. Remove the cable (A) from the gap between the power supply weldment (C) and head-end weldment (D).
6. Make a note of the cable tie locations (E) where the cable (A) is held on to the base frame tube (F), and then remove the cable ties.
7. Push the cable (A) into the head-end opening in the base frame tube (F), and then pull the cable out from the foot-end opening in the tube.

8. Remove the string from the cable (A).
9. The removal of the night light assembly (I) differs depending on your bed version. Do the steps that apply to your bed version (see Figure 4-26 on page 4-112):
 - **P7900A0/P7900B0**—at the night light bracket (G), remove the screw (H) that attaches the night light assembly (I) to the bracket, and then remove the night light assembly.
 - **P7900B1/newer**—do as follows:
 - a. Remove the foot base cover (J).
 - b. Remove the four screws (K) that attach the torque tube (L) to the pedals (M).
 - c. Slide the patient-left brake pedal (M) just far enough out from the bed to remove the torque tube (L). Then, remove the torque tube.
 - d. Remove the screw (H) that attaches the night light assembly (I) to the bed, and then remove the night light assembly.

Figure 4-26. Night Light Assembly (P7900A0/P7900B0 bottom view shown on the left; P7900B1/newer shown on the right)



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REPLACEMENT

1. Do the removal procedure in reverse order.

NOTES:

- **P7900B1/newer bed**—when you install the brake pedal, make sure the spacer stays on the pedal weldment.
 - Tighten the screw (H) to 2.3 N·m (20.4 in-lb) \pm 10% of torque.
2. Do the “Function Checks” on page 2-1.

4.45 Auxiliary Outlet—Replacement

Tools: T10, T25, and T30 Torx® screwdrivers Torque wrench
Tape String, approximately 10' (305 cm)

REMOVAL

1. Make sure the brake is set.
2. Raise the bed to its highest position.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
2. Make a note of the cable connections on the outlet's power inlet (A), and then disconnect the cables from the inlet (see Figure 4-27 on page 4-114).
3. If you need to replace the power inlet (A), do as follows:
 - a. Disconnect the outlet's power cord (B) from the power inlet (A).
 - b. Remove the two screws (C) that attach the power inlet (A) to the power supply weldment (D).
 - c. Remove the power inlet (A).
4. Pull the auxiliary outlet cable out through the opening (E) in the power supply weldment.
5. Remove the cable from the gap between the power supply weldment (D) and head-end weldment (F).
6. If a cable tie (G) holds the cable on to the bed, make a note of the cable tie location, cut the cable tie to free the cable.
7. At the auxiliary outlet (H), pull the cable out through the opening (I) in the base frame tube.

NOTE:

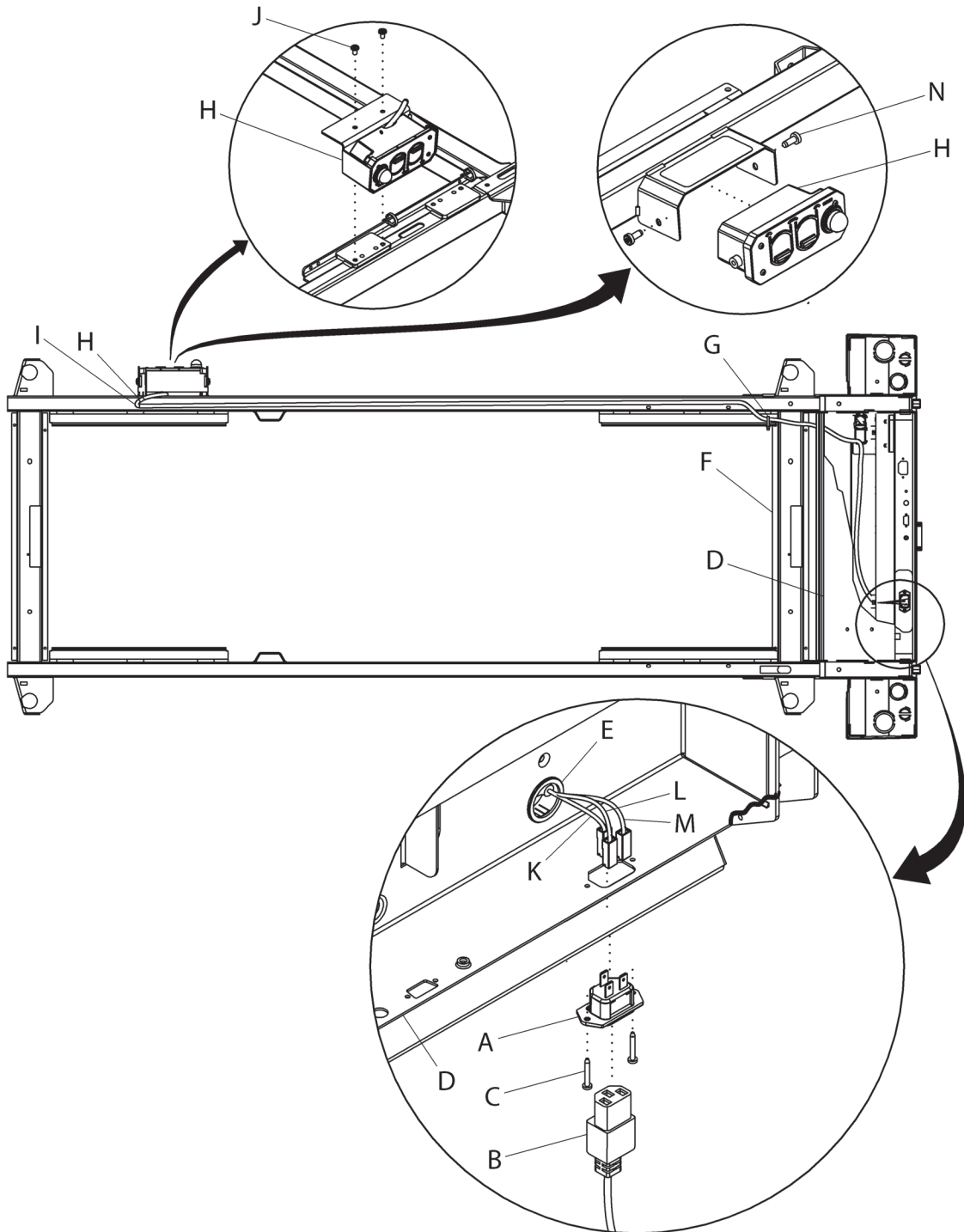
P7900A0/P7900B0 bed—the opening is in the bottom of the tube; P7900B1/newer bed—the opening is in the side of the tube.

8. Do as applicable for your bed version to remove the outlet assembly:
 - Remove the two screws (J) that attach the weldment with outlet assembly (H) to the bed, and then remove the outlet assembly.
 - **P7900B1/newer bed**—remove the two screws (N) that attach the outlet assembly (H) to the bed, and then remove the outlet assembly.

REPLACEMENT

1. Do the removal procedure in reverse order. Make sure to do these:
 - Connect the three colored connectors on the auxiliary outlet cable to the correct tine locations on the power inlet (A):
 - **K**—green
 - **L**—white
 - **M**—black
 - Tighten the screws (C and J or N) to 8.0 N·m (70.8 in-lb) ± 10% of torque.
2. Do the "Function Checks" on page 2-1.

Figure 4-27. Auxiliary Outlet (Tine Locations: K—green; L—white; M—black; P7900A0/P7900B0 shown in the left detail view; P7900B1/newer shown in the right detail view)



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4.46 CPR Assembly Components—Replacement

Tools: T10, T25, and T30 Torx® screwdrivers with an extension
 4 mm hex wrench Needle nose pliers Torque wrench

SETUP

1. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
2. Raise the head section to its highest position.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. At the foot end of the head deck panel (A), remove the two screws with washers (B) that attach the panel to the bed (see Figure 4-28 on page 4-116).

NOTE:

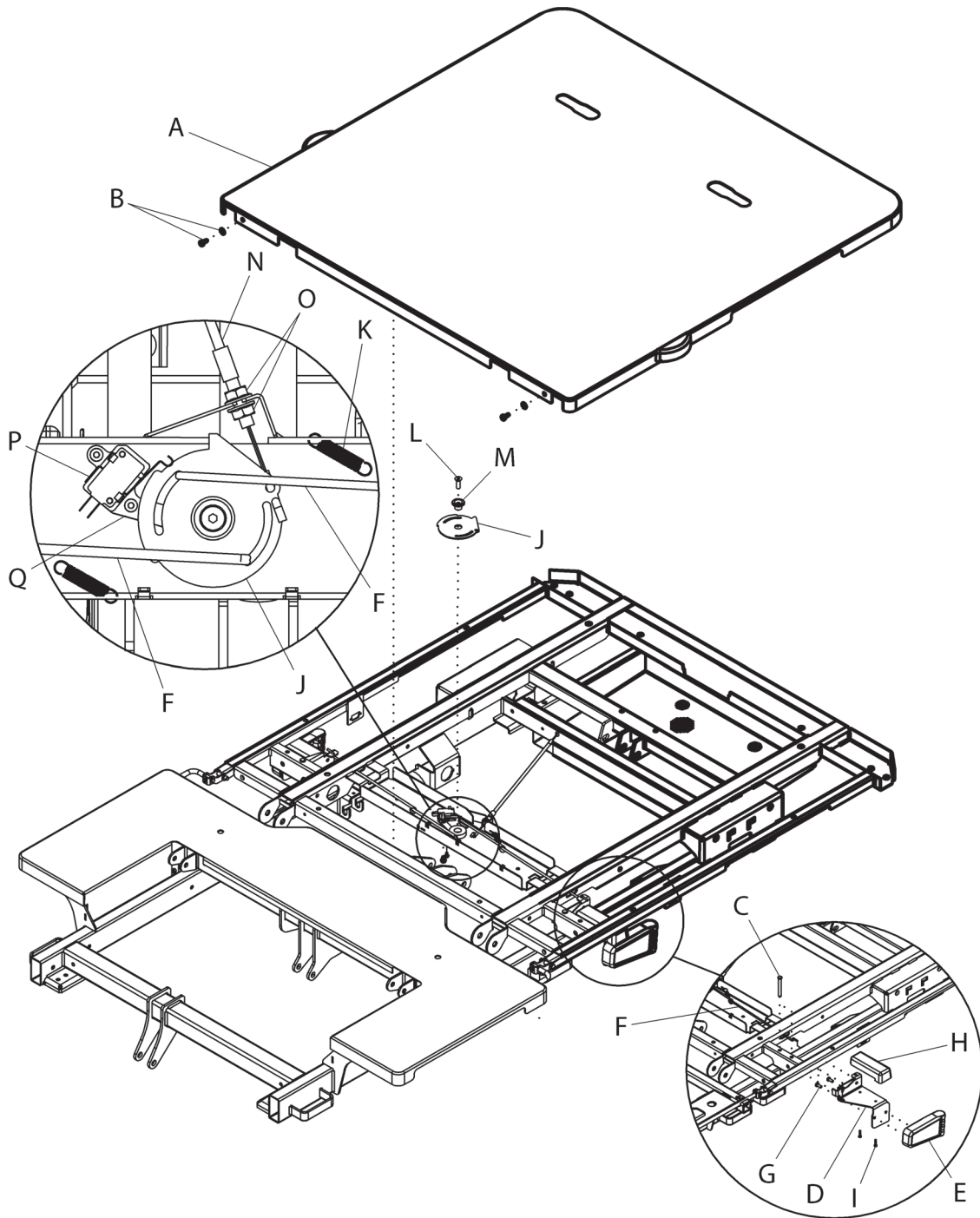
It may be easier to remove the screws from underneath the head deck panel.

5. Lift the panel (A) at its foot end, and slide the panel off its notches at the head end. Set the panel aside.
6. Go to the applicable procedure:
 - “CPR Handle Bracket, Handle, and CPR Guide—Removal” on page 4-115
 - “CPR Release Disk, Snap Switch, and CPR Pull Rod—Removal” on page 4-116

CPR Handle Bracket, Handle, and CPR Guide—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. On the applicable side of the bed, remove the pin (C) from the CPR handle bracket (D).
3. Remove the bracket (D) with handle (E) from the CPR pull rod (F).
4. To remove the handle (E) from the bracket (D), remove the two screws (G) that attach the handle to the bracket. Then, remove the handle.
5. To remove the CPR guide (H) from the bracket (D), remove the two screws (I) that attach the guide to the bracket. Then, remove the guide.

Figure 4-28. CPR Assembly Components



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CPR Release Disk, Snap Switch, and CPR Pull Rod—Removal

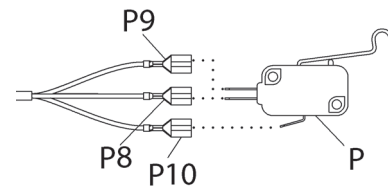
1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.

2. On each side of the bed, remove the pin (C) from the CPR handle bracket (D).
3. Remove the bracket (D) with handle (E) from the CPR pull rod (F).
4. Near the CPR release disk (J), disconnect the two width extension cam springs (K) from the frame.
5. Remove the screw (L) and drive lug (M) from the disk (J).
6. Disconnect the CPR cable (N) from the disk (J).
7. Turn the disk (J) enough to remove both pull rods (F) from the disk, and then remove the disk.
8. To remove the snap switch (P), remove the switch from the CPR switch spacer (Q), and then disconnect the red, green, and black cable connectors (P9, P8, and P10) from the switch.
9. To remove a CPR pull rod, remove and keep the spring (K) from the applicable pull rod (F), and then remove the rod.

REPLACEMENT

Do the applicable removal procedure in reverse order. However, make sure to do these:

- If you replaced the snap switch (P), make sure that you connect the red, green, and black cable connectors (P9, P8, and P10) to the correct tine locations on the snap switch (P):
 - **P9**—red
 - **P8**—green
 - **P10**—black
- After you install the CPR disk (J), make sure to do this adjustment:
 - a. Adjust the flange nuts (O) on the CPR cable (N) until the cable has no slack and the CPR disk (J) rotates counterclockwise and touches the head section weldment.
 - b. Tighten the flange nuts (O) to 4.5 N·m (39.8 in-lb) \pm 10% of torque.
- As you replace the CPR components, tighten the screws to the amount of torque as follows:
 - Screw (L)—3.4 N·m (30.1 in-lb) \pm 10%
 - Screws (G)—4.5 N·m (39.8 in-lb) \pm 10%
 - Screws (I)—1.0 N·m (8.85 in-lb) \pm 10%
- **Before you replace the head deck panel (A)**, do these checks:
 - a. Examine the handles (E), cable (N), and CPR components. Make sure the screws (G, I, and L) are installed and fully tightened.
 - b. Raise the head section to the high position, and pull one of the CPR controls. Make sure the head section lowers.
 - c. Release the CPR control, and make sure that the CPR disk (J) locks correctly.
 - d. Adjust the CPR disk (J) as necessary.
 - e. Do Step b through Step d on the other side of the bed.
 - f. Press the **Head Up** control, and make sure the head section rises.
- Tighten the head deck panel screws (B) to 4.5 N·m (39.8 in-lb) \pm 10% of torque.



4.47 Load Beam—Replacement

Tools: (1) Jack stand Antistatic strap
 Ratchet T25 Torx® socket



WARNING:

OIML EN 45501 Class Scale—A representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the scale.

REMOVAL

1. Set the brake.
2. Raise the head section to its highest position.
3. **Foot-end load beam**—raise the knee section to its highest position.

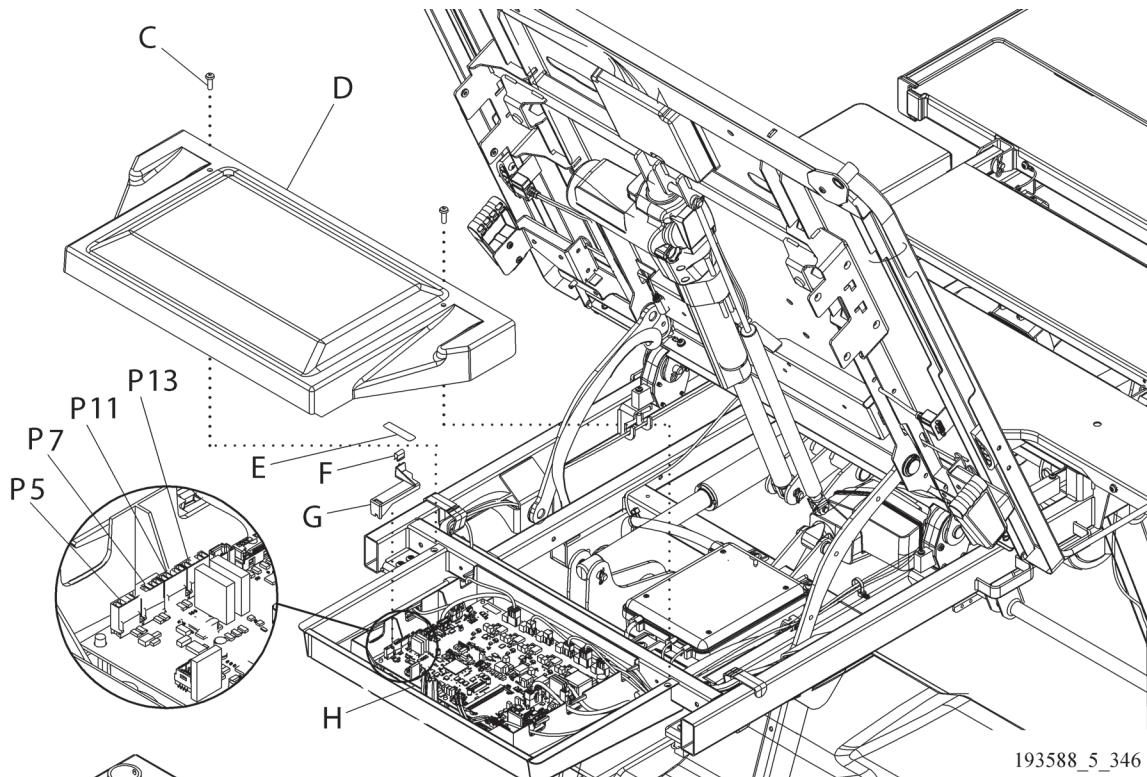


WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

4. Do the Removal steps of Procedure 4.29 on page 4-63 to **remove all power** from the bed.
5. Remove the two screws (C) that attach the MCB cover (D) to the MCB chassis, and then remove the cover (see Figure 4-29 on page 4-118).

Figure 4-29. MCB



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CAUTION:

Caution—Failure to wear an antistatic strap could cause equipment damage.

6. Put on the antistatic strap.

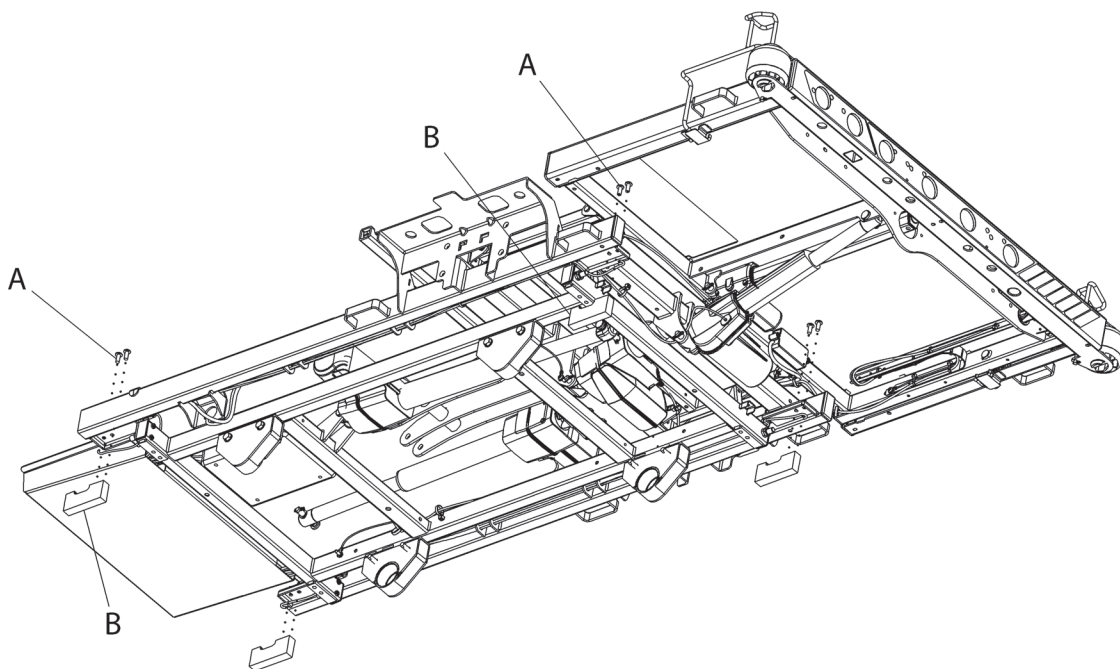
7. **Bed with the OIML EN 45501 Class Scale**—remove the scale seal (E), u-clip (F), and load beam connector cover (G) from the MCB (H).
8. Disconnect the applicable load beam cable from the MCB (H):
 - Left head—P13
 - Left foot—P11
 - Right foot—P7
 - Right head—P5
9. Make a note of the routing and cable tie locations for the applicable load beam cable. Then, remove the cable ties.

**CAUTION:**

Caution—Failure to support the upper frame could cause equipment damage.

10. Put a jack stand under the upper frame near the load beam that is to be replaced.
11. Remove the two screws (A) that attach the load beam (B) to the upper frame, and then remove the load beam and its cable from the bed (see Figure 4-30 on page 4-119).

Figure 4-30. Load Beams



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REPLACEMENT**WARNING:**

OIML EN 45501 Class Scale—A representative or certified person from the Notified Body for NAWI scales or from the Authority Having Jurisdiction (AHJ) in the country must re-certify the scale.

1. Do the Removal procedure in reverse order. Make sure of these:
 - **OIML EN 45501 Class Scale**—when you install the load beam (B), it is parallel to the load beam mount within $\pm 0.6^\circ$.
 - When you install the screws (A), tighten them to $10.0 \text{ N}\cdot\text{m} \pm 10\%$ of torque.
2. Calibrate the scale:
 - **Standard (NA) Scale**—see page 4-10.
 - **OIML EN 45501 Class Scale**—see page 4-15.
3. Do the “Function Checks” on page 2-1.

4.48 Head Siderail and Its Internal Components—Replacement

Tools: T20, T25, and T30 Torx® screwdrivers Small screwdriver
Torque wrench Alcohol-based cleaner Soft cloth

SETUP

1. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
2. Raise the head section to approximately 40°.



WARNING:

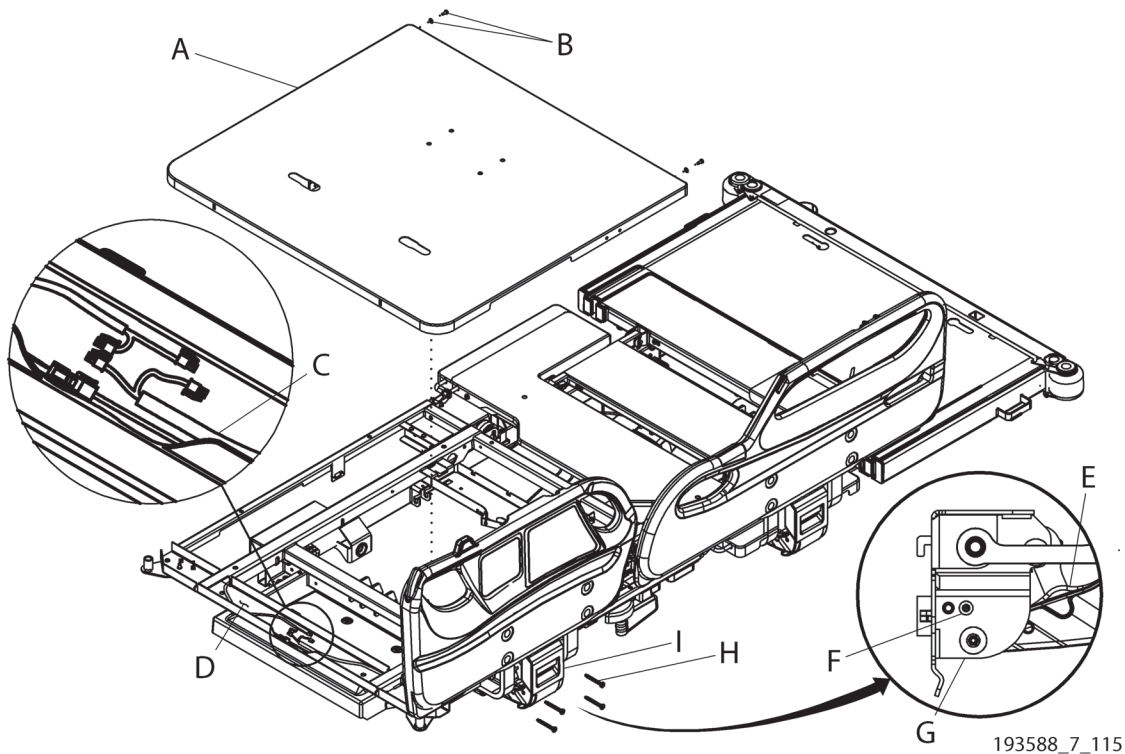
Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. At the foot end of the head deck panel (A), remove the two screws with washers (B) that attach the panel to the bed (see Figure 4-31 on page 4-121).

NOTE:

It may be easier to remove the screws from underneath the head deck panel.

Figure 4-31. Head Siderail



5. Lift the panel (A) at its foot end, and slide the panel off its notches at the head end. Set the panel aside.



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

6. Put on the antistatic strap.
7. Disconnect the siderail cable(s) for the applicable siderail from the cable harness (C) in the upper frame channel (D).

NOTE:

The cables connect red to red (patient-right siderail) and blue to blue (patient-left siderail).

8. Make a note of the cable routing from the upper frame channel (D) to the siderail, and then remove the cable(s) from the routing on the upper frame.
9. **Siderail Switch Cable Assembly Removal**—if you need to replace the siderail switch cable assembly (E) only, do as follows. Otherwise, continue to Step 10.
 - a. Remove the screw (F) that attaches the siderail switch cable assembly (E) to the siderail mechanism (G).
 - b. Lower the siderail so that you can get access to the siderail switch cable assembly (E) in the siderail mechanism (G).
 - c. Remove the tab on the siderail switch cable assembly (E) from its opening in the siderail mechanism (G).
 - d. From the bed side of the siderail mechanism (G), pull the siderail switch cable assembly (E) through the round opening to release the cable assembly from the siderail.
 - e. Remove the siderail switch cable assembly (E) from the bed.
 - f. Go to “Replacement” on page 4-125.



WARNING:

Warning—As you remove the screws from the siderail, support the siderail so it does not fall. Otherwise, injury or equipment could occur.

10. Remove the four screws (H) that attach the siderail to the upper frame (I).

NOTE:

On a wide (40") bed, there is a hook and spacer between the siderail and upper frame. When you remove the screws, the hook and spacer may come off of the upper frame.

11. Help to guide the siderail cables through as you lift and slide the siderail toward the left to remove it from the upper frame (I). Lay the siderail on the bed.
12. Go to the applicable section:
 - “Speaker Assembly and USB Cable—Removal” on page 4-123
 - “Caregiver Control Panel—Removal” on page 4-123
 - “Patient Control Panel and HFB—Removal” on page 4-124
 - “GCI—Removal” on page 4-124
 - “Siderail Light—Removal” on page 4-124

Speaker Assembly and USB Cable—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Remove the label (J) from the speaker housing (K) (see Figure 4-32 on page 4-123).
3. Remove the six screws (L) that attach the speaker housing (K) to the siderail.

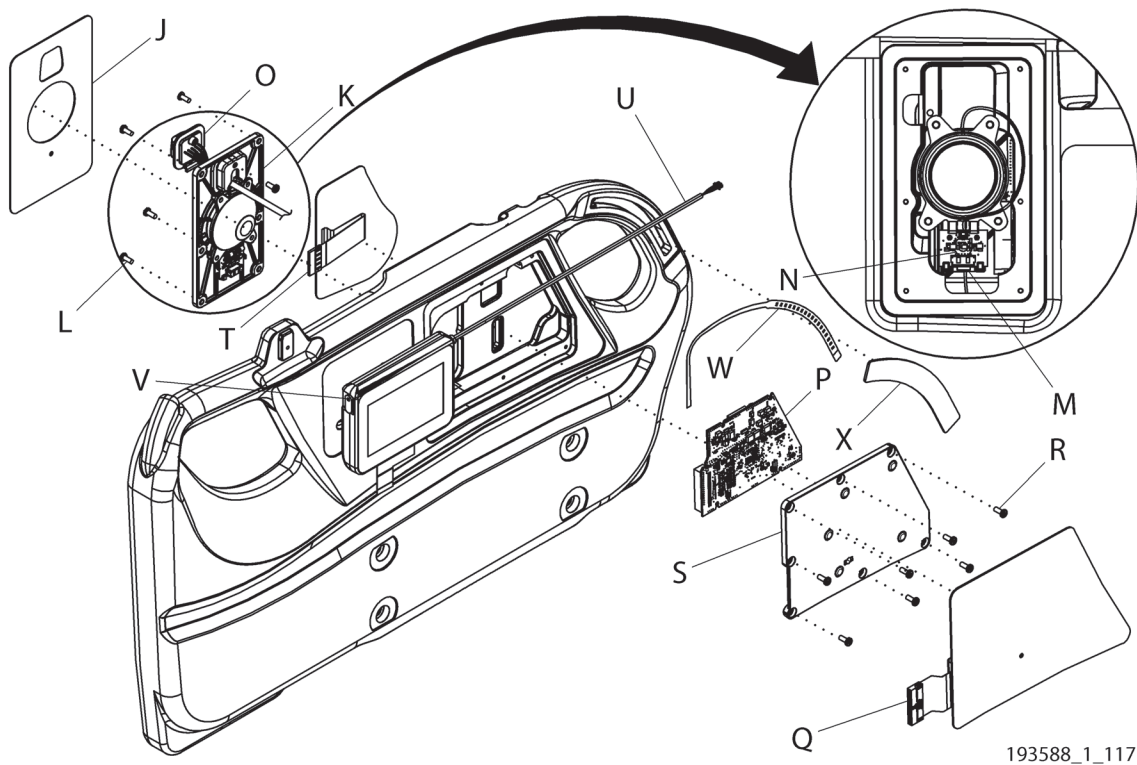


CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

4. Put on the antistatic strap.
5. If the bed has the SideCom® Communication System option, disconnect the headrail audio cable (M) from the FHB audio P.C. board (N) on the speaker housing (K).
6. If the bed has the USB option, disconnect its cable (O) from the HFB (P).
7. Remove the speaker housing (K) from the siderail, and if applicable, remove the USB cable (O) from the speaker housing.

Figure 4-32. Head Siderail—Internal Components (not all component options are shown)



4

Caregiver Control Panel—Removal

1. Remove the speaker assembly (see its procedure above).



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

2. Put on the antistatic strap.

3. In the opening for the speaker housing (L), disconnect the caregiver control panel's two ribbon cables (Q) from the HFB (M), and then remove the panel from the siderail.

Patient Control Panel and HFB—Removal

1. Remove the speaker assembly and the caregiver control panel (see their procedures above).
2. Remove the seven screws (R) that attach the HFB cover (S) to the siderail, and then remove the cover.



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

3. Put on the antistatic strap.
4. Do as applicable:

To Remove the Patient Control Panel—

Disconnect the patient control panel's ribbon cable (T) from the HFB (P), and then remove the panel from the siderail.

To Remove the HFB—

- a. Make a note of the cable connections on the HFB (P), and then disconnect the cables from the HFB.
- b. Remove the HFB (P) from its cover (S).

GCI—Removal



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

1. Put on the antistatic strap.
2. Get access to the HFB (see its procedure above), and disconnect the GCI cable (U) from the HFB (P).
3. At the upper left or right corner of the GCI (left for the patient-left rail and right for the patient-right rail), use the small screwdriver to push-in and turn the torsion button (V) as you remove the GCI from the bed.

Siderail Light—Removal



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

1. Put on the antistatic strap.
2. Get access to the HFB (see its procedure above), and disconnect the siderail light cable (W) from the HFB (P).
3. Remove the siderail light lens (X) from the siderail.
4. Remove the siderail light cable (W) from the siderail.

REPLACEMENT

1. Do the removal procedure in reverse order. Make sure of these:
 - **Siderail**—make sure to install the speaker assembly from the older siderail into the new siderail. Do the speaker removal procedure in reverse order to install the speaker assembly.
 - As you replace the parts, tighten the screws to the amount of torque as follows:
 - Screws (L and R)—1.0 N·m (8.85 in-lb) \pm 10% (see Figure 4-32 on page 4-123)
 - Screws (H)—8.5 N·m (75.23 in-lb) \pm 10% (see Figure 4-31 on page 4-121)
 - Screw (F)—3.95 N·m (35.0 in-lb) \pm 10% \pm 10% of torque
 - Screws (B)—4.5 N·m (39.8 in-lb) \pm 10%

**WARNING:**

Warning—Alcohol-based cleaners are flammable and toxic to skin, eyes, and respiratory tract. Do not use near an open flame. Do not use in confined areas. Injury could occur.

- **Labels**—before you install new labels, clean and let dry the locations where the labels will be installed, and then install the labels.

NOTE:

Make sure the new label matches the replaced label.

- **Head deck panel**—before you install the head deck panel, plug the bed in and make sure all siderail components operate correctly.
 - **HFB or GCI**—if you replaced an HFB and/or a GCI, the bed software versions may not match. Make sure you update the software as necessary. See the service tool app user guide (205987 or 212326).
2. Do the “Function Checks” on page 2-1.

4.49 Intermediate Siderail and Siderail Switch Cable Assembly—Replacement

Tools:	T20 and T30 Torx® screwdrivers	Alcohol-based cleaner
	Soft cloth	Torque wrench
		Antistatic strap

REMOVAL

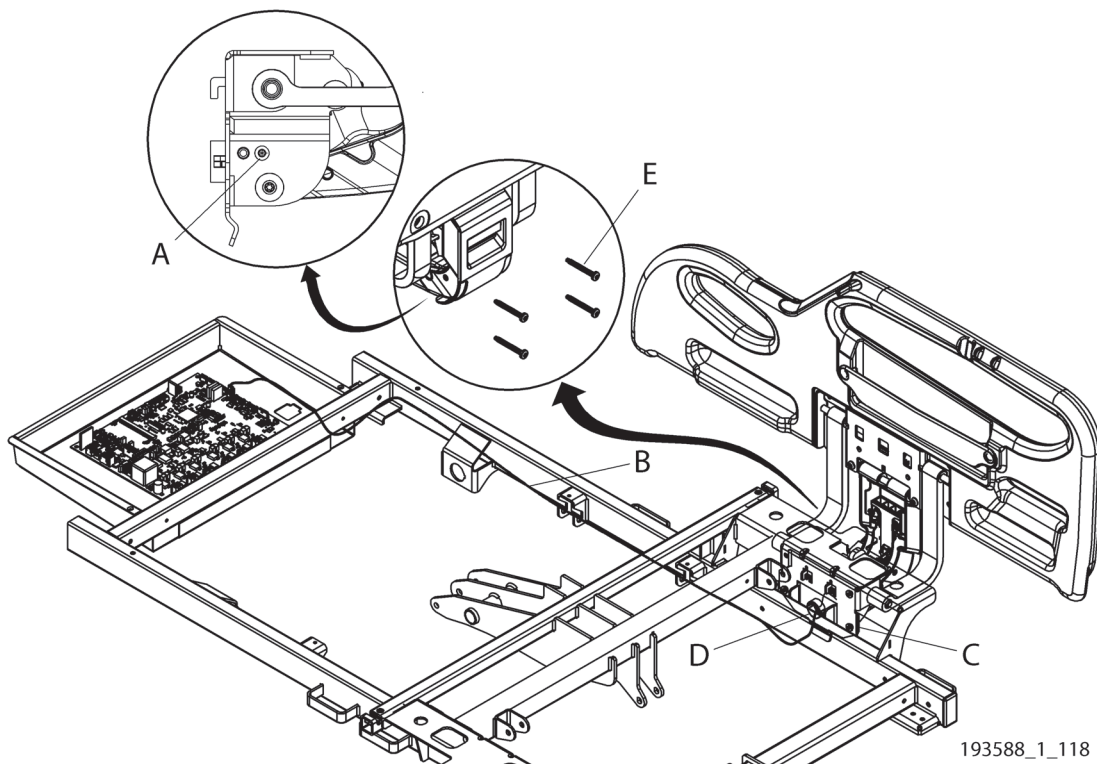


WARNING:

Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 to **remove all power** from the bed.
2. Raise the siderail to the up and locked position.

Figure 4-33. Intermediate Siderail



3. Remove the screw (A) that attaches the siderail switch cable assembly (B) to the siderail mechanism (C).
4. Lower the siderail so that you can get access to the siderail switch cable assembly (B) in the siderail mechanism (C).
5. Remove the tab on the siderail switch cable assembly (B) from its opening in the siderail mechanism (C).
6. Do as applicable for the bed width:

Wide Width

- a. From the bed side of the siderail mechanism (C), pull the siderail switch cable assembly (B) through the round opening (D) to release the cable assembly from the siderail.
- b. If you need to replace the siderail up switch cable only, go to Step 7. Otherwise, to replace the siderail, continue to Step c.

**WARNING:**

Warning—As you remove the screws from the siderail, support the siderail so it does not fall. Otherwise, injury or equipment damage could occur.

- c. Remove the four screws (E) that attach the siderail to the upper frame.

NOTE:

On a wide width bed, there is a hook and spacer between the siderail and the upper frame. When you remove the screws, the hook and spacer may come off of the bracket.

- d. Lift and slide the siderail toward the left to remove it from the upper frame.

Standard Width

- a. Raise the siderail to the up and locked position.

**WARNING:**

Warning—As you remove the screws from the siderail, support the siderail so that it does not fall. Otherwise, injury or equipment damage could occur.

- b. Remove the four screws (E) that attach the siderail to the upper frame.
 - c. Move the siderail away from the bed just enough so that you can guide the siderail switch cable assembly (B) through the bed side of the round opening (D) in the siderail mechanism (C). Make sure the cable assembly is fully released from the siderail.
 - d. Lift and slide the siderail toward the left to remove it from the upper frame.
7. If you need to replace the siderail switch cable assembly (B), do as follows:
 - a. Get access to the MCB. See procedure 4.32 on page 4-71.
 - b. Make a note of the routing for the siderail switch cable assembly (B) from the siderail to the MCB (B) (see Figure 4-33 on page 4-126).

**CAUTION:**

Caution—Failure to wear antistatic strap could cause equipment damage.

- c. Put on the antistatic strap.
- d. Disconnect the siderail switch cable assembly from its connector on the MCB (see “MCB Cable Connections” on page 4-79):
 - Patient-right siderail—P8
 - Patient-left siderail—P15
- e. Remove the siderail switch cable assembly (B) from the bed (see Figure 4-33 on page 4-126).

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTE:

As you replace the parts, tighten the screws to the amount of torque as follows:

- Screws (E)—8.5 N·m (75.23 in-lb) \pm 10% of torque
 - Screw (A)—3.95 N·m (35.0 in-lb) \pm 10% \pm 10% of torque
2. Do the “Function Checks” on page 2-1.

4.50 Siderail Mount Components—Replacement

Tools:	T10, T20, T25, and T30 Torx® screwdrivers	Small flathead screwdriver
	Torque wrench	Alcohol-based cleaner
		Soft cloth

SETUP

- Go to the applicable procedure to remove the siderail, and then lay the siderail on the bed:
 - Head siderail**—see “Head Siderail and Its Internal Components—Replacement” on page 4-121.
 - Intermediate siderail**—see “Intermediate Siderail and Siderail Switch Cable Assembly—Replacement” on page 4-126.

NOTE:

If you replace components for a head siderail while the siderail is installed on the bed, make sure the head section is flat.

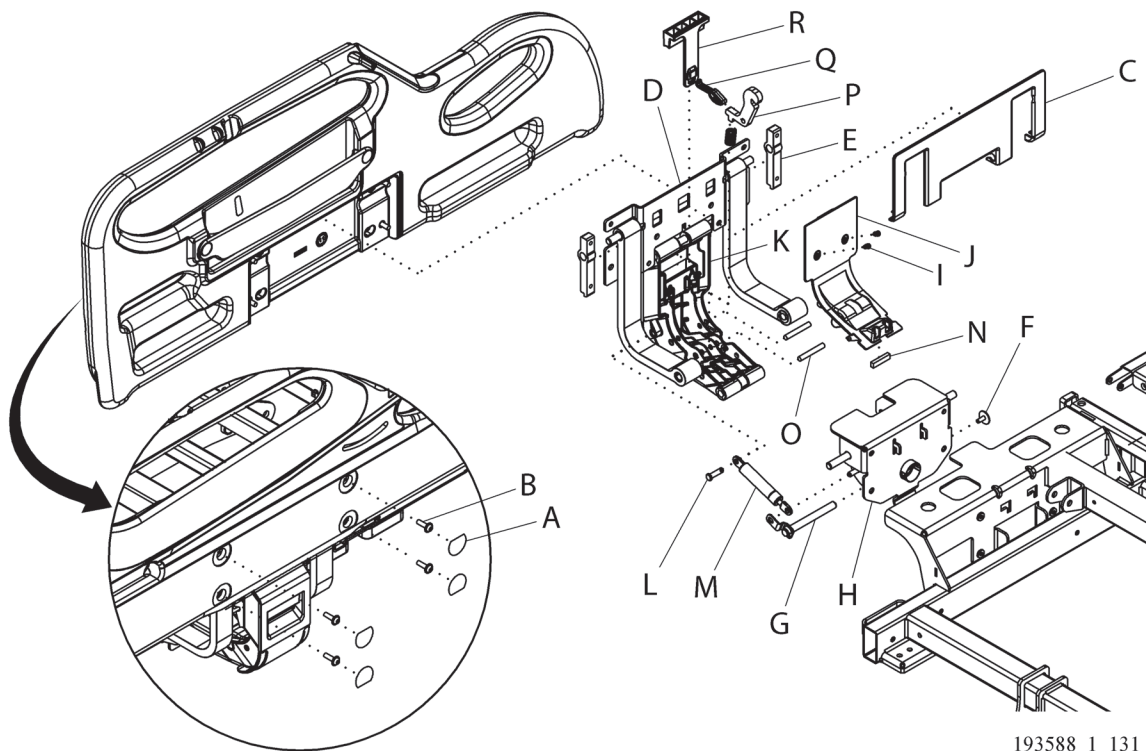


WARNING:

Failure to **remove all power** from the bed could cause injury or equipment damage.

- Make sure you have removed all power from the bed (see Procedure 4.29 on page 4-63).
- Remove the four screw covers (A) and screws (B) from the outside of the siderail (see Figure 4-34 on page 4-128).

Figure 4-34. Siderail Mount Components



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NOTE:

The upper mount cover is shown fully removed from the upper mount weldment for clarity.

4. Pry the upper mount cover (C) open, pull on the cover to release its clamps from the upper mount weldment (D), and then fully lower the cover to remove it.
5. Remove the siderail mechanism assembly from the siderail.
6. Go to the applicable procedure:
 - “Upper Mount Reinforcement—Removal” on page 4-129
 - “Siderail Damper, Siderail Up Switch Cable Assembly, Latch Pivot Pin, Latch, Latch Lever, and Latch Handle—Removal” on page 4-129

Upper Mount Reinforcement—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Pull the upper mount reinforcement (E) off the upper mount weldment (D).

Siderail Damper, Siderail Up Switch Cable Assembly, Latch Pivot Pin, Latch, Latch Lever, and Latch Handle—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Remove the two screws (I) that attach the center arm cover (J) to the center arm (K), and then remove the cover.
3. Do as applicable:
 - **Siderail Damper—**



WARNING:

Warning—Do not fully remove the lower pivot weldment from the lower mount weldment. To do so could cause the siderail to fall. Injury or equipment could occur.

- a. Remove the screw (F) that attaches the lower pivot weldment (G) to the lower mount weldment (H). Then, move the lower pivot weldment out just enough to release the damper (M) from the lower mount weldment.
 - b. Use the small flathead screwdriver to push the lever down on the slic pin (L) that attaches the siderail damper (M) to the upper mount weldment (D). Then, remove the pin and damper from the upper mount weldment.
- **Siderail Up Switch Magnet**—remove the siderail up switch magnet (N) from the center arm cover (J).
 - **Latch Pivot Pin, Latch, Latch Lever, and Latch Handle**—remove the two latch pivot pins (O) from the center arm (K). Then, remove the latch (P), latch lever (Q), and latch handle (R).

REPLACEMENT

Do the applicable removal procedure in reverse order. Make sure of these:

- If you are replacing the siderail up switch magnet (N), when you install the magnet, make sure the marking on the magnet is toward the center arm (K) (see Figure 4-34 on page 4-128).
- The siderail operates correctly.
- As you replace parts, tighten the screws to the amount of torque as follows:
 - Screws (B)—8.5 N·m (75.0 in-lb) \pm 10%
 - Screw (F)—3.95 N·m (35.0 in-lb) \pm 10%
 - Screws (I)—1.13 N·m (10.0 in-lb) \pm 10%



WARNING:

Warning—Alcohol-based cleaners are flammable and toxic to skin, eyes, and respiratory tract. Do not use near an open flame. Do not use in confined areas. Injury could occur.

- Before you install the new screw covers (A), clean and let dry the locations where the screw covers are to be installed.

4.51 SafeView®+ Alerts Components—Replacement

Tools: T25 Torx® screwdriver Phillips head screwdriver
 Alcohol-based cleaner Soft cloth Torque wrench

SETUP

1. Raise the head section to approximately 40°.
2. Fully extend the foot section.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

1. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
2. Remove the 10 or 12 screws (A) that attach the SafeView® cover (B) to the bed, and then lay the cover on the foot end of the bed (see Figure 4-35 on page 4-132).

NOTE:

Standard width beds have 10 screws for the SafeView® cover; wide width beds have 12 screws.

3. Go to the applicable procedure:
 - “SafeView®2 Cable—Removal” on page 4-131
 - “SafeView®2 Control Board, SafeView®2 Light Board and Cable, SafeView®2 ES Light Board and Cable—Removal” on page 4-132
 - “SafeView® Cover—Removal” on page 4-133

SafeView®2 Cable—Removal

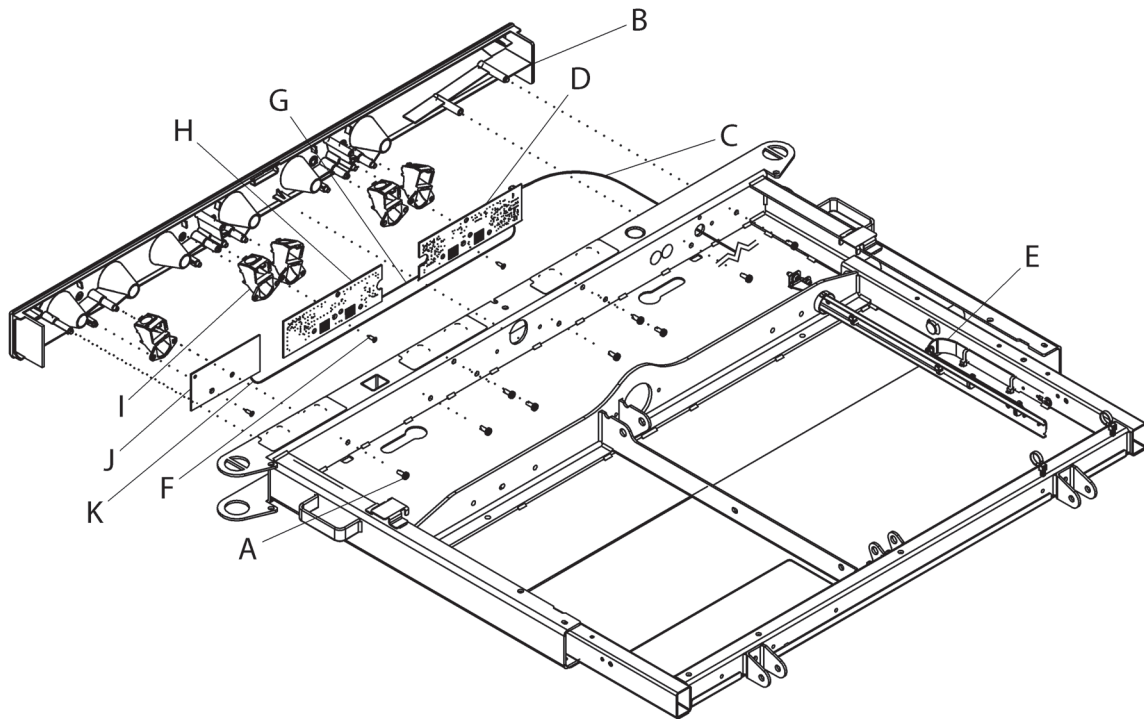
1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Make a note of the routing and cable tie locations for the SafeView®2 cable (C) to the MCB, and then remove the cable ties.



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

3. Put on the antistatic strap.
4. Disconnect the SafeView®2 cable (C) from the SafeView®2 control board (D).
5. Remove the SafeView®2 cable (C) from the wire routing assembly (E).
6. Remove the electronics box cover. See “MCB Speaker, SOM, and WiFi Components—Replacement” on page 4-71.
7. Disconnect the SafeView®2 cable (C) from connector J4 on the MCB.
8. Remove the SafeView®2 cable (C) from the bed.

Figure 4-35. SafeView®+ Alerts

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SafeView®2 Control Board, SafeView®2 Light Board and Cable, SafeView®2 ES Light Board and Cable—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.



CAUTION:

Caution—Failure to wear antistatic strap could cause equipment damage.

2. Put on the antistatic strap.
3. Do as applicable for the board you are replacing:

SafeView®2 Control Board

- a. Disconnect the SafeView®2 cable (C) from the SafeView®2 control board (D).
- b. Remove the screw (F) that attaches the SafeView®2 control board (D) to the SafeView® cover (B).
- c. Disconnect the SafeView®2 light board cable (G) and, if installed, the SafeView®2 ES cable (K) from the SafeView®2 control board (D), and then remove the control board.

SafeView®2 Light Board and SafeView®2 Light Board Cable

- a. Remove the screw (F) that attaches the SafeView®2 light board (H) to the SafeView® cover (B).
- b. Disconnect the SafeView®2 light board cable (G) from the SafeView®2 control board (D) and the SafeView®2 light board (H). Then, remove the SafeView®2 light board (H), and if applicable, the SafeView®2 light board cable (G).

SafeView®2 ES Light Board and Cable

- a. Remove the screw (F) that attaches the SafeView®2 ES light board (J) to the SafeView® cover (B).
- b. Disconnect the SafeView® ES cable (K) from the SafeView®2 control board (D) and the SafeView®2 ES light board (J). Then, remove the SafeView®2 ES light board (J), and if applicable, the SafeView® ES cable (K).

SafeView® Cover—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.

**CAUTION:**

Caution—Failure to wear antistatic strap could cause equipment damage.

2. Put on the antistatic strap.
3. Remove the two or three screws (F) that attach the SafeView®2 control board (D), the SafeView®2 light board (H), and, if installed, the SafeView® ES light board to the SafeView® cover (B), and then remove the boards from the cover.
4. Remove the four or five projectors (I) from the SafeView® cover (B).

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTES:

- As you replace the parts, tighten the screws to the amount of torque as follows:
 - Screws (F)—0.5 to 1.0 N·m (4.4 to 8.8 in-lb)
 - Screws (A)—2.3 N·m (20.3 in-lb) ± 10%

**WARNING:**

Warning—Alcohol-based cleaners are flammable and toxic to skin, eyes, and respiratory tract. Do not use near an open flame. Do not use in confined areas. Injury could occur.

- **SafeView® Cover**—before you install new labels, clean and let dry the locations where the labels will be installed, and then install the labels. Make sure the new labels match the labels that are on the removed cover.
2. Do the “Function Checks” on page 2-1.

4.52 Head and Foot Hilow Actuators—Replacement

Tools: T25 Torx® screwdriver 13 mm wrench Antistatic strap
Wire cutters Cable puller (come-along) Needle nose pliers

REMOVAL

1. Get access to the MCB. See Procedure 4.32 on page 4-71.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

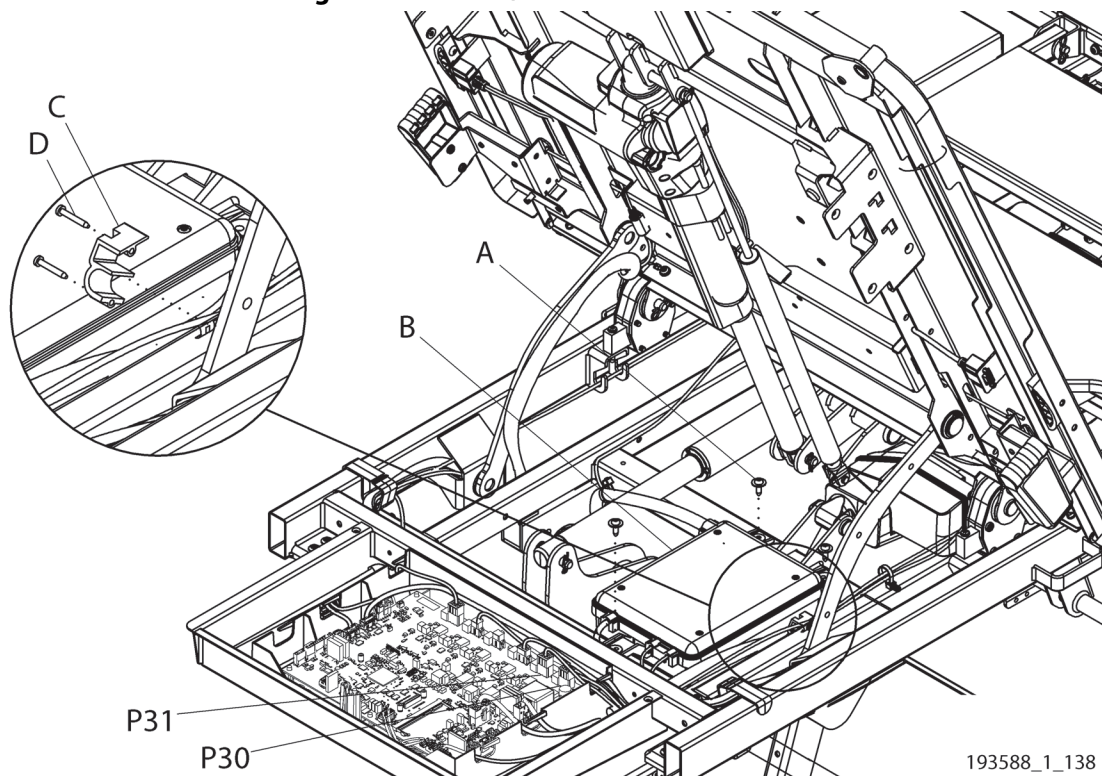
2. Make sure you have removed all power from the bed (see Procedure 4.29 on page 4-63).
3. Make a note of the routing and cable tie locations for the applicable foot/head hilow actuator cable. Then, remove the cable ties.

NOTE:

The head hilow actuator connects to P30 on the MCB, and the foot hilow actuator connects to P31.

4. If the bed has the SideCom® Communication System option, remove the three screws (A) that attach the SCB enclosure (B) to the bed. Then, move the enclosure just enough so you can get access to the coil cable clamp (C) (see Figure 4-37 on page 4-136).

Figure 4-36. Head/Foot Hilow Actuator



193588_1_138

5. Remove the two screws (D) that attach the coil cable clamp (C) to the bed.

**CAUTION:**

Caution—Failure to wear antistatic strap could cause equipment damage.

6. Put on the antistatic strap.
7. Disconnect the applicable hilow actuator cable from its connector on the MCB:
 - Head—P30
 - Foot—P31
8. Remove the actuator cable from the bed.
9. Install the cable puller (E) so the hooks (F) catch on the shafts (G) (see Figure 4-37 on page 4-136).

NOTE:

If the Powered Transport System drive box is installed, the cable puller goes on top of the drive box.

**WARNING:**

Warning—Failure to have the mounting pins loose enough to remove by hand could cause injury or equipment damage.

10. Tighten the cable puller (E) enough to remove pressure from the mounting pins (H) on the hilow drive.
11. Remove the rue rings (I) from the pins (H) on both ends of the hilow actuator.
12. As you support the actuator, remove the pins (H) from the actuator. Then, remove the actuator from the bed.

REPLACEMENT

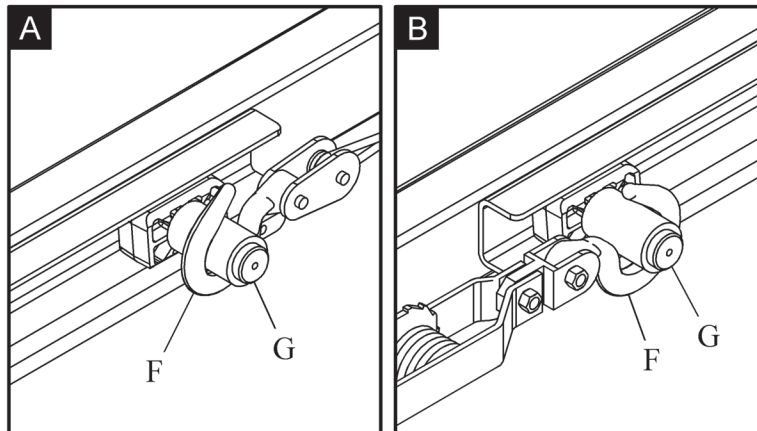
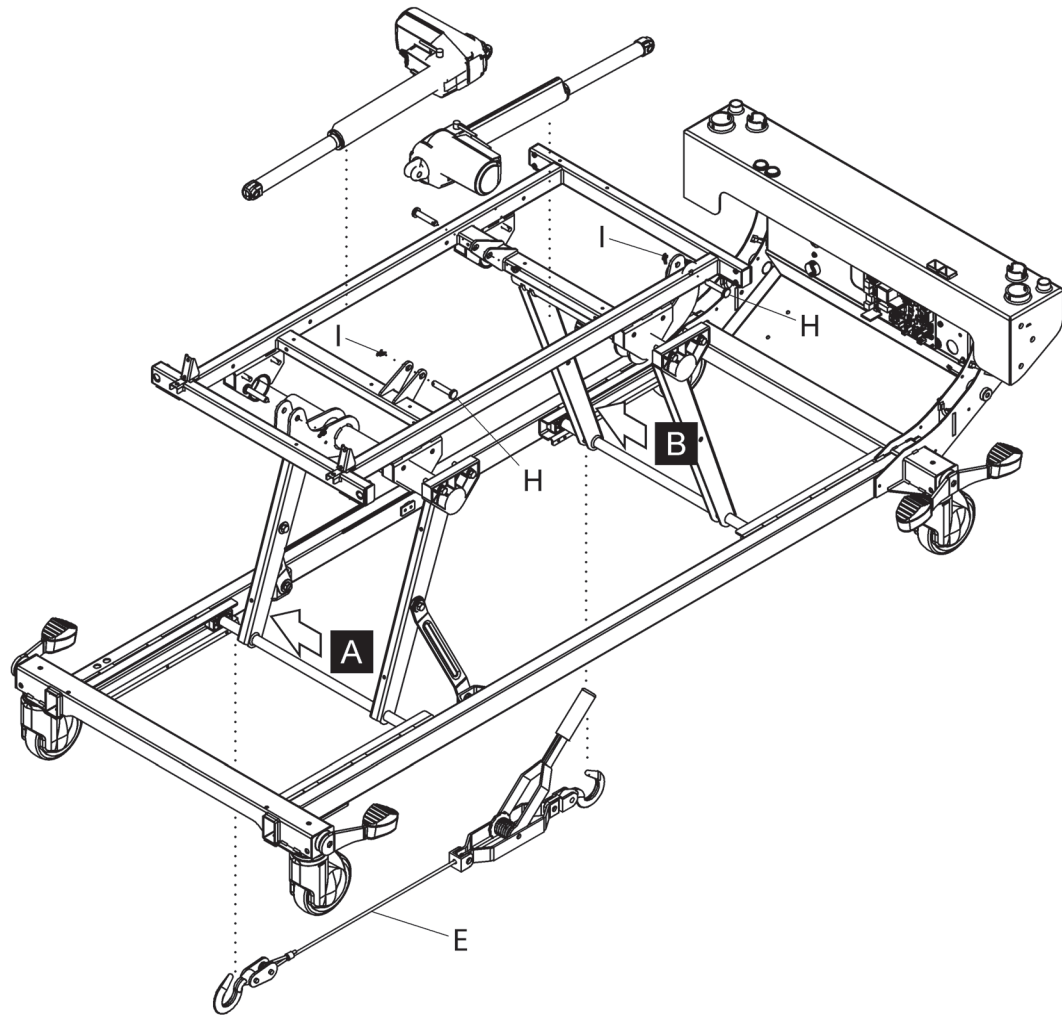
1. Install the motor end of the new actuator into the bed.
2. Refer to your note to route and connect the hilow actuator cable to the MCB.
3. Plug the bed in.
4. Operate the hilow function as necessary to align the shaft end of the actuator with the lift arm on the bed.
5. Do the removal procedure in reverse order.

NOTE:

As you replace parts, tighten the screws to the amount of torque as follows:

- Screws (A)—4.5 N·m (39.8 in-lb) \pm 10%
 - Screws (D)—1.8 N·m (15.9 in-lb) \pm 10%
6. Calibrate the Bed Articulations. See page 4-62.
 7. Do the “Function Checks” on page 2-1.

Figure 4-37. Cable Puller Installation and Actuator Removal



193588_1_139

4.53 Head Actuator and Damper—Replacement

Tools:	T10, T20, and T25 Torx® screwdrivers	4 mm hex wrench
	(2) head stop bracket (P/N 202004)	Small screwdriver
	Needle nose pliers	Wire cutters
		Torque wrench

REMOVAL

1. Remove the headboard.
2. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167



WARNING:

Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. Do as follows to raise and support the head section:
 - a. Pull the CPR lever to manually raise the head section weldment (C).
 - b. Install a head stop bracket on each slide rail (D).
 - c. Lower the head section until it rests against the head stop bracket.
 - d. At the foot end of the head deck panel (A), remove the two screws with washers (B) that attach the panel to the bed (see Figure 4-38 on page 4-138).

NOTE:

It may be easier to remove the screws from underneath the head deck panel.

5. Lift the head deck panel (A) at its foot end, and slide the panel off its notches at the head end. Set the panel aside.



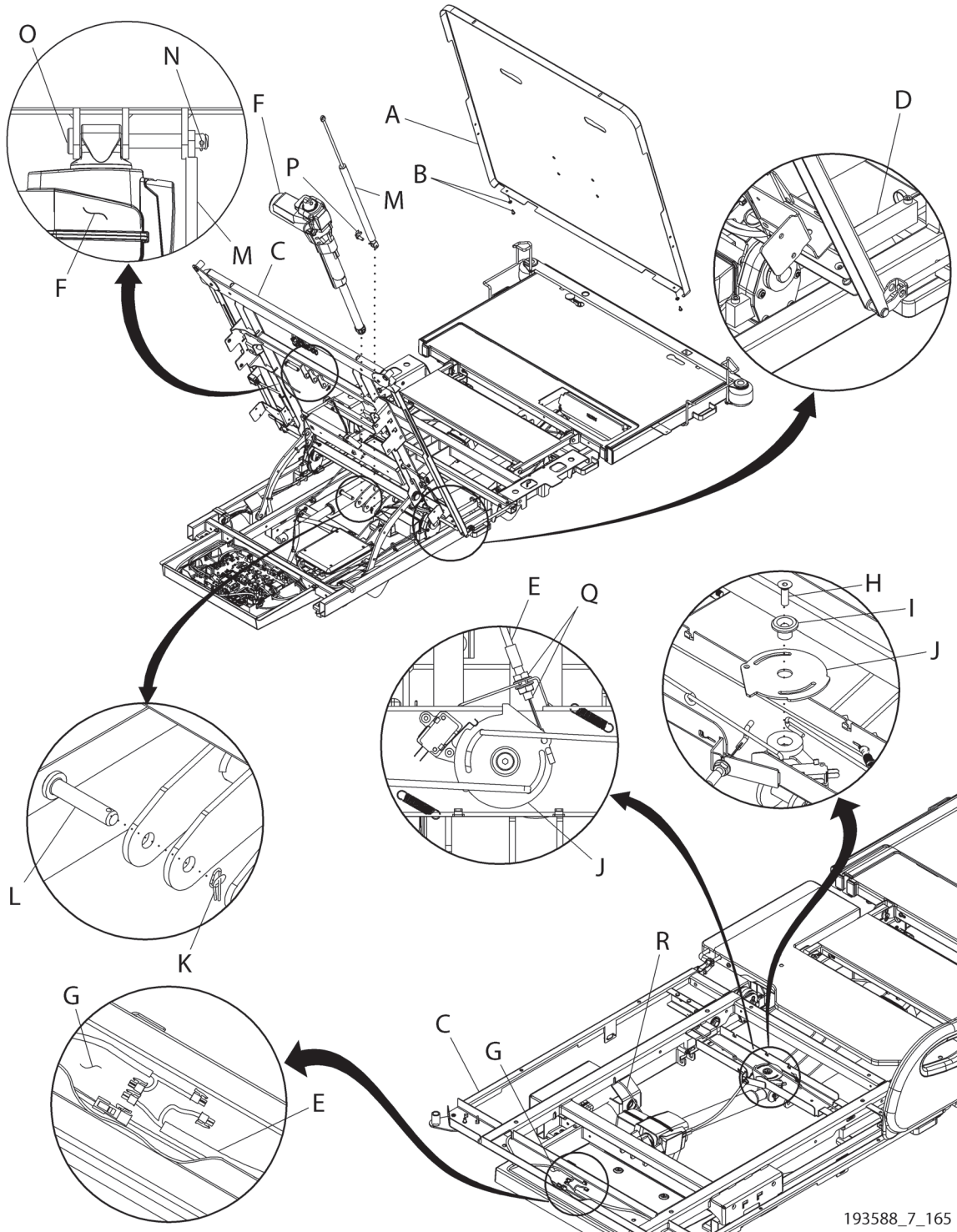
CAUTION:

Caution—Failure to wear an antistatic strap could cause equipment damage.

6. Put on the antistatic strap.
7. If possible, disconnect the head actuator cable (R) from the actuator (F). If the cable can not be disconnected from the actuator, disconnect the cable from its connector in the head section channel (G).
8. Remove the screw (H) and drive lug (I) from the CPR disk (J).
9. Disconnect the CPR cable (E) from the CPR disk (J).
10. Loosen the flange nuts (Q) enough so that you can remove the CPR cable (E) from the head section.
11. Remove the rue ring (K) and pin (L) from the rod end of the actuator (F).
12. While you support the actuator (F) and damper (M), remove the rue ring (N) from the pin (O) at the motor end of the actuator (F). Let the damper hang.
13. While you support the actuator (F), remove the pin (O) from the actuator, and then remove the actuator from the bed.

14. If you need to replace the damper (M), remove the clamp pin (P) from its foot end, and then remove the damper from the bed.

Figure 4-38. Head Actuator



193588_7_165

REPLACEMENT

1. Do the removal procedure in reverse order. However, make sure to do these:
 - After you install the CPR disk (J), make sure to do this adjustment:
 - a. Adjust the flange nuts (Q) on the CPR cable (E) until the cable has no slack and the CPR disk (J) rotates counterclockwise and touches the head section weldment (C).
 - b. Tighten the flange nuts (Q) and the head deck panel screws (B) to 4.5 N·m (39.8 in-lb) \pm 10% of torque.
 - c. Tighten the screw (H) to 3.4 N·m (30.1 in-lb) \pm 10% of torque.

NOTE:

When you install the actuator, it may be necessary to connect the motor end of the actuator first, and then extend or retract the actuator to align the rod end with its connecting bracket.

- **Before you replace the head deck panel (A)**, do these checks to make sure the CPR assembly and head actuator operate correctly:
 - a. Examine the CPR handles, cable, and CPR components. Make sure the screws are installed and fully tightened.
 - b. Install the battery fuse into its cable (see Procedure 4.29 on page 4-63).
 - c. Raise the head section to its highest position, and the pull one of the CPR controls. Make sure the head section lowers.
 - d. Release the CPR control, and make sure that the CPR disk (J) locks correctly.
 - e. Adjust the CPR disk (J) as necessary.
 - f. Do Step b through Step d on the other side of the bed.
 - g. Press the **Head Up** control, and make sure the head section rises.
 - Tighten the head deck panel screws (B) to 4.5 N·m (39.8 in-lb) \pm 10% of torque.
2. Do the “Function Checks” on page 2-1.

4.54 Thigh, Foot, and Foot Extension Actuators—Replacement

Tools:	T25 Torx® screwdriver	Antistatic strap	Wire cutters
	Jack stands (for the foot actuator)		Needle nose pliers

SETUP

1. Raise the bed to its highest position.
2. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
3. Get access to the MCB. See “MCB Speaker, SOM, and WiFi Components—Replacement” on page 4-71.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

4. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.



CAUTION:

Caution—Failure to wear an antistatic strap could cause equipment damage.

5. Put on the antistatic strap.
6. Disconnect the applicable cable from its connector on the MCB (see Figure 4-11 on page 4-79):

NOTE:

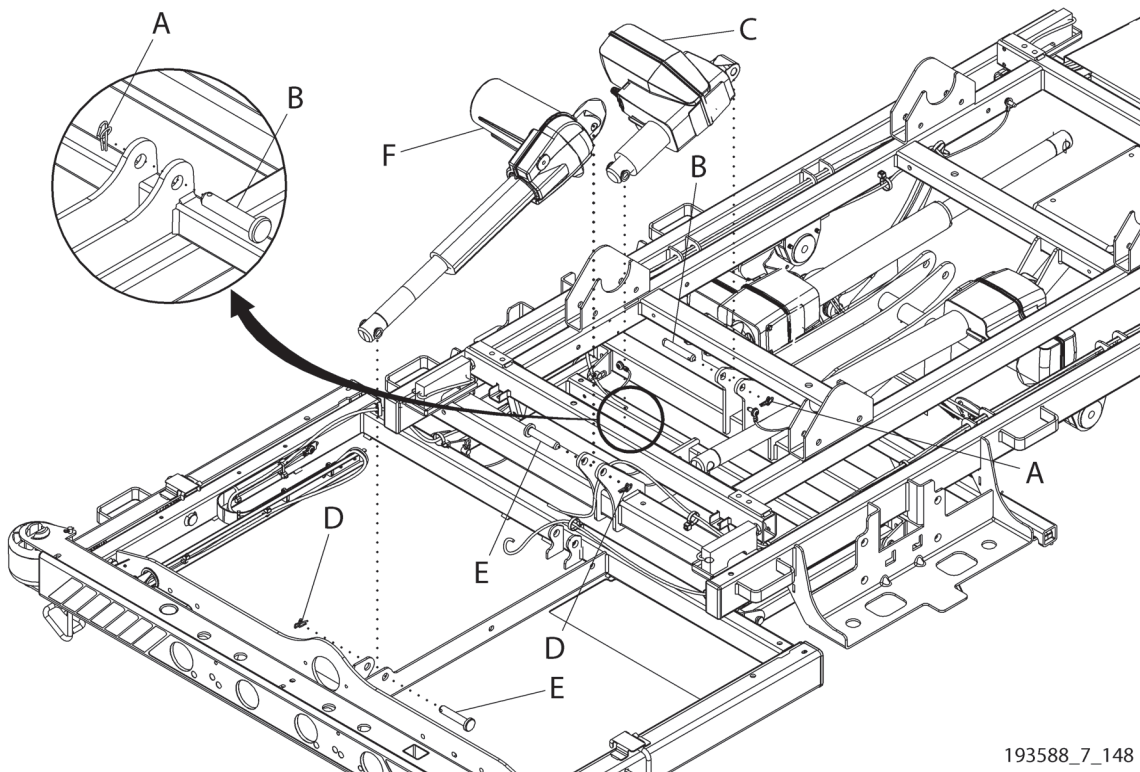
If the actuator cable can be disconnected from the actuator, disconnect the cable from the actuator instead of the MCB.

- Foot actuator—P32
 - Thigh actuator—P33
 - Foot Extension actuator—P34
7. Make a note of the routing for the applicable actuator cable from the actuator to the MCB, and then remove the cable ties that hold the cable on to the bed.
 8. Go to the applicable procedure:
 - “Thigh Actuator—Removal” on page 4-140
 - “Foot Actuator—Removal” on page 4-141
 - “Foot Extension Actuator—Removal” on page 4-141

Thigh Actuator—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Remove the rue rings (A) from the pins (B) on both ends of the thigh actuator (C) (see Figure 4-39 on page 4-141).
3. Support the actuator (C) as you remove the pins (B) from both ends of the actuator, and then remove the actuator from the bed.

Figure 4-39. Thigh and Foot Actuators (bottom view)



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4

Foot Actuator—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.



CAUTION:

Caution—Failure to support the upper frame could cause equipment damage.

2. Install the jack stands close to the foot-end bumpers.
3. Remove the rue rings (D) from the pins (E) on both ends of the foot actuator (F) (see Figure 4-39 on page 4-141).
4. Support the actuator (F) as you remove the pins (E) from both ends of the actuator, and then remove the actuator from the bed.

NOTE:

When you replace the foot actuator, make sure it is installed with the motor toward the patient-left side of the bed.

Foot Extension Actuator—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. At the foot end of the bed, remove the 10 or 12 screws (G) that attach the SafeView® cover (H) to the sliding foot weldment (I), and then remove the SafeView® cover (see Figure 4-40 on page 4-142).

NOTE:

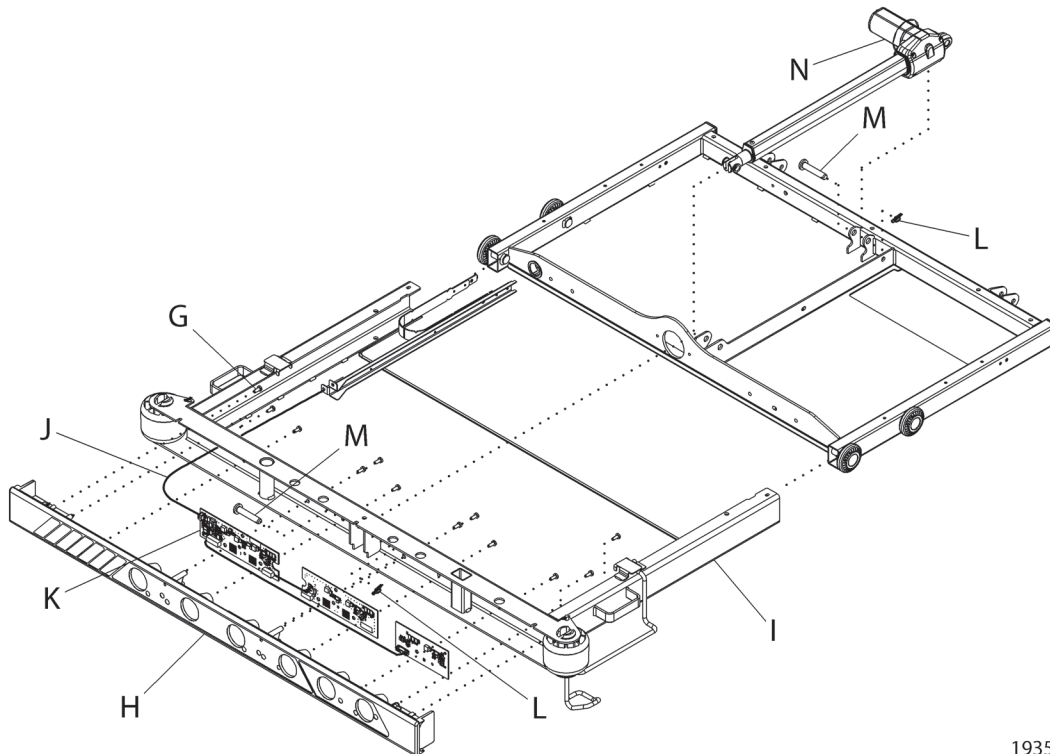
Standard width beds have 10 screws for the SafeView® cover; wide width beds have 12 screws.

**CAUTION:**

Caution—Failure to wear an antistatic strap could cause equipment damage.

3. If the bed has the SafeView® option, do as follows:
 - a. Put on the antistatic strap.
 - b. Disconnect the SafeView® cable (J) from the SafeView® control board (K).

Figure 4-40. Foot Extension Actuator (bottom view)



193588_1_147

4. Remove the rings (L) from the pins (M) on both ends of the foot extension actuator (N).
5. Support the actuator (N) as you remove the pins (M) from both ends of the actuator, and then remove the actuator from the bed.

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTES:

- When you install an actuator, it may be necessary to connect the motor end of the actuator first, and then extend or retract the actuator to align the rod end with its connecting bracket.
 - Tighten the screws (G) to 2.3 N·m (20.3 in-lb) ± 10% of torque.
2. Do the “Function Checks” on page 2-1.

4.55 max Mattress—Pneumatic Assembly and Internal Components Replacement

Tools:	T10, T20, T25, and T30 Torx® screwdrivers	7 mm socket
	Needle nose pliers	Wire cutters
	Antistatic strap	Centrella® service tool (if replacing the blower)
		Torque wrench

NOTE:

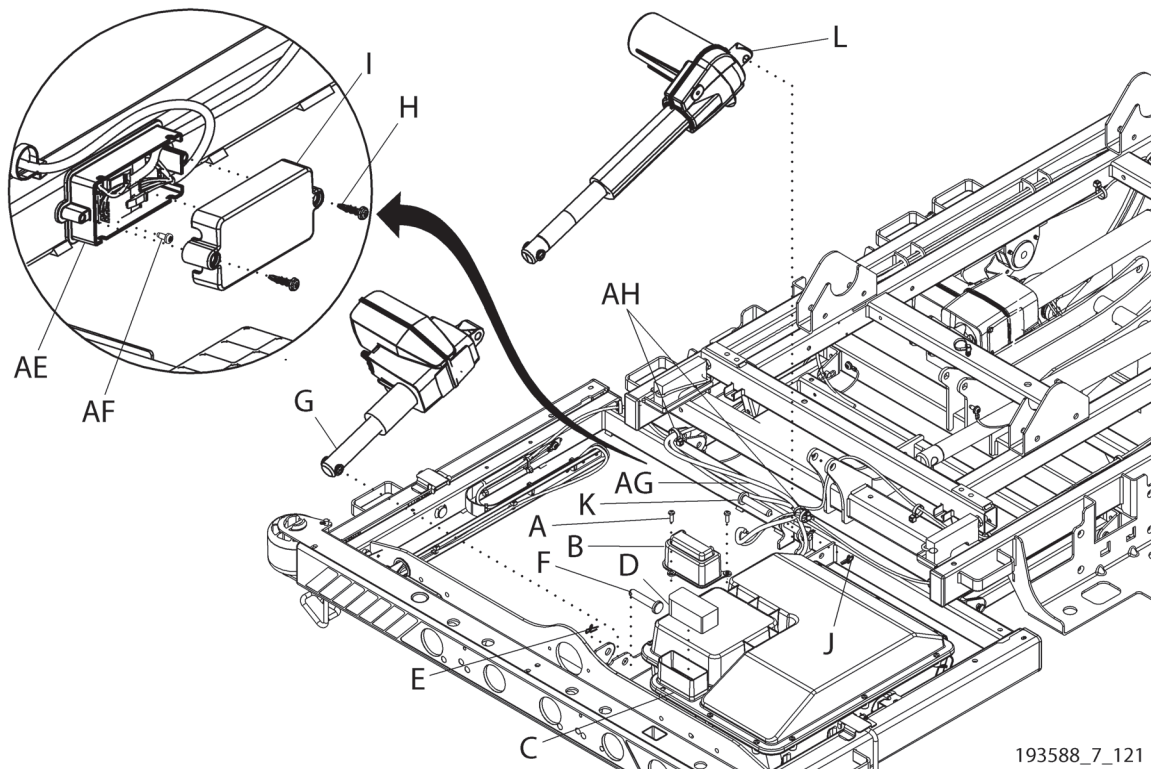
We recommend that whenever you replace the blower assembly, replace the pneumatic box inlet filter also.

1. Make sure the brake is set.
2. Go to the applicable procedure:
 - “Pneumatic Box—Removal” on page 4-144
 - “Manifold Cover—Removal” on page 4-146
 - “Pneumatic Box Manifold—Removal” on page 4-146
 - “ACB—Removal” on page 4-146
 - “Blower Assembly—Removal” on page 4-147

Pneumatic Box Inlet Filter—Removal

Remove the two screws (A) that attach the filter housing (B) to the pneumatic box (C), and remove the filter element (D) (see Figure 4-41 on page 4-143).

Figure 4-41. Pneumatic Box Access (bottom view shown; the junction box (AE) may be on earlier bed models)



193588_7_121

Pneumatic Box—Removal

1. Remove the mattress. See “core, pro, and max Mattresses—Removal” on page 4-149.
2. Adjust the knee section to level the foot section.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. While you support the foot up/down actuator (G), remove the rue ring (E) and clevis pin (F) at the foot end of the actuator (see Figure 4-41 on page 4-143).
5. Lift the foot section so it rests against the sleep deck.
6. Get access to the MCB. See “MCB Speaker, SOM, and WiFi Components—Replacement” on page 4-71.
7. Do as applicable:

Bed with a Junction Box (AE)

- a. Disconnect the MCB-ACB junction cable (195598) from P6 on the MCB.
- b. Make a note of the MCB-ACB junction cable routing. Then, remove the cable from its routing to the junction box. Remove cable ties as necessary.
- c. Remove the screws (H) and the junction box cover (I).
- d. Disconnect the cables from the junction box (AE).
- e. Remove the screw (AF) that attaches the junction box (AE) to the bed, then remove the junction box; it is no longer used.

Bed without a Junction Box

- a. Disconnect the ACB-MCB cable (AG) from P6 on the MCB.
 - b. Make a note of the ACB-MCB cable (AG) routing. Then, remove the ACB-MCB cable from its routing to the pneumatic box. Remove cable ties as necessary.
8. While you support the foot extension actuator (L), remove the rue ring (J) and clevis pin (K) at the head end (motor side) of the actuator.

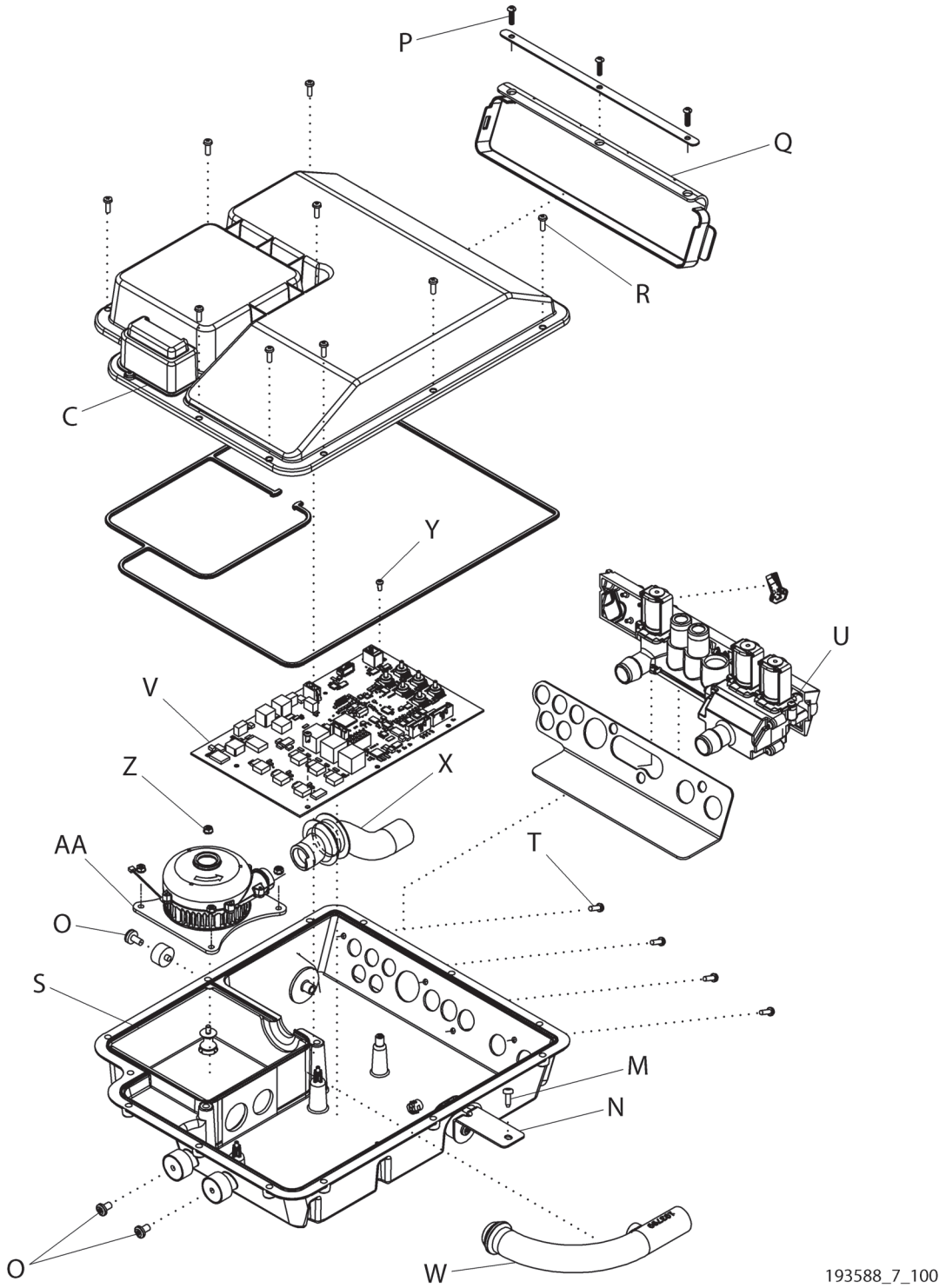


CAUTION:

Make sure you support the pneumatic box when you remove the screws that attach it to the bed. Failure to support the pneumatic box could cause equipment damage.

9. Remove the screw (M) that attaches the bracket (N) to the bed (see Figure 4-42 on page 4-145).
10. Remove the screws (O) that attach the pneumatic box (C) to the bed.
11. Remove the pneumatic box (C).

Figure 4-42. Pneumatic Box



4

193588_7_100

Manifold Cover—Removal

1. Remove the mattress. See “core, pro, and max Mattresses—Removal” on page 4-149.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

2. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
3. Remove the three screws (P) that attach the manifold cover (Q) to the pneumatic box (C) (see Figure 4-42 on page 4-145).

Pneumatic Box Manifold—Removal

1. Remove the pneumatic box from the bed. See “Pneumatic Box—Removal” on page 4-144.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

2. Make sure you have removed all power from the bed (see Procedure 4.29 on page 4-63).
3. Remove the screws (R) that attach the top of the pneumatic box (C) to the bottom of the pneumatic box (S) (see Figure 4-42 on page 4-145).
4. Remove the four screws (T) that attach the pneumatic box manifold (U) to the bottom of the pneumatic box (S).
5. Remove the ACB (V). See “ACB—Removal” on page 4-146.
6. Disconnect the return hose (W) and the blower discharge hose (X) from the pneumatic box manifold (U), and remove the pneumatic box manifold (see Figure 4-42 on page 4-145).

ACB—Removal

1. Remove the pneumatic box from the bed. See “Pneumatic Box—Removal” on page 4-144.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

2. Make sure you have removed all power from the bed (see Procedure 4.29 on page 4-63).



CAUTION:

Caution—Failure to wear an antistatic strap could cause equipment damage.

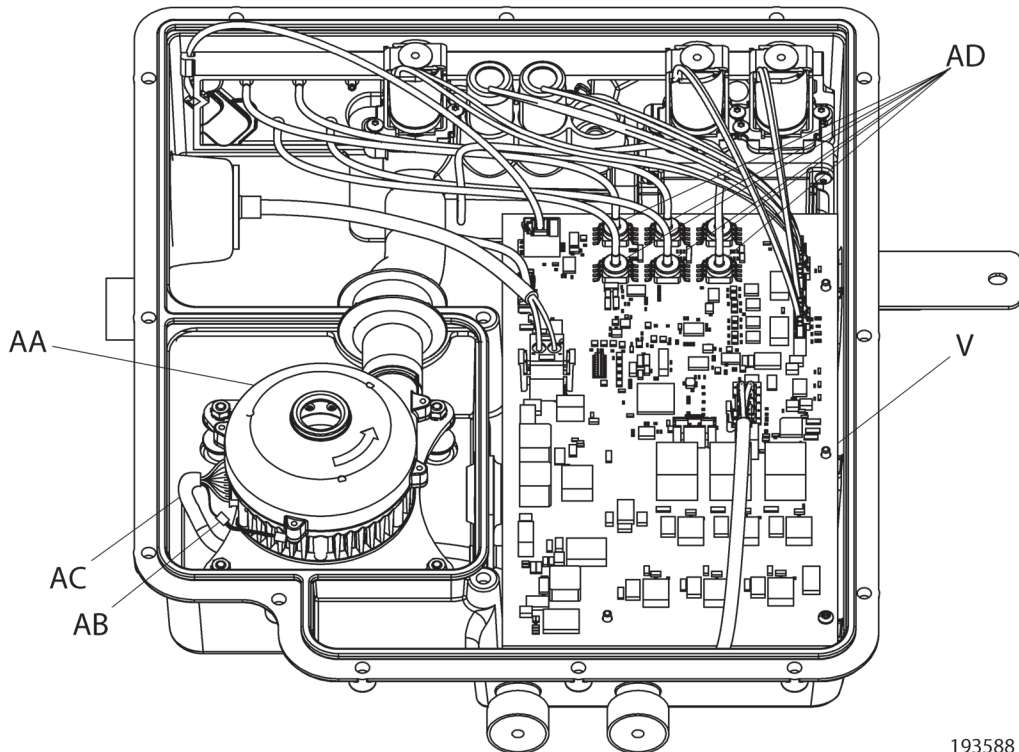
3. Put on the antistatic strap.
4. Remove the screws (R) that attach the top of the pneumatic box (C) to the bottom of the pneumatic box (S) (see Figure 4-42 on page 4-145).
5. Disconnect the electrical connections.
6. Make a note of the connections for the sense tubes (AD), and disconnect the sense tubes from the ACB (V) (see Figure 4-43 on page 4-147).

NOTE:

The tubes connect to the ACB in the same sequence they connect to the manifold.

7. Remove the screw (Y) that attaches the ACB (V) to the pneumatic box (S), and remove the ACB (see Figure 4-42 on page 4-145).

Figure 4-43. ACB



193588_1_120

Blower Assembly—Removal

NOTE:

Whenever you replace the blower assembly, replace the pneumatic box inlet filter (see “Pneumatic Box Inlet Filter—Removal” on page 4-143).

1. Remove the pneumatic box from the bed. See “Pneumatic Box—Removal” on page 4-144.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

2. Make sure you have removed all power from the bed (see Procedure 4.29 on page 4-63).
3. Remove the screws (R) that attach the top of the pneumatic box (C) to the bottom of the pneumatic box (S) (see Figure 4-42 on page 4-145).
4. Disconnect the electrical connections.
5. Remove the four nuts (Z), and remove the blower assembly (AA).

REPLACEMENT

Do the applicable removal procedure in reverse order. Make sure of these:

- As you replace the parts, tighten the screws to the amount of torque as follows:
 - Screws (H and Y)—0.60 to 0.80 N·m (5.3 in-lb to 7.08 in-lb)
 - Screws (P and T) and nuts (Z)—1.40 N·m (12.39 in-lb) ± 10%
 - Screws (M)—3.48 to 4.58 N·m (30.80 in-lb to 40.53 in-lb)
 - **Blower Assembly**—make sure that you do these:
 - Replace the pneumatic box inlet filter (D) (see Figure 4-42 on page 4-145).
 - Fully connect the thermistor connector (AB) on the blower assembly (AA) to its connector on the blower cable (AC) (see Figure 4-43 on page 4-147).
 - Use your service device to access the Centrella® service tool app, and set the blower usage hours to zero (see Procedure 4.26 on page 4-60).
 - **ACB**—if you replaced the ACB, the bed software versions may not match. Make sure you update **the software as necessary. See the service tool app user guide (205987 or 212326).**
 - **Bed that had a Junction Box (AE)** (see Figure 4-41 on page 4-143)—
 - a. Refer to your cable routing note, then route the ACB-MCB cable (AG) from the pneumatic box, along the foot section.
 - b. Install two cable ties (AH) in the same locations where the MCB-ACB junction cable was attached to the foot section.
 - c. Then, route the ACB-MCB cable (AG) along with the other cables to the MCB. Replace cable ties as necessary.
6. Do the applicable “Function Checks” on page 2-1.

4.56 core, pro, and max Mattresses—Removal

NOTE:

For removal of a pro+ mattress, see the applicable section:

- “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
- “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167

Tools: Small screwdriver (for the max mattress, optional)

REMOVAL

1. Adjust the bed to the flat position.
2. Fully extend the foot section.

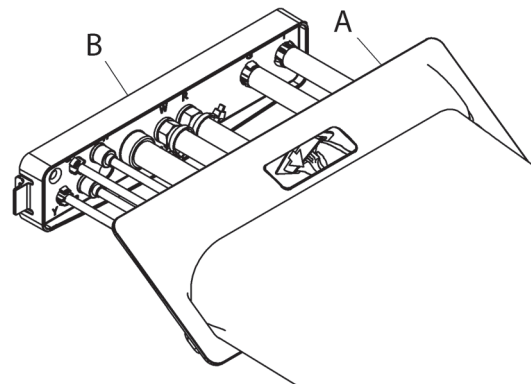


WARNING:

Warning—Failure to unplug the bed could cause injury or equipment damage.

3. Unplug the bed.
4. Lower the siderails.
5. Disconnect the mattress’s four attachment knobs from the bed frame.
6. If the bed has the max mattress (P7922A), do as follows. Otherwise, go to Step 7.
 - a. Fold the foot end of the mattress assembly over the head end.
 - b. Pull up on the heel cover (A) to release it, and then turn it as necessary to fully disconnect the cover from its opening (see Figure 4-44 on page 4-149).
 - c. Pull the cover (A) back toward the sleeve to get access to the pneumatic box connection.
 - d. Disconnect the interface connector assembly (B) from the pneumatic box.

Figure 4-44. Heel Cover



NOTE:

To disconnect the interface connector assembly, it may be helpful to insert the small screwdriver between the connector assembly and its latch tabs.



CAUTION:

Caution—Failure to keep the pneumatic box manifold covered when the interface connector assembly is disconnected could cause equipment damage.

- e. Pull the manifold cover (C) over the manifold (D) (see Figure 4-45 on page 4-149). Keep the manifold covered until you connect the interface connector assembly.

Figure 4-45. Manifold Cover



7. Remove the mattress from the bed.

REPLACEMENT

1. Do the removal procedure in reverse order.

NOTE:

For a max mattress, make sure of these:

- The latch tabs on both sides of the interface connector assembly (B) are fully connected to the pneumatic box (see Figure 4-44 on page 4-149). You should hear a click when the latch tabs connect. After you connect the interface connector assembly, pull on the assembly. If it is easy to remove, then the latch tabs are not fully connected.
 - When you connect the heel cover (A) to the bed, put one side of the cover through the opening first, and then push down on the other side until the cover connects in its location.
 - Make sure the heel cover (A) is correctly sealed without any gaps around its edges. (There is a lip around the edges of the cover.)
2. Zero the scale:
 - **Standard (NA) Scale**—see “Zero the Standard (NA) Scale with or without Resetting the Bed” on page 4-13.
 - **EN 45501 Class Scale (OIML)**—see “Zero the EN 45501 Class Scale (OIML) with or without Resetting the Bed” on page 4-25.
 3. Do the applicable “Function Checks” on page 2-1.

4.57 max Mattress (P7922A) Components—Replacement

Tools: Wire cutters Small screwdriver 12 mm and 13 mm wrenches
 Needle nose pliers Isopropyl alcohol (for tube connections)

SETUP



WARNING:

Warning—Failure to unplug the bed could cause injury or equipment damage.

1. Unplug the bed.
2. If you need to replace the **interface connector assembly**, go to “Interface Connector Assembly—Removal” on page 4-154. Otherwise, to remove the mattress internal components, go to Step 3.
3. Fully extend the foot section of the bed.
4. Unzip the top cover (A) from the bottom cover (B), and remove the top cover (see figure 4-46 on page 4-152).
5. Remove the fire barrier (C) from the hook tape that holds the fire barrier on to the head and seat/foot foam assemblies (D and E), and then remove the fire barrier.

NOTE:

To get access to the internal components of the mattress, you do not need to fully remove the fire barrier. Pull it down toward the foot end as far as necessary to get access to the replacement part.

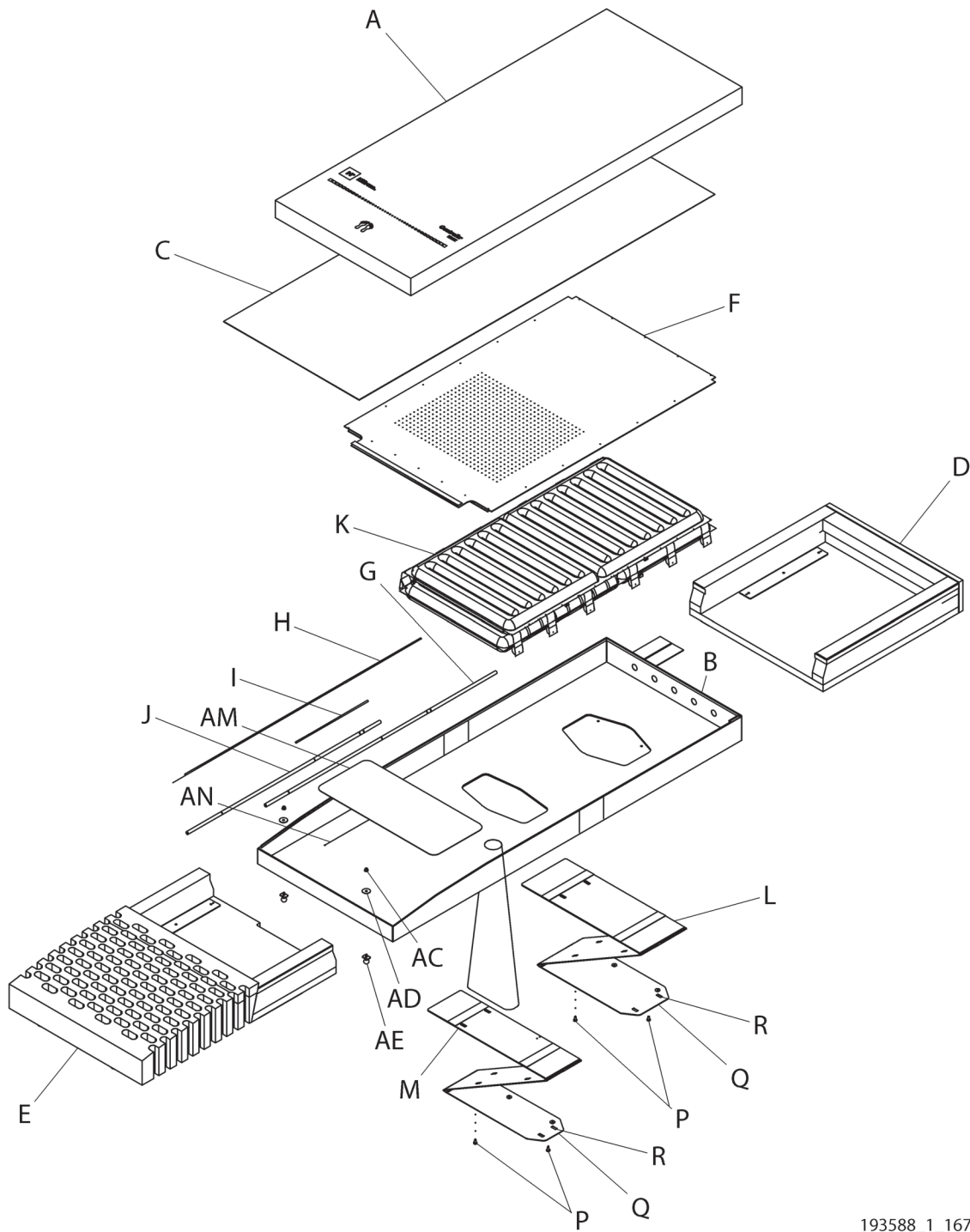
6. Disconnect the hook and loop tape that holds the MCM cover (F) on to foam assemblies (D and E).
7. Disconnect the head and seat fill and sense tubes (G, H, I, and J) from the support bladder assembly (K).

NOTE:

The white tubes are for the head section, and the red tubes are for the seat section.

8. Disconnect the hook and loop tape that attaches the turn head and seat plates (L and M) to the foam assemblies (D and E).
9. Go to the applicable procedure:
 - “Support Bladder Assembly—Removal” on page 4-153
 - “Head or Seat Turn Plate Rivet—Removal” on page 4-153
 - “Head or Seat Turn Assist Bladder and Right-Side Turn Assist Support Plate—Removal” on page 4-153
 - “Bottom Cover—Removal” on page 4-155

Figure 4-46. max mattress

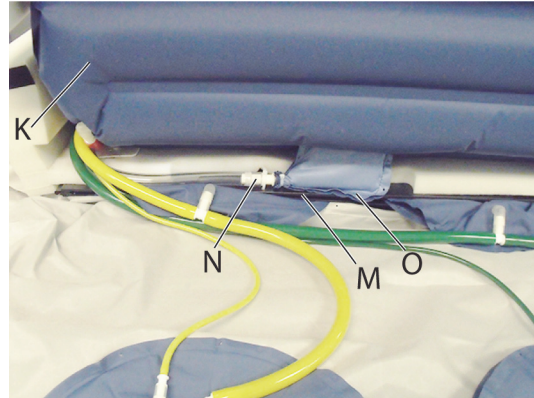


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Support Bladder Assembly—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Fold the head end of the mattress assembly over the foot end.
3. Remove the cable ties that attach the MCM tube connector (N) to the MCM connector bullhorn (O) and the seat turn plate (M) (see Figure 4-47 on page 4-153).

Figure 4-47. Support Bladder Assembly



4. Remove the MCM tube connector (N) from the MCM connector bullhorn (O), and then remove the MCM cover from the support bladder assembly (K).
5. Unfold the mattress assembly.
6. Remove all tubes from the straps in the support bladder assembly (K).
7. Use the wire cutters to remove the 12 male snap rivets that attach the support bladder assembly (K) to the foam assemblies (D and E) (see Figure 4-46 on page 4-152).
8. Remove the support bladder assembly (K) from the mattress assembly.

Head or Seat Turn Plate Rivet—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.
2. Do as applicable for the turn plate (L or M) that is to be replaced (see Figure 4-46 on page 4-152):
 - Head plate (L)—fold the head end of the foam assembly (D) over the foot end.
 - Seat plate (M)—fold the foot end of the foam assembly (E) over the head end.
3. Use the wire cutters to remove the two rivets (P) that attach the bellow of the bottom cover (B) to the head or seat turn plate (L or M) as necessary.
4. Remove the bottom plate (Q) of the turn plate (L or M) from the bellow in the bottom cover (B).

NOTE:

The female rivet is integral to the top of the turn plate, and the male rivet is installed on the bottom of the plate.

Head or Seat Turn Assist Bladder and Right-Side Turn Assist Support Plate—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.

2. Do as applicable for the turn assist bladder (S or T) that is to be replaced on the head or seat plate (L or M) (see Figure 4-48 on page 4-154):
 - Head plate (L)—fold the head end of the foam assembly over the foot end.
 - Seat plate (M)—fold the foot end of the foam assembly over the head end.
3. Disconnect the fill and sense tubes from the bladder (tubes U and V for a right turn bladder (S), or W and X for a left turn bladder (T)).

NOTE:

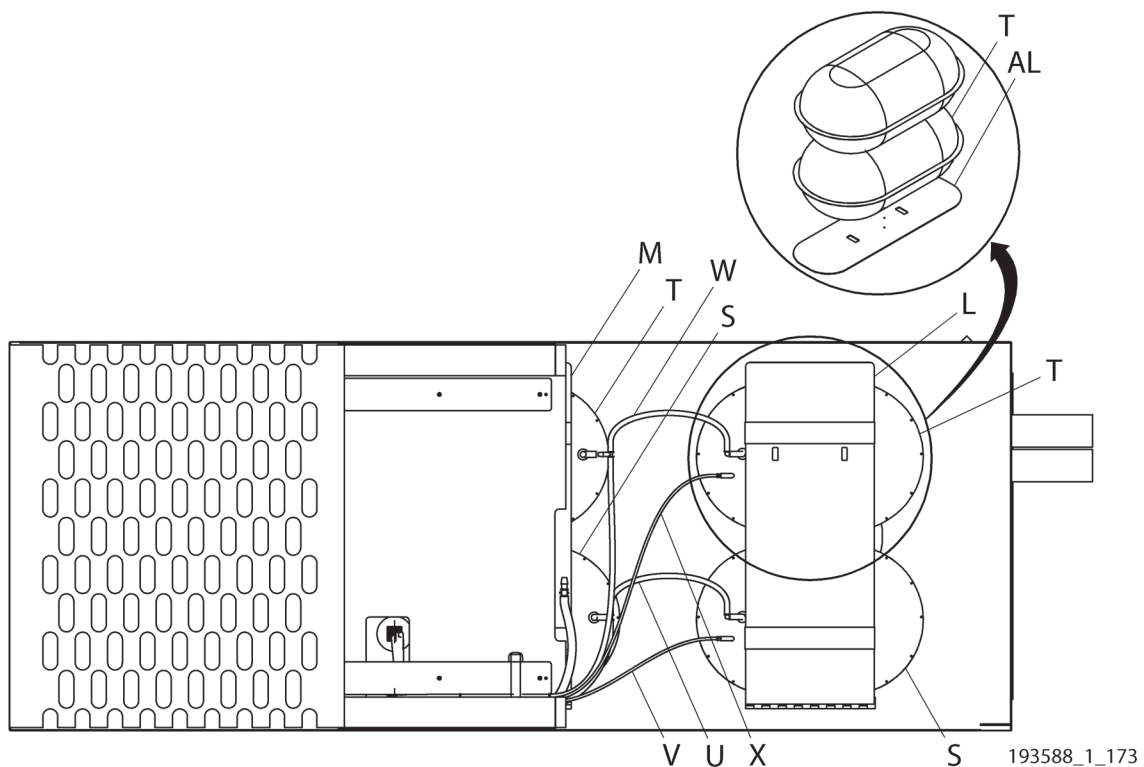
The yellow tubes are for the right turn bladder, and the green tubes are for the left turn bladder.

4. Disconnect the hook and loop tape that holds the bladder (S or T) on to the turn plate (L or M) and, if applicable, right-side turn assist support plate (AL). Then, remove the bladder.

NOTE:

It may be necessary to remove the turn plate from the bellow in the bottom cover. If so, use the wire cutters to remove the rivets.

Figure 4-48. Turn Assist Bladders

**Interface Connector Assembly—Removal**

1. Make sure the bed and auxiliary outlet (if installed) are unplugged.
2. Disconnect the mattress attachment knobs from the bed, and then fold the foot end of the mattress assembly over the head end.
3. Pull up on the heel cover (Y) to release it, and then turn it as necessary to fully disconnect the cover from its opening (see Figure 4-50 on page 4-155).

4. Pull the heel cover (Y) back toward the sleeve to get access to the pneumatic box connection.
5. Pull on the latch tabs of the interface connector assembly (Z) to disconnect the assembly from the pneumatic box.

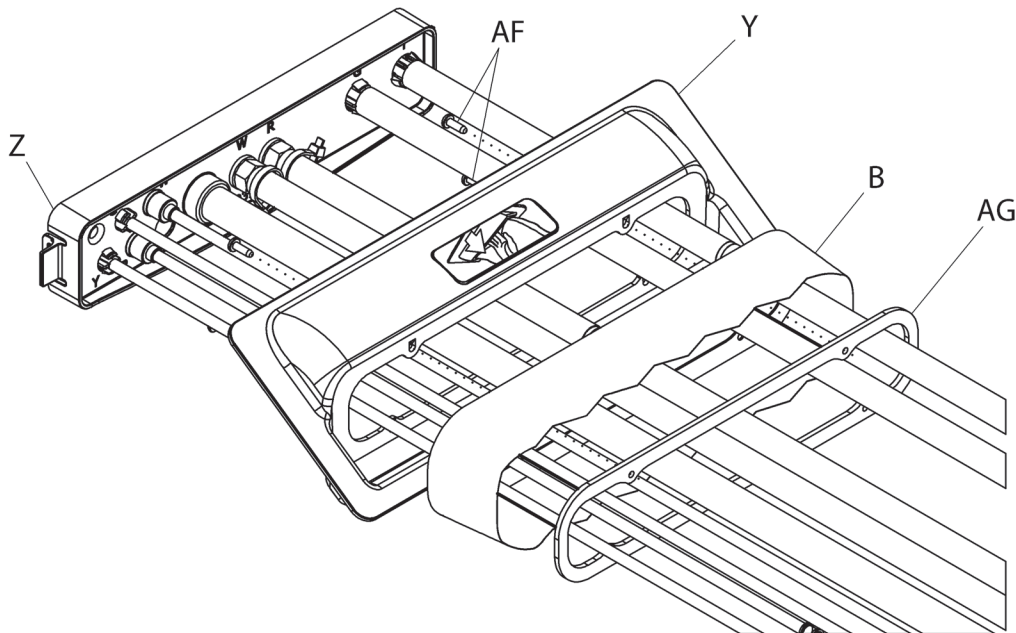
NOTE:

To disconnect the interface connector assembly, it may be helpful to insert the small screwdriver between the connector assembly and the latch tabs that are on each side of the assembly.

**CAUTION:**

Caution—Failure to keep the pneumatic box manifold covered when the interface connector assembly is disconnected could cause equipment damage.

6. Pull the manifold cover (AA) over the manifold (AB) (see Figure 4-49 on page 4-155). Keep the cover over the manifold until you connect the interface connector assembly.
7. Disconnect all of the tubes from the interface connector assembly (Z), and then remove the connector assembly (see Figure 4-50 on page 4-155).

Figure 4-49. Manifold Cover**Figure 4-50. Interface Connector Assembly and Heel Cover**

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Bottom Cover—Removal

1. Make sure the bed and auxiliary outlet (if installed) are unplugged and you have done the Setup steps above.

2. Remove the interface connector assembly. See “Interface Connector Assembly—Removal” on page 4-154.
3. Turn the mattress assembly so the bottom side is up.
4. Pull the tubes through the sleeve in the bottom cover (B) (see Figure 4-46 on page 4-152).
5. Remove the four rivets (P; two rivets per plate) that hold the bottom cover (B) to the head and seat turn plates (L and M).
6. Remove the nut (AC) and washer (AD) that attach the mattress attachment knob (AE) to the bottom cover (B), and then remove the knob from the cover.
7. If the bottom cover (B) has a heel stiffener (AM) installed, do as applicable; otherwise, go to Step 8.
 - If the replacement bottom cover has a slit (AN) for the heel stiffener (AM), remove the heel stiffener from the slit on the inside of the bottom cover. Keep the stiffener.
 - If the replacement bottom cover does **not** have a slit (AN) for the stiffener (AM), you do not need to remove the stiffener. It can be discarded with the bottom cover (B).
8. Remove the heel cover (Y) as follows (see Figure 4-50 on page 4-155):
 - a. Remove the four screws (AF) that attach the heel cover (Y) to the mattress bottom cover (B).
 - b. Remove the bottom cover sleeve from the heel cover (Y).
 - c. Remove the bottom cover (B) from the mattress assembly.

REPLACEMENT

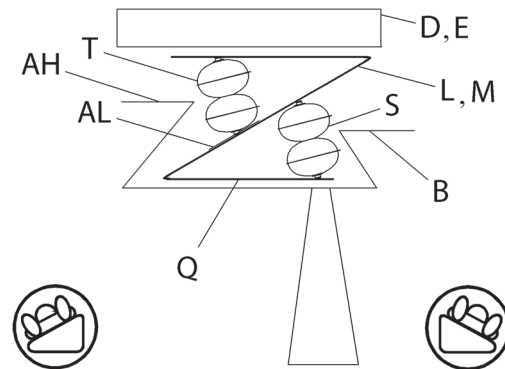
1. Do the applicable removal procedure in reverse order. As you replace parts, make sure of these:
 - **Bottom Cover**
 - The bottom cover sleeve is fully secured between the heel cover (Y) and its fabric support ring (AG) (see Figure 4-50 on page 4-155).
 - When you install the heel cover (Y), tighten the screws (AF) to 0.2 0.45 N·m ± 10% of torque.
 - **Interface Connector Assembly**
 - The latch tabs on both sides of the interface connector assembly (Z) are fully connected to the pneumatic box (see Figure 4-50 on page 4-155). You should hear a click when the latch tabs connect. After you connect the interface connector assembly, pull on the assembly. If it is easy to remove, then the latch tabs are not fully connected.
 - When you connect the heel cover (Y) to the bed, put one side of the cover through the opening first, and then push down on the other side until the cover connects in its location.
 - Make sure the heel cover (Y) is correctly sealed without any gaps around its edges.

NOTE:

There is a lip around the edges of the heel cover

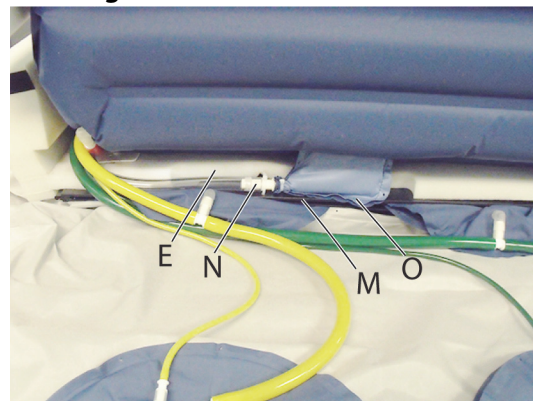
- **Head or Seat Turn Assist Bladder**
 - When you install a bladder (S or T) on to a turn plate (L or M), the bladder ports on the head turn plate (L) are toward the foot end, and the bladder ports on the seat turn plate (M) are toward the head end (see Figure 4-48 on page 4-154).
 - The bladder’s hook and loop tape that attaches the bladder (S or T) to the turn plate (L or M) and, if applicable, right-side turn assist support plate (AL) is as tight as possible.

- When you install a turn plate (L or M), only the bottom plate (Q), right-side turn assist support plate (AL; if applicable), and the lower turn bladders (S and T) go inside the bellow (AH) of the bottom cover (B) (see Figure 4-51 on page 4-157). Install the hinge side of the bottom plate into the bellow first.

Figure 4-51. Turn Assist Bladder

- **Support Bladder Assembly**

- The male and female snap rivets fully connect. If a female snap rivet needs replaced, see “Replace a Female Snap Rivet for the Support Bladder Assembly” on page 4-158.
- When you install the cable tie that holds the MCM tube connector (N) on to the MCM connection bullhorn (O), install the cable tie in front of the first ring (barb) from the bullhorn end of the tube’s connector (see Figure 4-52 on page 4-157). Do not cut the cable tie. Put its end between the seat/foot foam assembly (E) and seat turn plate (M).
- When you install the cable tie that holds the MCM tube connector (N) on to the seat turn plate (M), do not cut the cable tie. Put its end between the seat/foot foam assembly (E) and seat turn plate (M).
- For tube routing notes, see “Tube Routing” on page 4-159.

Figure 4-52. MCM Connection

4

NOTE:

To make the tubes easier to connect, apply a small amount of the Isopropyl alcohol on the inside of the tube ends.

2. Zero the scale:
 - **Standard (NA) Scale**—see “Zero the Standard (NA) Scale with or without Resetting the Bed” on page 4-13.
 - **EN 45501 Class Scale (OIML)**—see “Zero the EN 45501 Class Scale (OIML) with or without Resetting the Bed” on page 4-25.
3. Do the “Function Checks” on page 2-1.

REPLACE A FEMALE SNAP RIVET FOR THE SUPPORT BLADDER ASSEMBLY**NOTE:**

Carefully pry a very small section of the anchor plate (AO) from the foam assembly (D or E) so that you can get access to the snap rivet retainer.

NOTE:

Pry the anchor plate from the inside center of the plate; do not pry at the corners. Also, try to minimize the amount of detachment of the anchor plate from the foam assembly.

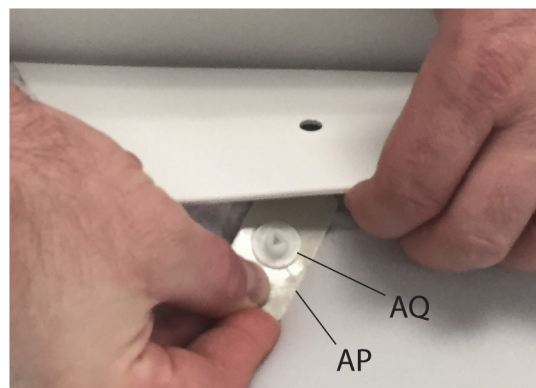
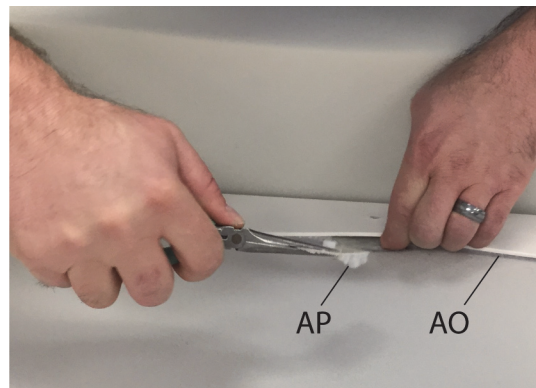
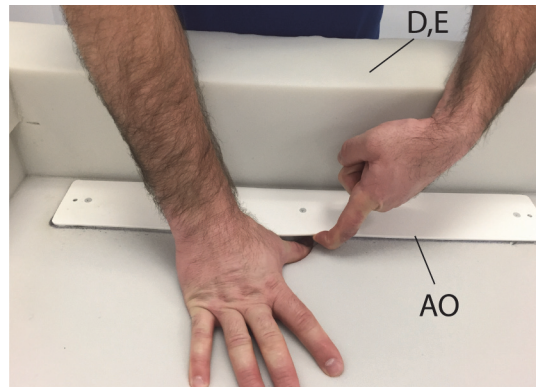
4. Remove the snap rivet retainer (AP) from the anchor plate (AO).

NOTE:

To remove the snap rivet retainer from the anchor plate, it may be helpful to use the needle nose pliers to—

- Push through the top of the rivet to detach the rivet from anchor plate.
- Pull the retainer out from between the anchor plate and foam assembly.

5. Remove the snap rivet (AQ) from the snap rivet retainer (AP), and install a new rivet on the retainer.



6. Install the snap rivet retainer (AP) on the anchor plate (AO), and then press the rivet and retainer into position on the anchor plate.

NOTE:

When you install the support bladder assembly, as you connect the male snap rivet to the female snap rivet, push against the female rivet from underneath the foam assembly to help the rivets fully connect.

Tube Routing

Item	Tube (see Figure 4-53 on page 4-159)
AI	MCM, clear
G	Head fill, white
H	Head sense, white
I	Seat sense, red
J	Seat fill, red (not shown in the photo)
U	Turn assist right fill, yellow
V	Turn assist right sense, yellow (not shown in the photo)
W	Turn assist left fill, green
X	Turn assist left sense, green

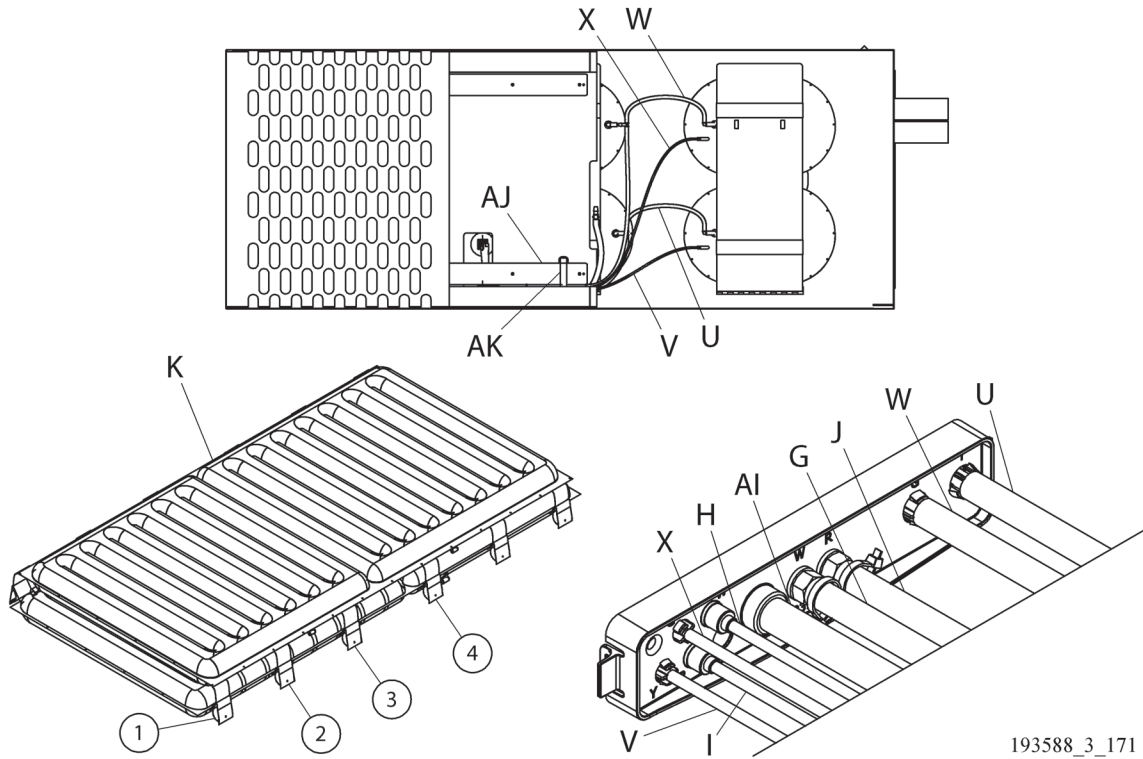
Figure 4-53. Tube Identification

Routing Notes (see the photo above and Figure 4-54 on page 4-160)

- The MCM connector bullhorn gets pulled through the slit in the support bladder assembly (K). An arrow on the bladder cover identifies the location of the slit.
- Route U, V, W, X, and AI beneath the anchor plate (AJ), and route along the cut out in the foam assembly (E).
- Route G, H, I, and J above the anchor plate (AJ).
- With AI on the bottom, bundle G, H, J, U, V, W, X, and AI with the ink marks aligned with the hook and loop tape (AK). When you connect the hook and loop tape, make sure the gap between the tape ends is no more than 0.5" (12.7 mm).
- Route G, H, I, and J through strap 2^a.
- Route G, H, and J through strap 3.
- Route G and H through strap 4.

a. Strap 1 shown in Figure 4-54 on page 4-160 is not used.

Figure 4-54. Tube Routing



193588_3_171

4.58 pro+ Non-Integrated Mattress (P7924)—Removal

Tools: None

REMOVAL

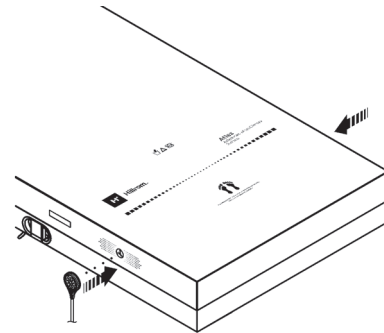
1. Make sure the brake is set.
2. Adjust the bed to the flat position.
3. Fully extend the foot section of the bed.
4. Lower the siderails.



WARNING:

Warning—Failure to unplug the bed and mattress could cause injury or equipment damage.

5. Unplug the bed and mattress.
6. Remove the status indicator from the footboard and attach the indicator to one of the mattress storage locations.



4

7. Remove the footboard.
8. Remove the mattress cord clamp from the bed power cord.



9. Remove the mattress power cord magnets and power cord from the bed and pull the power cord to the top of the bed deck.
10. Disconnect the mattress hooks from the head end of the bed.



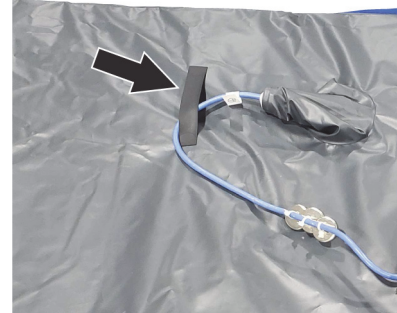
**WARNING:**

Warning—The mattress weighs approximately 50 lb (22.7 kg). Lift and move the mattress with the mattress handles. Do not twist, and seek assistance when necessary. Failure to do so could cause injury or equipment damage.

11. Use the mattress handles to remove the mattress from the bed.

REPLACEMENT

1. Lift the pro+ mattress to make sure the mattress power cord is routed through the strap on the bottom mattress cover.

**WARNING:**

Warning—The mattress weighs approximately 50 lb (22.7 kg). Lift and move the mattress with the mattress handles. Do not twist, and seek assistance when necessary. Failure to do so could cause injury or equipment damage.

2. Use the mattress handles to lift and install the mattress on the bed. Make sure the logo side is up and at the foot end of the bed.

**WARNING:**

Warning—Make sure the mattress is installed correctly and is securely attached to the bed. Failure to do so could cause the bed not to articulate as intended. Injury or equipment damage could occur.

3. Attach the mattress hooks to the head end of the bed.



4. Put the bed in this configuration:
 - Bed in the highest position
 - Knee in the highest position
 - Head in the highest position

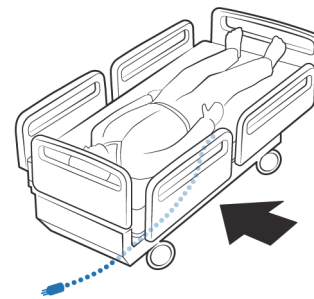
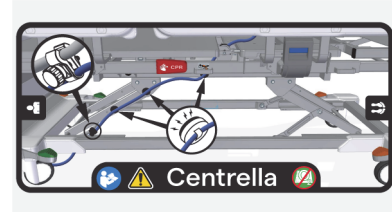
5. Route the mattress power cord as follows:

! WARNING:

Warning—Failure to route the mattress power cord correctly could cause a tripping hazard and/or the cord to be pinched during bed functions.

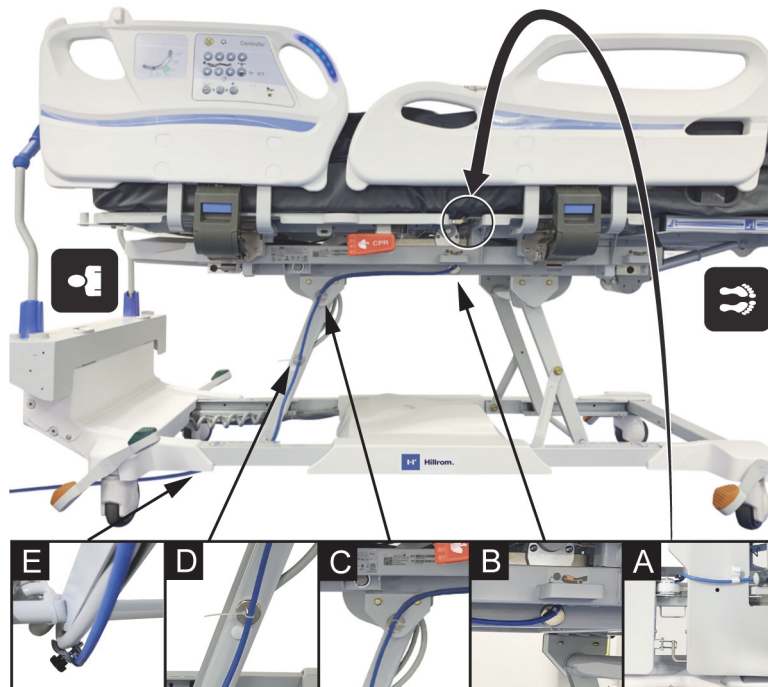
NOTES:

- Do **not** use cable ties to attach the mattress power cord to the bed.
- A label on the mattress power cord shows the routing and the attachment locations for the power cord on to the bed frame.
- The mattress power cord has magnets installed on the cord. The power cord is routed along the patient-right side of the bed to the head end of the bed.

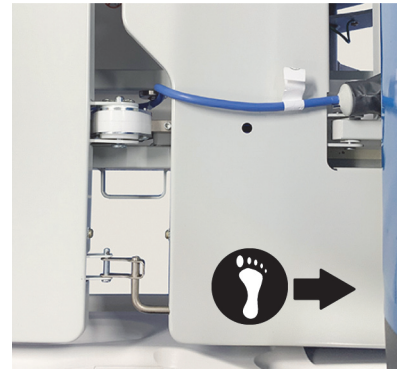


Below is an overall view of the cord routing; the numbered detail views correlate with Step a through Step e that follow.

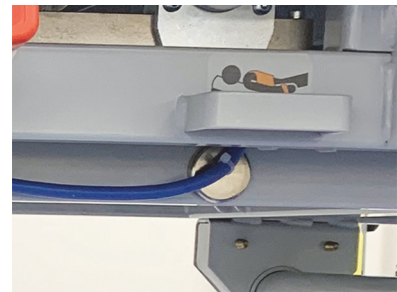
Figure 4-55. Mattress Power Cord Routing



- a. Route the power cord between the head and seat sections on the right-side of the bed, inside of the head pivot.



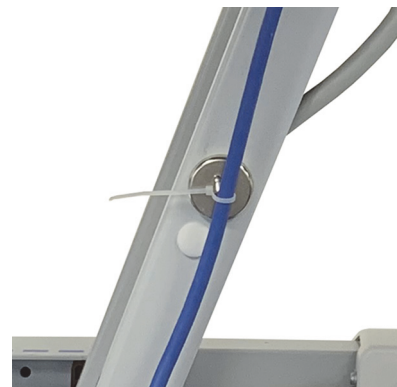
- b. Attach one cord magnet to the upper frame, aligned with the patient restraint bracket.



- c. Attach one cord magnet to the upper frame, under the head section on the triangle bracket.



- d. Attach one cord magnet to the lift arm, above the plastic insert.



- e. Put the bed power cord into the cord clamp that is on the mattress power cord. Use the knob to tighten the cord clamp.

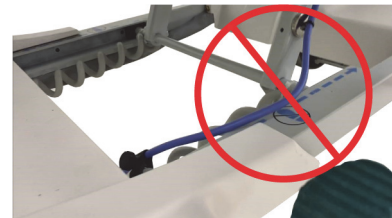
Gently pull on the bed power cord to make sure the cord clamp is attached to the bed power cord.



⚠ CAUTION:

Caution—To help prevent equipment damage, make sure the power cord is routed under the lift arm weldment.

- f. Route the power cord under the lift arm weldment and between the head-end casters.



6. Lift the foot end of the mattress.
7. Align the holes of the foot-end flap with the footboard sockets in the bed.
8. Align the footboard posts to go through the holes in the mattress flap, and install the footboard.



9. Plug the mattress power cord into AC power.
10. Put the bed in the flat position.

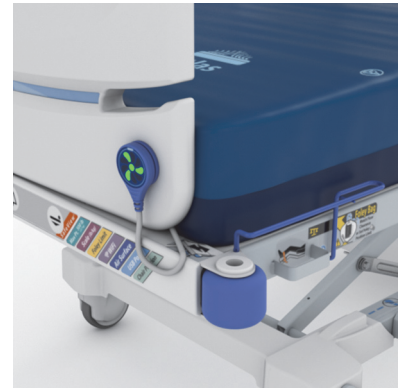
⚠ WARNING:

Warning—Keep cords out of the patient area or injury could occur.

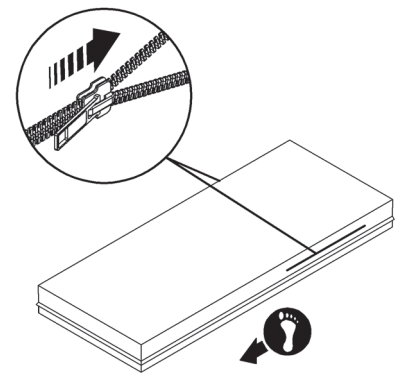
11. Make sure that the status indicator cord is not between the installed footboard and bed. Then, put the status indicator on its mount on the footboard. Make sure to store excess cord away from the patient area.

4

12. Make sure the status indicator is green.



13. Make sure the mattress foot-end flap is secured by the footboard.
 14. If applicable, make sure the x-ray sleeve zipper is closed on both sides of the mattress.



15. Make sure the bed is plugged into AC power.

! WARNING:

Warning—Do not allow the mattress to stay in continuous contact with the headboard. This could impact the scale accuracy and Bed Exit performance which could cause patient injury.

16. Make sure the mattress is not in continuous contact with the headboard.
 17. Zero the scale.
- **Standard (NA) Scale**—see “Zero the Standard (NA) Scale with or without Resetting the Bed” on page 4-13.
 - **EN 45501 Class Scale (OIML)**—see “Zero the EN 45501 Class Scale (OIML) with or without Resetting the Bed” on page 4-25.
18. If the bed has the Obstacle Detect® System, make sure the mattress power cord does not interfere with system. See the bed’s IFU (193587).

! WARNING:

Warning—Put the power cord in a location where persons will not trip over it, and away from bed mechanisms. Failure to do so could cause injury or equipment damage.

19. Make sure the power cord is in a location where persons will not trip over it, and away from the bed mechanisms.
 20. Do the applicable Procedure on page 2-1.

4.59 pro+ Integrated Mattress (P7923)—Replacement

Tools: None

REMOVAL

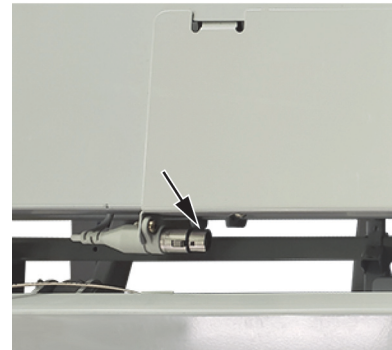
1. Make sure the brake is set.
2. Adjust the bed to the flat position.
3. Fully extend the foot section.
4. Lower the siderails.
5. Remove the footboard.



WARNING:

Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

6. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
7. Fold one end of the mattress over the other, and disconnect the integrated mattress cable from the connection cable that is between the thigh and foot sections of the bed.



8. Disconnect the mattress hooks from the head end of the bed.



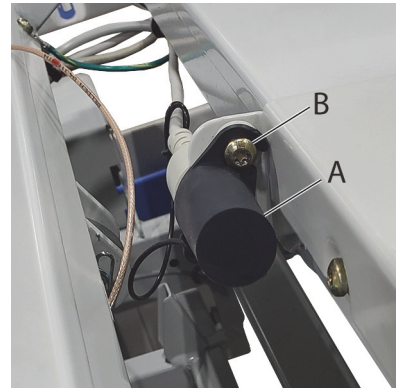
WARNING:

Warning—The mattress weighs approximately 50 lb (22.7 kg). Lift and move the mattress with the mattress handles. Do not twist, and seek assistance when necessary. Failure to do so could cause injury or equipment damage.

9. Use the mattress handles on the bottom of the mattress to remove the mattress from the bed.

4

10. If a pro+ mattress is not going to be installed on the bed for a length of time, install the connector cover (A). Secure the cover with the bracket screw (B).



REPLACEMENT



WARNING:

Failure to obey these warnings could cause injury and/or equipment damage:

- **Warning**—Make sure the mattress is installed correctly and is securely attached to the bed. Failure to do so could cause the bed not to articulate as intended.
- **Warning**—Do not allow the mattress to stay in continuous contact with the headboard as this could impact the scale accuracy and Bed Exit performance which could cause patient injury.

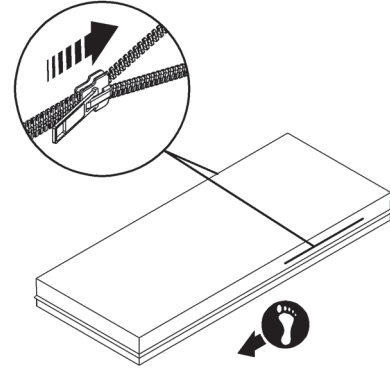
1. Do the removal procedure in reverse order. Make sure that—
 - The mattress cable is routed correctly—it is routed between the seat and thigh sections of the bed, then under the thigh panel to the frame connection cable on foot cover. Refer to the routing label on the bed's thigh panel.



- The holes in the mattress flap are aligned with the footboard sockets, and when installed, the footboard secures the mattress flap.



- If applicable, the x-ray sleeve zipper is closed on both sides of the mattress.



- The mattress is not in continuous contact with the headboard.
- The Microclimate Management® (MCM) indicator on the GCI is green when power is supplied to the bed.



2. Zero the scale:
 - **Standard (NA) Scale**—see “Zero the Standard (NA) Scale with or without Resetting the Bed” on page 4-13.
 - **EN 45501 Class Scale (OIML)**—see “Zero the EN 45501 Class Scale (OIML) with or without Resetting the Bed” on page 4-25.
3. Do the applicable “Function Checks” on page 2-1.

4.60 pro+ Integrated Mattress (P7923)—Connection Cable Replacement

Tools: Antistatic strap Wire cutters T25 Torx® screwdriver

REMOVAL

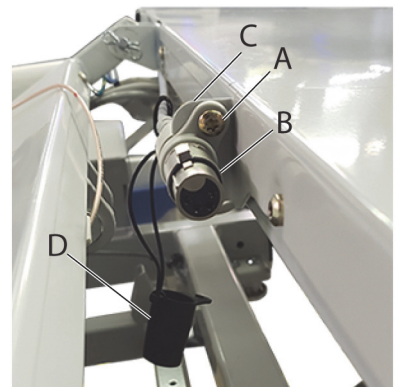
1. Make sure the brake is set.
2. Remove the mattress. See “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167.
3. Raise the bed to the highest position.
4. Raise the head and knee sections to the highest position.



WARNING:

Warning—Failure to unplug the bed could cause injury or equipment damage.

5. Unplug the bed.
6. Between the thigh and foot sections, remove the screw (A) that attaches the connection cable (B) to the foot cover bracket (C).
7. Remove the cable (B) from the bracket (C).
8. Look at the new cable (B), and make sure it has a connector cover (D) attached.
9. Put the new cable (B) in position on the bracket (C) with the cable routing towards the left.



10. Install the screw (A) to attach the cable (B) to the bracket (C).

NOTE:

If the integrated pro+ mattress is not going to be installed after you replace the cable, install the connector cover on to the cable connector. Secure the cover with the bracket screw.



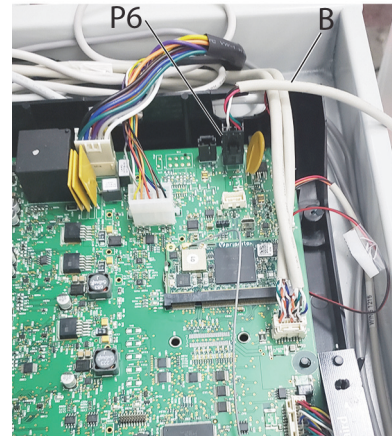
11. Remove the old cable from its routing to the MCB, and at the same time, route the new cable. Remove and replace push mount cable ties as necessary.

12. Get access to the MCB. See “MCB Speaker, SOM, and WiFi Components—Replacement” on page 4-71.

**CAUTION:**

Caution—Failure to wear an antistatic strap could cause equipment damage.

13. Put on the antistatic strap.
14. Disconnect the old cable from P6 on the MCB. Remove the cable from the bed.
15. Connect the new cable (B) to P6 on the MCB.



16. Install the MCB cover and its two screws.
17. Install the mattress. See “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167.
18. Do the applicable “Function Checks” on page 2-1.

4.61 pro+ Integrated Mattress (P7923)—Blower Enclosure and Internal Components Replacement

Tools:	T10 and T25 Torx® screwdrivers	Phillips head screwdriver	Antistatic strap
	Wire cutters	Screwdriver	Cable tie gun
	8 mm socket	5 mm wrench	

REPLACEMENT

Go to the applicable procedure:

- Blower Intake Hose—page 4-172
- Blower Enclosure—page 4-174
- Blower—page 4-177
- Blower Board— page 4-180

Blower Intake Hose

1. Make sure the brake is set.
2. Plug the bed into AC power.
3. Put the bed in the flat position.
4. Fully extend the foot section of the bed.

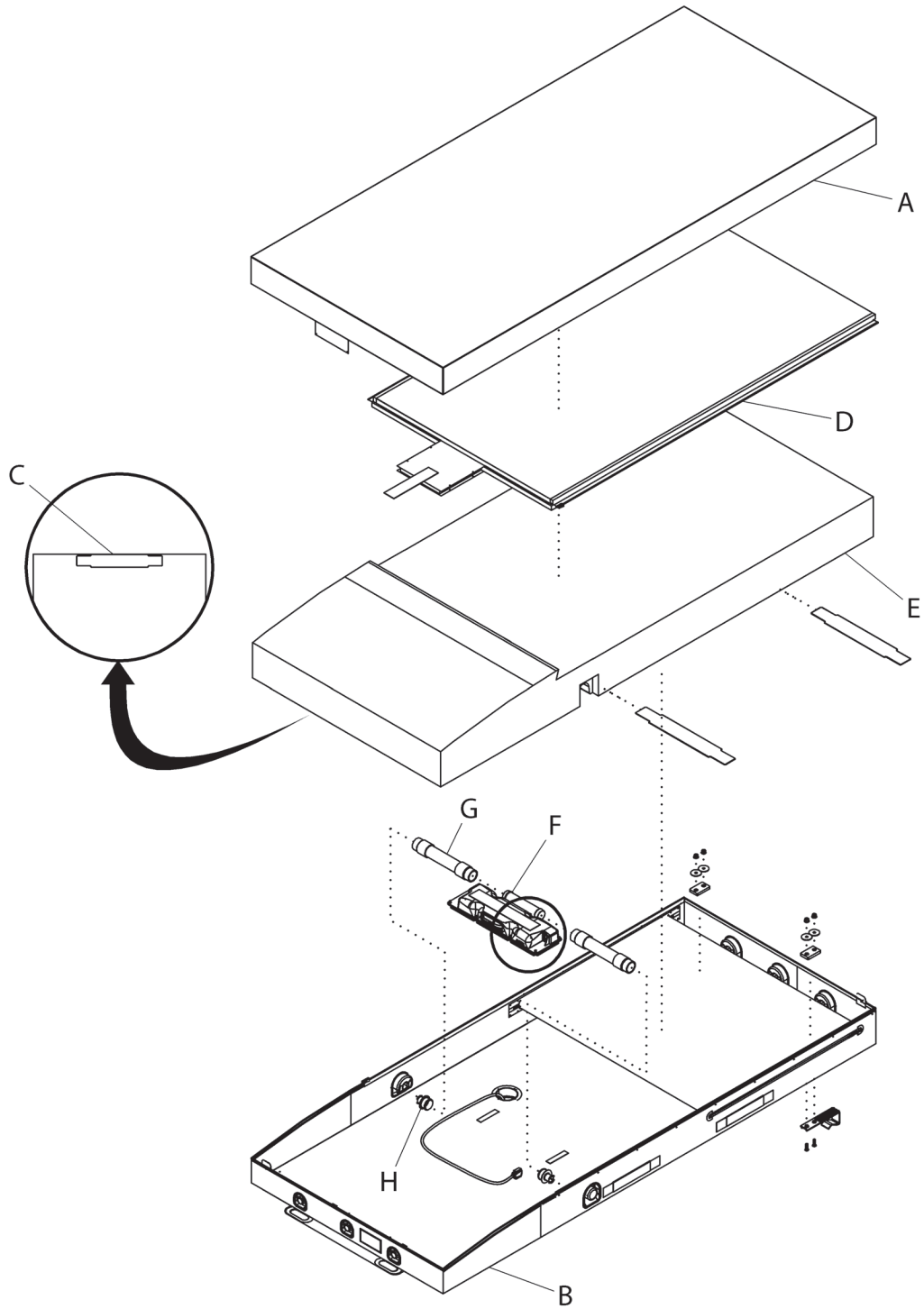


WARNING:

Warning—Failure to remove power from the bed and mattress could cause injury or equipment damage.

5. Unplug the bed.
6. Lower the siderails.
7. At the foot end of the mattress, remove the cable tie closure from the top cover (A) and bottom cover (B) zipper tabs (see Figure 4-56 on page 4-173).
8. Unzip the top cover (A) from the bottom cover (B).
9. Fold the top cover (A) over the head section of the bed.
10. Remove the mattress attachment plate (C) from the foot end of the bottom cover (B).
11. Unzip the MCM assembly (D) from the bottom cover (B).
12. Remove the blower intake hose (G) from the blower enclosure (F).
13. Remove the blower intake hose (G) from the barb fitting (H).

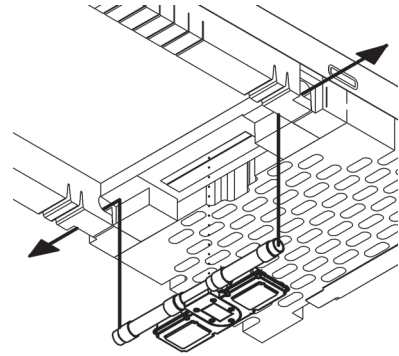
Figure 4-56. Blower Intake Hose



193588_7_497

Replacement

- Do the removal procedure in reverse order. Make sure of these:
 - MCM assembly**—the MCM assembly is completely zipped to the bottom cover on both sides.
 - Blower enclosure**—the blower enclosure is secured to the foam by the hook-and-loop fastener. Make sure there is no fire barrier between the hook-and-loop fastener.
 - Air intake hoses**—the air intake hoses are inserted into the cutouts in the foam assembly.



WARNING:

Warning—Make sure the cable tie closure is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- Cable tie (212042)**—to install the cable tie on to the top and bottom cover zipper tabs after closure. Do not trim the cable tie.
- Do the applicable “Function Checks” on page 2-1.

Blower Enclosure

- Make sure the brake is set.
- Plug the bed into AC power.
- Put the bed in the flat position.
- Fully extend the foot section of the bed.
- Lower the siderails.

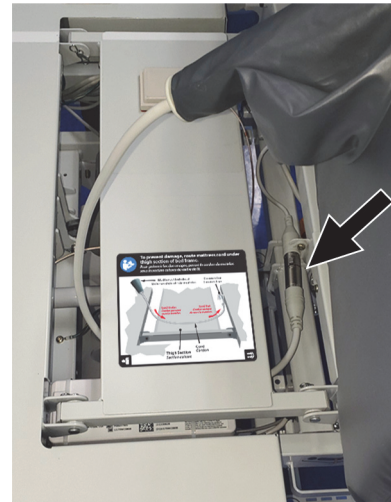


WARNING:

Warning—Failure to remove power from the bed could cause injury or equipment damage.

- Unplug the bed.
- Remove the footboard from the bed.

8. Lift the mattress and disconnect the integrated mattress cable from the cable connector.



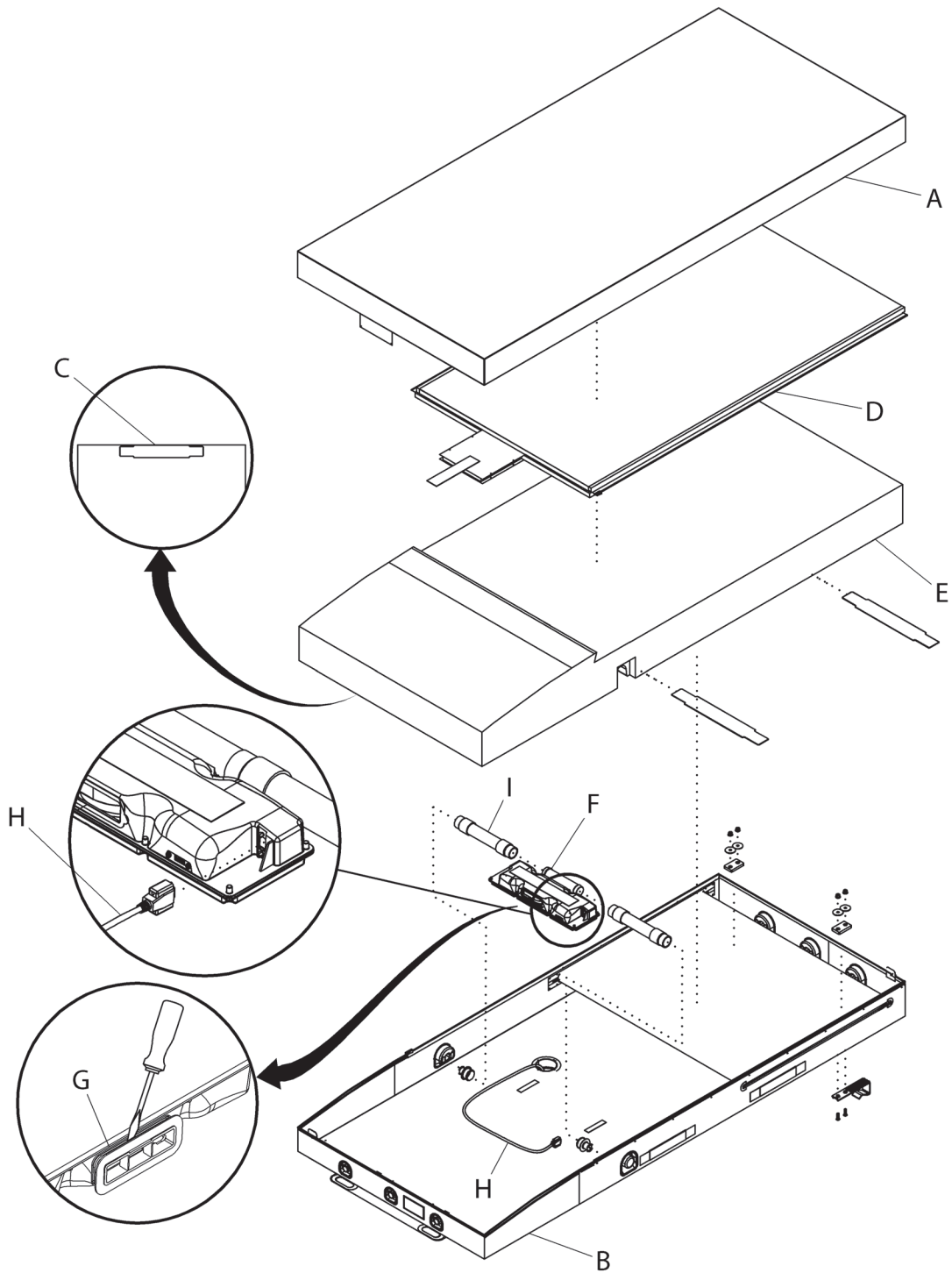
9. At the foot end of the mattress, remove the cable tie closure from the top cover (A) and bottom cover (B) zipper tabs (see Figure 4-57 on page 4-176).
10. Unzip the top cover (A) from the bottom cover (B).
11. Fold the top cover (A) over the head end of the bed.
12. Remove the mattress attachment plate (C) from the foot end of the bottom cover (B).
13. Unzip the MCM assembly (D) from the bottom cover (B).
14. Lift the foot end of the mattress foam assembly (E) and unfasten the hook-and-loop fastener from the blower enclosure (F).
15. Unfasten the MCM assembly (D) from the bottom of the blower enclosure (F).
16. Insert the screwdriver between the MCM assembly connector (G) and blower enclosure (F) and remove the MCM assembly connector (G) from the blower enclosure (F).
17. On the integrated mattress cable (H), loosen the two screws and disconnect the cable from the blower enclosure (F).

NOTE:

Use the wrench to hold the stand off nut (only one standoff is accessible) when you loosen the integrated mattress cable screws.

18. Remove the air intake hoses (I) from the blower enclosure (F).
19. Remove the blower enclosure (F).

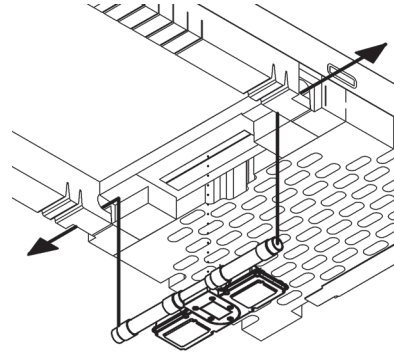
Figure 4-57. Blower Enclosure



193588_7_499

Replacement

1. Do the removal procedure in reverse order. Make sure of these:
 - **MCM assembly**—the MCM assembly connector is attached to the blower enclosure. Listen for a click. Verify it is connected by pulling on the hook-and-loop fastener strap. Then attach the hook-and-loop fastener strap to the blower enclosure.
 - **Blower enclosure**—the blower enclosure is secured to the foam by the hook-and-loop fastener. Make sure there is no fire barrier between the hook-and-loop fastener.
 - **Air intake hoses**—the air intake hoses are inserted into cutouts in the foam assembly.



WARNING:

Warning—Make sure the cable tie closure is installed to the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- **Cable tie (212042)**—to install the cable tie on to the top and bottom cover zipper tabs after closure. Do not trim the cable tie.
2. Do the applicable “Function Checks” on page 2-1.

Blower

1. Make sure the brake is set.
2. Plug the bed into AC power.
3. Put the bed in the flat position.
4. Fully extend the foot section of the bed.
5. Lower the siderails.

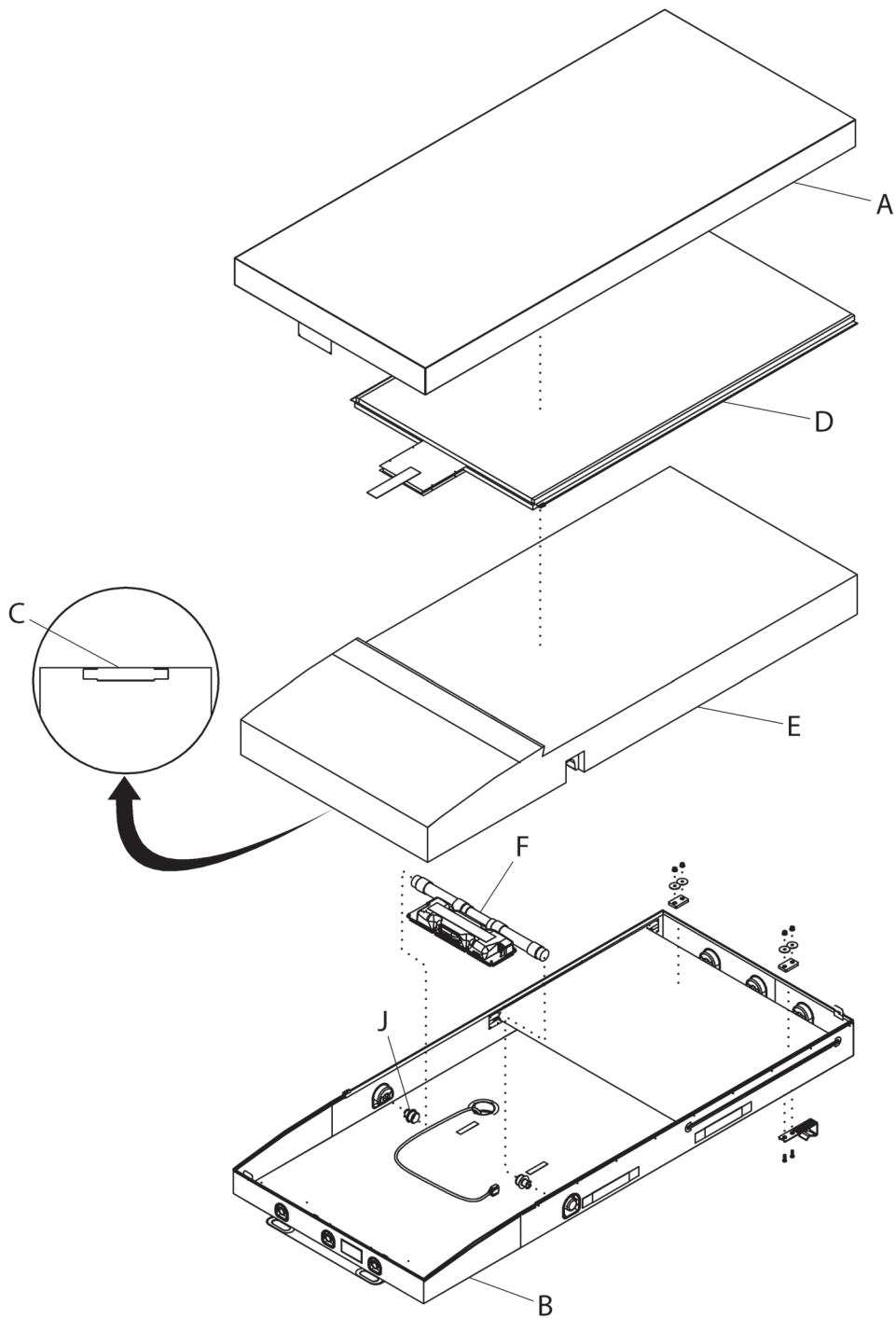


WARNING:

Warning—Failure to remove power from the bed could cause injury or equipment damage.

6. Unplug the bed.
7. Remove the footboard from the bed.
8. At the foot end of the mattress, remove the cable tie closure from the top cover (A) and bottom cover (B) zipper tabs (see Figure 4-58 on page 4-178).
9. Unzip the top cover (A) from the bottom cover (B).

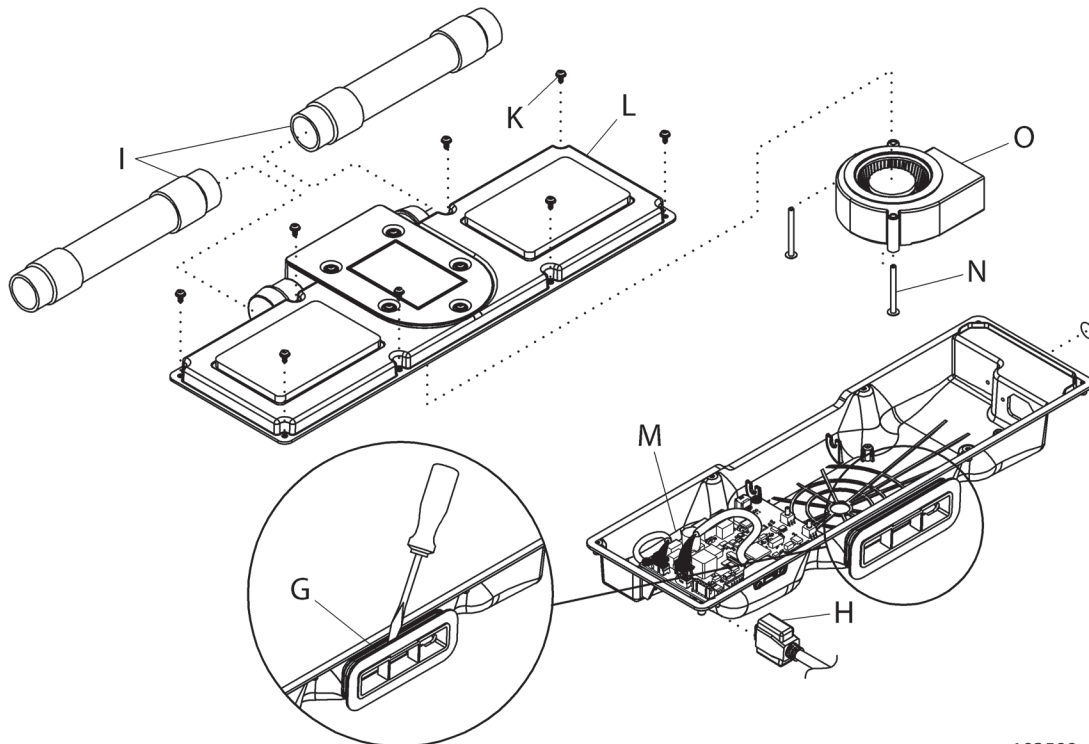
Figure 4-58. Blower Access



193588_7_486

10. Fold the top cover (A) over the head end of the bed.
11. Remove the mattress attachment plate (C) from the foot end of the bottom cover (B).
12. Unzip the MCM assembly (D) from the bottom cover (B).
13. Lift the foot end of the foam assembly (E) and unfasten the hook-and-loop fastener from the blower enclosure (F).
14. Unfasten the MCM assembly (D) from the bottom of the blower enclosure (F).
15. Insert the screwdriver between the MCM assembly connector (G) and the blower enclosure and remove the MCM assembly connector from the blower enclosure (see Figure 4-59 on page 4-179).

Figure 4-59. Blower Enclosure (bottom view)



193588_7_485

16. On the integrated mattress cable (H), loosen the two screws and disconnect the cable from the blower enclosure.

NOTE:

Use the wrench to hold the stand off nut (only one standoff is accessible) when you loosen the integrated mattress cable screws.

17. Remove the air intake hoses (I) from the blower enclosure.
18. Remove the air intake hoses (I) from the barb fitting (J; shown in Figure 4-58 on page 4-178).
19. Turn the blower enclosure over and remove the eight screws (K) from the blower enclosure cover (L) (see Figure 4-59 on page 4-179).



CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

20. Put on the antistatic strap.

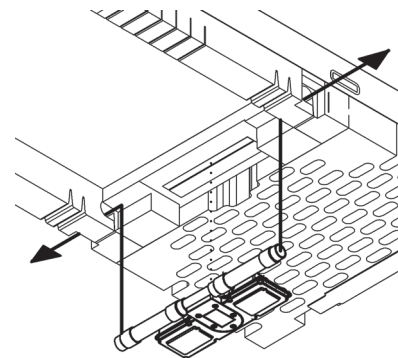
**CAUTION:**

Caution—Slowly lift the blower enclosure cover or damage could occur to the blower board assembly.

21. Lift the blower enclosure cover (L) and disconnect the blower cable from P5 on the blower board (M).
22. Remove the two screws (N) from the blower (O).
23. Remove the blower (O) from the blower enclosure cover (L).

Replacement

1. Do the removal procedure in reverse order. Make sure of these:
 - **MCM assembly**—the MCM assembly connector is attached to the blower enclosure. Listen for a click. Verify it is connected by pulling on the hook-and-loop fastener strap. Then attach the hook-and-loop fastener strap to the blower enclosure.
 - **Blower enclosure**—the blower enclosure is secured to the foam by the hook-and-loop fastener. Make sure there is no fire barrier between the hook-and-loop fastener.
 - **Air intake hoses**—the air intake hoses are inserted into cutouts in the foam assembly.

**WARNING:**

Warning—Make sure the cable tie closure is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- **Cable tie (212042)**—to install cable tie on to the top and bottom cover zipper tabs after closure. Do not trim the cable tie.
2. Do the applicable “Function Checks” on page 2-1.

Blower Board

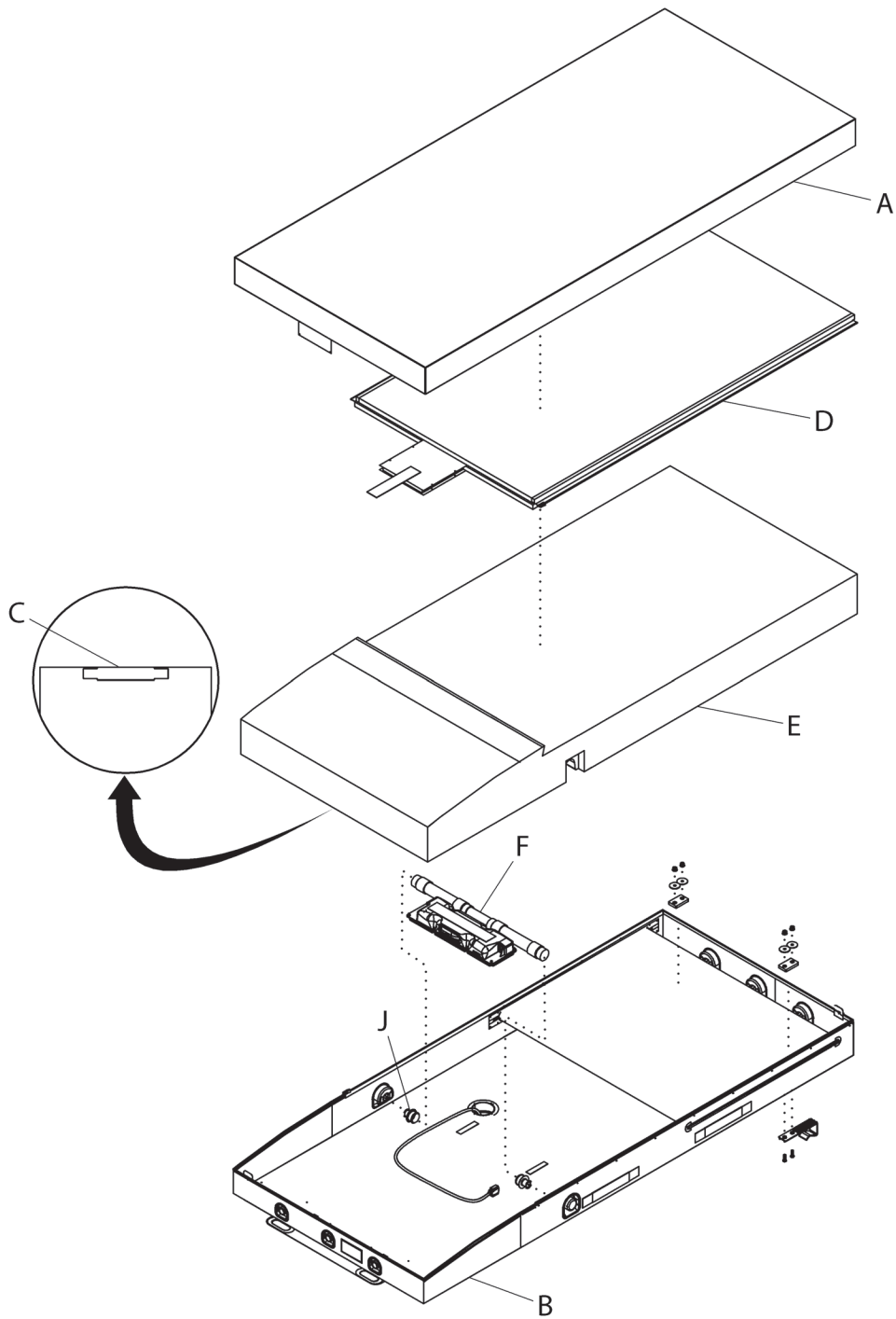
1. Make sure the brake is set.
2. Plug the bed into AC power.
3. Put the bed in the flat position.
4. Fully extend the foot section of the bed.
5. Lower the siderails.

**WARNING:**

Warning—Failure to remove power from the bed could cause injury or equipment damage.

6. Unplug the bed.
7. Remove the footboard from the bed.
8. At the foot end of the mattress, remove the cable tie closure from the top cover (A) and bottom cover (B) zipper tabs (see Figure 4-60 on page 4-182).
9. Unzip the top cover (A) from the bottom cover (B).
10. Fold the top cover (A) over the head end of the bed.
11. Remove the mattress attachment plate (C) from the foot end of the bottom cover (B).
12. Unzip the MCM assembly (D) from the bottom cover (B).
13. Lift the foot end of the foam assembly (E) and unfasten the hook-and-loop fastener from the blower enclosure (F).
14. Unfasten the MCM assembly (D) from the bottom of the blower enclosure (F).

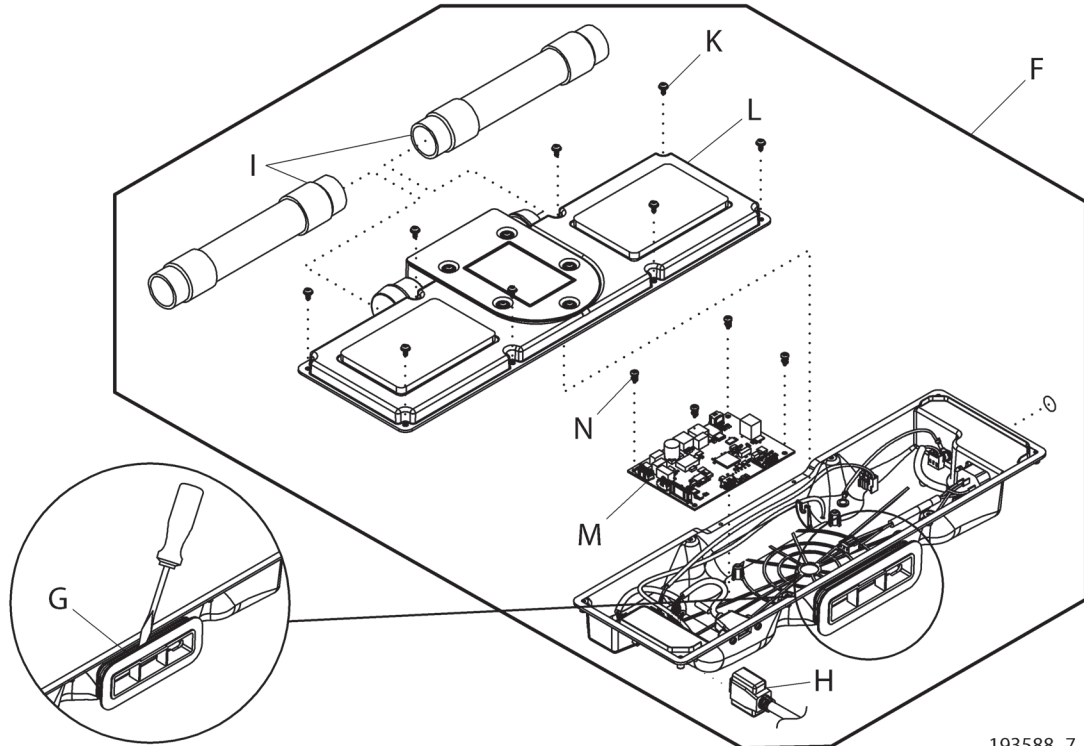
Figure 4-60. Blower Board Access



193588_7_500

15. Insert the screwdriver between the MCM assembly connector (G) and the blower enclosure (F) and remove the MCM assembly connector from the blower enclosure (see Figure 4-61 on page 4-183).

Figure 4-61. Blower Enclosure (bottom view)



193588_7_487

16. On the integrated mattress cable (H), loosen the two screws and disconnect the cable from the blower enclosure.

NOTE:

Use the wrench to hold the stand off nut (only one standoff is accessible) when you loosen the integrated mattress cable screws.

17. Remove the air intake hoses (I) from the blower enclosure (F).
 18. Remove the air intake hoses (I) from the barb fitting (J; shown in Figure 4-60 on page 4-182).
 19. Turn the blower enclosure (F) over and remove the eight screws (K) from the blower enclosure cover (L) (see Figure 4-61 on page 4-183).



CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

20. Put on the antistatic strap.



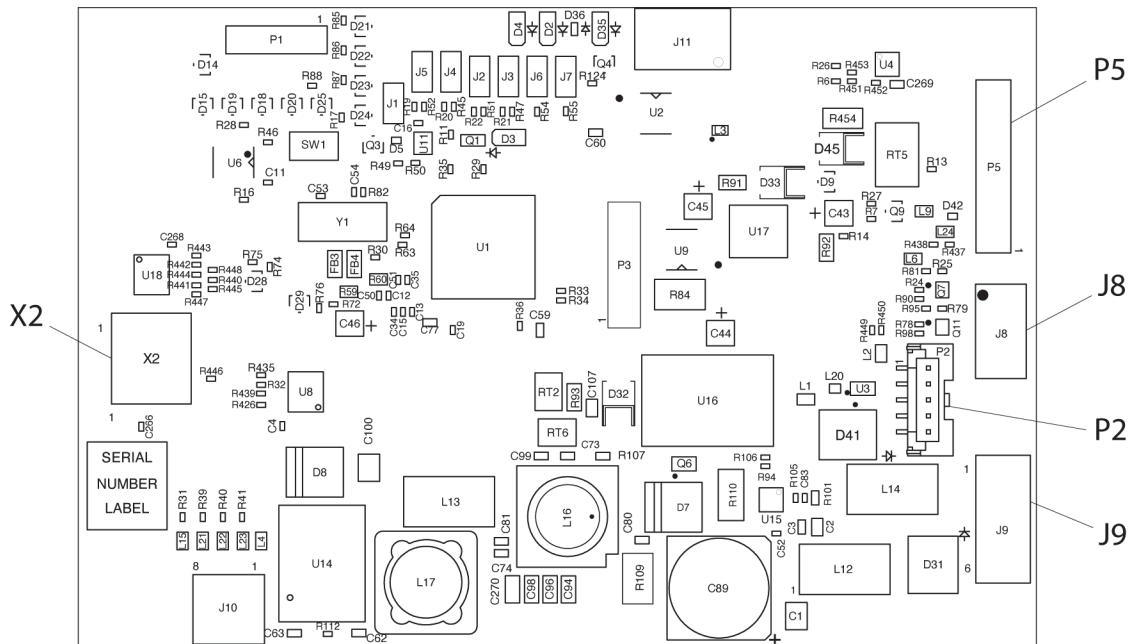
CAUTION:

Caution—Slowly lift the blower enclosure cover or damage could occur to the blower board assembly.

21. Lift the blower enclosure cover (L) and disconnect the blower cable from P5 (shown on page 4-184) on the blower board (M).

22. Disconnect these cables and hose from the blower board:

Cable P/N	Connector Location
208827	J8
208829	J9
209353	P2
Air hose	X2
208976	J9



23. Remove four screws (N) from the blower board (M) (see Figure 4-61 on page 4-183).

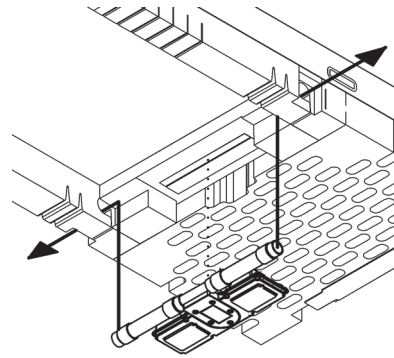
24. Remove the blower board (M) from the blower enclosure (F).

Replacement

1. Do the removal procedure in reverse order. Make sure of these:

- **MCM assembly**—the MCM assembly connector is attached to the blower enclosure. Listen for a click. Verify it is connected by pulling on the hook-and-loop fastener strap. Then attach the hook-and-loop fastener strap to the blower enclosure.
- **Blower enclosure**—the blower enclosure is secured to the foam by the hook-and-loop fastener. Make sure there is no fire barrier between the hook-and-loop fastener.

- **Air intake hoses**—the air intake hoses are inserted into cutouts in the foam assembly.



 **WARNING:**

Warning—Make sure the cable tie closure is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- **Cable tie (212042)**—to install cable tie on to the top and bottom cover zipper tabs after closure. Do not trim the cable tie.
2. Do the “Function Checks” on page 2-1.

4.62 pro+ Integrated Mattress (P7923)—Mattress Components Replacement

Tools: Screwdriver 5 mm wrench Cable tie gun

REPLACEMENT

Go to the applicable procedure:

- Integrated mattress cable—page 4-186
- Top cover—page 4-188
- Bottom cover—page 4-189
- MCM assembly—page 4-192
- Air system assembly—page 4-195

Integrated Mattress Cable

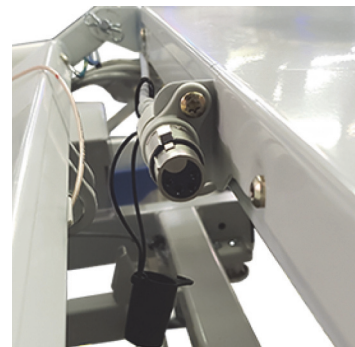
1. Make sure the brake is set.
2. Plug the bed into AC power.
3. Put the bed in the flat position.
4. Fully extend the foot section of the bed.
5. Lower the siderails.



WARNING:

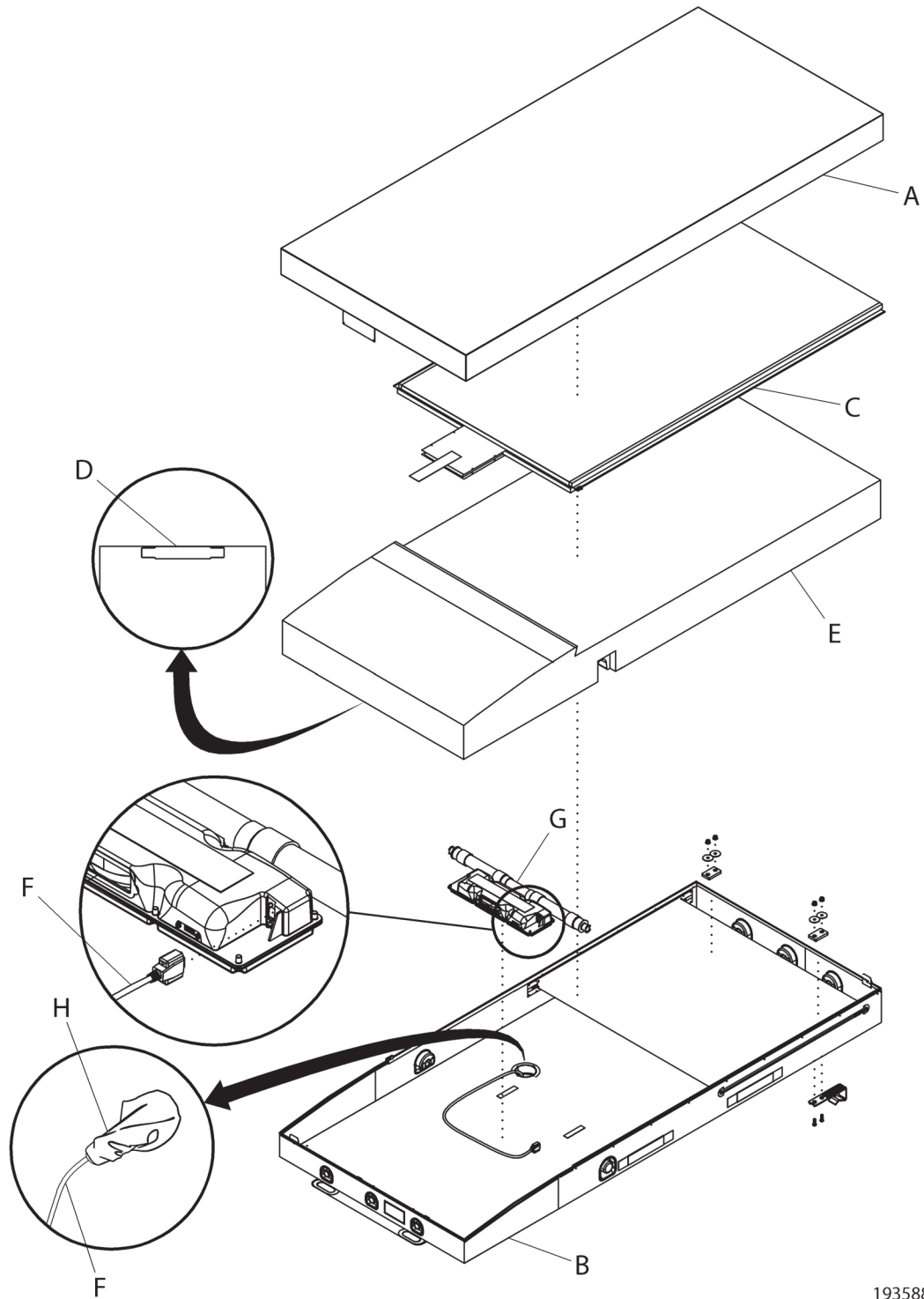
Warning—Failure to remove power from the bed could cause injury or equipment damage.

6. Unplug the bed.
7. Remove the footboard from the bed.
8. Fold one end of the mattress over the other, and disconnect the integrated mattress cable from the connection cable that is between the thigh and foot sections of the bed.



9. At the foot end of the mattress, remove the cable tie closure from the top cover (A) and bottom cover (B) zipper tabs (see Figure 4-62 on page 4-187).
10. Unzip the top cover (A) from the bottom cover (B).
11. On the left side of the mattress, unzip the MCM assembly (C) from the bottom cover (B).
12. Put the mattress flat on to the bed, and remove the foot attachment plate (D) from the bottom cover (B).
13. Fold the foot end of the foam assembly (E) over the head end.

Figure 4-62. Mattress Assembly



4

193588_7_490

- On the integrated mattress cable (F), loosen the two screws and disconnect the cable from the blower enclosure (G).

NOTE:

Use the wrench to hold the stand off nut (only one standoff is accessible) when you loosen the integrated mattress cable screws.

- From the inside of the mattress, gently pull on the integrated mattress cable (F) to turn the cable sleeve (H) inside out.

**CAUTION:**

Caution—Use caution when you cut the cable tie from the mattress cable sleeve. Failure to do so could damage the bottom cover.

- Remove the cable tie from the mattress cable sleeve (H).
- Gently pull the integrated mattress cable (F) through the cable sleeve (H) towards the outside of the bottom cover (B).

**Replacement**

- Pull the integrated mattress cable (F) through the cable sleeve (H) until the ridges on the overmold are covered by the cable sleeve (H).



- Set the cable tie gun to medium to high tension.
- Install the cable tie (209657) between the ridges of the overmold and fabric.

**CAUTION:**

Caution—The cable tie should not have any sharp edges or equipment damage could occur.

- Make sure there are no sharp edges on the cable tie.
- Start at Step 15 and do the removal procedure in reverse order.
- Make sure the mattress flap is secured by the footboard.

NOTE:

Do not trim the zipper closure cable tie (212042).

- Do the applicable "Function Checks" on page 2-1.

Top Cover

- Make sure the brake is set.
- Adjust the bed to a comfortable working height.
- Fully extend the foot section of the bed.

4. Remove the footboard from the bed.
5. At the foot end of the mattress, remove the cable tie closure from top cover and bottom cover zipper tabs.
6. Unzip and remove the top cover from the bottom cover.

Replacement



WARNING:

Warning—Make sure the cable tie closure is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

Do the removal procedure in reverse order. Make sure to install the cable tie (**212042**) on to the top and bottom cover zipper tabs. Do not trim the cable tie.

Bottom Cover

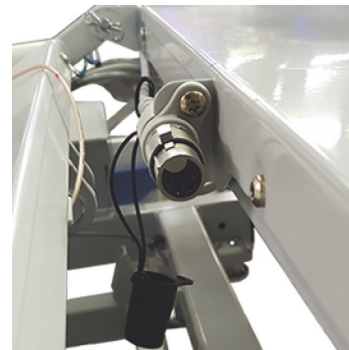
1. Make sure the brake is set.
2. Put the bed in the flat position.
3. Adjust the bed to a comfortable working height.
4. Fully extend the foot section of the bed.



WARNING:

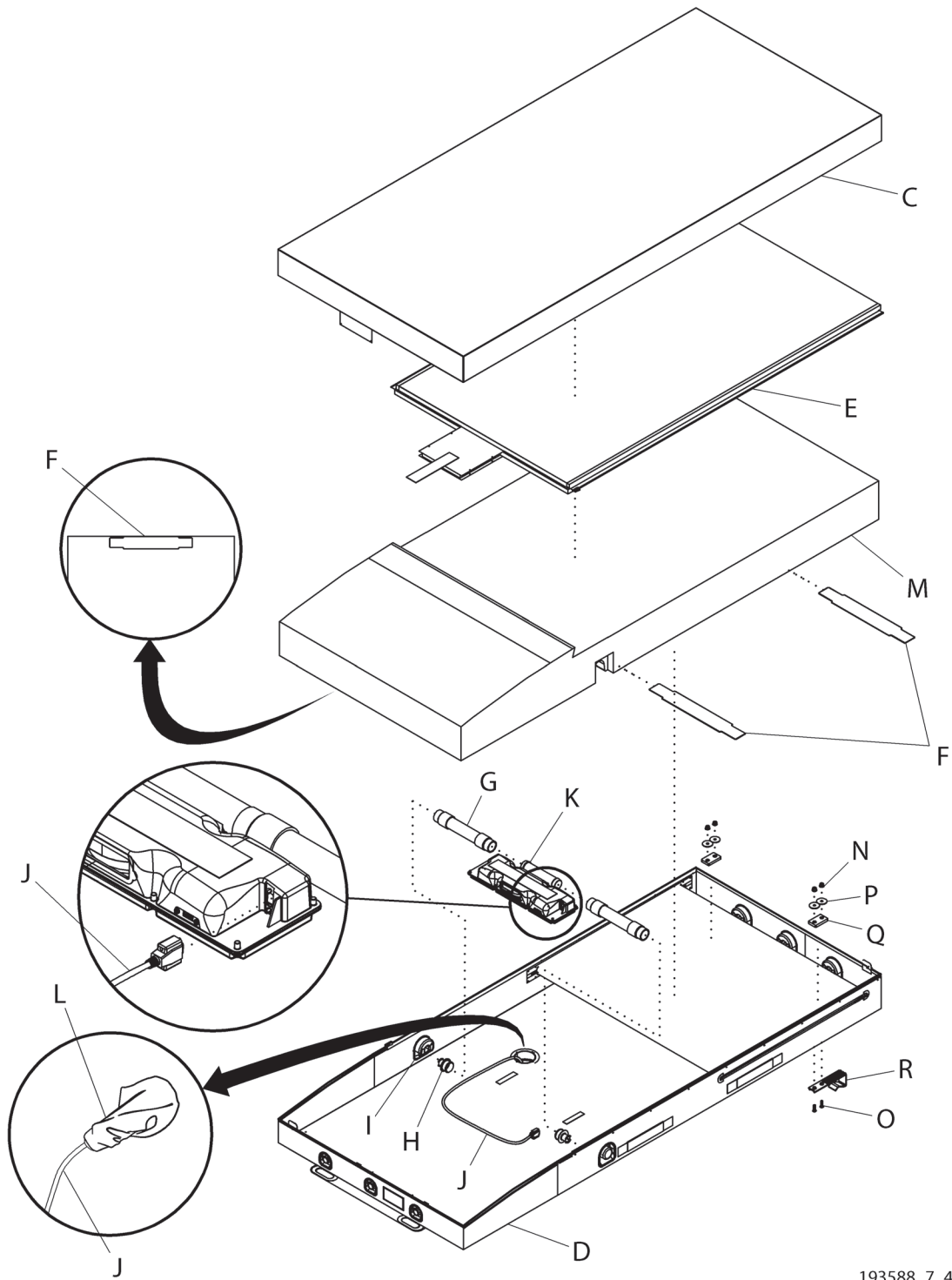
Warning—Failure to remove power from the bed could cause injury or equipment damage.

5. Unplug the bed.
6. Remove the footboard from the bed.
7. Fold one end of the mattress over the other, and disconnect the integrated mattress cable from the connection cable that is between the thigh and foot sections of the bed.



8. Put the mattress flat on the bed.
9. At the foot end of the mattress, remove the cable tie closure from the top cover and bottom cover zipper tabs.
10. Unzip and remove the top cover (C) from the bottom cover (D) (see Figure 4-63 on page 190).
11. Unzip the MCM assembly (E) from the bottom cover (D); do not remove the assembly.
12. Remove the foot attachment plate (F) from the bottom cover (D).
13. Remove the air intake hoses (G) from the two barb fittings (H) on the bottom cover vents (I).

Figure 4-63. Mattress Bottom Cover



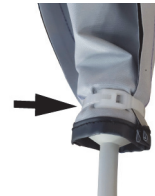
193588_7_492

14. On the integrated mattress cable (J), loosen the two screws and disconnect the cable from the blower enclosure (K).

NOTE:

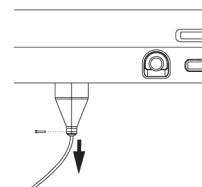
Use the wrench to hold the standoff nut (only one standoff is accessible) when you loosen the integrated mattress cable screws.

15. From inside the mattress, gently pull on the integrated mattress cable (J) to turn the cable sleeve (L) inside out. Then remove the cable tie from the cable sleeve (L).

**NOTE:**

The integrated mattress cable will need to be disconnected from the blower enclosure and then pulled through the sleeve on the bottom cover.

16. Pull the integrated mattress cable (J) through the cable sleeve (L) on the bottom cover (D).



17. Remove the other two attachment plates (F) from the bottom cover (D).

**WARNING:**

Warning—The mattress weighs approximately 50 lb (22.7 kg). Lift and move the mattress with the mattress handles. Do not twist, and seek assistance when necessary. Failure to do so could cause injury or equipment damage.

18. Remove the mattress core assembly (M) and the blower enclosure (K) from the bottom cover (D).
19. Remove the four nuts (N) and washers (P) and two hook plates (Q) from the four hook screws (O).
20. Remove the two hooks (R) from the bottom cover (D).

Replacement

1. Align the two hooks (R) on the replacement bottom cover (D) (see Figure 4-63 on page 190).
2. Install the four hook screws (O) on to the two hooks (R) and the bottom cover (D).
3. Install the two hook plates (Q) on to the four hook screws (O).
4. Install the four washers (P) and nuts (P) to attach the four hook screws (O) to the bottom cover.

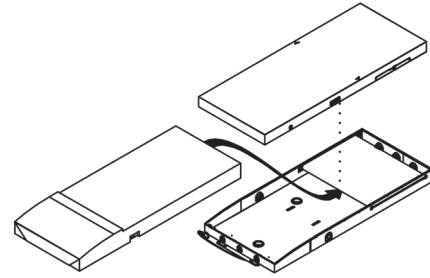
**CAUTION:**

Caution—To prevent damage to the x-ray sleeve, gently pull both sides of the bottom cover on to the mattress core assembly.

- Put the MCM assembly (E) and mattress core assembly (M) into the bottom cover (D).

or

If the bottom cover (D) has an x-ray sleeve, fold the MCM assembly (E) over the foot end of the mattress core assembly (M). Carefully pull on each side of the bottom cover to slide the mattress core assembly under the x-ray sleeve on the bottom cover.



- Connect the barb fittings (H) to the air intake hoses (G) on the blower enclosure (K). Make sure the fittings are fully inserted into the hoses.
- Start at Step 12 on page 4-189 and do the removal procedure in reverse order. Make sure of these:

CAUTION:

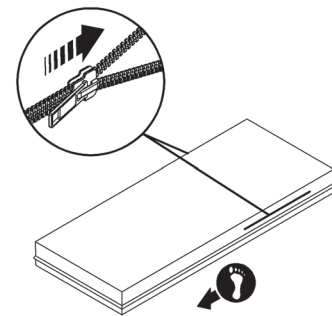
Caution—The cable tie should not have any sharp edges or equipment damage could occur.

- Sleeve cable tie (209657)**—to use a cable tie gun to tighten the cable tie around the cable and bottom cover sleeve. Set the cable tie gun to medium to high tension. Make sure there are not sharp edges on the cable ties.

WARNING:

Warning—Make sure the cable tie is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- Cable tie (212042)**—to install the cable tie to the top and bottom cover zipper tabs. Do not trim the cable tie.
- X-ray sleeve**—if applicable, make sure the x-ray sleeve zipper is closed on both sides of the mattress.



MCM Assembly

- Make sure the brake is set.
- Adjust the bed to a comfortable working height.
- Fully extend the foot section of the bed.

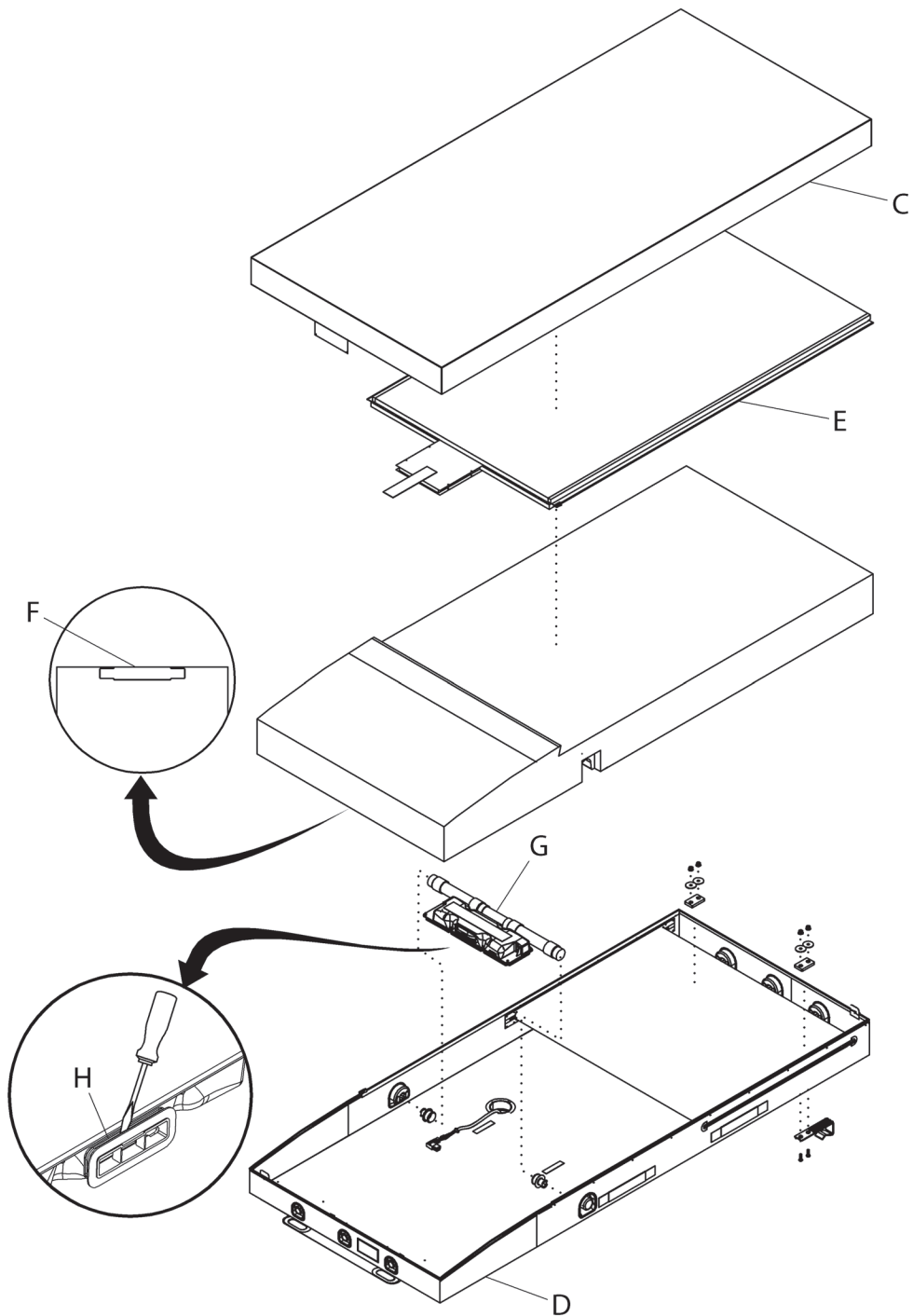
WARNING:

Warning—Failure to remove power from the bed could cause injury or equipment damage.

- Unplug the bed.
- Remove the footboard from bed.

6. At the foot end of the mattress, remove the cable tie closure from the top cover and bottom cover zipper tabs.
7. Unzip and remove the top cover (C) from the bottom cover (D) (see Figure 4-64 on page 4-194).
8. Unzip the MCM assembly (E) from the bottom cover (C).
9. Remove the attachment plate (F) from the bottom cover (C).
10. Lift the foot end of the mattress and unfasten the MCM assembly (E) from bottom of the blower enclosure (G).

Figure 4-64. Mattress Top and Bottom Cover (with X-Ray Sleeve)



193588_7_488

11. Insert the screwdriver into the clip on the blower enclosure (G) to remove the MCM assembly connector (H) from the blower enclosure (G).
12. Remove the MCM assembly (E).

Replacement

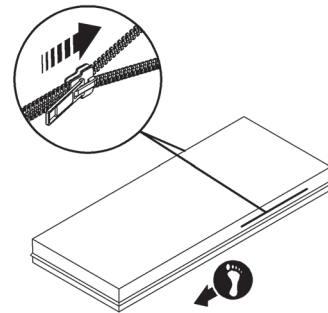
1. Do the removal procedure in reverse order. Make sure of these:
 - **MCM assembly**—the MCM assembly connector is attached to the blower enclosure. Listen for a click. Verify it is connected by pulling on the hook-and-loop fastener strap. Then attach the hook-and-loop fastener strap to the blower enclosure.
 - **Blower enclosure**—the blower enclosure is secured to the foam by the hook-and-loop fastener and there is no fire barrier between the hook-and-loop fastener.



WARNING:

Warning—Make sure the cable tie closure is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- **Cable tie (212042)**—to install the cable tie on to the top and bottom cover zipper tabs. Do not trim the cable tie.
- **X-ray sleeve**—if applicable, make sure the x-ray sleeve zipper is closed on both sides of the mattress.



4

2. Do the applicable “Function Checks” on page 2-1.

Air System Assembly

1. Make sure the brake is set.
2. Adjust the bed to a comfortable working height.
3. Fully extend the foot section of the bed.

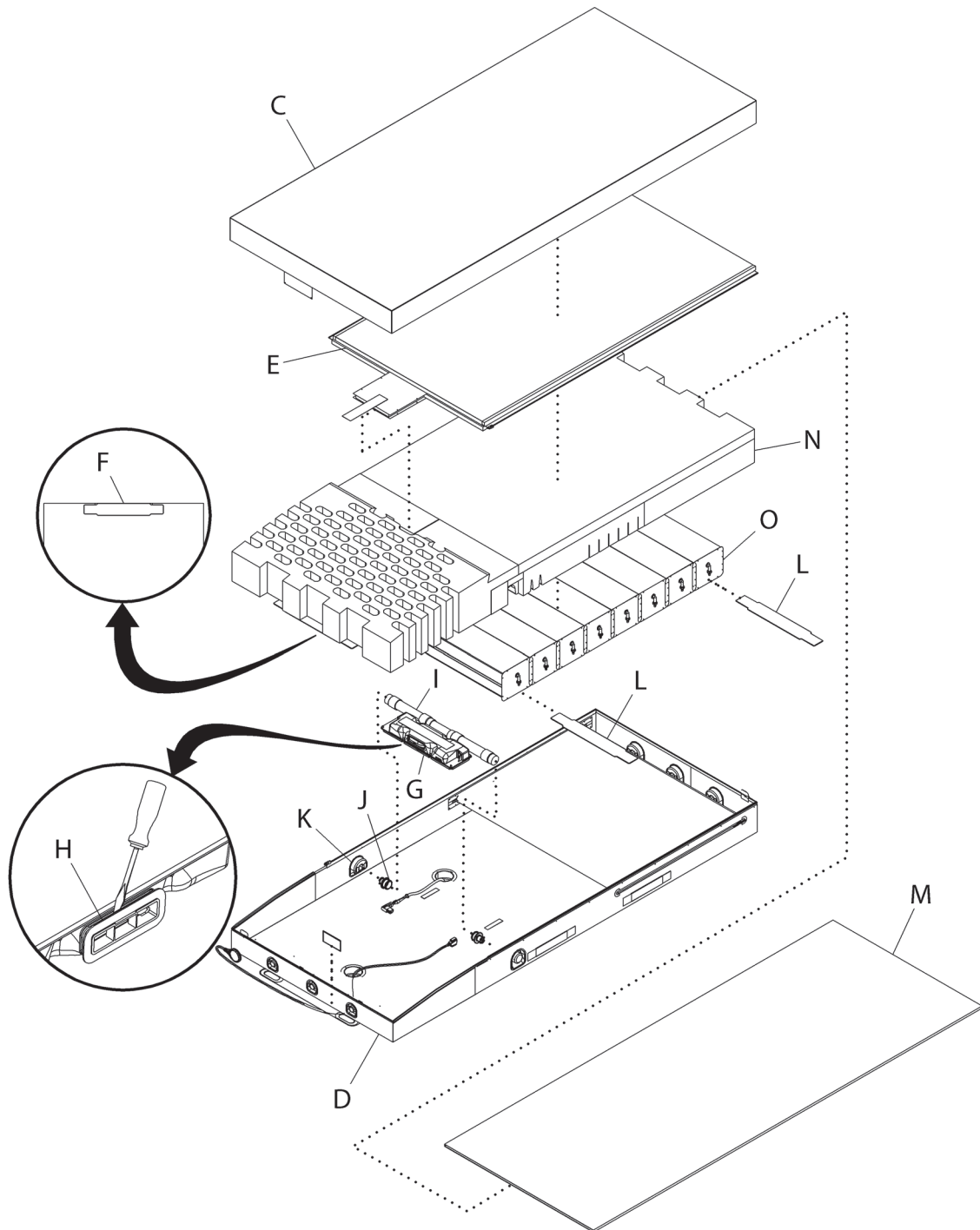


WARNING:

Warning—Failure to remove power from the bed could cause injury or equipment damage.

4. Unplug the bed.
5. Remove the footboard from the bed.
6. At the foot end of the mattress, remove the cable tie closure from the top cover (C) and bottom cover (D) zipper tabs (see Figure 4-65 on page 4-196).

Figure 4-65. Air System Assembly



193588_7_489

7. Unzip and remove the top cover (C) from the bottom cover (D).
8. Unzip the MCM assembly (E) from the bottom cover (D).
9. Remove the attachment plate (F) from the bottom cover (D).
10. Lift the foot end of the mattress and unfasten the MCM assembly (E) from bottom of the blower enclosure (G).
11. Insert the screwdriver into the clip on the blower enclosure (G) to remove the MCM assembly connector (H) from the blower enclosure.
12. Remove the MCM assembly (E).
13. Remove the air intake hoses (I) from the two barb fittings (J) in the bottom cover vents (K).
14. Remove the two attachment plates (L) from the bottom cover (D).
15. If your bottom cover has an x-ray sleeve, carefully slide the mattress out from x-ray sleeve.
16. Move the fire barrier (M) to the head end of the mattress.
17. Lift the foam assembly (N) and remove the air system assembly (O).
18. Remove the two attachment plates (L) from the bottom of the air system assembly (O).

Replacement

1. Install the two attachment plates (L) on to the replacement air system assembly (O) (see Figure 4-65 on page 4-196).
2. Install the air system assembly (O) into the foam assembly (N).
3. Install the fire barrier (M) over the air system (O) and foam assembly (N). Make sure the pre-cut holes in the fire barrier align with the cutouts in the foam assembly.



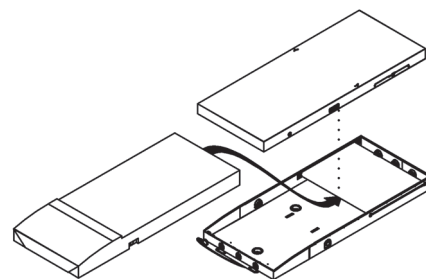
CAUTION:

Caution—If the bottom cover has an x-ray sleeve, to prevent damage to the x-ray sleeve, gently pull both sides of the bottom cover on to the mattress core assembly.

4. Put the MCM assembly (E) and mattress assembly (M, N, and O) into the bottom cover (D).

or

If the bottom cover has an x-ray sleeve, set the MCM assembly (E) aside, and carefully pull on each side of the bottom cover (D) to slide the mattress assembly (M, N, and O) under the x-ray sleeve on the bottom cover (D).



NOTE:

Make sure the foam assembly is fully installed at the head-end corners of the bottom cover.

5. Install the two attachment plates (L) on to the bottom cover (D).

NOTE:

If the bottom cover has an x-ray sleeve, make sure the x-ray sleeve lays flat on the mattress core assembly.

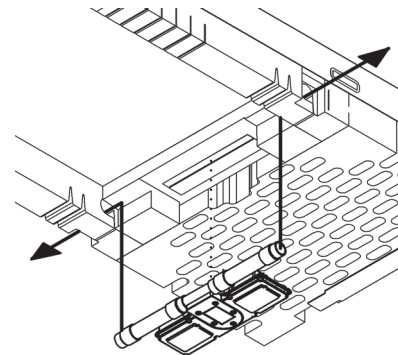
6. Connect the barb fittings (J) to the air intake hoses (I) on the blower enclosure (G). Make sure the fittings are fully inserted into the hoses.

7. Start at Step 13 and do the removal procedure in reverse order. Make sure of these:
 - **Barb fittings**—the barb fittings are fully inserted into the intake hoses on the blower enclosure.
 - **MCM assembly**—the MCM assembly connector is attached to the blower enclosure. Listen for a click. Verify it is connected by pulling on the hook-and-loop fastener strap. Then attach the hook-and-loop fastener strap to the blower enclosure.

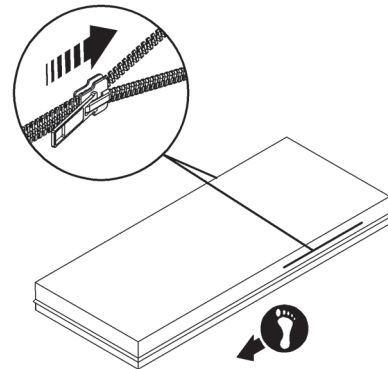
**CAUTION:**

Caution—The cable tie should not have any sharp edges or equipment damage can occur.

- **Sleeve cable tie**—use the cable tie gun to tighten the cable tie around the cable and bottom cover sleeve. Set the cable tie gun to medium to high tension. Make sure there are not sharp edges on the cable tie.
- **Blower enclosure**—the blower enclosure is secured to the foam by the hook-and-loop fastener and there is no fire barrier between the hook-and-loop fastener.
- **Air intake hoses**—the air intake hoses are inserted into cutouts in the foam assembly.



- **X-ray sleeve**—if applicable, make sure the x-ray sleeve zipper is closed on both sides of the mattress.

**WARNING:**

Warning—Make sure the cable tie closure is installed on the top and bottom cover zipper tabs. Failure to do so could cause injury or equipment damage.

- **Cable tie (212042)**—to install the cable tie on to the top and bottom cover zipper tabs. Do not trim the cable tie.
8. Do the applicable “Function Checks” on page 2-1.

4.63 pro+ Non-Integrated Mattress (P7924) Components—Replacement

NOTE:

For replacement procedures for the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

4.64 Experience Pod® Device Components—Replacement

Tools: 2.5 mm hex wrench Small screwdriver

REMOVAL

1. Make sure the brake is set.



WARNING:

Warning—Failure to unplug the bed could cause injury or equipment damage.

2. Unplug the bed.
3. Disconnect the Experience Pod® Device cable (F) from its port on the power supply (see Figure 4-66 on page 4-201).
4. Do as applicable:

Upper or Lower Pivot Cap—gently pry the cap (A) free from the frame assembly (B) (see Figure 4-66 on page 4-201).

NOTE:

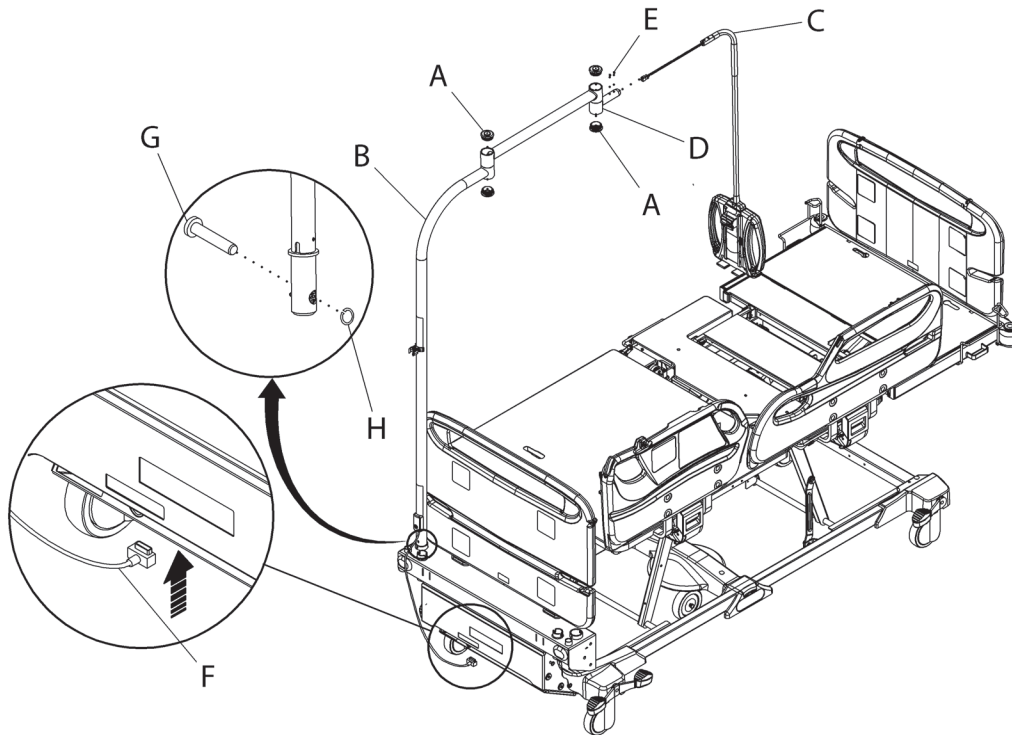
The bumper plug can be pulled free from the upper pivot cap if necessary.

Pod Housing Assembly

- a. Remove the lower pivot cap (A) (see the procedure above) that is closer to the pod housing assembly (C) to get access to the Experience Pod® Device cable connector (D).
- b. Disconnect the cable connector (D).
- c. Remove the two screws (E) that attach the pod housing assembly (C) to the frame assembly (B).
- d. Pull the top fitting of the pod housing assembly (C) out from the frame assembly (B).

Frame Assembly

- a. Remove the pod housing assembly (C) from the frame assembly (B) (see the procedure above).
- b. **P7926A07**—remove the frame retaining ring (G) and pin (H) from underneath the mounting location on the bed frame.
- c. Lift the frame assembly (B) out from its opening on the bed.

Figure 4-66. Experience Pod® Device

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REPLACEMENT

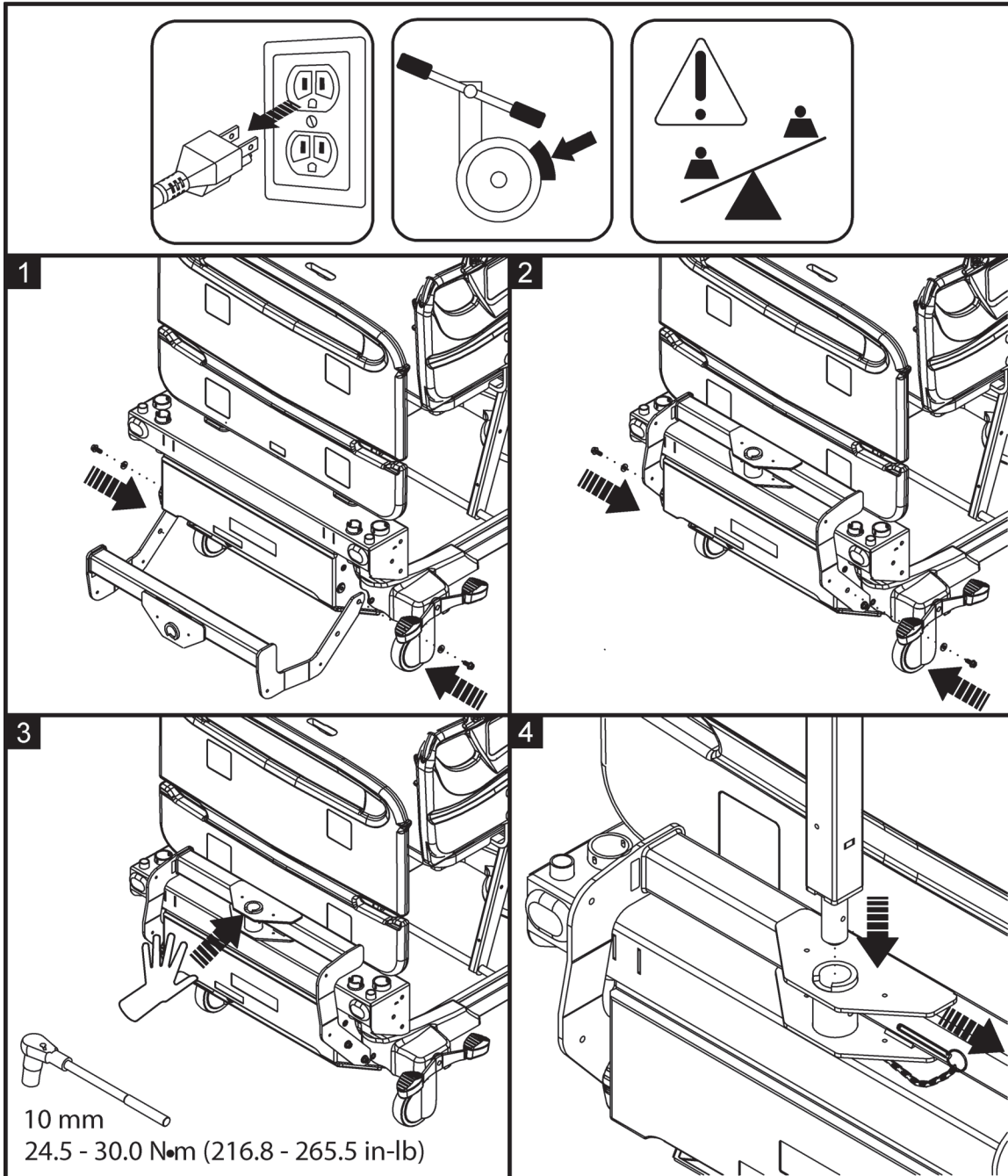
Do the applicable procedure in reverse order. Make sure of these:

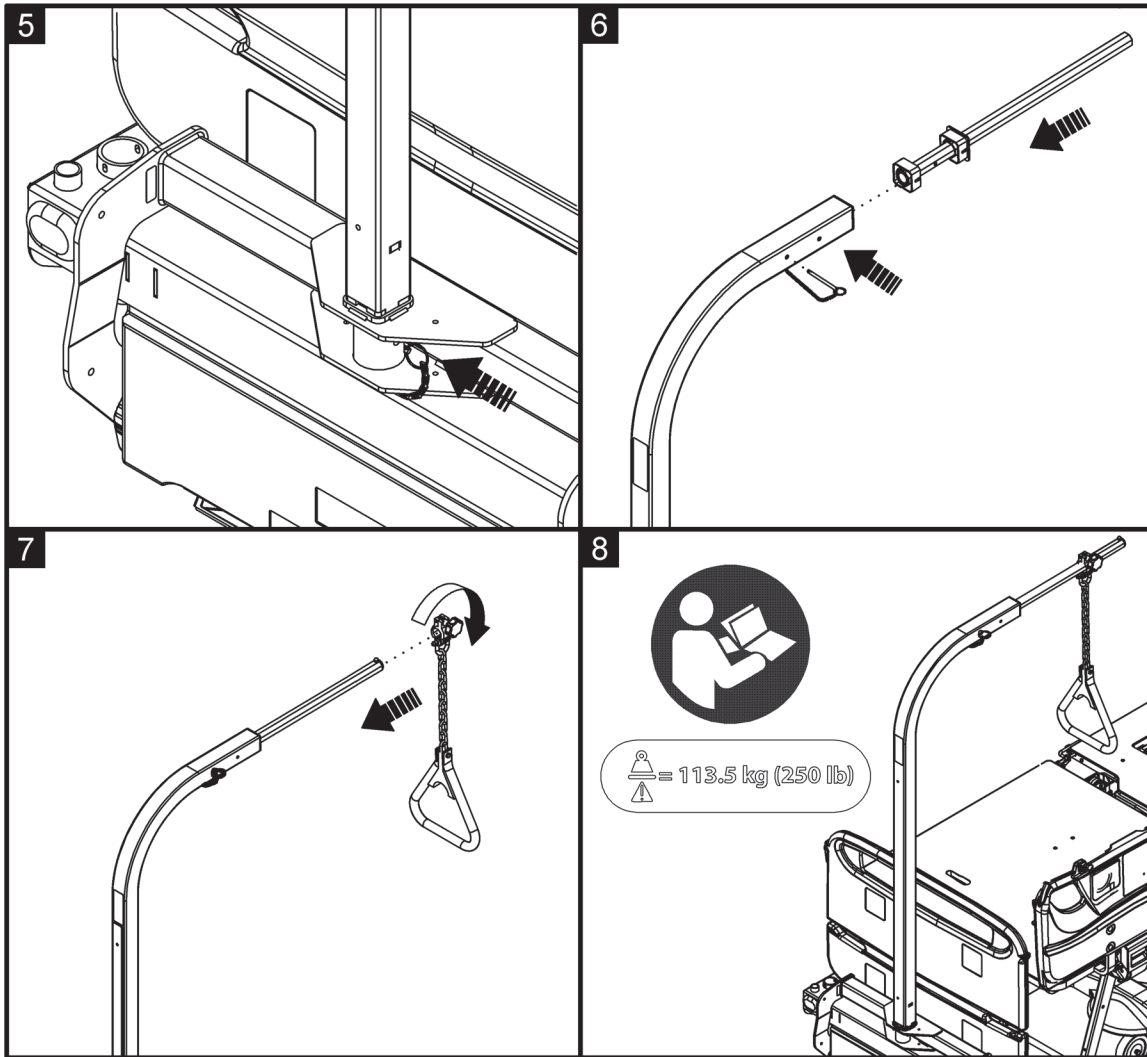
- **Pod housing assembly (C)**—make sure all of its controls operate correctly.
- **Pivot cap (A)**—the cap is secure in its opening.
- **Frame assembly (B)**—the frame assembly is secure in its opening.
- **P7926A07**—the frame retaining ring (G) and clip (H) are securely installed.

4.65 Patient Helper (P7934A)—Installation

Tools: 10 mm hex wrench

INSTALLATION





4

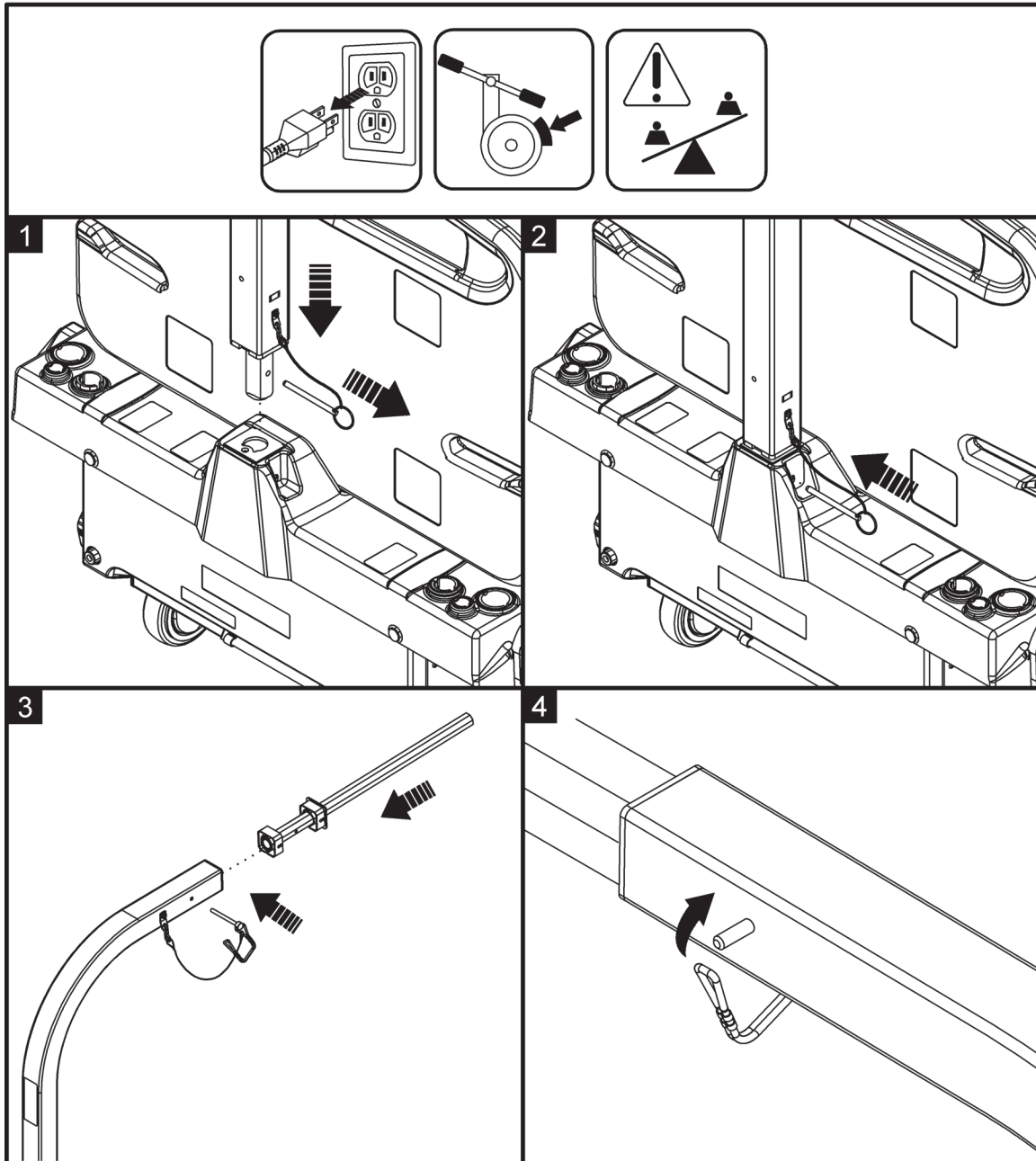
REMOVAL

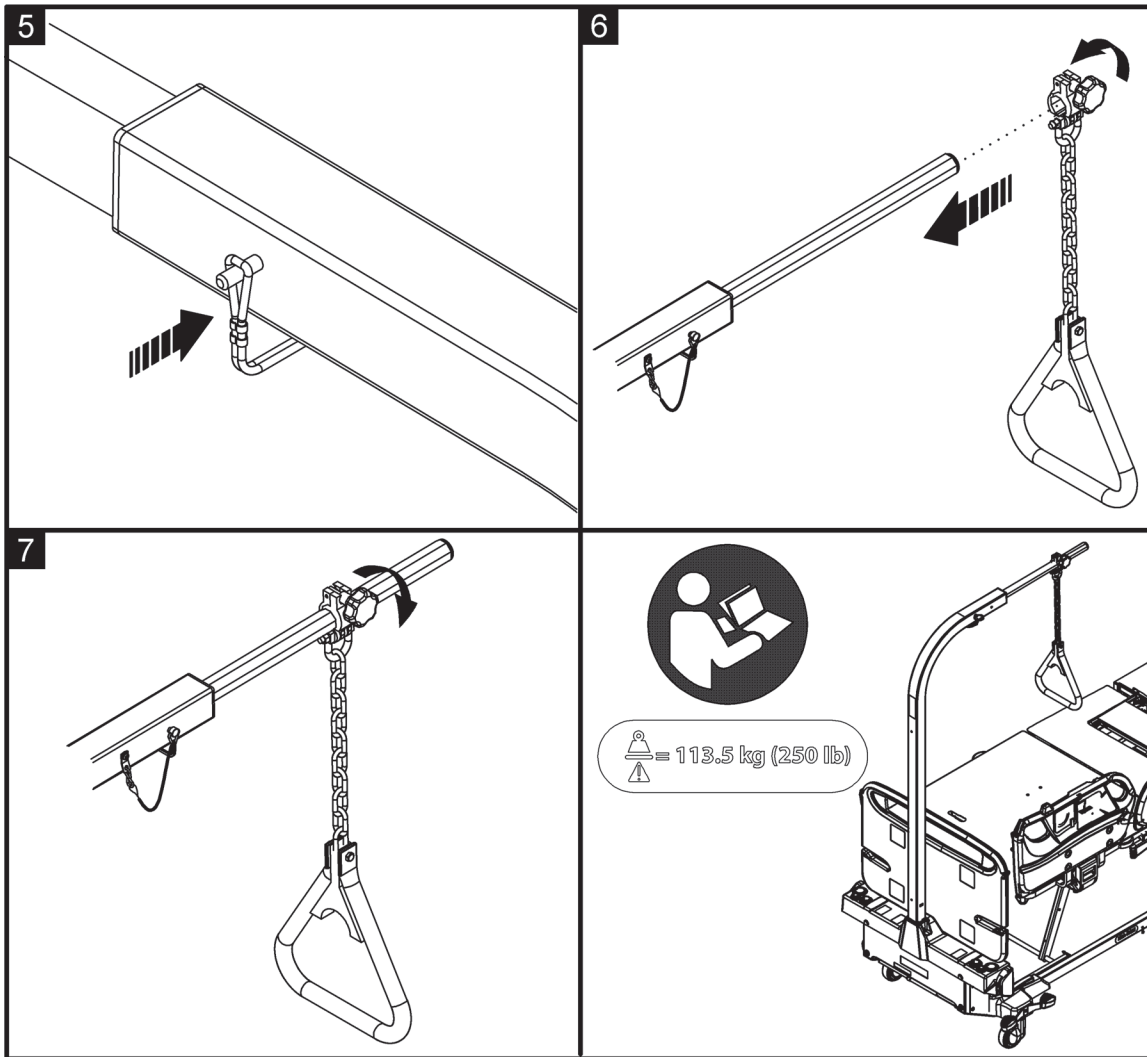
Do steps 1 through 7 of the installation procedure in reverse order.

4.66 Patient Helper (P7936A) Installation

Tools: None

INSTALLATION





4

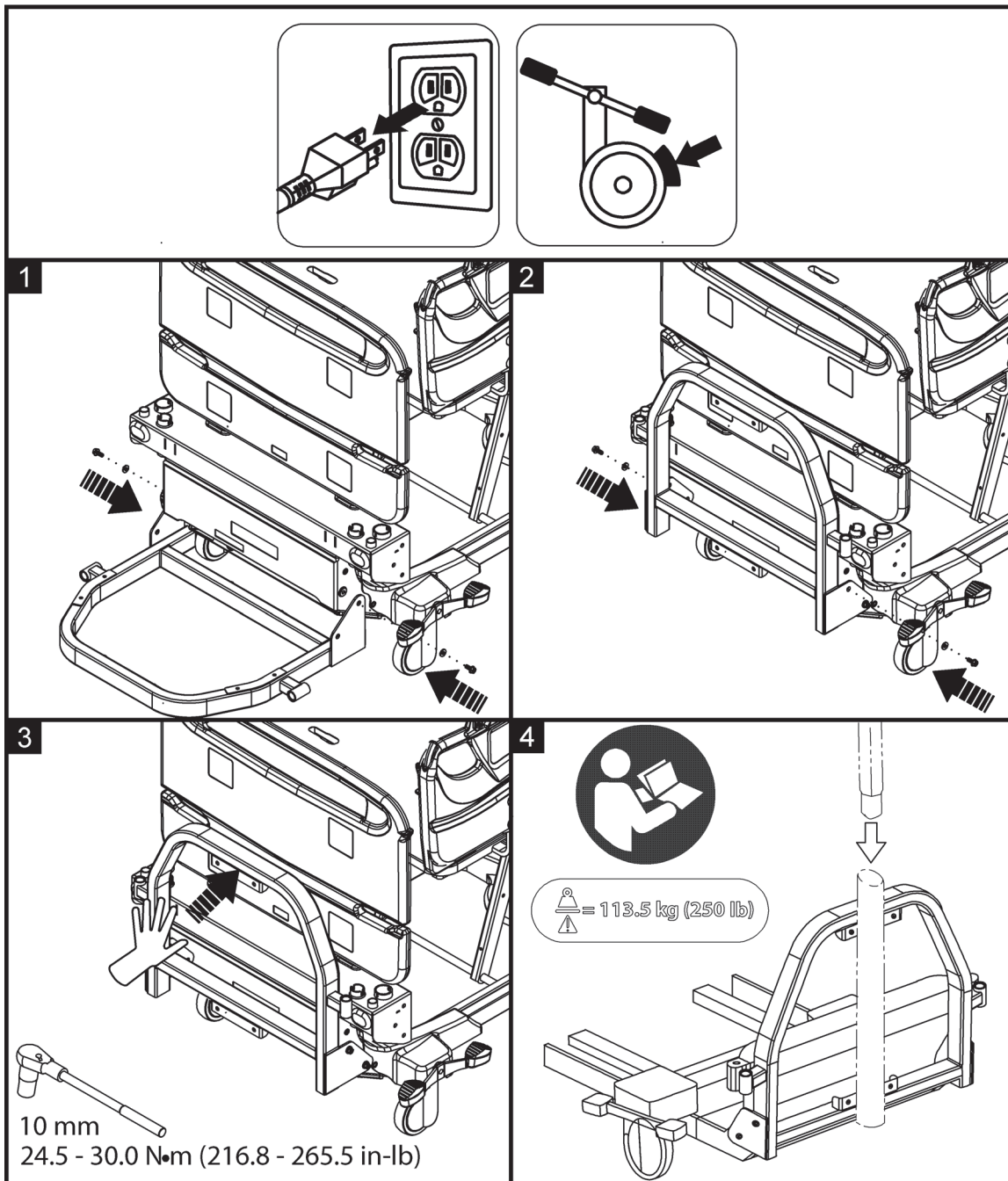
REMOVAL

Do steps 1 through 7 of the installation procedure in reverse order.

4.67 Patient Helper Support (P7928A)—Installation

Tools: 10 mm wrench

INSTALLATION



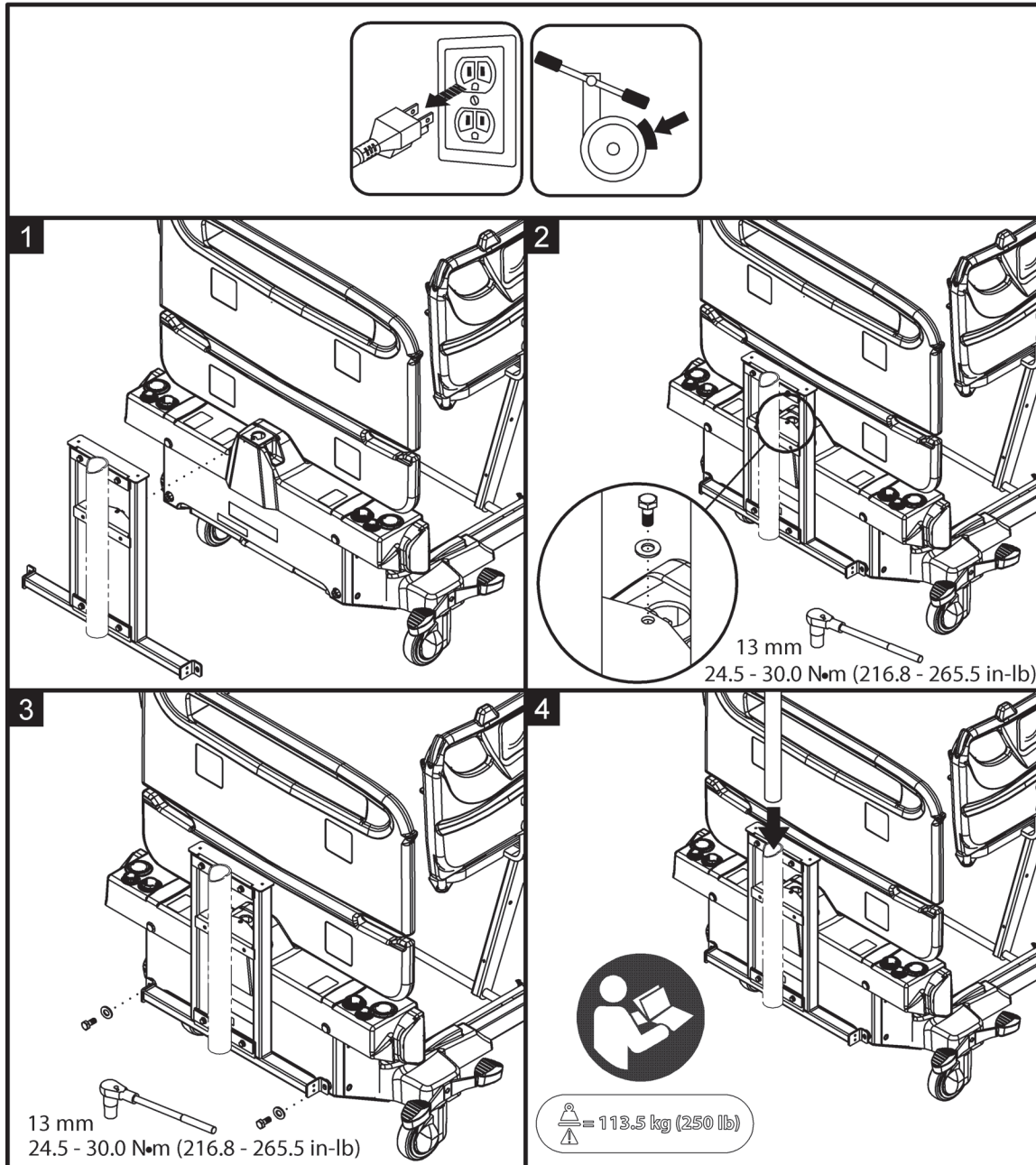
REMOVAL

Do steps 1 through 3 of the installation procedure in reverse order.

4.68 Patient Helper Support (P7938A)—Installation

Tools: 13 mm wrench

INSTALLATION



4

REMOVAL

Do steps 1 through 3 of the installation procedure in reverse order.

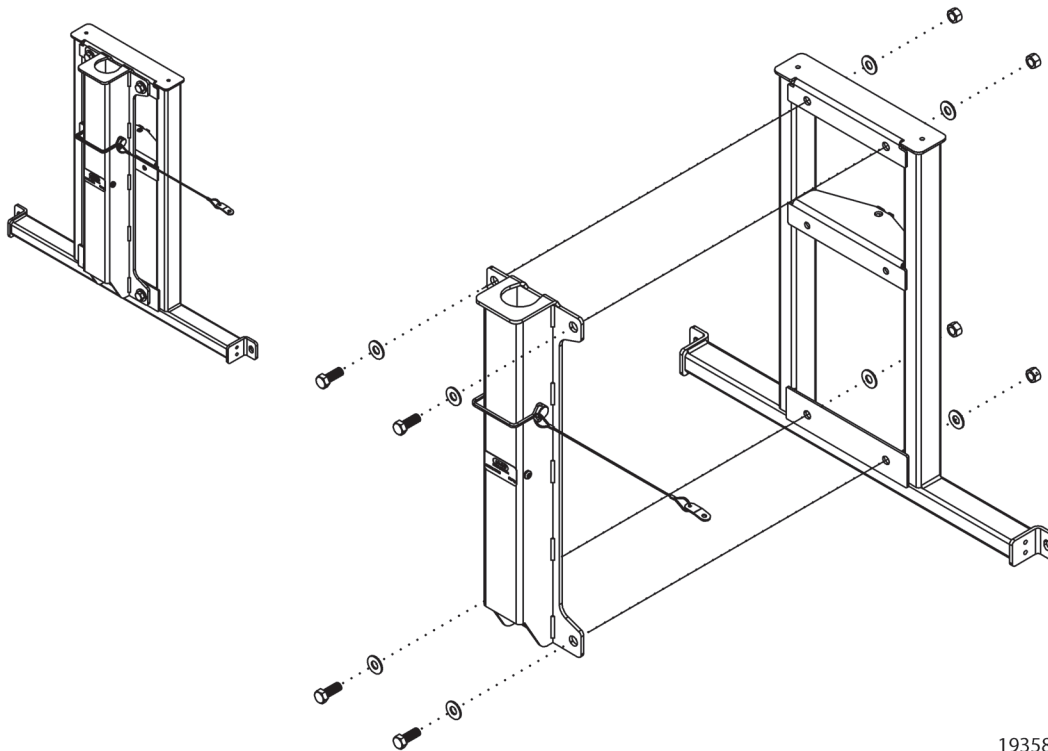
4.69 HD Patient Helper Mount (P7939A)—Installation

Tools: 9/16" and 5/8" wrenches

NOTES:

- The HD patient helper mount must be installed on the patient helper support (P7938A) before the support is installed on the bed.
- The patient helper support (P7938A) can fully support the HD patient helper mount.

INSTALLATION



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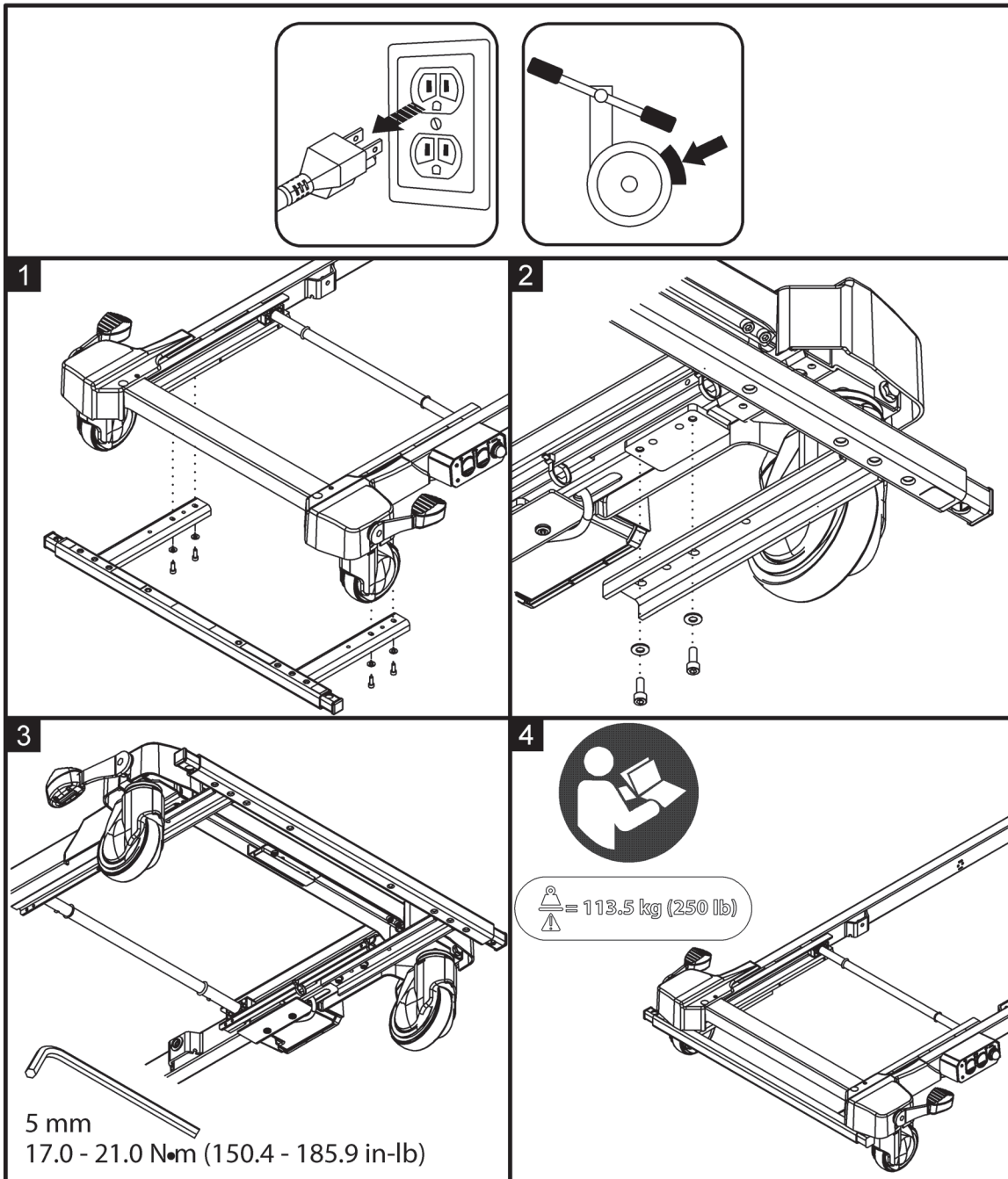
REMOVAL

Do the installation procedure in reverse order.

4.70 Traction Frame (P7927A)—Installation

Tools: 5 mm hex wrench

INSTALLATION



4

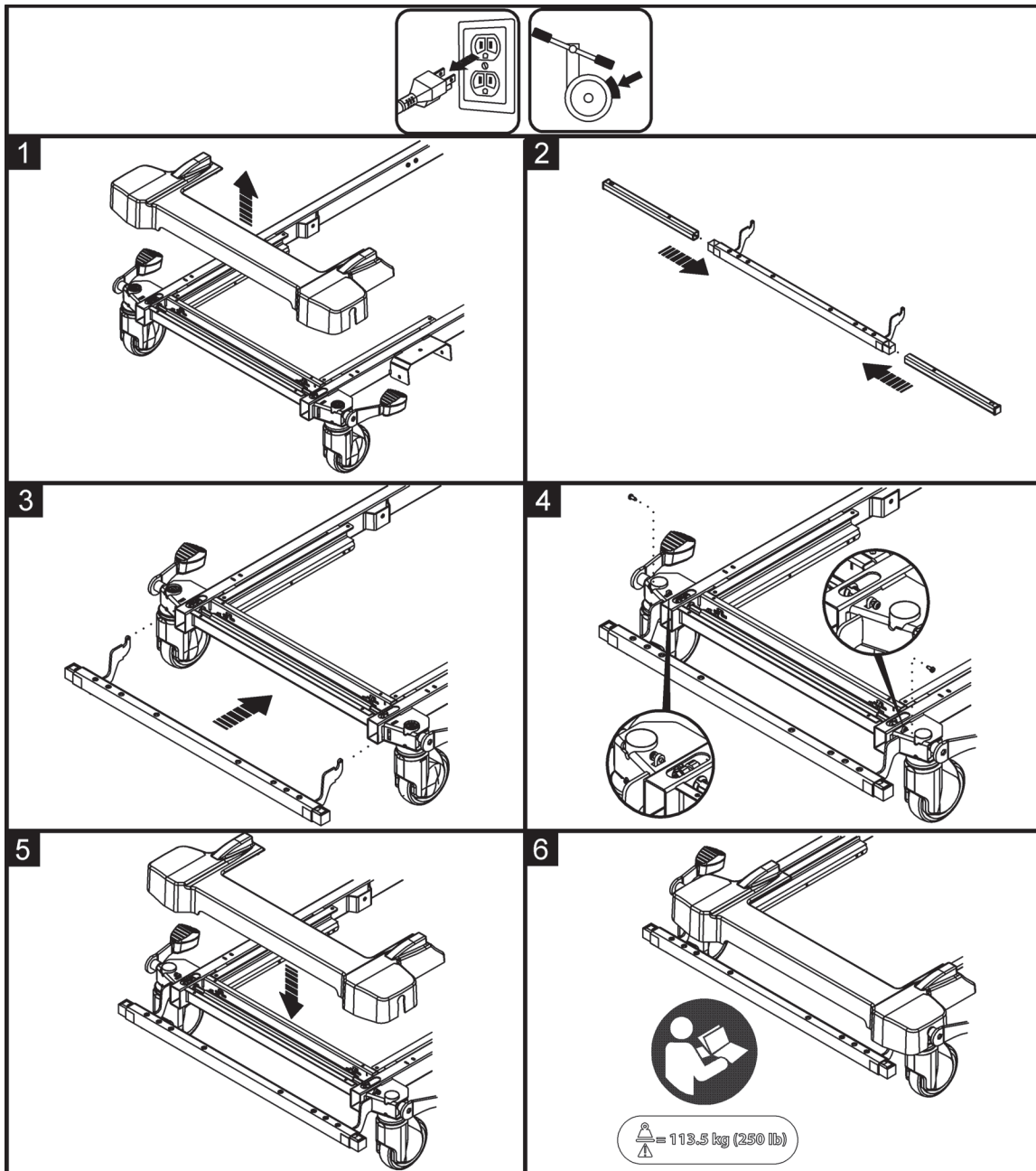
REMOVAL

Do steps 1 through 3 of the installation procedure in reverse order.

4.71 Traction Adapter (P7937A)—Installation

Tools: T25 Torx® screwdriver

INSTALLATION



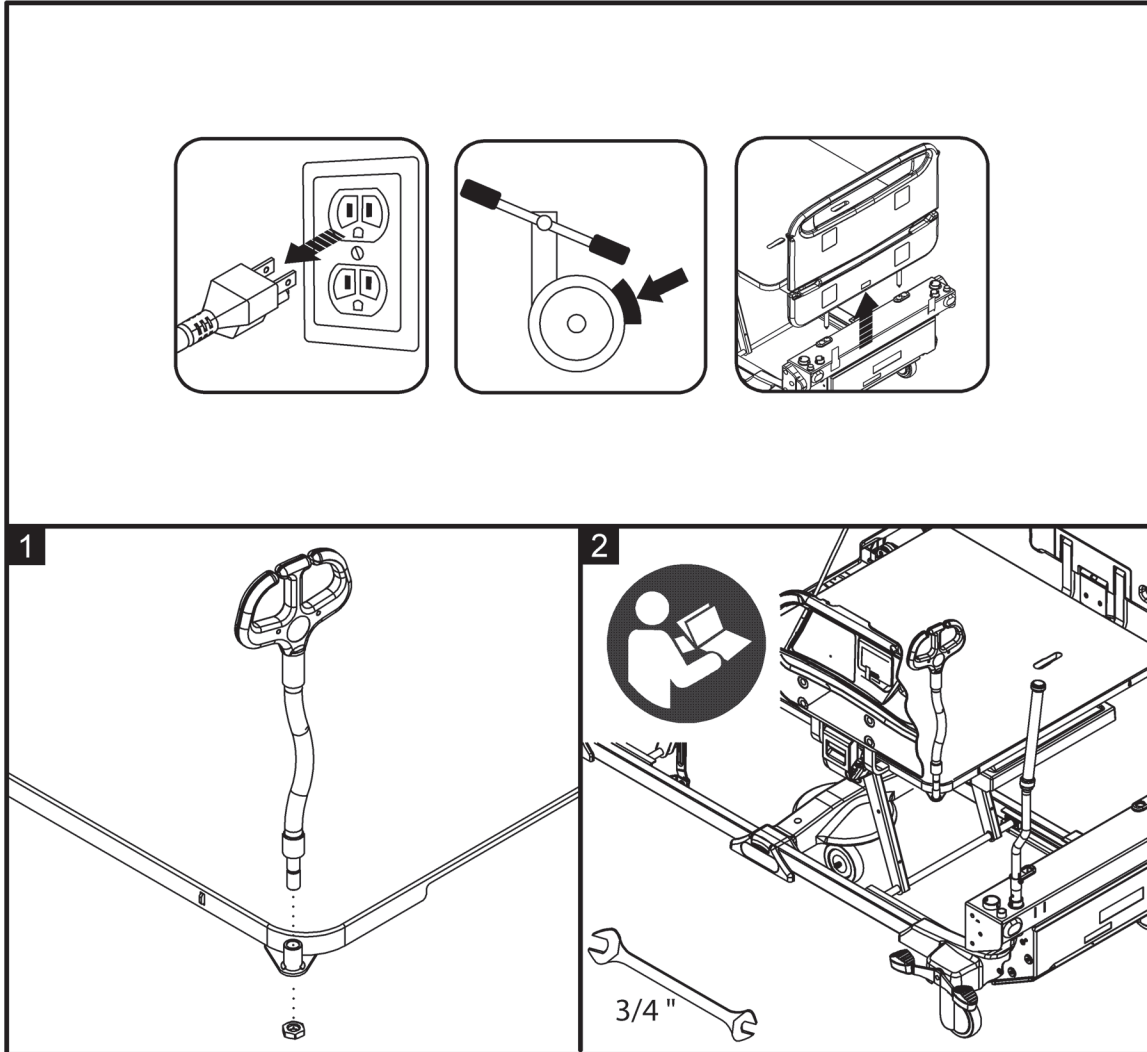
REMOVAL

Do steps 3 through 5 of the installation procedure in reverse order.

4.72 Line Manager (P7512A)—Installation

Tools: 3/4" wrench

INSTALLATION



REMOVAL

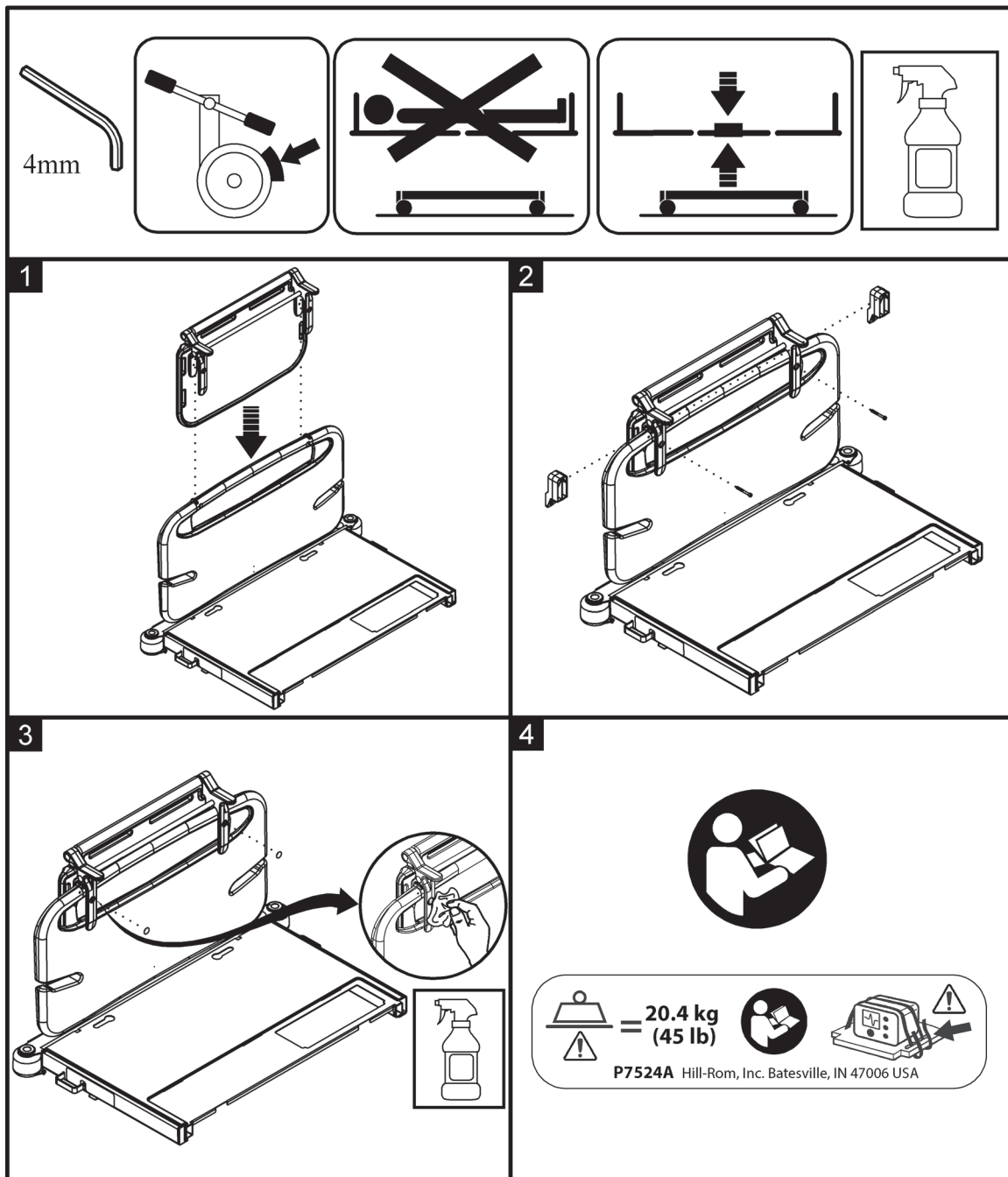
Do steps 1 and 2 of the installation procedure in reverse order.



4.73 Transport Shelf (P7524)—Installation

Tools: 4 mm hex wrench Alcohol-based cleaner Soft cloth

INSTALLATION



REMOVAL

Do steps 1 through 3 of the installation procedure in reverse order.

4.74 HR/RR Monitoring Sensor Replacement

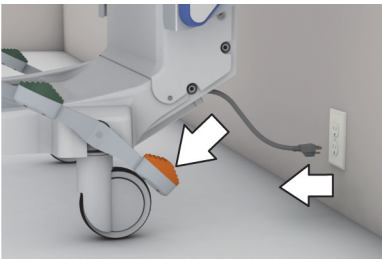
Tools: None

REMOVAL

NOTE:

The cable routing differs depending on your bed version. If your bed does not have the hole shown in Step 4, route the cable under the head deck panel.

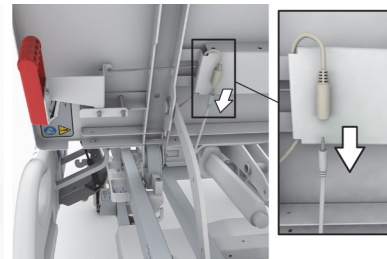
1.



2.



3.



4.



5.



4

REPLACEMENT

1. Make a note of the activation code on the new HR/RR monitoring sensor, and then do Step 3 through Step 5 of the Removal steps in reverse order.
2. Plug the bed in.
3. Raise the siderails.
4. Lower the bed's head section.



CAUTION:

Caution—Do not to remove the protective tab from the HR/RR monitoring sensor until the Heart and Respiration Rate Monitoring System has been activated through the GCI. To do so could reduce the life of the sensor.

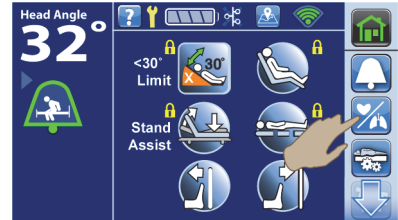


5. Do as applicable per facility request:
 - If the facility does not want to activate the HR/RR Monitoring System at this time, unfold the head end of the mattress, and connect it to the bed. The replacement is complete.

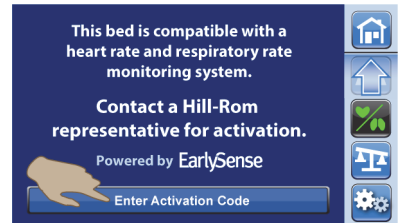
- If the facility requests that the HR/RR Monitoring System be activated, determine the bed's software version (see page 4-59). Then, go to the applicable section:
 - **Version earlier than 1.30**, go to "HR/RR Activation—Software Version 1.29 and Earlier" on page 4-214.
 - **Version 1.30 and later**, go to "HR/RR Activation—Software Version 1.30 and Later" on page 4-216.

HR/RR Activation—Software Version 1.29 and Earlier

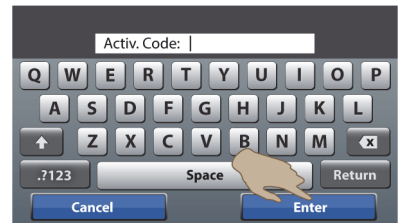
6. At the GCI, press the **HR/RR** menu control.



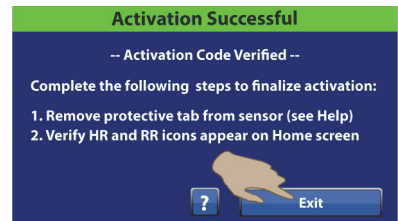
7. Press **Enter Activation Code**.



8. Enter the code, and then press **Enter**.



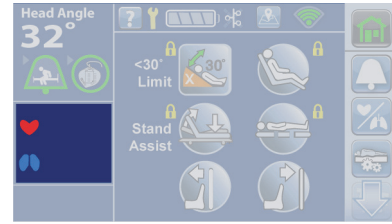
9. Follow the on-screen instructions as noted below, and then press **Exit**.



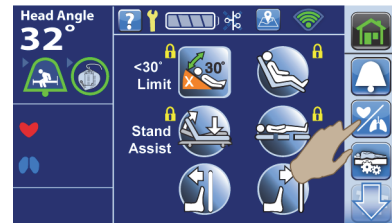
- (1.) Remove the protective tab.



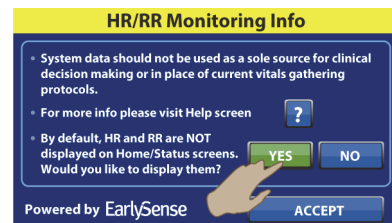
- (2.) Verify the HR and RR icons show on the Home screen.



10. Unfold the head end of the mattress, and connect it to the bed.
11. Do as follows to make sure the HR/RR Monitoring System operates correctly:
 - a. Press the **HR/RR** menu control.



- b. Press **Yes** to show the HR and RR on the Home and Status screens.



- c. The HR and RR screen shows. Press the **Home** menu control.

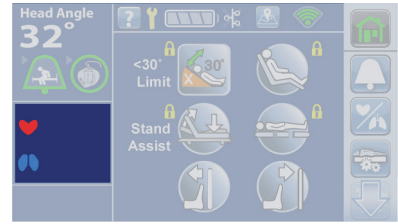


- d. At the Home screen, make sure dashes show next to the HR and RR icons.

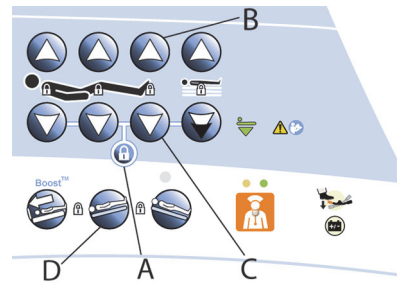


12. Zero the scale for a new patient (reset the bed):
 - Standard (NA) Scale—see “Zero the Standard (NA) Scale with or without Resetting the Bed” on page 4-13.
 - EN 45501 Class Scale (OIML)—see “Zero the EN 45501 Class Scale (OIML) with or without Resetting the Bed” on page 4-25.

- e. At the Home screen, make sure dashes no longer show next to the HR and RR icons.



13. Reset the bed as follows:
 - a. Unplug the bed.
 - b. Press and hold the **Lockout** control (A) until you hear a beep (approximately 20 seconds). This puts the bed in Service mode.
 - c. Press and hold these controls at the same time until you hear a beep: **Foot Up** (B), **Foot Down** (C), and **Trendelenburg** (D). The bed should shut down within 5 seconds after you release the controls.
 - d. Plug the bed in.



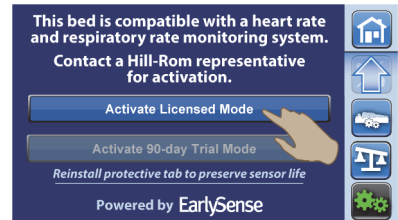
Caregiver Control Panel

HR/RR Activation—Software Version 1.30 and Later

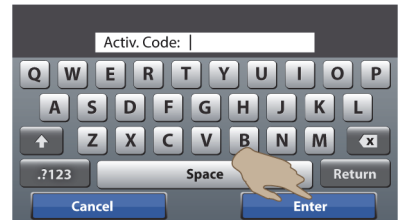
1. At the GCI, press the **HR/RR** menu control.



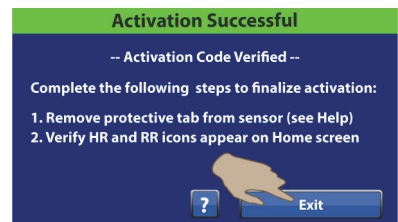
2. Press **Activate Licensed Mode**.



3. Enter the code, and then press **Enter**.



4. Follow the on-screen instructions as noted below, and then press **Exit**.



- (1.) Remove the protective tab.



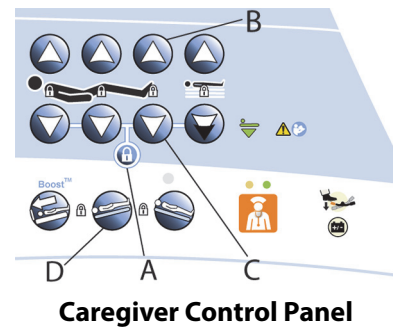
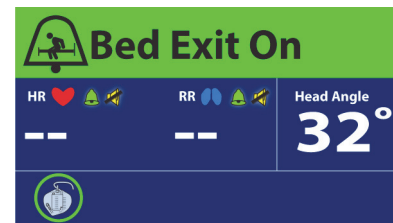
- (2.) Verify the HR and RR icons show on the Home screen.

NOTES:

- "0" may show next to the HR and RR icons for up to 30 seconds. Then, dashes should show.
- The HR/RR values will show by default when a patient is in the bed. If the facility requests that the values do not show, see "Turn Off the HR/RR Display—Software Version 1.30 and Later" on page 4-218.
- After approximately five minutes, the GCI will default to the Status screen.



5. Unfold the head end of the mattress, and connect it to the bed.
6. Reset the bed as follows:
 - a. Unplug the bed.
 - b. Press and hold the **Lockout** control (A) until you hear a beep (approximately 20 seconds). This puts the bed in Service mode.
 - c. Press and hold these controls at the same time until you hear a beep: **Foot Up** (B), **Foot Down** (C), and **Trendelenburg** (D). The bed should shut down within 5 seconds after you release the controls.
 - d. Plug the bed in.
7. Check the HR/RR in-room alarm as follows:
 - a. Put the brake/steer pedal in the level position.
 - b. Make sure the alarm sounds.

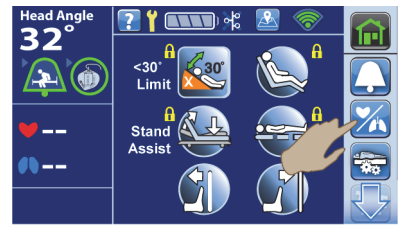


NOTE:

The HR/RR Monitoring System uses the same speaker as the Brake Not Set Alert for the in-room alarm.

Turn Off the HR/RR Display—Software Version 1.30 and Later

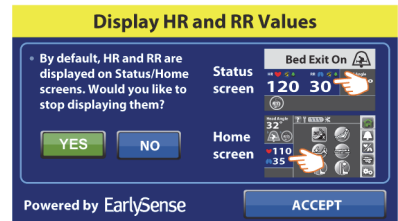
1. Press the **HR/RR** menu control.



2. Press **Display**.



3. Press **Yes**, and then **Accept**.



4. Press the **Home** menu control, and make sure dashes no longer show next to the HR and RR icons.



4.75 Obstacle Detect® System Replacement

Tools: Antistatic strap Small screwdriver
String, approximately 10' (305 cm)

SETUP

1. Set the brake.
2. Raise the bed to its highest position.



WARNING:

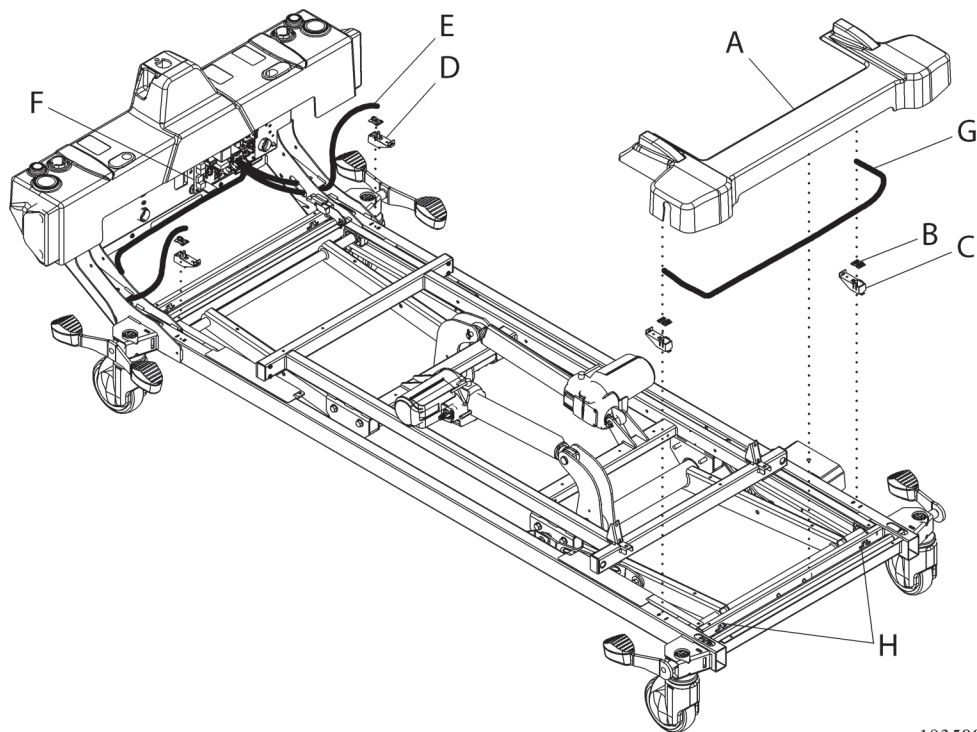
Warning—Failure to **remove all power** from the bed could cause injury or equipment damage.

3. Do the Removal steps of Procedure 4.29 on page 4-63 **to remove all power** from the bed.
4. If you are replacing foot-end components or an Obstacle Detect® cable, remove the foot base cover (A) (see Figure 4-67 on page 4-219).

NOTE:

To remove the cover, pull the lower edge of the cover outward while you lift the cover up.

Figure 4-67. Obstacle Detect® System



193588_5_408



CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

5. Put on the antistatic strap.

6. Go to the applicable section:
 - “Sensor Mount or P.C. Board—Removal” on page 4-220
 - “Head-End or Foot-End Cable—Removal” on page 4-220

Sensor Mount or P.C. Board—Removal

1. Disconnect the Obstacle Detect® cable(s) from the P.C board (B) on the sensor mount (C or D).

NOTE:

The patient-left, foot-end sensor mount has two cables connected to the mount.

2. Remove the P.C. board (B) from the sensor mount (C or D).
3. **Sensor mount**—manually squeeze and pull (or use the small screwdriver to pry) the sensor mount (C or D) out from the bed frame.

Head-End or Foot-End Cable—Removal

Head-End Cable

- a. Disconnect the head-end cable (E) from connector P6 on the BCB (F).
- b. Disconnect the head-end cable (E) from the P.C. board (B) on both head-end sensor mounts (D) and foot-left, sensor mount (C).
- c. Tape the string to the foot-left connector on the head-end cable (A). (This will help when you need to route the cable from the head end to the foot end.)
- d. From the head end of the patient-left base tube, pull the head-end cable (A) with string out from the tube.
- e. Remove the head-end cable (A) from the bed.

Foot-End Cable

- a. Disconnect the foot-end cable (G) from the P.C. board (B) on each foot-end sensor mount (C).
- b. Remove the foot-end cable (G) from the T-slots (H) in foot-end cross channel.

REPLACEMENT



CAUTION:

Caution—Failure to wear an antistatic strap could cause component damage.

1. Put on the antistatic strap.
2. Do the removal procedure in reverse order.
3. Do the “Function Checks” on page 2-1.

4.76 WatchCare® Incontinence Management System—Component Replacement

Tools:	Wire cutters	Alcohol-based cleaner	Soft cloth
	Antistatic strap	T25 Torx® short and regular screwdrivers	
	Needle nose pliers	Dry smart pad	

SETUP

1. Make sure the brake is set.
2. Remove the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
3. Raise the bed to its highest position.
4. Go to the applicable procedure:
 - “Removal—Reader and Power Cable” on page 4-221
 - “Removal and Replacement—Antenna” on page 4-226

Removal—Reader and Power Cable



CAUTION:

Caution—During this procedure, you will be working with P.C. boards. To prevent damage to the P.C. boards, wear an antistatic strap.

1. Raise the siderails.
2. Raise the head section to its highest position.
3. Raise the knee section to its highest position.



WARNING:

Warning—Failure to unplug the bed could cause injury or equipment damage.

4. Unplug the bed.
5. Remove the two screws that attach the MCB cover to the MCB chassis, and remove the cover.



6. Make sure you have the antistatic strap on.



WARNING:

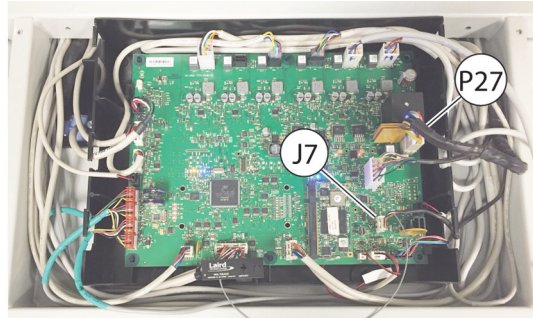
Warning—Failure to **disconnect the BCB/MCB power cable** from the MCB could cause injury or equipment damage.

7. Disconnect the BCB/MCB power cable from P27 on the MCB.

NOTE:

It could take up to 5 minutes for the MCB to power down.

8. Make sure all power is removed from the bed. Then disconnect the power cable from J7 on the MCB.



9. Free the WatchCare® power cable from its routing to the reader.
10. Near the reader, remove the white cable tie that holds the WatchCare® power cable with the other cables on to the bed.



11. Do as applicable for your replacement part:

Reader

- a. Remove the two screws that attach the reader to the bed. Then, remove the reader with power cable from the bed.



- b. Remove the heat shrinks from the antenna cable connections.



- c. Disconnect the antenna-reader cables from the antenna cables.
- d. Connect the antenna cables to the antenna-reader cables that are attached to the **new** reader.

- e. Put the insulated tape over the cable connections.
- f. Go to “Replacement—Reader and Power Cable” on page 4-224.

Power Cable

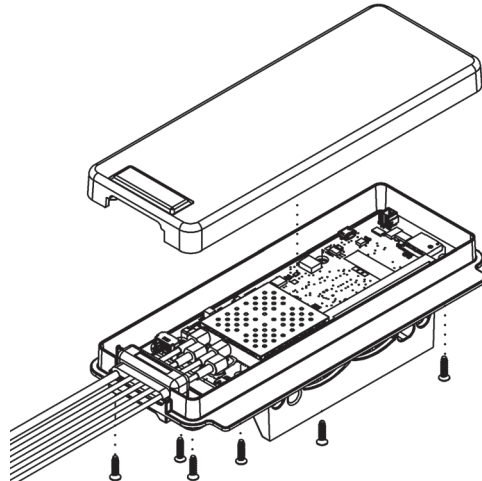
CAUTION:

To prevent equipment damage, obey the **cautions** below:

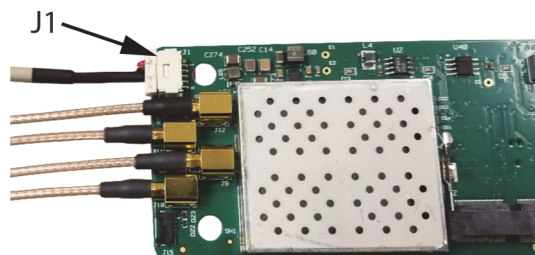
- **Caution**—The antennas are attached to the reader. When you remove the reader, set it in a safe location on the bed so that the reader and its antenna connections do not get damaged.
 - **Caution**—The coaxial cable connections on the outside of the reader are fragile and should not be flexed or kinked. Be careful when you remove and replace the reader. Poor or no system performance could occur if the coaxial cable connections are damaged.
- a. Be careful with the reader and its antenna connections as you remove the two screws that attach the reader to the bed.



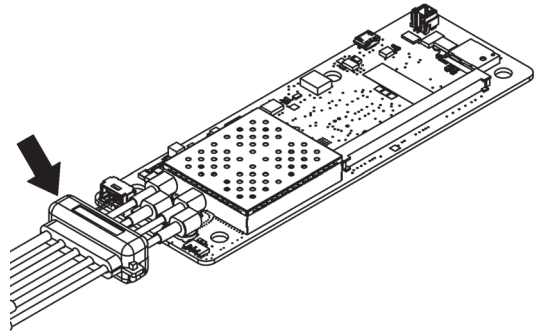
- b. Set the reader in a safe location on the bed.
- c. Remove the six screws from the bottom cover of the reader.
- d. Make sure you have the antistatic strap on.
- e. Remove the P.C. board from the reader.
- f. Remove the gasket from around the cables.



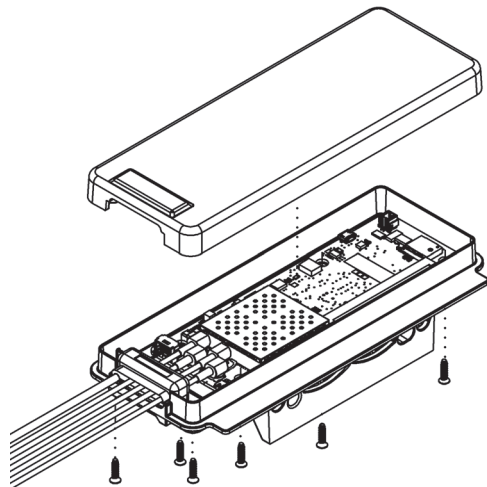
- g. Disconnect the power cable from J1 on the P.C. board, and remove the power cable from the bed.
- h. Connect the **new** power cable to J1 on the P.C. board.



- i. Install the gasket around the cables. Make sure of these:
 - The power cable is through the large hole in the gasket.
 - The rimmed side of the gasket is away from the P.C. board.

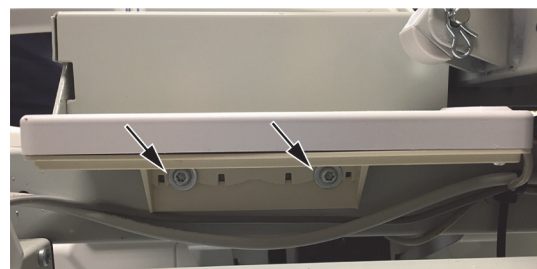


- j. Install the P.C. board in the reader.
- k. Install the cover on to the reader.
- l. Install the six screws to attach the reader covers.
- m. Go to “Replacement—Reader and Power Cable” on page 4-224.



Replacement—Reader and Power Cable

1. Put the reader in its location on the bed, and install the two screws to attach the reader to the bed.



2. Install a cable tie to include the power cable with the cable bundle by the black cable tie. Make sure of these:
 - The power cable is underneath the antenna cables.
 - The cable tie is less than a 1/2" (12.7 mm) from the black cable tie.

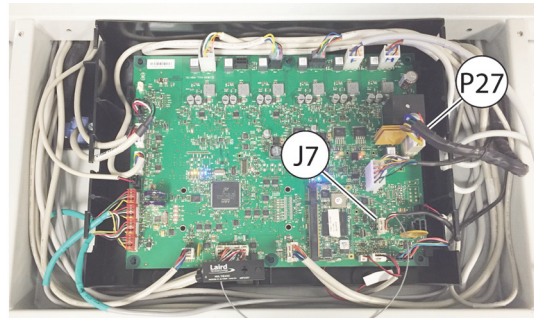


3. Route the WatchCare® power cable from the reader to the MCB. Make sure to put the power cable in the cable retainers with the existing cables.

**CAUTION:**

Caution—Do not connect the WatchCare® power cable to the MCB while there is power (**AC or battery**) to the bed. To do so will cause damage to the SOM.

4. Make sure—
 - The bed is **unplugged**.
 - The **BCB/MCB power cable is disconnected** from the MCB.
 - The MCB has had time to **power down**.
 - You have the antistatic strap on.
5. Connect the WatchCare® power cable to J7 on the MCB.
6. Connect the BCB/MCB power cable to P27 on the MCB.



7. Install the MCB cover and its two screws to attach the cover to the MCB chassis.



8. Go to “Final Steps” on page 4-227.

Removal and Replacement—Antenna



WARNING:

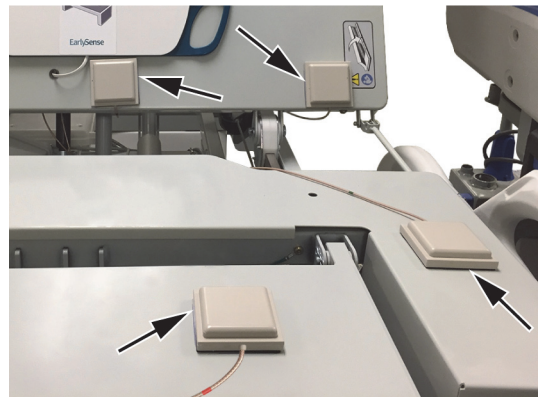
To prevent injury and/or equipment damage, obey these warnings throughout the procedure:

- **Warning**—During this procedure, you will need to use an alcohol-based cleaner. Such cleaners are flammable and toxic to skin, eyes, and respiratory tract. Do not use the cleaner near an open flame or in confined areas.
- **Warning**—Failure to unplug the bed could cause injury or equipment damage.

1. Unplug the bed.
2. Lower the siderails.
3. So that the new antenna will be installed correctly, make a mark to clearly identify the antenna location on the bed. Also, make a note of these:
 - The antenna's orientation
 - The indicator color on the antenna's cable.

NOTES:

- The antenna cable lengths are different. The indicator color on the cable will help to make sure the new antenna is correct for its location.
 - The location and orientation of the antenna are very important for the operation of the system.
4. Remove the antenna from the sleep deck, and set the antenna aside.



5. Use the alcohol-based cleaner to clean the area where the antenna was removed. Let the area dry.



CAUTION:

Caution—The location of each antenna is **critical** to the performance of the antenna. Make sure to install the new antenna in the correct orientation and location. Otherwise, the antenna may not operate as intended.

6. Remove the adhesive covering from the gasket on the bottom of the **new** antenna, and then install the antenna in the correct orientation and location on the sleep deck. Firmly press the antenna into position for 10 seconds with approximately 75 lb (34 kg) of force.

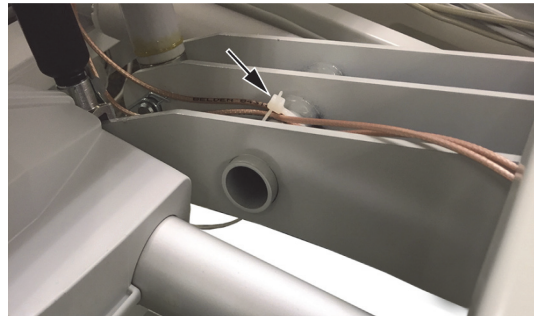
- Remove the two screws and washers that attach the seat pan to the frame.



- Slide the seat pan toward the foot end of the bed, but do not remove the seat pan. Lift the pan and let it rest against the head section.
- Follow the routing of the old antenna cable to the reader, and then use the same routing for the **new** antenna cable. Remove and install cable ties as necessary.

NOTE:

For a head section antenna, **loosely** secure the new cable tie on the patient-right side of the weigh frame tube to allow cable movement.



- At the antenna-reader cable to antenna cable connection, remove the heat shrink or insulated tape.



- Disconnect the antenna-reader cable from the antenna cable.
- Connect the antenna cable to the antenna-reader cable.
- Put insulated tape over the cable connection.
- Lower the seat pan, and install the two washers and screws to attach the seat pan to the frame.
- Go to “Final Steps” on page 4-227.

FINAL STEPS

- Install the mattress; go to the applicable procedure:
 - “core, pro, and max Mattresses—Removal” on page 4-149
 - “pro+ Non-Integrated Mattress (P7924)—Removal” on page 4-161
 - “pro+ Integrated Mattress (P7923)—Replacement” on page 4-167
- Make sure any WatchCare® smart pads are at least 2 feet (61 cm) from the bed, and then plug the bed in.

3. At the indicator light, make sure the white light comes on solid. This could take up to 2 minutes. If the white light does not come on, check the cable connections. (For more information about the indicator light, see the *WatchCare® Incontinence Management System User and Service Manual* (196414).)



4. Put a dry smart pad on the bed in the correct location and orientation (see the *WatchCare® Incontinence Management System User and Service Manual* (196414)), and make sure you hear a beep and the indicator light is solid green. This could take up to 10 seconds.



5. Do the “Function Checks” on page 2-1. As you operate the bed’s articulation functions, make sure the cables are not in a location where they could get damaged or pinched.

4.77 Label Replacement

NOTE:

Replace a label if it can not be read or if it is not fully bonded to its location.

Tools: Alcohol-based cleaner Soft cloth

1. Remove the label.



WARNING:

Warning—Alcohol-based cleaners are flammable and toxic to skin, eyes, and respiratory tract. Do not use near an open flame. Do not use in confined areas. Injury could occur.



CAUTION:

Caution—Failure to clean the label location thoroughly could prevent the label from bonding correctly.

2. Clean the area where the label was removed, and let the area dry.
3. Install the new label in the location where the original label was removed. Make sure the label has fully bonded to its location.

4.78 Rental Shipping and Handling

Refer to the *Truck Transport Procedure Using Universal Transport Brackets Work Instruction* (QS12114).

NOTES:

Chapter 5

Parts List

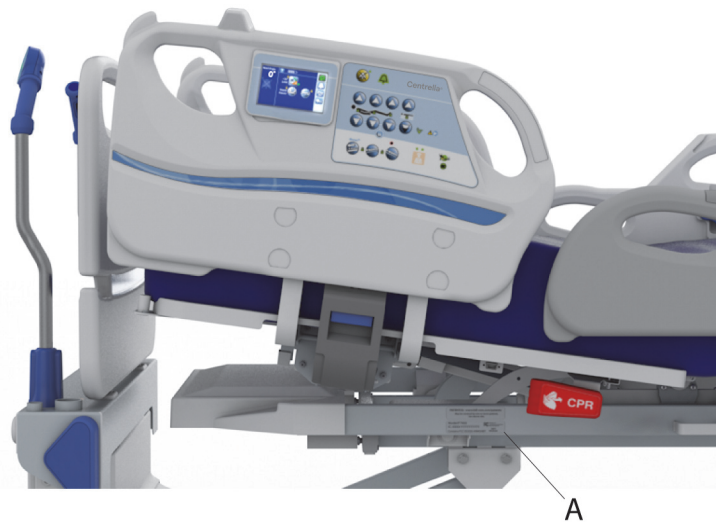
ORDER SERVICE PARTS

Use the parts lists in this manual to identify the necessary part number(s). Find the product number and serial number on the product identification label (A) (see figure 5-1 on page 5-32).

NOTE:

For service parts for the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

Figure 5-1. Product Identification Label Location



Contact Hill-Rom Technical Support. You will be requested to supply this data:

- Customer account number
- Purchase order number
- Product number
- Serial number
- Part number(s)

To promptly order parts, request part prices and availability, or follow up on a service order, use this Hill-Rom fax number:

812-934-8472

Terms:

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

Address all inquiries to:

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

Address all return goods to:

ATTN SERVICE STORES
RITTER PLANT EAST END DOOR R33
HILL-ROM, INC.
COUNTY ROAD 300E
BATESVILLE IN 47006-9167

NOTE:

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

EXCHANGE POLICY

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

IN-WARRANTY EXCHANGES

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

NOTE:

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

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

Do not return any parts without an RMA number. When parts/products have been requested to be returned, Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, contact Hill-Rom Technical Support.

OUT-OF-WARRANTY EXCHANGES

You are expected to return the inoperative parts/products within 30 days of receipt of the exchange part. Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, contact Hill-Rom Technical Support. Hill-Rom will invoice your facility for the full selling price of the parts/products. Upon return of the inoperative parts/products, Hill-Rom will issue a credit to your facility for **the difference between the exchange price and the full selling price of the parts/products.**

LIMITED WARRANTY

HILL-ROM COMPANY, INC. CENTRELLA® CORE, CENTRELLA® PRO, CENTRELLA® PRO+, and CENTRELLA® MAX MATTRESS LIMITED WARRANTY

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

SPECIFIC WARRANTY

Centrella® Core Mattress

Hill-Rom warrants to the original purchaser that the following mattress components of its Centrella® core mattress shall be free from defects in material and workmanship from the date of delivery as set forth below:

- Internal Components = Five (5) Years
- Top Cover, Fire Barrier, Bottom Cover = Two (2) Years

Centrella® Pro Mattress

Hill-Rom warrants to the original purchaser that the following mattress components of its Centrella® pro mattress shall be free from defects in material and workmanship from date of delivery as set forth below:

- Internal Components = Five (5) Years
- Top Cover, Fire Barrier, Bottom Cover = Two (2) Years

Centrella® Pro+ Mattress

Hill-Rom warrants to the original purchaser that the following mattress components of its Centrella® pro+ mattress shall be free from defects in material and workmanship from date of delivery as set forth below:

- Internal Components = Five (5) Years
- Blower Unit (including associated parts) = One (1) Year
- Top Cover, Fire Barrier, Bottom Cover = One (1) Year

Centrella® Max Mattress

Hill-Rom warrants to the original purchaser that the following mattress components of its Centrella® max mattress shall be free from defects in material and workmanship from date of delivery as set forth below:

- Internal Components, Fire Barrier, Bottom Cover = Two (2) Years
- Top Cover, Blower Unit (including compressors, valves, printed circuit boards) = One (1) Year

Hill-Rom's obligation under this warranty is expressly limited to supplying replacement parts and/or service for, or replacing, at its option, any product which is, in the sole discretion of Hill-Rom, found to be defective. The purchaser is hereby advised that some fabric will stretch, and all foam will lose some of its resiliency during its life. This is normal and is not included in this or any other warranty applicable to this product. This warranty is void if the manufacturer's tag is removed.

TO OBTAIN PARTS AND SERVICE

Call Hill-Rom Technical Support at (800) 445-3720 (US) or (800) 267-2337 (Canada). Outside the United States and Canada, call your authorized Hill-Rom distributor. In order to expedite service, please provide: customer identification number, product model number, serial number, and description of problem.

PARTS AVAILABILITY POLICY

Hill-Rom will use commercially reasonable efforts to offer parts for new mattresses for five (5) years from the date of sale. If original component parts and assemblies are no longer available, functional equivalents will be substituted in Hill-Rom's sole discretion.

ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION, OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN HILL-ROM AND OTHER THAN FACILITY-AUTHORIZED, PROPERLY TRAINED PERSONNEL WITHOUT HILL-ROM'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY HILL-ROM, SHALL IMMEDIATELY VOID AND

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

Some states, provinces, or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply. The foregoing is Hill-Rom's only obligation and purchaser's only remedy for a breach of this warranty. This warranty does not apply to defects or damage arising from negligence, misuse or abuse, including without limitation, improper handling or cleaning inconsistent with the manufacturer's instructions. This warranty cannot be modified by any employee or representative of Hill-Rom or an agent thereof except in writing signed by an officer of Hill-Rom.

203639 REV 2

November 2020

Hill-Rom Company, Inc., 1069 State Route 46 E, Batesville, IN 47006-9167

HILL-ROM COMPANY, INC. LIMITED WARRANTY

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

GENERAL WARRANTY (APPLICABLE UNLESS A SPECIFIC WARRANTY IS LISTED)

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

SPECIFIC WARRANTIES

MATTRESS WARRANTIES

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

EXPENDABLES WARRANTIES

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

TO OBTAIN PARTS AND SERVICE

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

OUT OF WARRANTY EXCHANGE POLICY

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

PARTS AVAILABILITY POLICY

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

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

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE. HILL-ROM'S OBLIGATION UNDER THESE WARRANTIES SHALL NOT INCLUDE ANY LIABILITY FOR LOSS OF PROFITS, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES OR DELAYS. Some states, provinces, or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply. Any improper or negligent use, any alterations or repairs not in accordance with Hill-Rom's manuals or performed by others in such manner as in Hill-Rom's sole judgment affects the product materially and adversely, shall void these warranties. These warranties do not cover failures due to misuse, abuse, neglect, or lack of routine maintenance. No employee or representative of Hill-Rom is authorized to change these warranties in any way or grant any other warranty unless in writing and signed by a Hill-Rom officer. These warranties provide specific legal rights; but, there may be other available rights, which vary from state to state, province to province, or country to country.

ADM004 REV 4

July 2010

Hill-Rom Company, Inc., 1069 State Route 46 E, Batesville, IN 47006-9167

NOTES:

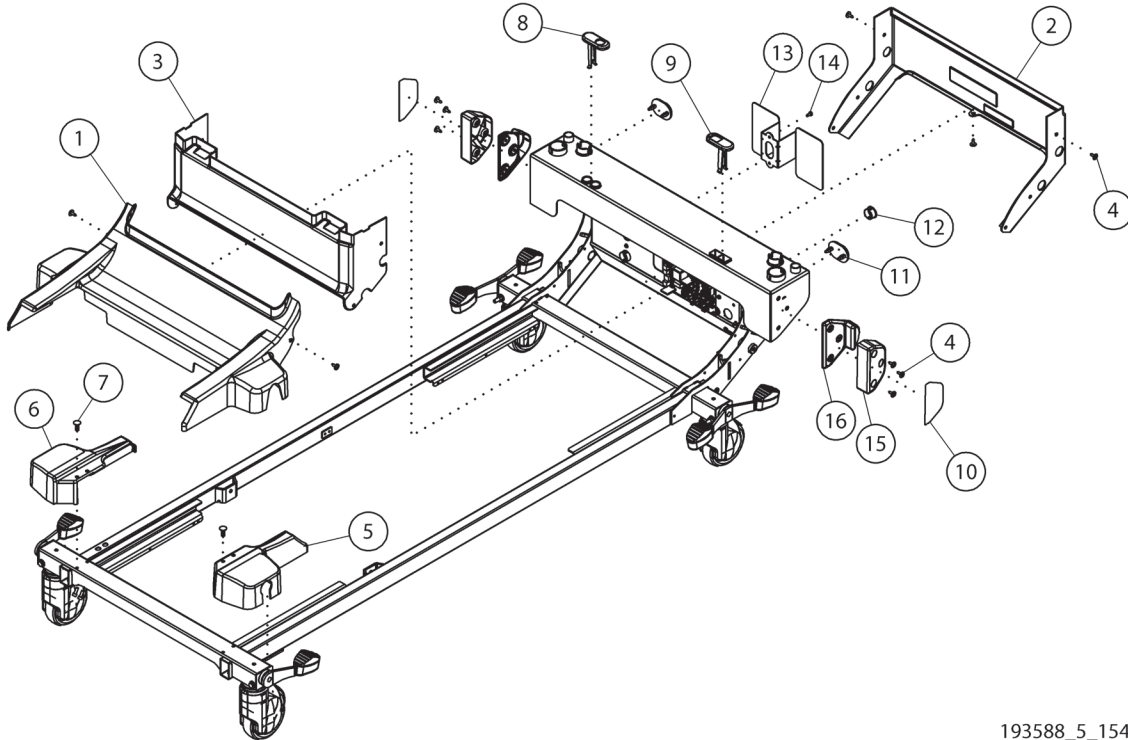
RECOMMENDED SPARE PARTS

This is a recommended spare parts list to service five or more units:

Part Number	Quantity	Description
199077	2	CASTER, BRAKE
199159	2	CASTER, STEER
202180	1	CASTER, BRAKE, 125MM, ESD
6342201	1	POWER CORD ^a
19579201	1	BASE COVER FOOT, RHS (P7900A0/P7900B0)
19579202	1	BASE COVER FOOT, LHS (P7900A0/P7900B0)
208107	1	FOOT END COVER (P7900B1/NEWER)
47219	2	BUMPER
20570001	1	WELDMENT, WIREFORM, DRAINAGE LH
20570002	1	WELDMENT, WIREFORM, DRAINAGE RH
193626	1	ACTUATOR, HI-LO
198860	1	ASSEMBLY, NIGHT LIGHT
169105 or 16910501	1 1	LOAD BEAM, HD LOAD BEAM, HD (OIML)
137757 or 13775701	1 1	LOAD BEAM, FT LOAD BEAM, FT (OIML)
191096	1	ACTUATOR, HEAD
194955	1	DAMPER, HEAD SECTION
193627	1	ACTUATOR, THIGH
193629	1	ACTUATOR, FOOT EXTENSION
193628	1	ACTUATOR, FOOT
20760502	1	CONTROL PANEL, PATIENT RIGHT
20760501	1	CONTROL PANEL, PATIENT LEFT
4840501	2	BATTERY, LEAD ACID
34512P	1	DUMMY PLUG
210881	1	CENTRELLA® SERVICE TOOL KIT

a. For other power cord types, see "Electronic Module (P7900B1 and Newer) (Sheet 2 of 4)" on page 5-72.

BASE MODULE (P7900A0 AND P7900B0)—SHROUD AND BUMPER (SHEET 1 OF 4)

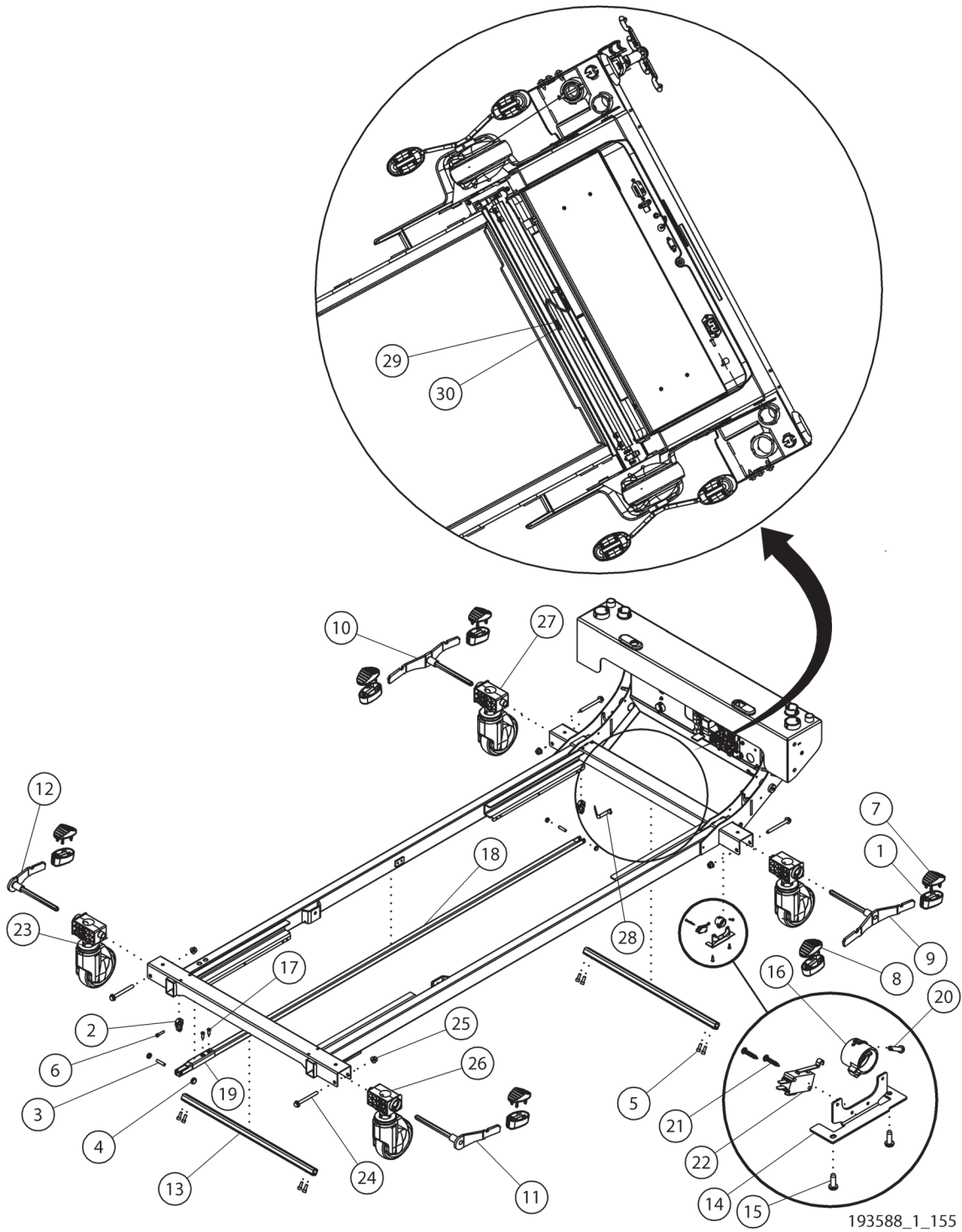


193588_5_154

Item	Part Number	Description	Quantity
1	195790	PSM COVER - LOWER FRONT	1
2	195810	PSM COVER - BACK	1
3	195789	PSM COVER - UPPER FRONT	1
4	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	5
5	19579202	BASE COVER, FOOT, LHS	1
6	19579201	BASE COVER, FOOT, RHS	1
7	129623	PANEL FASTENER	4
8	195064	PLUG, ROUND	1
9	195065	PLUG, RECTANGULAR	1
10	202940	LABEL KIT, 5 MIL COMMON (WIDE BED GAPPER)	1
11	72037	BUMPER	2
12	185178	GROMMET, HEYCO 3128	1
13	195809	BRACKET, MAIN BATTERY	1
14	70341	SCREW,RLG,PAN,TX,M5,.472,STL	1
15	198968	EXTENSION WIDE	2
16	202747	SPACER, NARROW	2

NOTES:

BASE MODULE (P7900A0 AND P7900B0)—BRAKE AND CASTER (SHEET 2 OF 4)

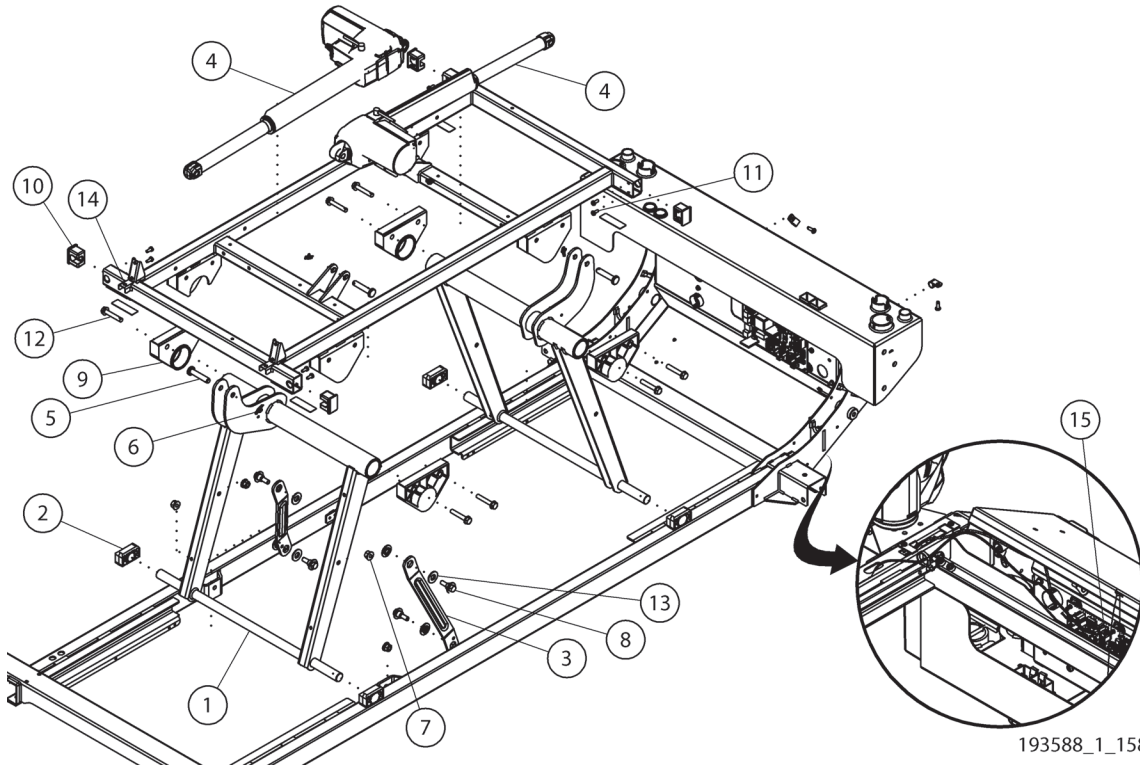


Item	Part Number	Description	Quantity
1	195854	PEDAL, BOTTOM	6
2	191059	HUB, TORQUE TUBE, LONG	2
3	70346	PIN, 1/4" X 1.000"	2
4	69548	BUSHING, BRAKE / STEER	4
5	137658	M6 X 16 SHCS	10
6	197186	SCREW,SHCS,M5-.8,25	2
7	19585301	PEDAL TOP (ORANGE)	4
8	19585302	PEDAL TOP (GREEN)	2
9	19505001	WELDMENT, BRAKE PEDAL, HEAD,LH	1
10	19505002	WELDMENT, BRAKE PEDAL, HEAD,RH	1
11	19577601	WELDMENT, BRAKE PEDAL, FOOT,LH	1
12	19577602	WELDMENT, BRAKE PEDAL, FOOT,RH	1
13	191058	TUBE, BRAKE/STEER	2
14	198736	BRKT,MOUNT,BRAKE/STEER SWITCH	1
15	69988	SCREW,ROLL,PAN,TX,M4-.7,12,ZN	3
16	198735	CAM, BRAKE/STEER SWITCH	1
17	70762	SCREW,RLG,PAN,TX,M6,.630,STL	2
18	198730	LINK, BRAKE / STEER	1
19	198727	WELDMENT, ADJUSTABLE LINK	1
20	4214102	SCREW,HILO,PAN,TX,6-19,.58,STL	1
21	158582	SCREW,TAPPAN,T10,#4,.625,STL	2
22	19512	SWITCH,SNAP,SPDT,0.1A	1
23	191066	CASTER MOUNT	4
24	165096	BOLT,MACH,HEXFLG,M8-1.25,70,ZN	4
25	7037608	NUT,NYLOC,M8,11,STL	4
26	199077	CASTER, BRAKE, 125mm	3
	199159	CASTER, BRAKE/STEER, 125mm	2
27	202180	CASTER, BRAKE, 125MM, ESD	1
28	131641	BUTTON SNAP SINGLE	1
29	16940704	GROUND STRAP ASSY	1
30	70341	SCREW, RLG, PAN, TX, M5, .472, STL	1

NOTE:

The casters on a bed **without** the IntelliDrive® Transport System or 5th wheel option include two (2) brake/steer casters (199159), one (1) brake caster (199077), and one (1) ESD brake caster (202180). The casters on a bed **with** the IntelliDrive® Transport System or 5th wheel option include three (3) brake casters (199077) and one (1) ESD brake caster (202180).

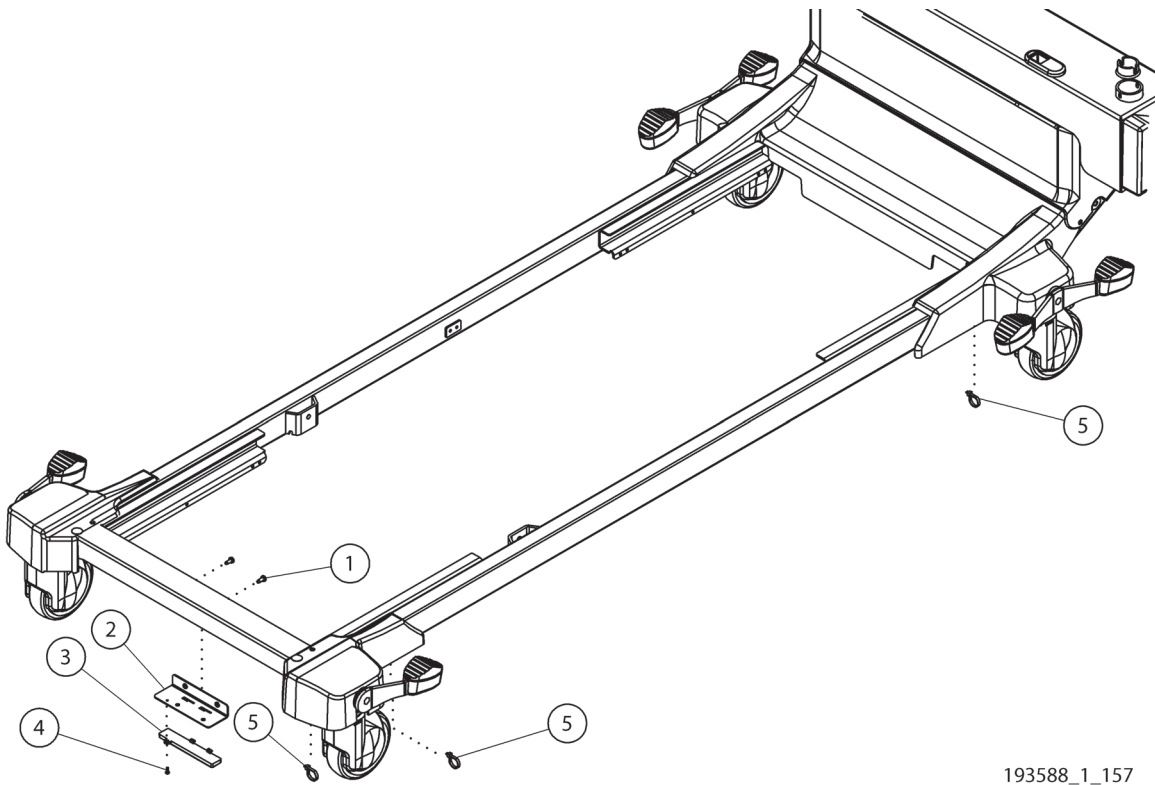
BASE MODULE (P7900A0 AND P7900B0)—INTERMEDIATE FRAME AND ACTUATORS (SHEET 3 OF 4)



193588_1_158

Item	Part Number	Description	Quantity
1	191025	WELDMENT, LIFT ARM	2
2	211794	SLIDE, HI/LO LIFT	4
3	191033	GROUND LINK	2
4	193626	ACTUATOR, HI-LO	2
5	164827	PIN - 10MM X 50	4
6	61615	RETAIN, RUE, 3/8, .054	4
7	7037608	NUT, NYLOC, M8, 11, STL	4
8	165539	BOLT, SHLDR, HEXWASH, M8, 26.114	4
9	191069	HILO LIFT ATTACHMENT	4
10	193624	BLOCK, LOAD CELL	4
11	42142	SCREW, HILO, PAN, TX, 10-16, .500	8
12	125943	SCREW, 5/16-18, TYPE TT, HEX WA HD, STL ZP	8
13	211795	GROUND LINK BUSHING	4
14	191073	WELDMENT, INTERMEDIATE FRAME	1
15	195904	CABLE ASSY, BRAKE SW	1

BASE MODULE (P7900A0 AND P7900B0)—NIGHT LIGHT (SHEET 4 OF 4)

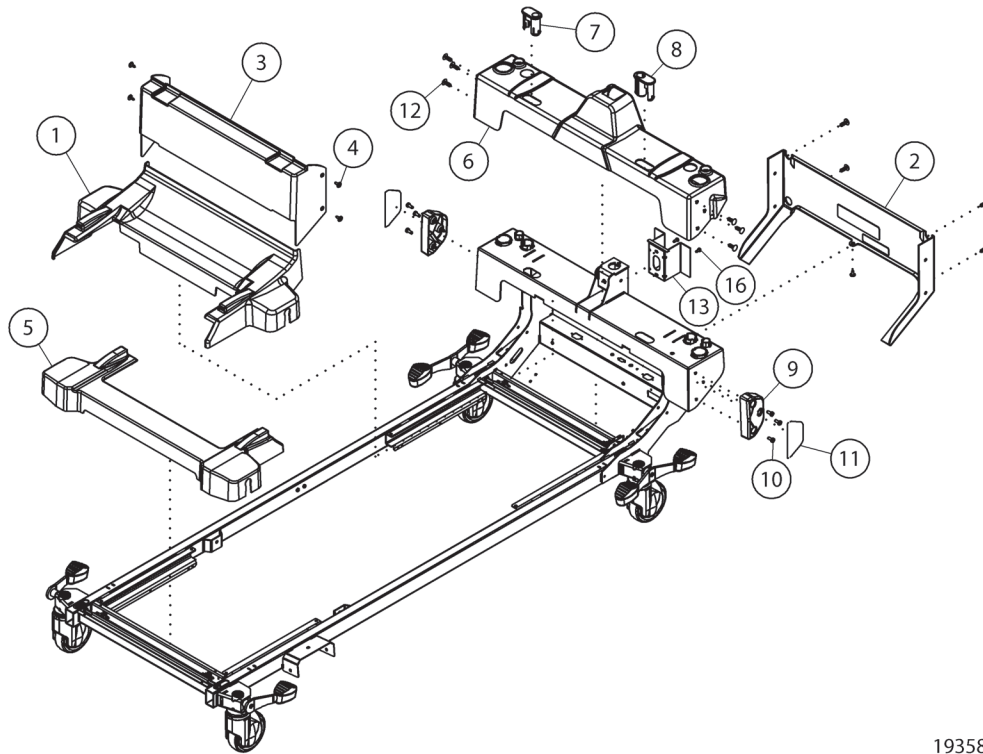


193588_1_157

Item	Part Number	Description	Quantity
1	70341	SCREW,RLG,PAN,TX,M5,.472,STL	2
2	198850	BRACKET, NIGHTLIGHT, FOOTEND	1
3	198860	ASSEMBLY, NIGHT LIGHT	1
4	69346	SCREW,SHLDR,PAN,TX,6-32,.355	1
5	19124	WIRE TIE	3



BASE MODULE (P7900B1 AND NEWER)—SHROUD AND BUMPER (SHEET 1 OF 4)

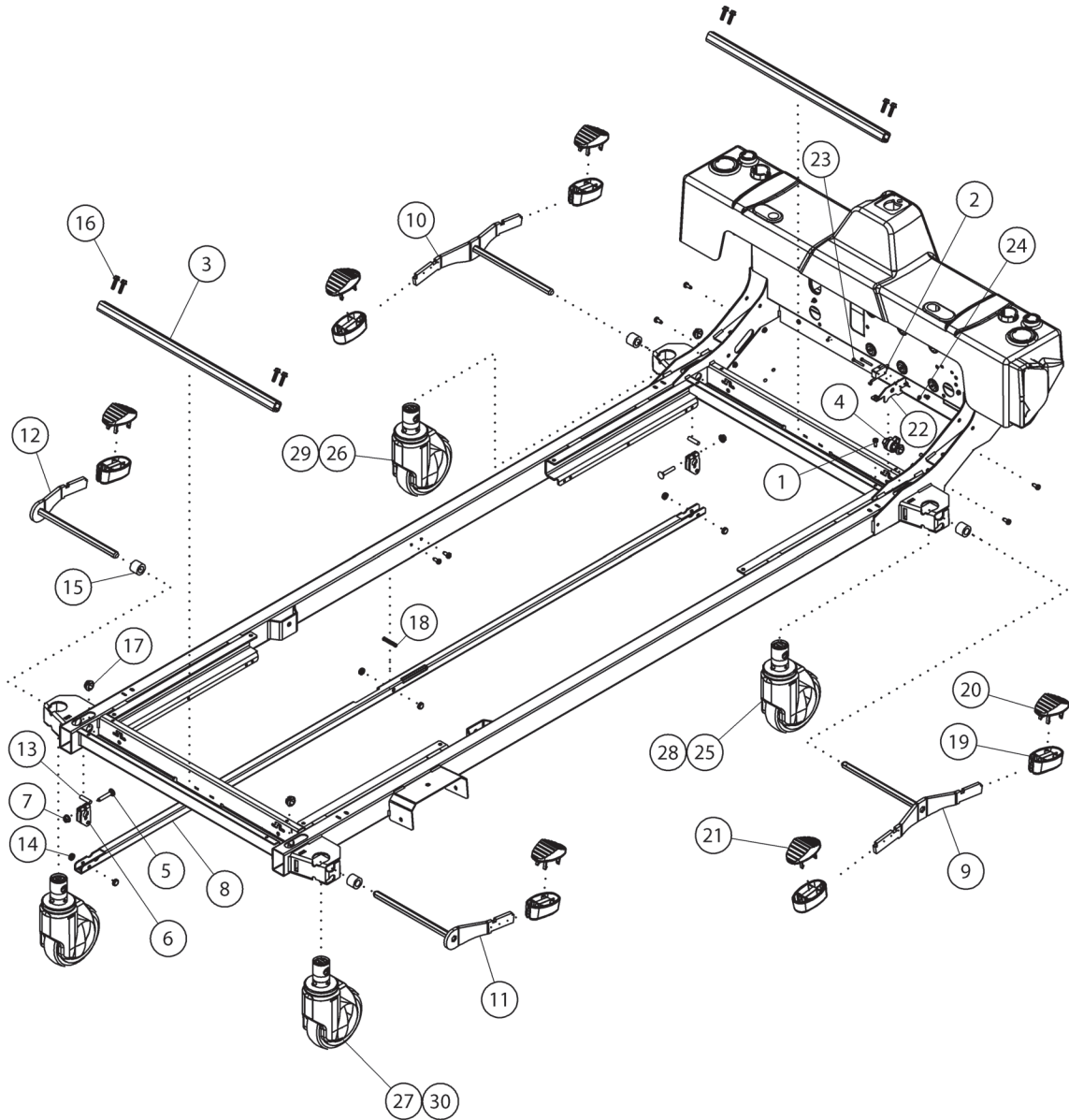


193588_5_347

Item	Part Number	Description	Quantity
1	208105	HEAD END COVER - LOWER FRONT	1
2	208104	HEAD END COVER - BACK	1
3	208101	HEAD END COVER - FRONT	1
4	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	5
5	208107	FOOT END COVER	1
6	208100	HEAD END COVER - TOP	1
7	208102	HEADBOARD MOUNT ROUND	1
8	208103	HEADBOARD MOUNT OVAL	1
9	208106	EXTENSION WIDE	2
10	9016601	SCREW, HILO, PAN, PH, 12-11, 3/4	6
11	209753	WIDE BED GAPPER LABEL KIT	1
12	129623	PANEL FASTER	6
13	205430	BRACKET, MAIN BATTERY	1

NOTES:

BASE MODULE (P7900B1 AND NEWER)—BRAKE AND CASTER (SHEET 2 OF 4)



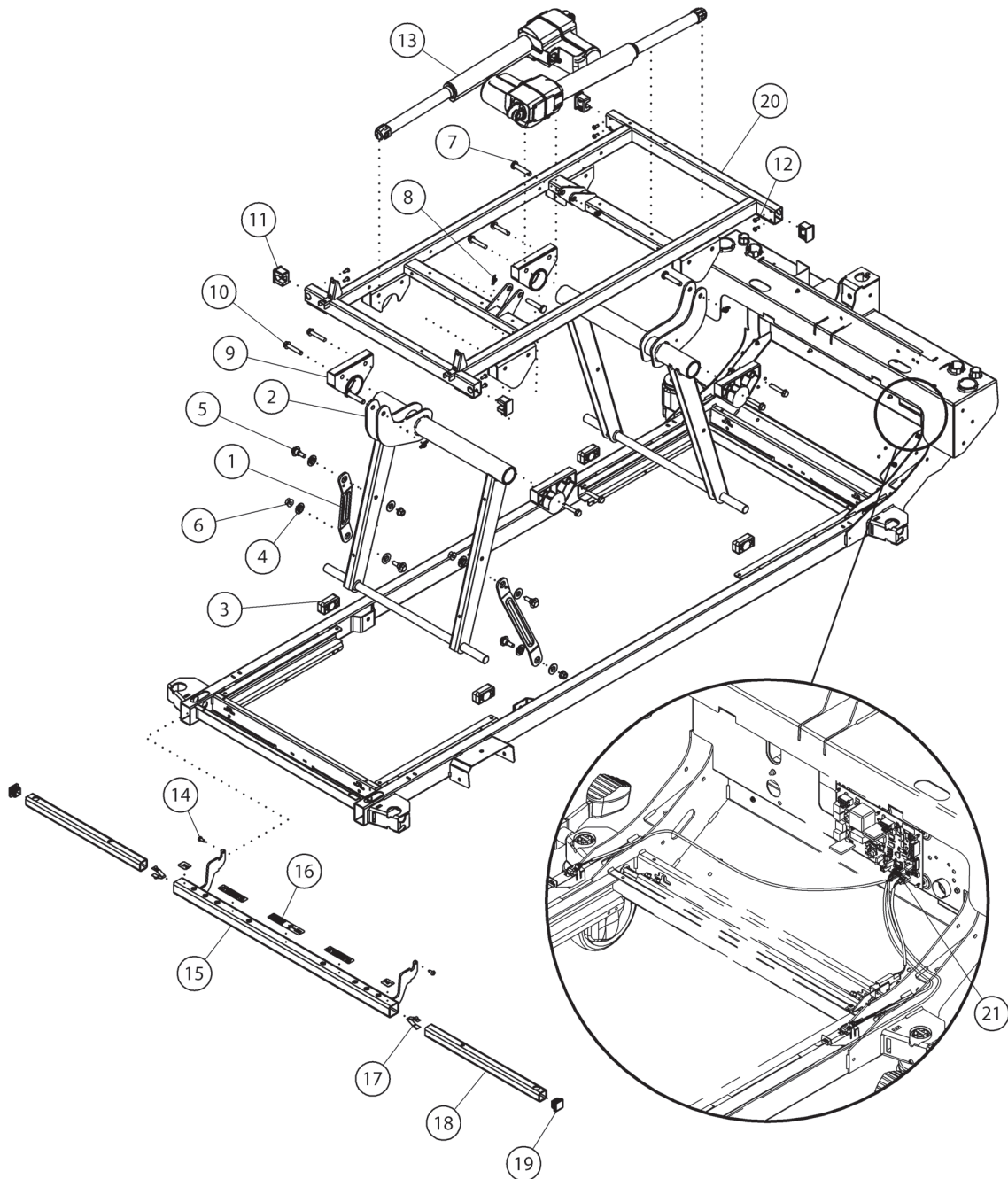
193588_11_349

Item	Part Number	Description	Quantity
1	70341	SCREW,RLG,PAN,TX,M5,.472,STL	1
2	19512	SWITCH,SNAP,SPDT,0.1A	1
3	208117	TORQUE TUBE	2
4	208109	BRAKE SWITCH CAM	1
5	70375	BOLT, M6, CARRIAGE, 35	2
6	208116	BRAKE LINK	2
7	194235	FLANGE NUT, SERRATED HEX	2
8	208115	BRAKE STEER TUBE	1
9	20812101S	BRAKE PEDAL WELDMENT HEAD LH	1
10	20812102S	BRAKE PEDAL WELDMENT HEAD RH	1
11	20812201S	BRAKE PEDAL WELDMENT FOOT LH	1
12	20812202S	BRAKE PEDAL WELDMENT FOOT RH	1
13	70346	PIN, 1/4" X 1.000"	2
14	69548	BUSHING, BRAKE / STEER	6
15	208110	PEDAL SPACER	4
16	208114	HEX HEAD SCREW, M5 X 20	8
17	208108	HEX BUSHING	4
18	208111	COMPRESSION SPRING	1
19	195854	PEDAL, BOTTOM	6
20	19585301	PEDAL TOP (ORANGE)	4
21	19585302	PEDAL TOP (GREEN)	2
22	208119	BRAKE SWITCH BRACKET	1
23	34402	SCREW,MACH,PAN,PH,4-40,1.000	2
24	37890	NUT, #4-40, HEX, KEP	2
25	199077	CASTER, BRAKE, 125mm	3
26	202180	CASTER, BRAKE, 125mm, ESD	1
27	199159	CASTER, BRAKE/STEER, 125mm	2
28	20956602	CASTER, BRAKE, 125mm	3
29	20956603	CASTER, BRAKE, 125mm, ESD	1
30	20956601	CASTER, BRAKE/STEER, 125mm	2

NOTE:

The casters on a bed **without** the IntelliDrive® Transport System or 5th wheel option include two (2) brake/steer casters (199159/20956601), one (1) brake caster (199077/20956602), and one (1) ESD brake caster (202180/20956603). The casters on a bed **with** the IntelliDrive® Transport System or 5th wheel option include three (3) brake casters (199077, 202180, and 199159 not to be used with casters 20956601, 20956602, and 20956603) and one (1) ESD brake caster (202180, 20956603).

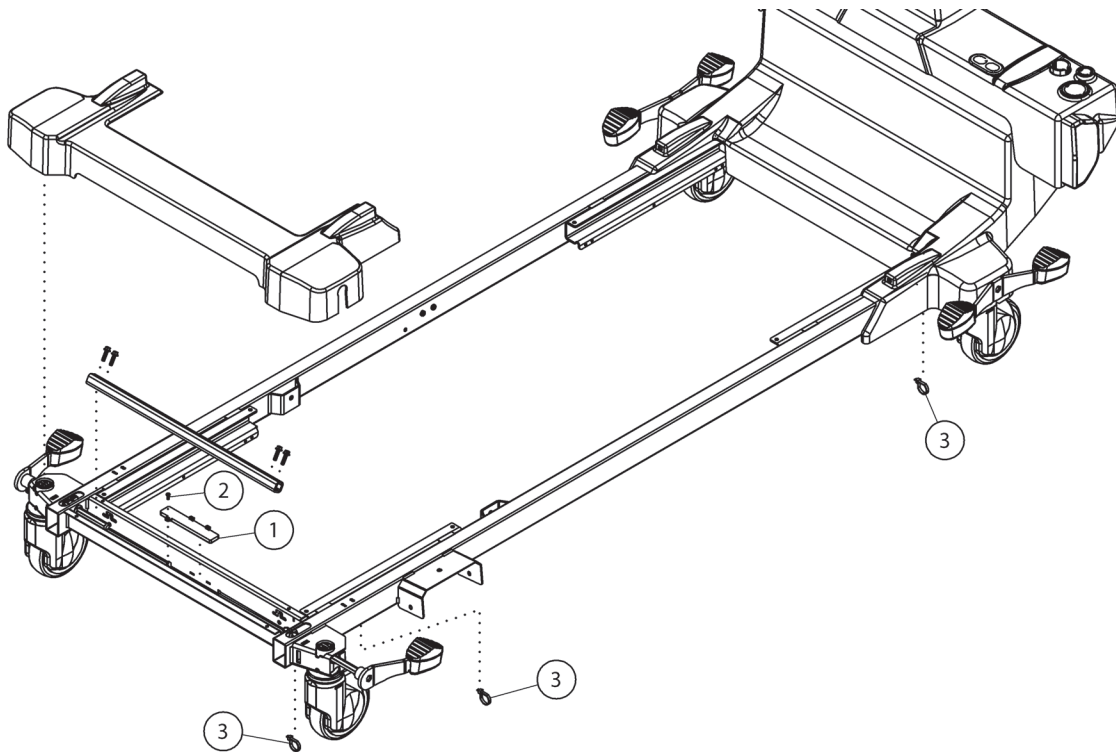
BASE MODULE (P7900B1 AND NEWER)—INTERMEDIATE FRAME AND ACTUATORS (SHEET 3 OF 4)



193588_5_348

Item	Part Number	Description	Quantity
1	191033	GROUND LINK	2
2	191025	WELDMENT, LIFT ARM	2
3	211794	SLIDE, HI/LO LIFT	4
4	211795	GROUND LINK BUSHING	4
5	165539	BOLT,SHLDR,HEXWASH,M8,26.114	4
6	7037608	NUT,NYLOC,M8,11,STL	4
7	164827	PIN - 10MM X 50	4
8	61615	RETAIN,RUE,3/8,.054	4
9	191069	HILO LIFT ATTACHMENT	4
10	125943	SCREW, 5/16-18, TYPE TT, HEX WA HD, STL ZP	8
11	193624	BLOCK, LOAD CELL	4
12	42142	SCREW,HILO,PAN,TX,10-16,.500	8
13	193626	ACTUATOR, HI-LO	2
14	70341	SCREW,RLG,PAN,TX,M5,.472,STL	2
15	208140	TRACTION FRAME WELDMENT	1
16	201807101	LABEL, TRACTION WARNING, EN	2
	201807301	LABEL, TRACTION WARNING, FR	2
17	130815	BUTTON, SNAP	2
18	196504	EXTENSION ARM, TRACTION FRAME	2
19	4917701	PLUG, FRAME TUBE	2
20	191073	WELDMENT, INTERMEDIATE FRAME	1
21	195904	CABLE ASSY, BRAKE SW	1
22	209378	CALIFORNIA PROP 65 LABEL	

BASE MODULE (P7900B1 AND NEWER)—NIGHT LIGHT (SHEET 4 OF 4)

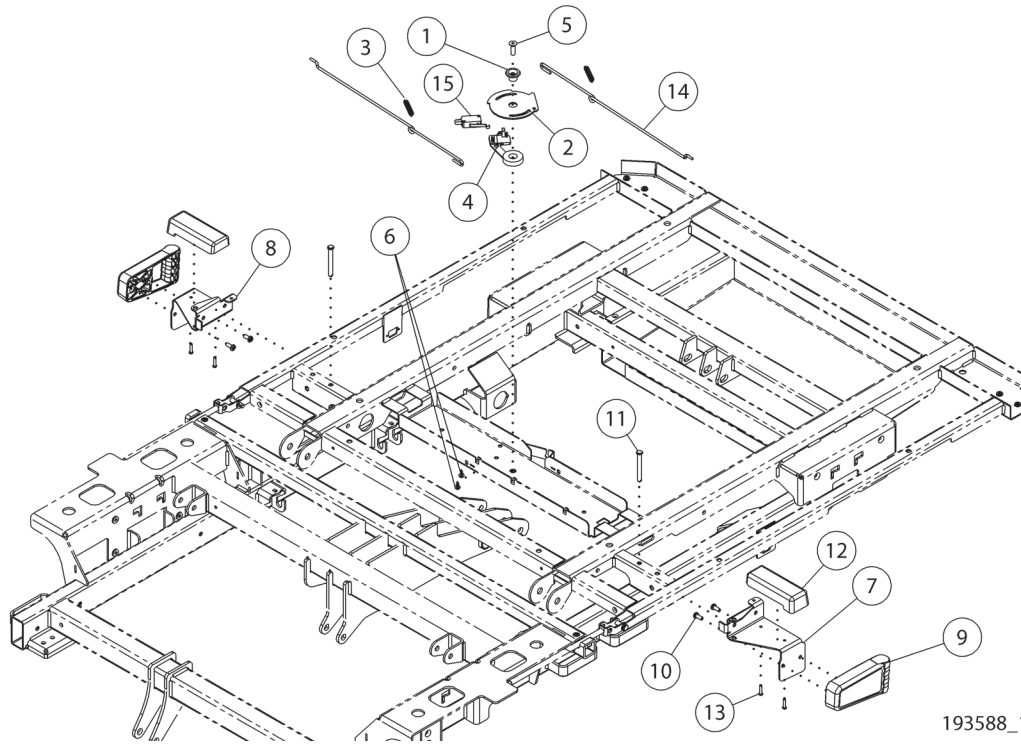


193588_5_351

Item	Part Number	Description	Quantity
1	198860	ASSEMBLY, NIGHT LIGHT	1
2	69346	SCREW,SHLDR,PAN,TX,6-32,.355	1
3	19124	WIRE TIE	3

NOTES:

UPPER FRAME—CPR (SHEET 1 OF 6)

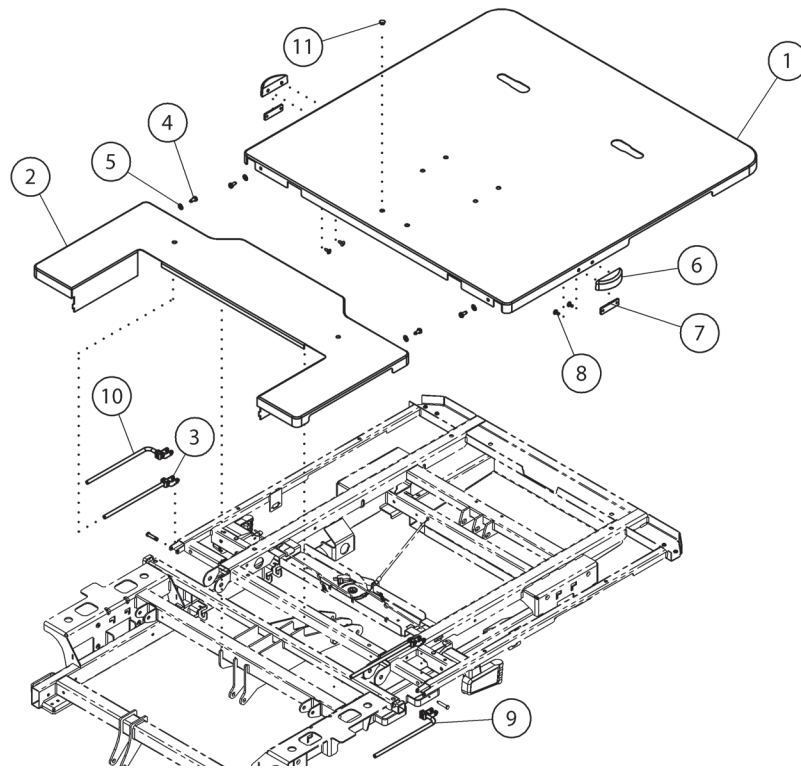


193588_1_159

Item	Part Number	Description	Quantity
1	164881	DRIVE LUG	1
2	194001	DISK, CPR RELEASE	1
3	182856	SPRING, WIDTH EXT CAM	2
4	195906	SPACER, CPR SWITCH	1
5	196577	SCREW,MACH,FLAT,HXST,M6-1,20	1
6	71050	SCREW, HILO FLANGE HEAD	2
7	19399802	BRACKET, CPR HANDLE, LH	1
8	19399801	BRACKET, CPR HANDLE, RH	1
9	185108	HANDLE, CPR	2
10	49493	SCREW,RLG,PAN,TX,10-32,.438	4
11	53575	PIN,CLV,.246,2.000,STL	2
12	200250	CPR GUIDE	2
13	4214102	SCREW,HILO,PAN,TX,6-19,.58,STL	4
14	195965	PULL ROD, CPR	2
	193999	PULL ROD, CPR (WIDE DECK)	
15	19512	SWITCH, SNAP, SPDT, 0.1A	1
Not shown	211393	CABLE ASSY,HOB HARNESS	1

NOTES:

UPPER FRAME—SLEEP DECK PANELS AND ENTRAPMENT (SHEET 2 OF 6)

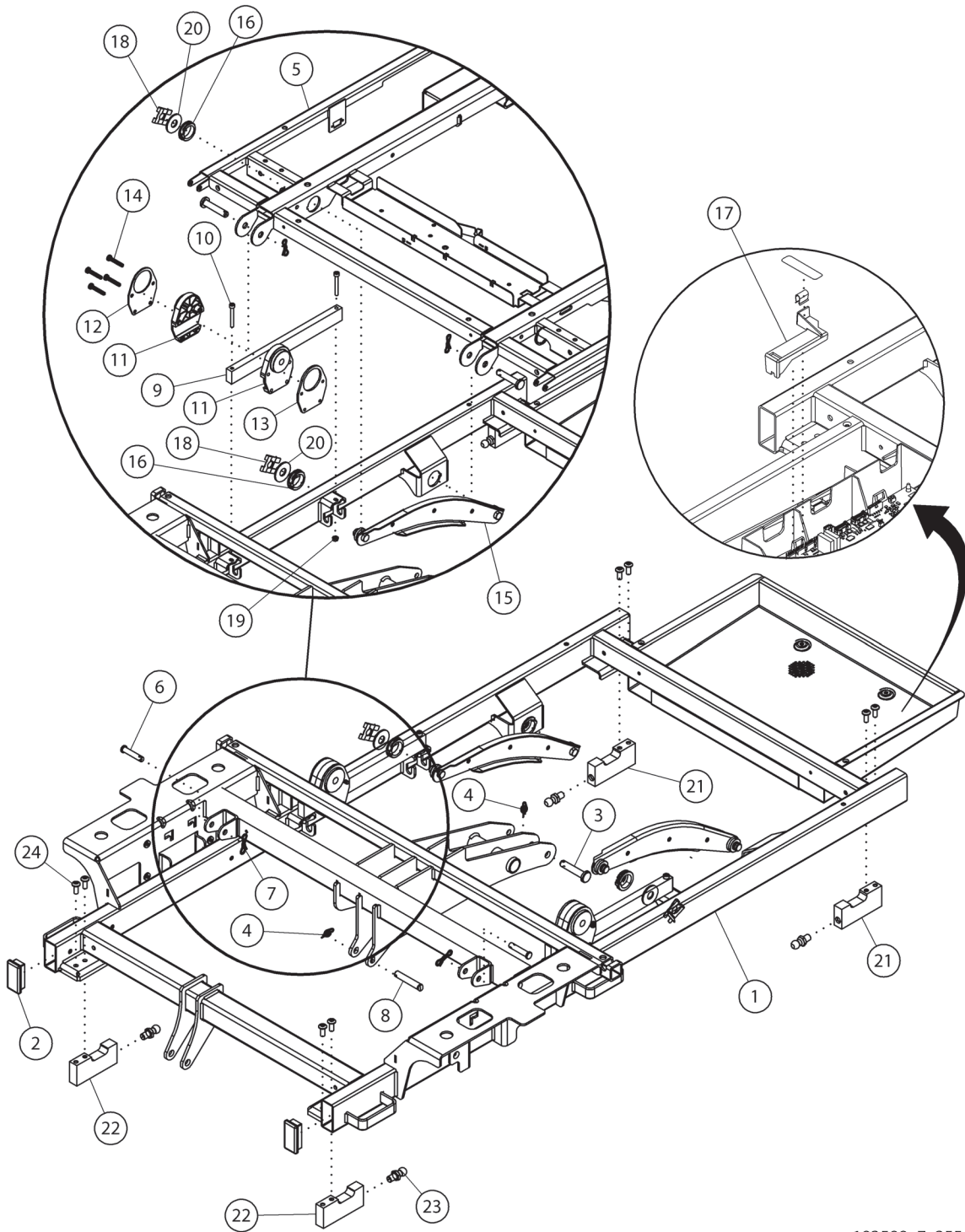


193588_12_160

Item	Part Number	Description	Quantity
1	191098	PANEL, HEAD DECK	1
	196295	PANEL, HEAD (WIDE) DECK	
2	191175	PAN, SEAT	1
	192619	PANEL, SEAT, (WIDE) DECK	
3	196365	WELDMENT, ENTRAPMENT ROD	2
4	70341	SCREW,RLG,PAN,TX,M5,.472,STL	4
5	16147	WASHER,LK-EXT,.220,.468,.025	4
6	199339	ENTRAPMENT BOSS	2
7	199338	PLATE, ENTRAPMENT BOSS	2
8	69377	SCREW,SHLDR,TR,TX,10-32,.447	4
9	19636301	WELDMENT, ENTRAPMENT ROD, LH (WIDE) DECK	1
10	19636302	WELDMENT, ENTRAPMENT ROD, RH (WIDE) DECK	1
11	160705	BUSHING CLIP	1

NOTES:

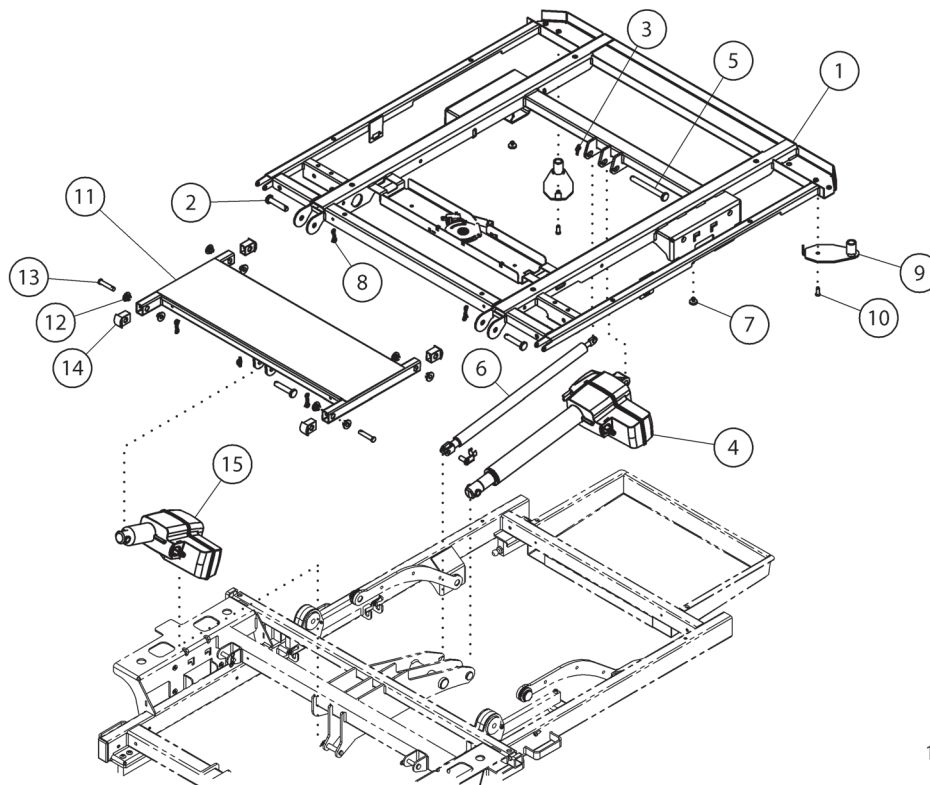
UPPER FRAME—LOAD CELLS AND SLIDE GUARD (SHEET 3 OF 6)



193588_7_255

Item	Part Number	Description	Quantity
1	193209	WELDMENT, WEIGH FRAME	1
2	16643101	PLUG, FRAME TUBE	2
3	164827	PIN - 10MM X 50	3
4	61615	RETAIN,RUE,3/8,.054	4
5	193383	WELDMENT, HEAD SECTION	1
6	196116	PIN,CLEVIS,5/16,1.5,STL	4
7	196117	PIN, COTTER, BOW, 1/4-38, 5/64	4
8	199615	D-PIN, 3/8, 46	1
9	185501	SLIDE RAIL	2
10	201603	SCREW,CAP,HXST,M5-0.8,40,ZN	4
11	195029	SLIDE PIVOT	4
12	195297	PLATE, SLIDE BLOCK, OUTER	2
13	195298	PLATE, SLIDE BLOCK, INNER	2
14	148956	SCREW,ROLL,PAN,TX,M5-.8,30,ZN	8
15	209749	WELDMENT, COMPRESSION LINK	2
16	209737	PIVOT SLEEVE	4
17	207487	COVER, LOAD BEAM CONNECTOR (OIML)	1
18	209747	CLIP, CLEVIS PIN	4
19	70336	NUT,HEX/LKWASH,M5,.800,STL	4
20	209738	WASHER,12.8,32.2,2.0	4
21	169105	LOAD BEAM-JR. 600LB SHORT CBL	2
	16910501	LOAD BEAM-JR. OIML 600LB SHORT CBL	2
22	137757	LOAD BEAM, JR, 600 LB	2
	13775701	LOAD BEAM, JR, OIML 600 LB	2
23	38052	STUD,BALL,M10-1.5,34.19	4
24	49521	BOLT,MACH,PAN,TX,.250-20,.61	8
Not shown	213115 ^a	SERVICE KIT, COMPRESSION LINK	1

a. The kit includes (2) compression link weldment (209749), (4) washer (209738), (4) pivot sleeve (209737), and (4) clevis pin clip (209747).

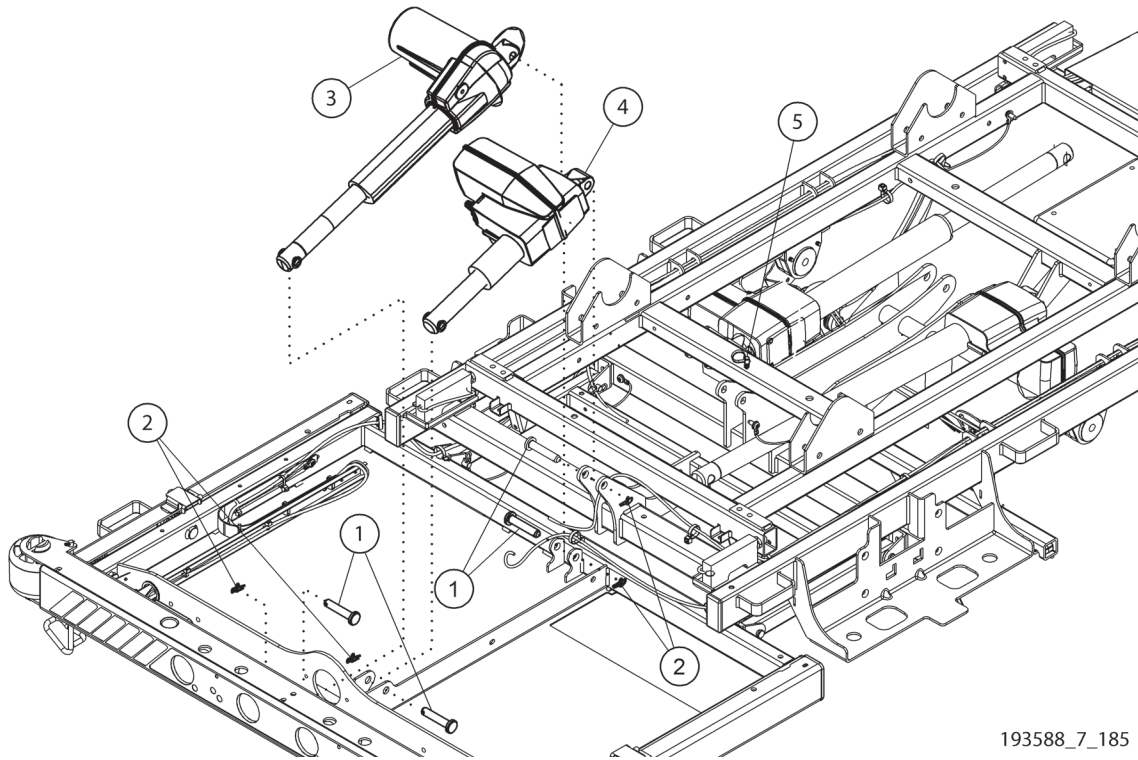
UPPER FRAME—HEAD AND THIGH DRIVES (HEAD AND THIGH) (SHEET 4 OF 6)

193588_1_161

Item	Part Number	Description	Quantity
1	193383	WELDMENT, HEAD SECTION	1
2	164827	PIN - 10MM X 50	4
3	61615	RETAIN,RUE,3/8,.054	4
4	191096	ACTUATOR,HEAD	1
5	168942	PIN - 10MM X 95	1
6	194955	DAMPER, HEAD SECTION	1
7	41344	RIVET,BARB,.250,.185,FL,NYL	2
8	196117	PIN,COTTER,BOW,1/4 - 3/8,5/64	6
9	198861	WELDMENT, IV MANAGEMENT	2
10	70762	SCREW,RLG,PAN,TX,M6,.630,STL	2
11	193226	WELDMENT, THIGH	1
12	198055	BUSHING, SNAP, 5/16, NYL	8
13	196116	PIN,CLEVIS,5/16,1.5,STL	4
14	198227	PLUG, END	4
15	193627	ACTUATOR, THIGH	1

NOTES:

UPPER FRAME—FOOT SECTION DRIVES MODULE (SHEET 5 OF 6)

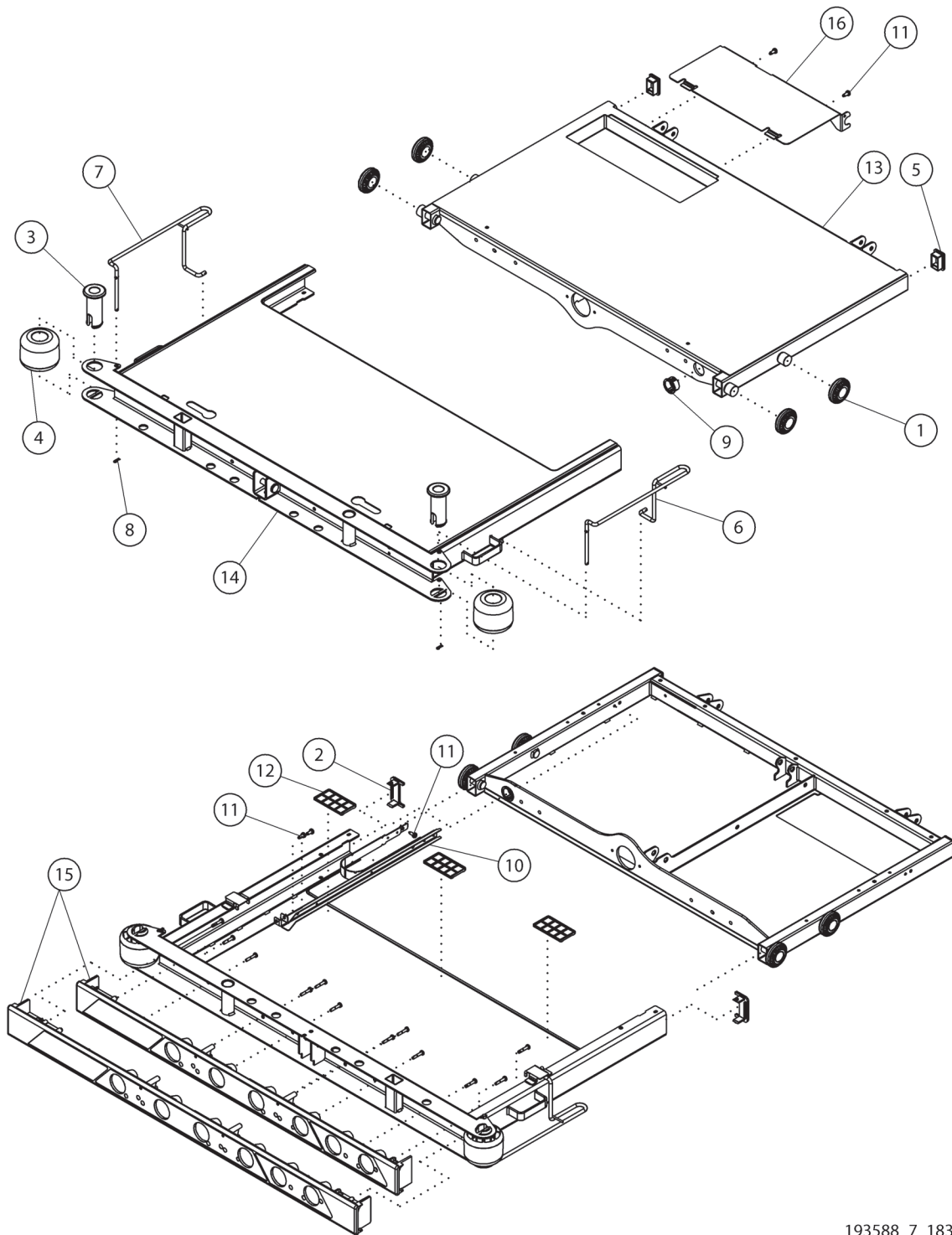


193588_7_185

Item	Part Number	Description	Quantity
1	164827	PIN - 10MM X 50	4
2	61615	RETAIN,RUE,3/8,.054	4
3	193629	ACTUATOR, FOOT EXTENSION	1
4	193628	ACTUATOR, FOOT	1
5	186023	WIRE TIE, PUSH MOUNT	1

NOTES:

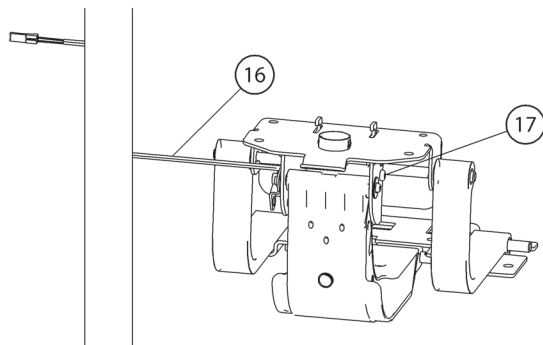
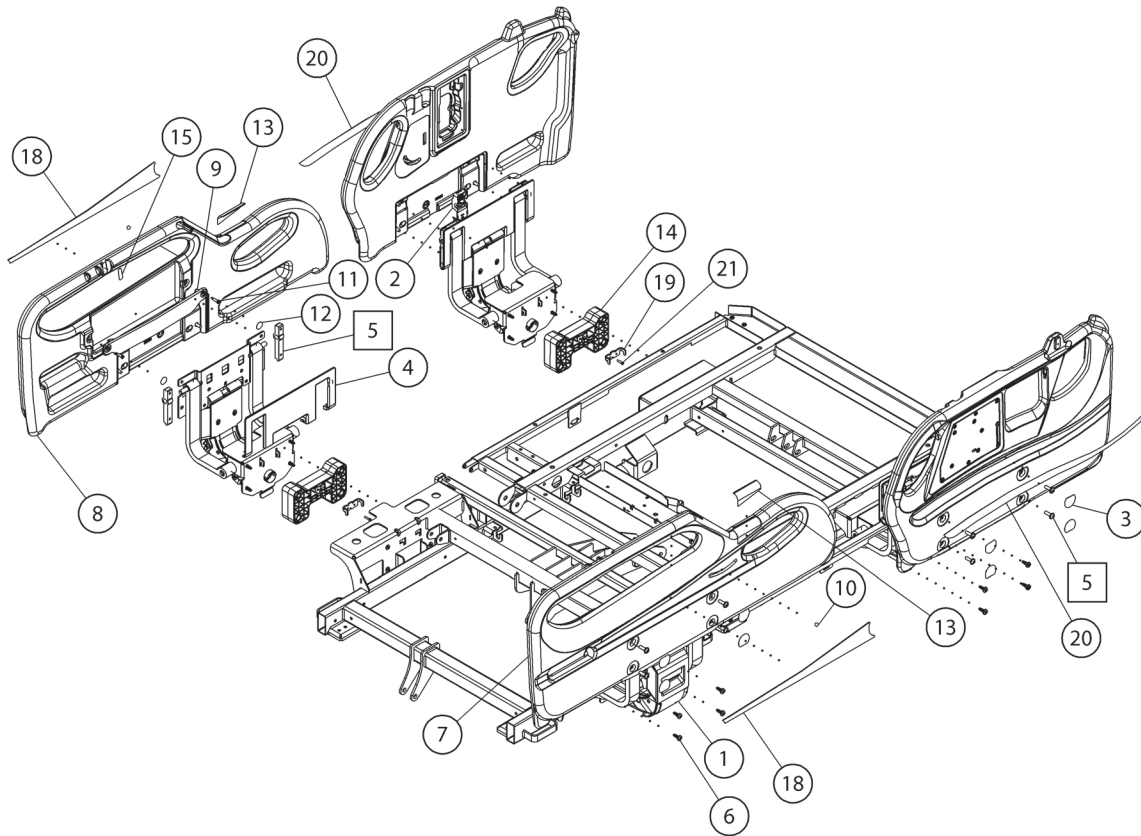
UPPER FRAME—FOOT SECTION MODULE (SHEET 6 OF 6)



193588_7_183

Item	Part Number	Description	Quantity
1	34922	RETRACTING ROLLER	4
2	194592	CAP, SLIDING	2
3	4715302	RIVET,TUB,1.16,2.756,FLG,NYL	2
4	47219	BUMPER	2
5	16643102	PLUG, FRAME TUBE	2
6	20570001	WELDMENT,WIREFORM,DRAINAGE,LH	1
7	20570002	WELDMENT,WIREFORM,DRAINAGE,RH	1
8	4179	PIN,COT/HRPN,.047,.578,SPR/S	2
9	185178	GROMMET, HEYCO 3128	1
10	198655S	ASSY, WIRE ROUTING, FOOT	1
11	70341	SCREW,RLG,PAN,TX,M5,.472,STL	5
12	195360	GLIDE	3
13	194585	WELDMENT, FIXED FOOT	1
	196256	WELDMENT, FIXED FOOT, WIDE	1
14	194593	WELDMENT, SLIDING FOOT	1
	196242	WELDMENT, SLIDING FOOT, WIDE	1
15	194920	COVER, SAFEVIEW	1
	198907	COVER, SAFEVIEW, WIDE	1
16	208797	FOOT COVER (NON-INTEGRATED AIR BEDS)	1

SIDERAILS (SHEET 1 OF 4)

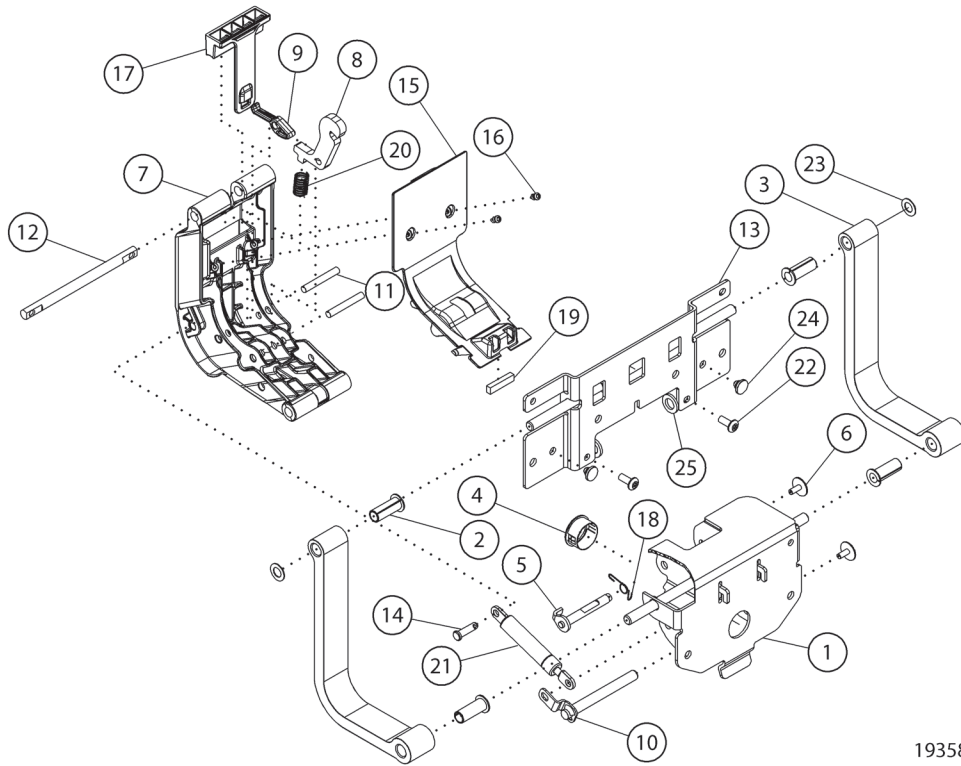


193588_7_239

Item	Part Number	Description	Quantity
1	191841S	ASSEMBLY, SIDERAIL MECHANISM	4
2	193979	CABLE GUIDE	1
3	202946	KIT, SIDERAIL BOLT COVER (PKG OF 16)	1
4	192590	COVER, UPPER MOUNT	4
5	211429S ^a	KIT, SIDERAIL UPPER MOUNT	4
6	70762	SCREW,RLG,PAN,TX,M6,.630,STL (NARROW DECK)	16
	211294	SCREW,RLG,PAN,TX,M6-1,52,ZN (WIDE DECK)	16
7	19443901	SIDERAIL, INTERMEDIATE, LEFT	1
8	19443902	SIDERAIL, INTERMEDIATE, RIGHT	1
9	191876	STRAP, S/RL STOWAGE	2
10	47272	ANGLE BALL	2
11	199238	SCREW,FORM,PAN,TX,8-16,5/8,ZN	4
12	195896	LABEL, PED STORAGE BOLT COVER	4
13	202953	LABEL KIT, HIP INDICATOR	1
14	193877	SPACER, SIDERAIL, WIDE	4
15	195901	LABEL, URINAL PLACEMENT	2
16	19587202	CABLE ASSY,SIDERAIL UP SW,FT	2
17	197339	SCREW,MACH,PAN,TX,M5-.8,10,ZN	2
18	202937	LABEL KIT, INT RAIL, DECO	1
19	193882	HOOKS, S/R SPACER, WIDE	4
20	202938	LABEL KIT, HEAD RAIL DECO	1
21	4214102	SCREW,HILO,PAN,TX,6-19,.58,STL	4

a. The kit includes (1) upper mount weldment (194970), (4) siderail bolt cover (195882), (1) left-hand and (1) right-hand upper mount reinforcement (21129701 and 21129702), and (4) screws (211380).

SIDERAILS (SHEET 2 OF 4)

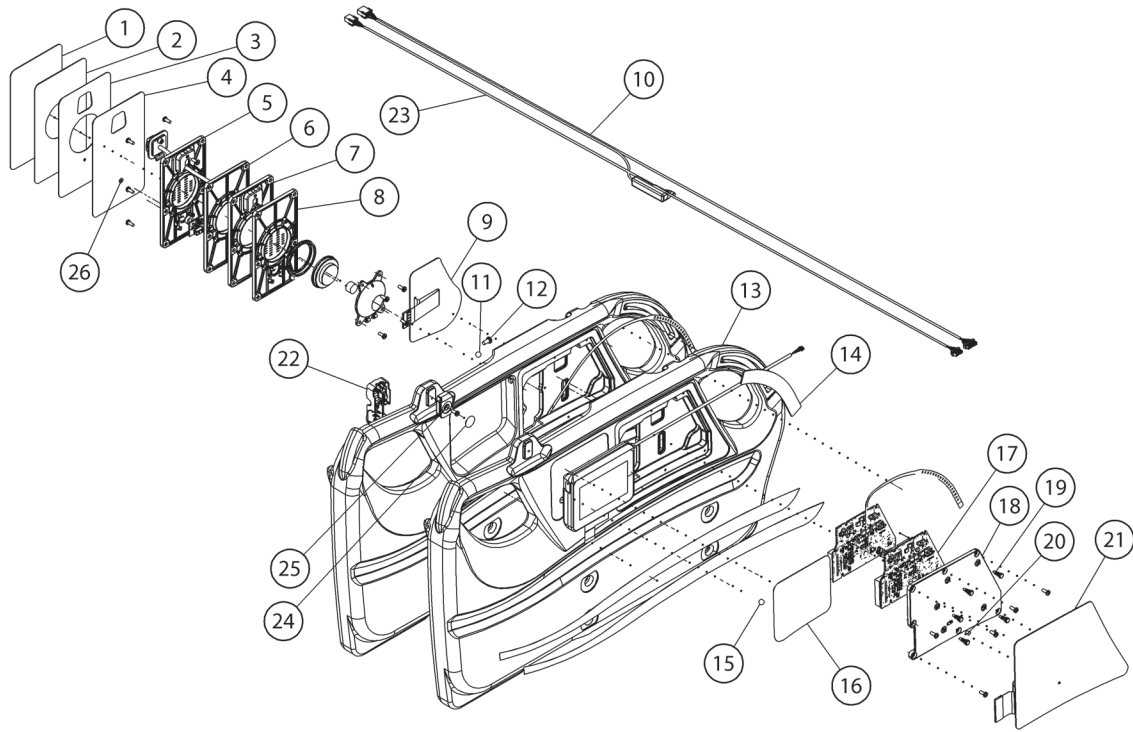


193588_3_298

Item	Part Number	Description	Quantity
1	194968	WELDMENT, LOWER MOUNT	1
2	196180	BUSHING,FLG,15/32,1.25,3/8,IGLIDE	4
3	193995	ARM, OUTER, SIDERAIL	2
4	185178	GROMMET, HEYCO 3128	1
5	170060	LATCH PIN WELDMENT	1
6	163082	M5 FLANGE HEAD SCREW	2
7	191848	CENTER ARM	1
8	191849	LATCH	1
9	193975	LEVER, LATCH	1
10	194969	WELDMENT, LOWER PIVOT	1
11	196157	PIN, LATCH PIVOT	2
12	191866	SHAFT, CENTER ARM, UPPER	1
13	194970	WELDMENT, UPPER MOUNT	1
14	199421	PIN, SLIC	1
15	191872	COVER, CENTER ARM	1
16	4214101	SCREW,HILO,PAN,TX,6-19,.35,ZN	2
17	193974	HANDLE, LATCH	1
18	191854	SPRING, LATCH PIN	1
19	69842	MAGNET, SIDERAIL UP SWITCH	1

Item	Part Number	Description	Quantity
20	49111	SPRING, LATCH BIAS	1
21	198895	DAMPER, SIDERAIL	1
22	49521	BOLT,MACH,PAN,TX,.250-20,.61	2
23	41298	WASHER,FL,.390,.695,.031,NYL	2
24	199420	BUMPER, UPPER MOUNT	2
25	46487	WASHER,FLAT,7/16,3/4,3/32,NYL	2

SIDERAILS (SHEET 3 OF 4)



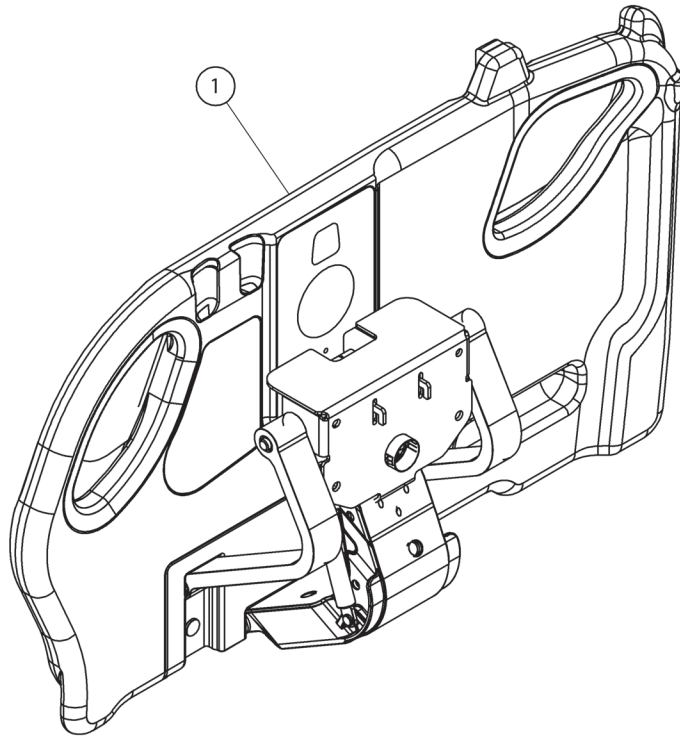
193588_7_240

Item	Part Number	Description	Quantity
1	195895102	LABEL, NO SPEAKER, NO USB, BLANK, EN	1
	195895302	LABEL, NO SPEAKER, NO USB, BLANK, FR	1
	1958951202	LABEL, NO SPEAKER, NO USB, BLANK, JA	1
2	195895101	LABEL, W/ SPEAKER, NO USB, EN	1
	195895301	LABEL, W/ SPEAKER, NO USB, FR	1
	1958951201	LABEL, W/ SPEAKER, NO USB, JA	1
3	19589503	LABEL, W/ SPEAKER, W/USB	1
4	19589504	LABEL, NO SPEAKER, W/USB	1
5	19283701	HOUSING, SPEAKER, W/USB	1
6	19283703	HOUSING, SPEAKER, BLANK	2
7	19283704	HOUSING, SPEAKER, W/USB ONLY	1
8	19283702	HOUSING, SPEAKER, WITHOUT USB	2
9	20760502	CONT PNL,PATNT,R,STD,W NCALL	1
	20760501	CONT PNL,PATNT,L,STD,W NCALL	1
10	211273 ³	CABLE ASSY, HEADRAIL DATA AND SWITCH	1
11	47272	ANGLE BALL	1
12	197339	SCREW,MACH,PAN,TX,M5-.8,10,ZN	1

Item	Part Number	Description	Quantity
13	19871503	SIDERAIL, HEAD, RH, WO/FUD	1
	19871501	SIDERAIL, HEAD, RH, W/FUD	1
	19871502	SIDERAIL, HEAD, LH	1
14	19679202	LENS, LIGHTED SIDERAIL RIGHT	1
	19679201	LENS, LIGHTED SIDERAIL LEFT	1
15	47272	ANGLE BALL	1
16	195305	LABEL, ANGLE BALL INDIC, BASIC	1
17	207608	PCBA, HEADRAIL FIXED RIGHT W/PED	1
	207609	PCBA, HEADRAIL FIXED RIGHT W/OPED	1
	207611	PCB ASSY, HEADRAIL FIXED LEFT	1
18	19283501	COVER, PCBA, RH	1
	19283502	COVER, PCBA, LH	1
19	199360	STANDOFF, PCBA, ELASTOMER	5
20	198871	LIGHT PIPE	1
21	20760402	CONT PNL,CRGVR,R,STDPM,W NCALL	1
	20760401	CONT PNL,CRGVR,L,STDPM,W NCALL	1
22	193979	CABLE GUIDE	1
23	194635	CABLE ASSY, HEADRAIL AUDIO	1
24	198824	LABEL, PENDANT MOUNT COVER	1
25	207115	INSERT, CAREGIVER, PENDANT MOUNT	1
26	196537	VENT, ACOUSTIC	2
Not shown	194651	CABLE ASSY,PED DCP	1

a. Part number 19587201, siderail up switch cable assembly, is no longer available. It has been combined with the headrail data cable assembly, 211273.

SIDERAILS (SHEET 4 OF 4)

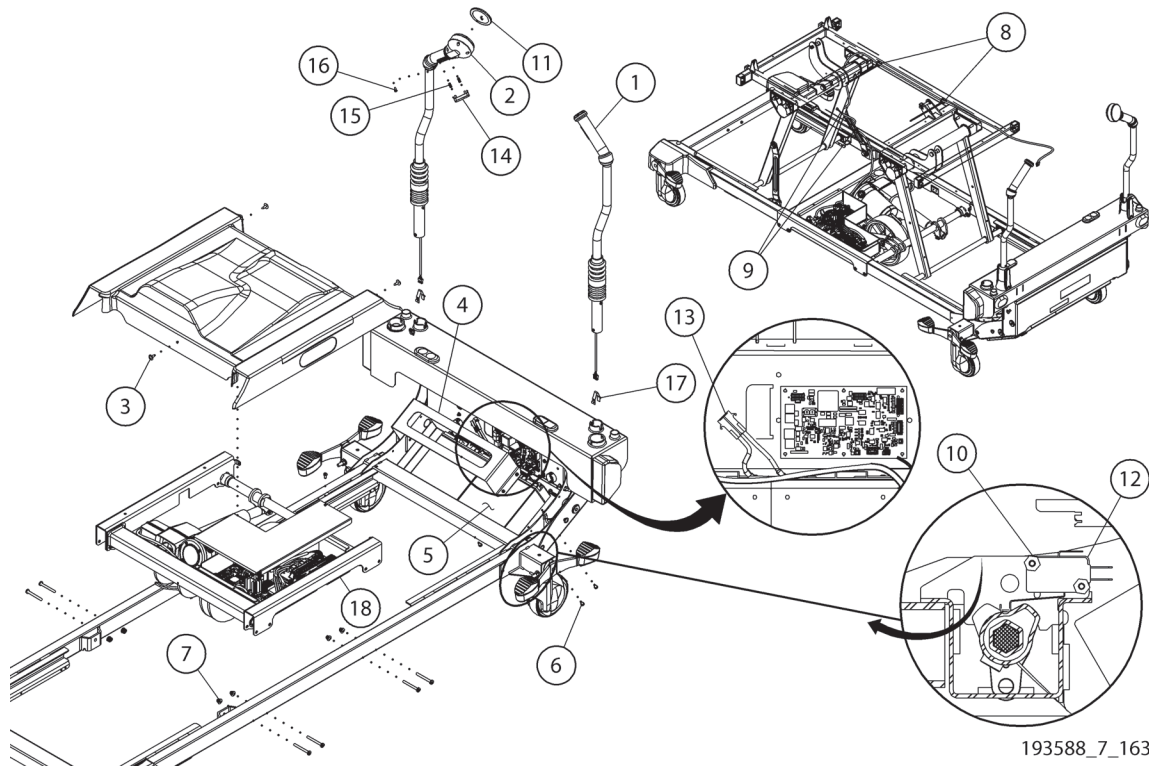


193588_3_309

Item	Part Number	Description	Quantity
1	P7933A13	HEAD SIDERAIL, RH	1
	P7933A15	HEAD SIDERAIL, LH	1

NOTES:

POWER DRIVE (SHEET 1 OF 2)

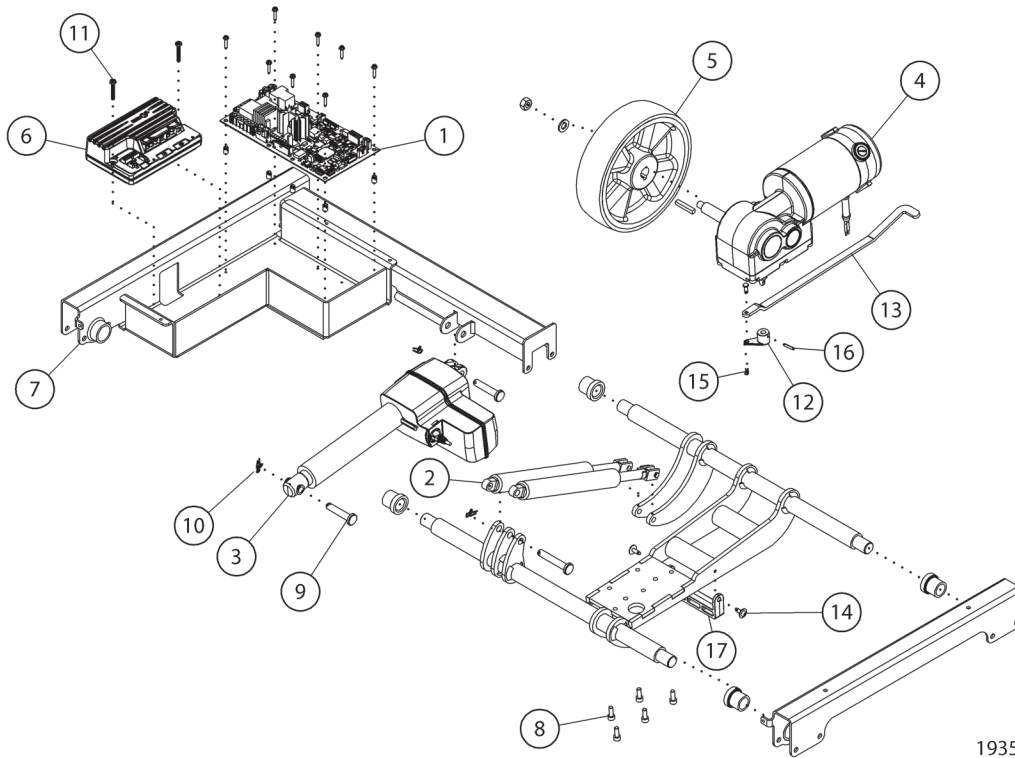


193588_7_163

Item	Part Number	Description	Quantity
1	19195401	ASSEMBLY, HANDLE, PTM, LEFT	1
2	19195402	ASSEMBLY, HANDLE, PTM, RIGHT	1
3	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	3
4	195807	BRACKET,PTD BATTERY (P7900A0/ P7900B0)	1
	205446	BRACKET,PTD BATTERY (P7900B1/NEWER)	1
5	192410	BATTERY,EB20-12	2
6	70341	SCREW,RLG,PAN,TX,M5,.472,STL	5
7	190237	NUT, HEX,FLG,NYLOC, M6-1,9.1, ZN	8
8	186023	WIRE TIE, PUSH MOUNT	2
9	19124	WIRE TIE	5
10	158582	SCREW,TAP,PAN,T10,#4,.625,STL	2
11	196112	PANEL,MEMBRANE,POWER DRIVE	1
12	19512	SWITCH,SNAP,SPDT,0.1A	1
13	196538	FUSE,ATO,30A	1
14	68352	ENABLE SWITCH BUTTON	1
15	68354	SPRING	2
16	163841	SCREW,MACH,PLAST,PH,8-32,.375	2
17	130815	BUTTON, SNAP	2
18	194879	ASSEMBLY, POWER DRIVE	1

NOTES:

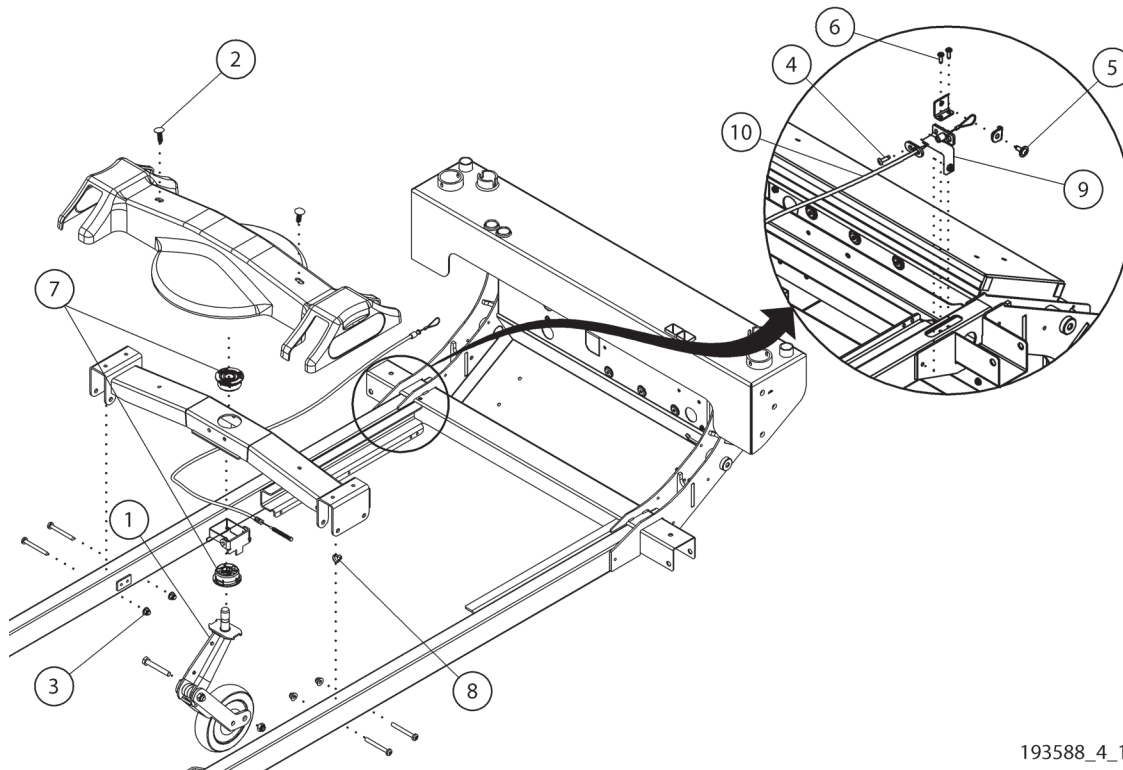
POWER DRIVE (SHEET 2 OF 2)



193588_4_164

Item	Part Number	Description	Quantity
1	195237	PCB ASSY, DRIVE CONTROL	1
2	206714 ^a	GAS SPRING, POWER DRIVE	2
3	191951	ACTUATOR, POWER DRIVE	1
4	191959	MOTOR, GEARMOTOR,PTM,450W	1
5	194620	200X50X20,WHEEL,DRIVE	1
6	195239	CONTROLLER, DRIVE MOTOR	1
7	194819	WELDMENT, ELECTRONICS BOX	1
8	137658	M6 X 16 SHCS	5
9	164827	PIN - 10MM X 50	2
10	61615	RETAIN,RUE,3/8,.054	3
11	148956	SCREW,ROLL,PAN,TX,M5-.8,30,ZN	2
12	198856	HUB, ACTIVATION	1
13	198855	ARM, ACTIVATION	1
14	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	2
15	62050	RUE RING, 1/4	1
16	0010020021	PINROLL 1/8, .750	1
17	198857	MOUNTING BLOCK	1

a. If the gas springs you are replacing are not adjustable, when you install the new gas springs, you will need to adjust their length. See "IntelliDrive® Transport System Components—Replacement" on page 4-101.

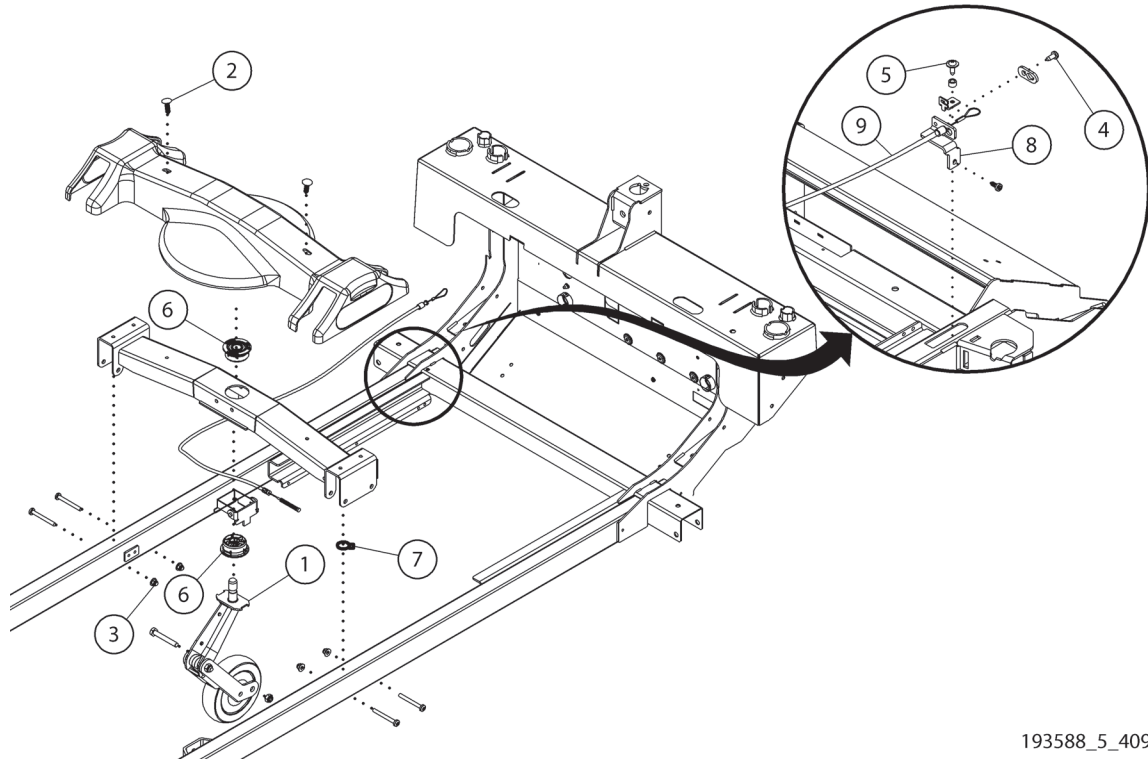
5TH WHEEL (P7900A0 AND P7900B0)

193588_4_176

Item	Part Number	Description	Quantity
1	191052S	5TH WHEEL	1
2	129623	RIVET,BARB,.25,1.05,DOME,NYL	2
3	190237	NUT, HEX,FLG,NYLOC, M6-1,9.1, ZN	4
4	70341 ^a	SCREW,RLG,PAN,TX,M5,.472,STL	1
5	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	1
6	69988	SCREW,ROLL,PAN,TX,M4-.7,12,ZN	2
7	167173	PIVOT SYSTEM	2
8	19124	WIRE TIE	2
9	197538	SUPPORT, CABLE END	1
10	198613	CABLE, 5TH WHEEL	1

- a. If service is being done on the 5th wheel cable assembly, when you install the cable latch plate (attached with the screw, item 4), install the cable latch plate on the foot-end side of the cable end support (item 9) (see "5th Wheel Assembly Components—Replacement" on page 4-108). After the parts are installed, make sure the 5th wheel function operates correctly.

5TH WHEEL (P7900B1 AND NEWER)



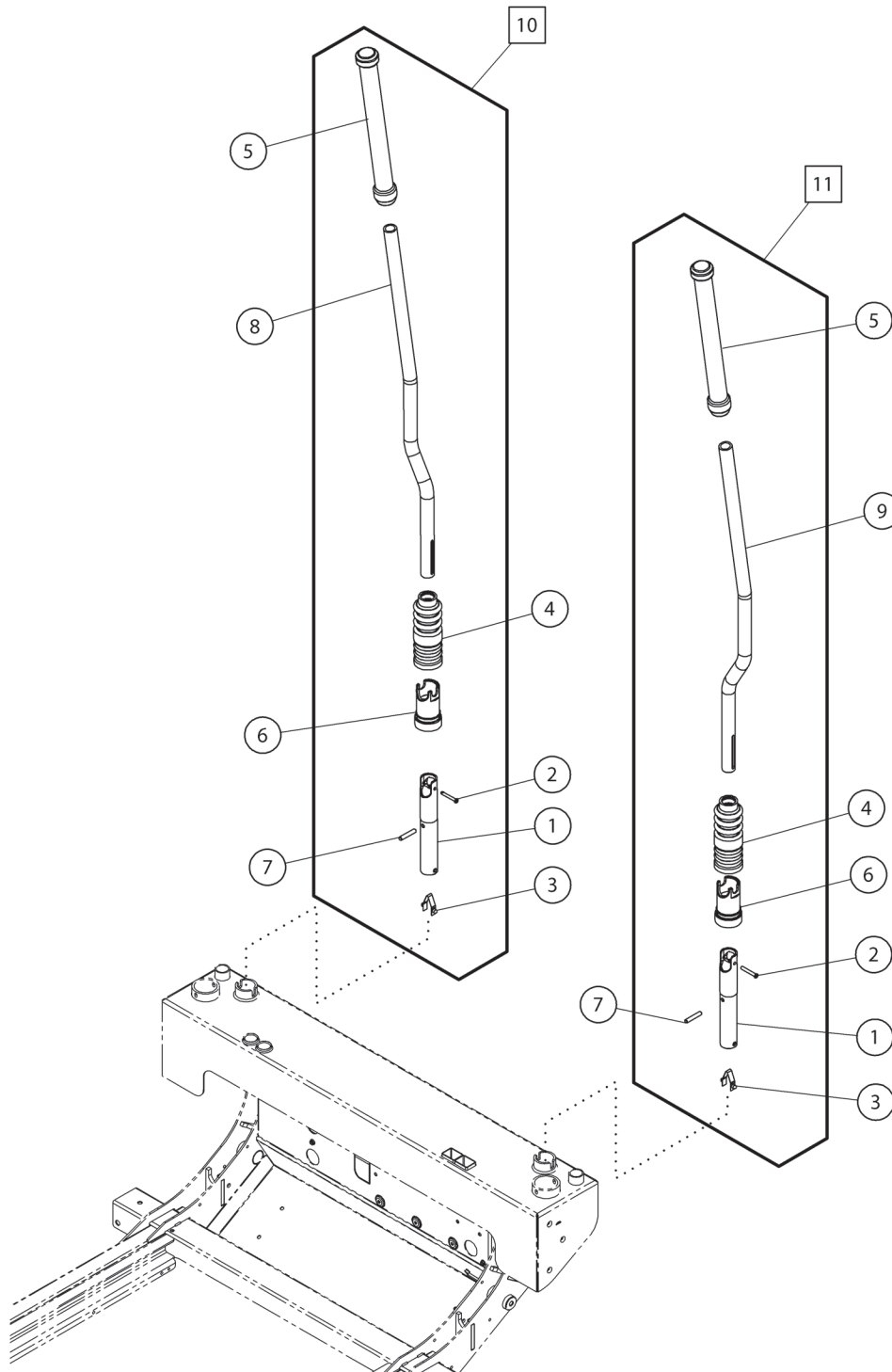
193588_5_409

Item	Part Number	Description	Quantity
1	191052S	5TH WHEEL	1
2	129623	RIVET,BARB,.25,1.05,DOME,NYL	2
3	190237	NUT, HEX,FLG,NYLOC, M6-1,9.1, ZN	4
4	70341 ^a	SCREW,RLG,PAN,TX,M5,.472,STL	1
5	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	1
6	167173	PIVOT SYSTEM	2
7	19124	WIRE TIE	2
8	197538	SUPPORT, CABLE END	1
9	198613	CABLE, 5TH WHEEL	1

- a. If service is being done on the 5th wheel cable assembly, when you install the cable latch plate (attached with the screw, item 4), install the cable latch plate on the foot-end side of the cable end support (item 9) (see “5th Wheel Assembly Components—Replacement” on page 4-108). After the parts are installed, make sure the 5th wheel function operates correctly.

NOTES:

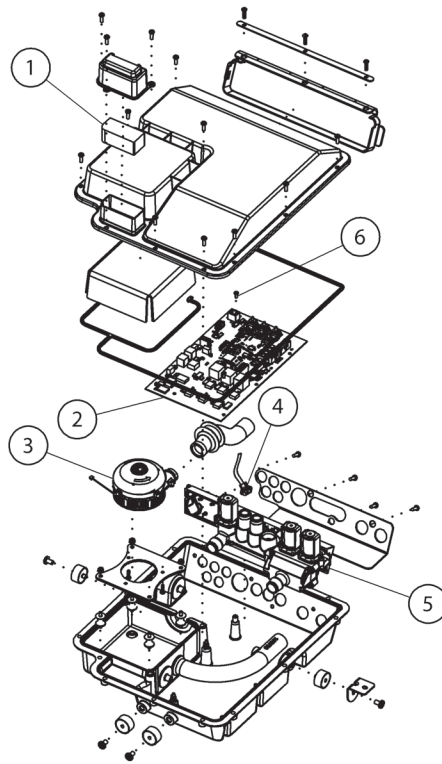
PUSH HANDLES (P7929)



193588_5_350

Item	Part Number	Description	Quantity
1	208124	TUBE, BASE, PUSH HANDLE	1
2	208128	PIN, SLIC 3/16", X 1.15"	1
3	130815	BUTTON, SNAP	1
4	6913001	HANDLE BELLOWS, DARK BLUE	1
5	197766	LONG HANDLE GRIP	1
6	68301	COUPLER SHIELD	1
7	62634	PIN, ROLL, .250, 1.375, HC STL	1
8	20812301	TUBE, HANDLE LONG LH	1
9	20812302	TUBE, HANDLE LONG RH	1
10	20812501	ASSEMBLY, PUSH HANDLE LONG LH	1
11	20812502	ASSEMBLY, PUSH HANDLE LONG RH	1

PNEUMATIC ASSEMBLY

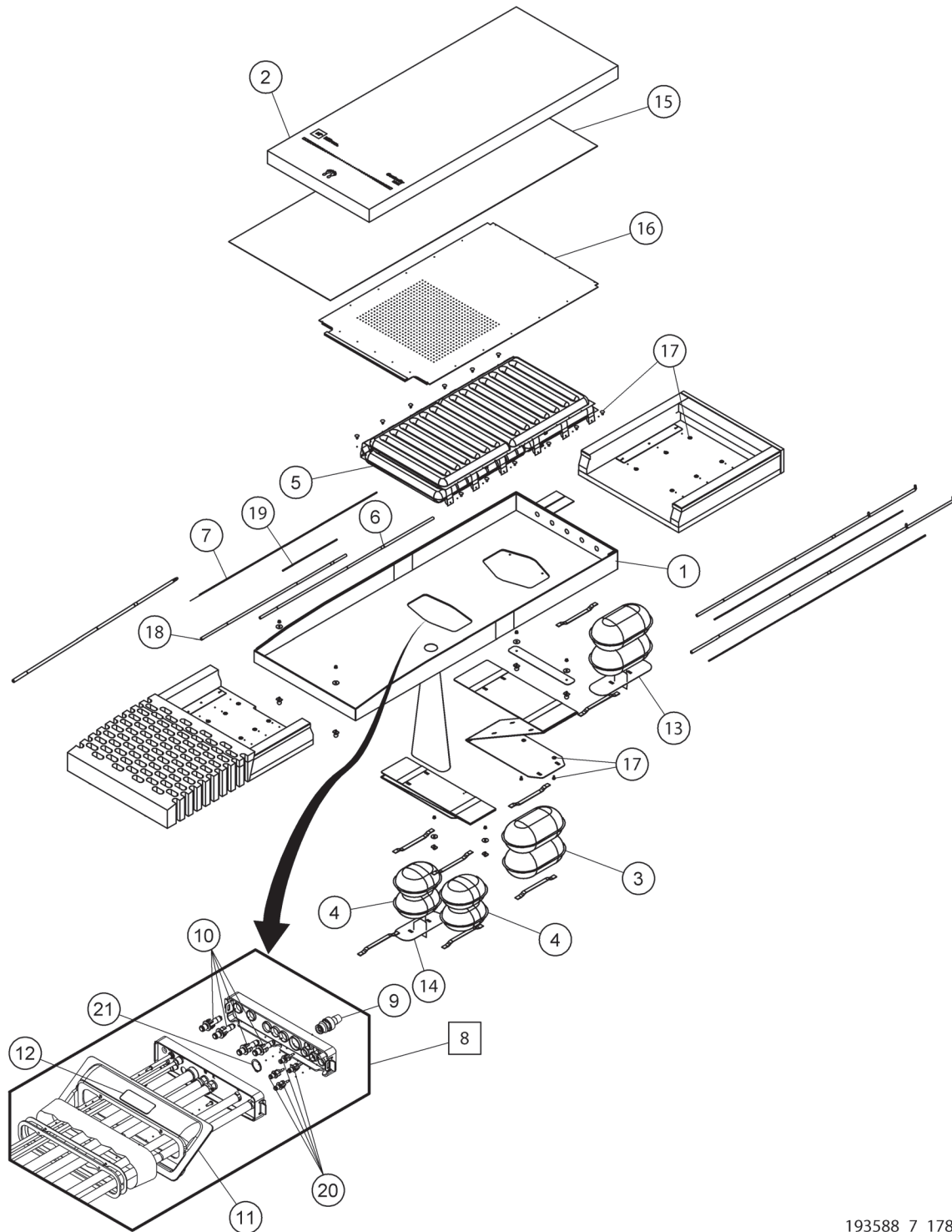


193588_1_162

Item	Part Number	Description	Quantity
1	192577	FILTER, INLET, PNEUMATIC BOX	1
2	192177	PCB ASSY, AIR CONTROL	1
3	192999	BLOWER, PNEUMATIC BOX	1
4	195954	SWITCH, HALL EFFECT	1
5	192569	MANIFOLD, PNEUMATIC BOX	1
6	4214101	SCREW, HILO, PAN, TX,6-19,.33,STL	2

NOTES:

MAX MATTRESS P7922A01¹ (36"), P7922A03 (36"), AND P7922A02 (40")

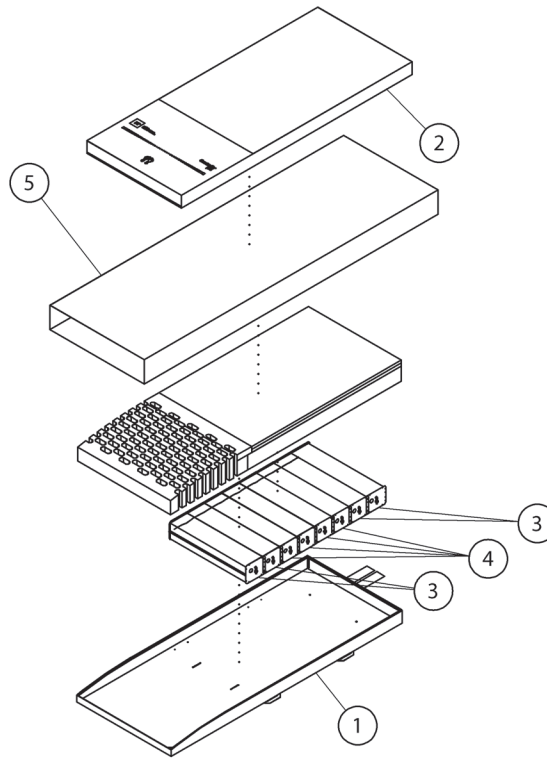


193588_7_178

1. The letter that follows P7922 identifies the mattress revision.

Item	Part Number	Description	Quantity
1	194577	ASSY, BOTTOM COVER, 36"	1
	196101	ASSY, BOTTOM COVER, 40"	1
2	194578	ASSY, TOP COVER, 36"	1
	209527	ASSY, TOP COVER, WITH X-RAY, 36"	1
	196419	ASSY, TOP COVER, 40"	1
3	194623	BLADDER, HEAD TURN ASSIST	2
4	194624	BLADDER, SEAT TURN ASSIST	2
5	194625	SUPPORT BLADDER ASSEMBLY	1
6	194808	HEAD FILL TUBE, ASSY	1
7	194809	HEAD SENSE TUBE, ASSY	
8	193798S	ASSY, CONN, MATTRESS, INTERFACE	1
9	192121	COUPLING, 1/2" HOSE BARB	1
10	153915	FITTING 3/8" HOSE BARB	2
11	192556	HEEL COVER	1
12	199769	LABEL, HEEL COVER	1
13	203185	PLATE, SUPPORT, TURN ASSIST, HEAD	1
14	203186	PLATE, SUPPORT, TURN ASSIST, SEAT	1
15	196184	ASSEMBLY, FIRE BARRIER	1
16	194626	ASSEMBLY, MCM, 36"	1
	196435	ASSEMBLY, MCM, 40"	1
17	172958	SNAP RIVET KIT (MALE AND FEMALE SETS)	50
18	194811	ASSY, SEAT FILL TUBE	1
19	194810	ASSY, SEAT SENSE TUBE	1
20	153917S	FITTING, 1/8" BARB	4
21	196328	RING, EXTERNAL RETAINING	1

PRO MATTRESS P7921A01 (36") AND P7921A02 (40")

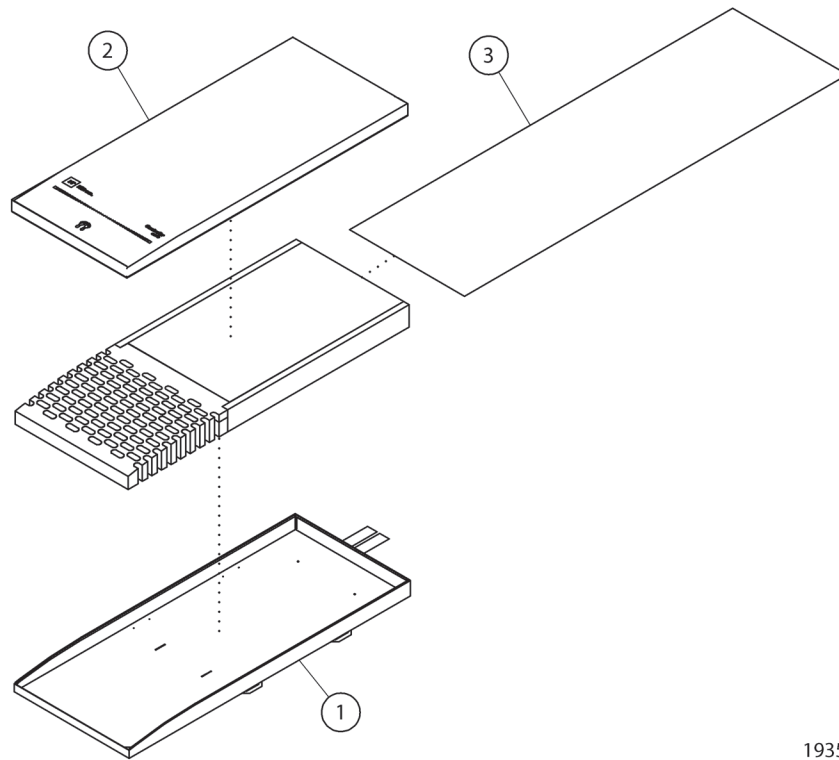


193588_5_179

Item	Part Number	Description	Quantity
1	194200	ASSY, BOTTOM COVER, 36"	1
	196158	ASSY, BOTTOM COVER, 40"	1
2	194192	ASSEMBLY, TOP COVER, 36"	1
	196190	ASSEMBLY, TOP COVER, 40"	1
3	19545501	BLADDER, FOAM FILLED	4
4	19545502	BLADDER, FOAM FILLED	4
5	202977	ASSEMBLY, FIRE BARRIER	1

NOTES:

CORE MATTRESS P7920A

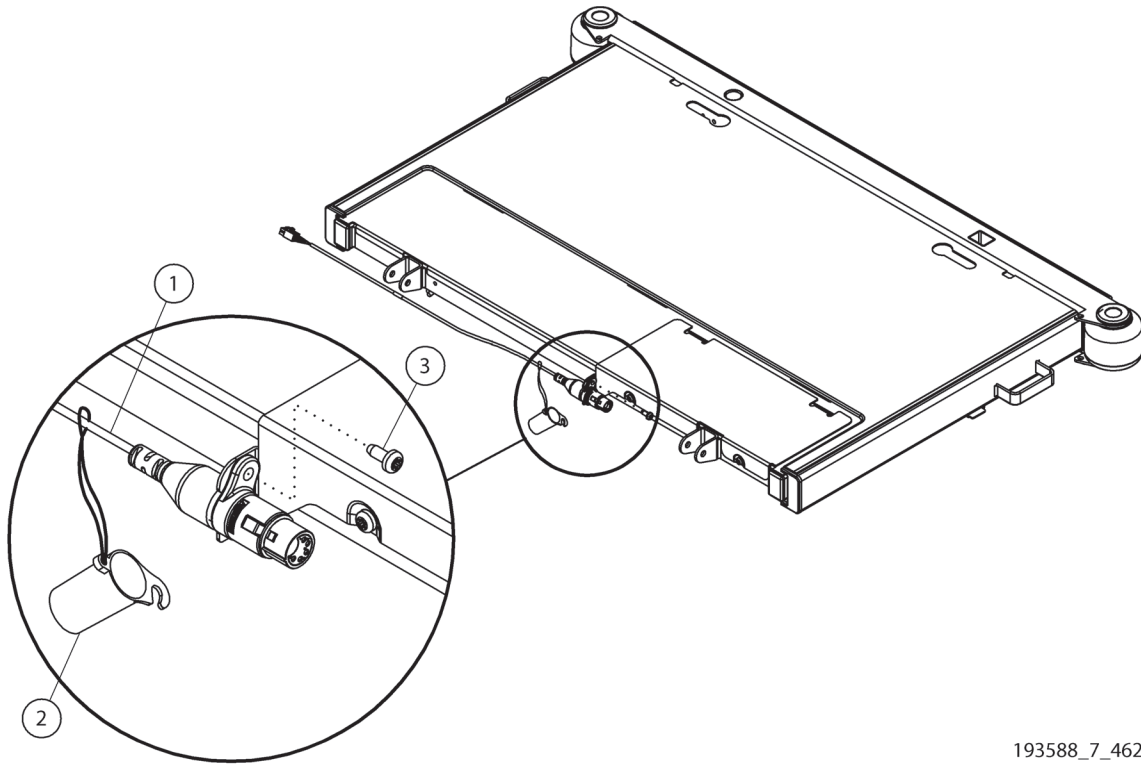


193588_3_180

Item	Part Number	Description	Quantity
1	194200	ASSY, BOTTOM COVER	1
2	195491	ASSY, TOP COVER, BASIC	1
3	195492	ASSY, FIRE BARRIER	1

NOTES:

PRO+ MATTRESS (P7923) CONNECTION CABLE



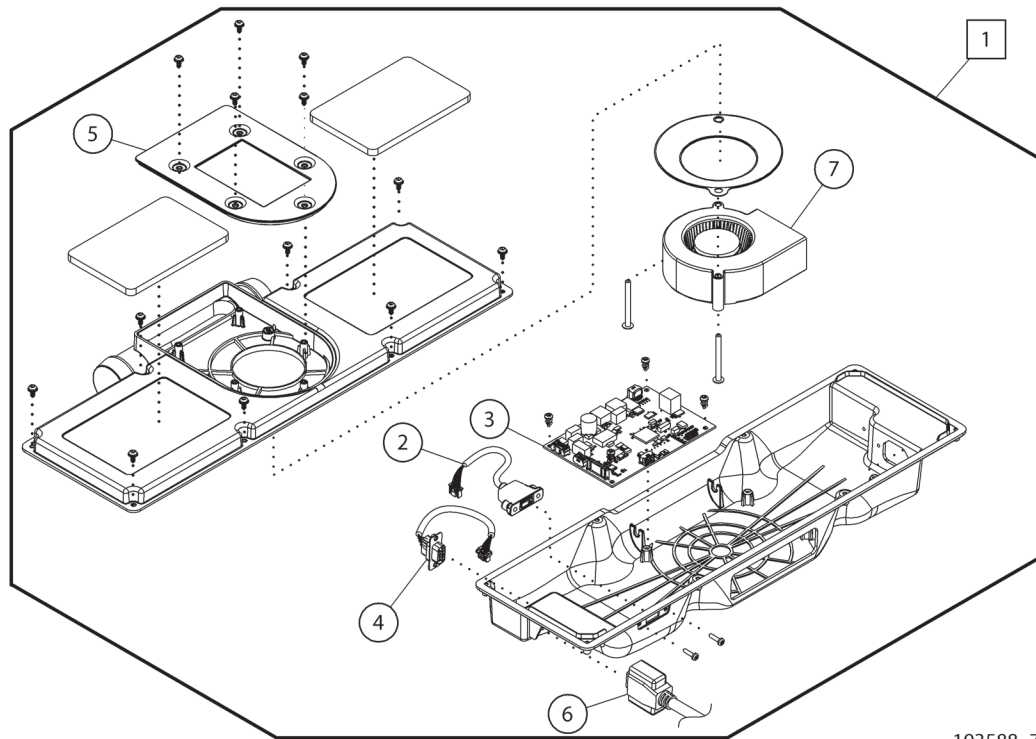
193588_7_462

Item	Part Number	Description	Quantity
1	208830S	CONNECTION CABLE	1
2	212825	CONNECTOR COVER	1
3	70341	SCREW,RLG,PAN,TX,M5,.472,STL	1

NOTES:



PRO+ MATTRESS (P7923)—BLOWER ENCLOSURE

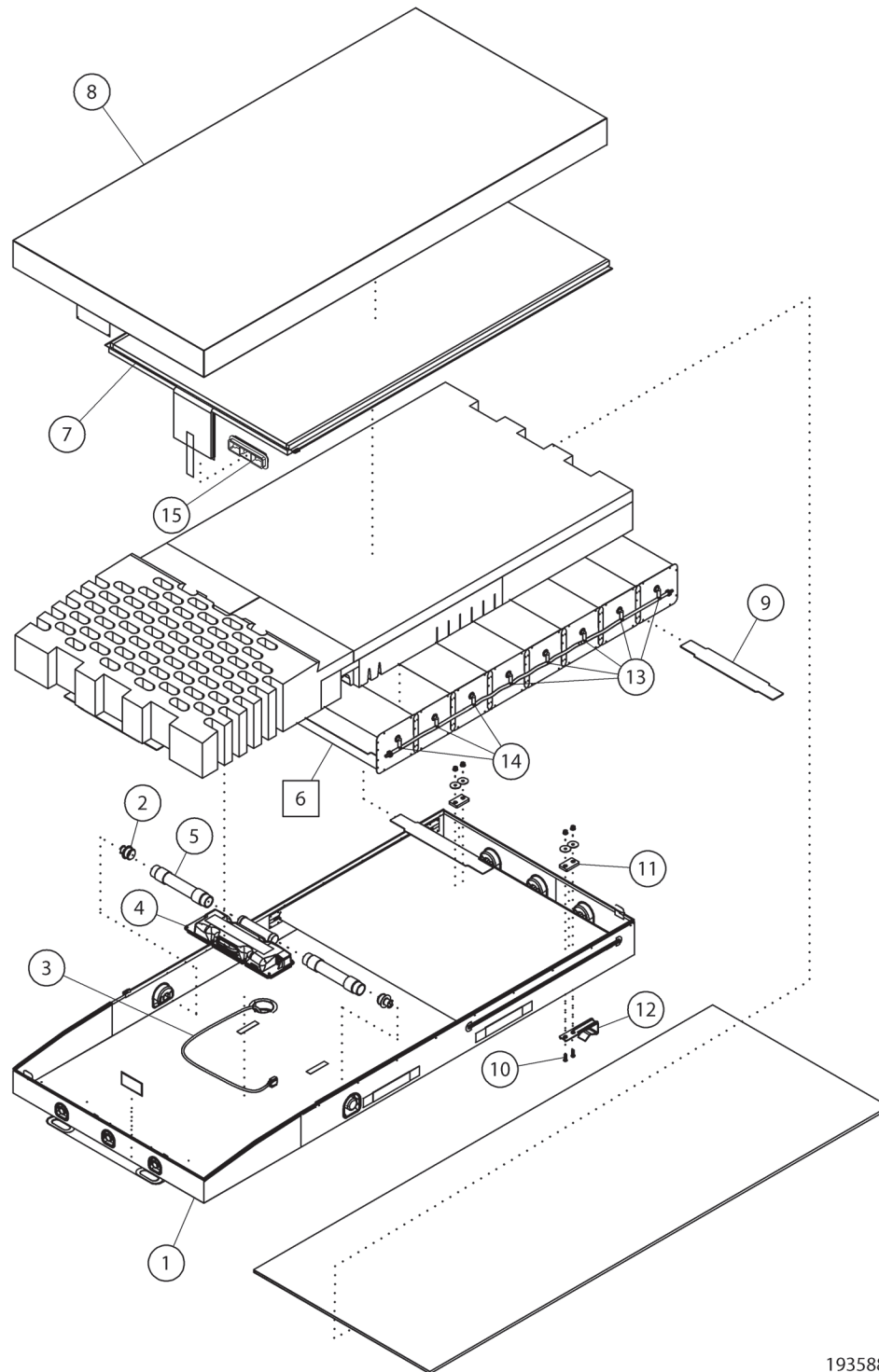


193588_7_477

Item	Part Number	Quantity	Description
1	207900S	1	BLOWER ENCLOSURE, INTEGRATED
2	209353S	1	CBL ASSY, PNL MNT USB, NO SCREW
3	208478S	1	PCB ASSY,BLOWER CONTROL BOARD
4	208976S	1	CABLE ASSY, EN/BOARD, INT
5	208757S	1	COVER, PLENUM
6	208831S	1	CABLE ASSY, INTEGRATED SURFACE
7	207889S	1	BLOWER, 24 VDC

NOTES:

PRO+ MATTRESS ASSEMBLY (P7923)¹—LAYERS AND COMPONENTS

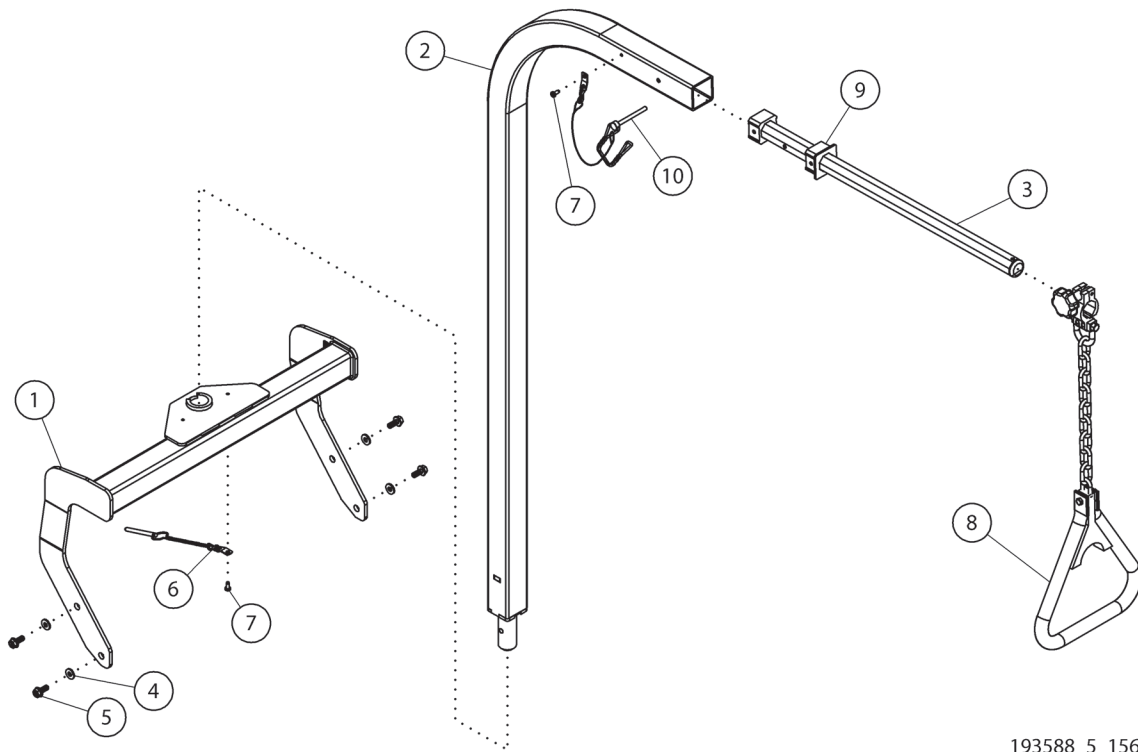


193588_7_493

1. P7923A01—36" (91 cm) wide mattress with x-ray sleeve; P7923A02—40" (102 cm) mattress with x-ray sleeve;
P7923A03—36" (91 cm) wide mattress without x-ray sleeve; P7923A04—40" (102 cm) wide mattress without x-ray sleeve

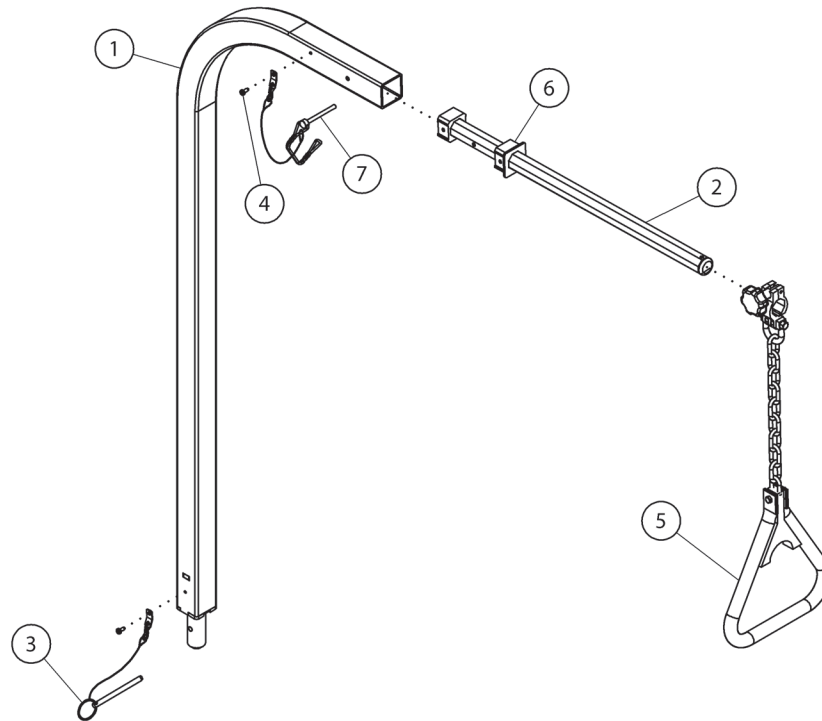
Item	Part Number	Quantity	Description
1	21187903S	1	ASSY, BTM CVR, 36", INT, X-RAY
	21187904S	1	ASSY, BTM CVR, 36", INT
	21187907S	1	ASSY, BTM CVR, 40", INT, X-RAY
	21187908S	1	ASSY, BTM CVR, 40", INT
2	208706S	2	BARBED FITTING, AIR INLET
3	208831S	1	CABLE ASSY, INTEGRATED SURFACE
4	207900S	1	BLOWER ENCLOSURE, INTEGRATED
5	20881701S	2	HOSE, XP,W/CUFFS ID 38MM, 280MM
6	208970S	1	AIR SYSTEM, 8" X 29"
7	20875101S	1	ASSEMBLY, MCM, 36"
	20875102S	1	ASSEMBLY, MCM, 40"
8	20877003S	1	ASSY, TOP CVR, 36" INT, X-RAY
	20877004S	1	ASSY, TOP CVR, 36" INT
	20877007S	1	ASSY, TOP CVR, 40" INT, X-RAY
	20877008S	1	ASSY, TOP CVR, 40" INT
9	212177S	2	ATTACHMENT PLATE, HEAD
10	212180	4	SCREW, MACH,M8X1.25,25,HX,SS
11	209234S	1	PLATE, SURFACE ATTACHMENT
12	212145S	2	ATTACMENT HOOK, MATTRESS
13	20897101S	5	BLADDER, FOAM FILLED, 1 - 29"
14	20897102S	3	BLADDER, FOAM FILLED, 2 - 29"
15	208756S	1	CONNECTOR, MCM TO ENCLOSURE
Not shown	209657	1	CABLE TIE, LP, 7.5", NYL
Not shown	212042	1	CABLE TIE, 5.5, 0.10, NYL

PATIENT HELPER (P7934A)



193588_5_156

Item	Part Number	Description	Quantity
1	200331	WELDMENT,MOUNT,PATIENT HELPER	1
2	185572	WELDMENT,MAST	1
3	200934	ASSEMBLY ARM	1
4	35667	WASHER	4
5	190317	FLANGE BOLT, M8x1.25, 20MM LENGTH	4
6	194070	PIN, 1/4" RELEASE	1
7	70341	SCREW,RLG,PAN,TX,M5,.472,STL	2
8	136787	TRAPEZE HANDLE ASSY	1
9	189910	OCTAGON CAP	1
10	209302	PIN, 1/4", DOUBLE WIRE LOCKING	1

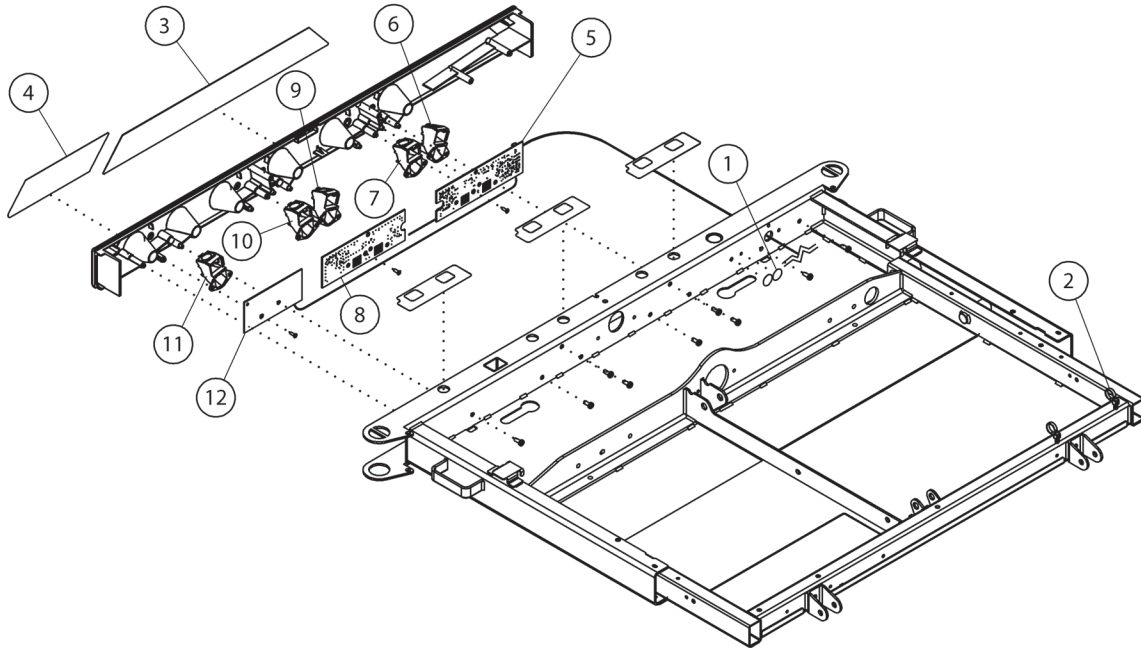
PATIENT HELPER (P7936A)

193588_5_410

Item	Part Number	Description	Quantity
1	185572	WELDMENT, MAST	1
2	200934	ASSEMBLY ARM	1
3	194070	PIN, 1/4" RELEASE	1
4	70341	SCREW,RLG,PAN,TX,M5,.472,STL	2
5	136787	TRAPEZE HANDLE ASSY	1
6	189910	OCTAGON CAP	1
7	209302	PIN, 1/4", DOUBLE WIRE LOCKING	1

5

SAFEVIEW®+ ALERTS

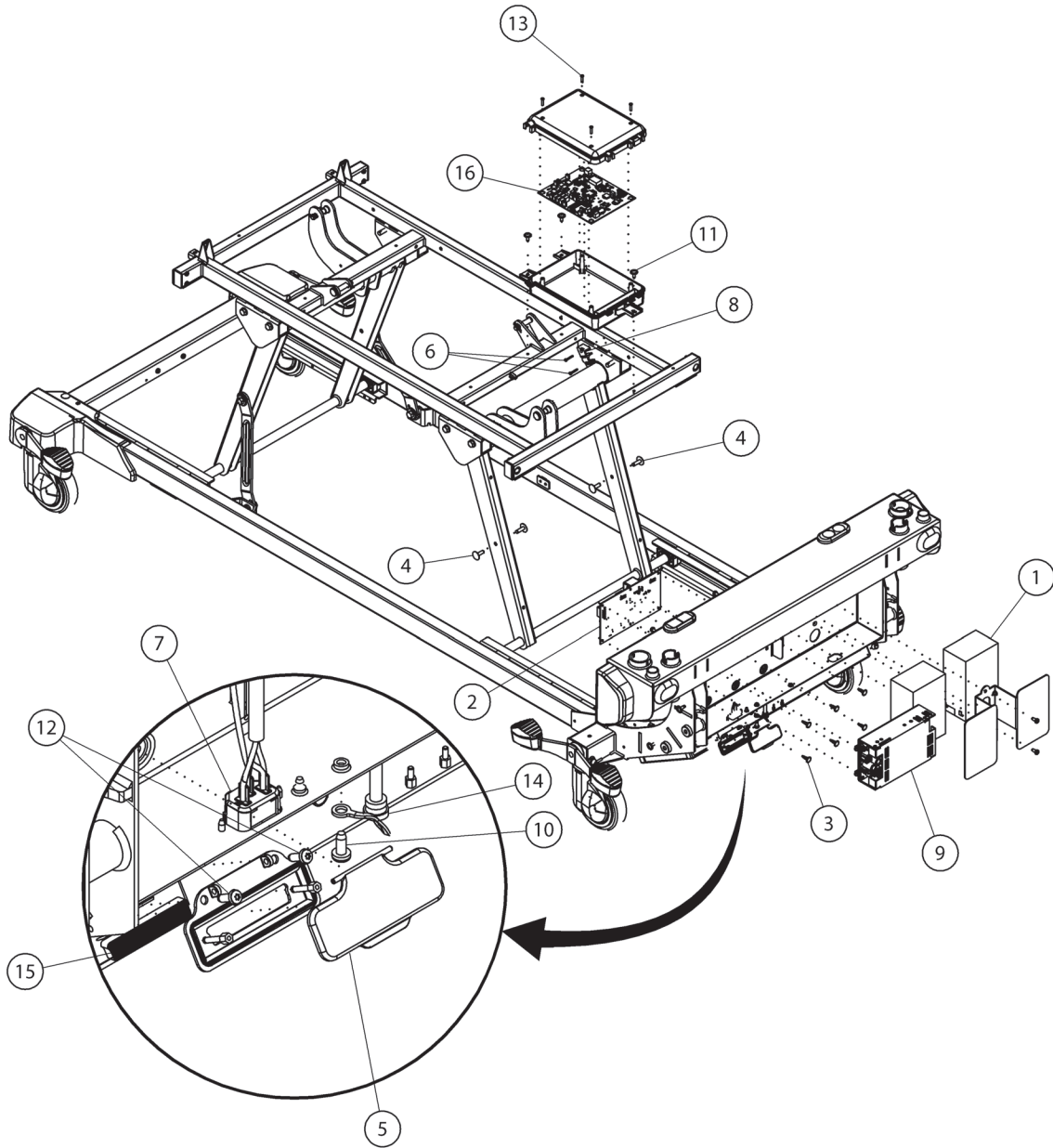


193588_1_177

Item	Part Number	Description	Quantity
1	198824	LABEL, PENDANT MOUNT COVER	2
2	186023	WIRE TIE, PUSH MOUNT	2
3	195912	LABEL, FOOT END SAFEVIEW BLANK	1
	195911	LABEL, FOOT END SAFEVIEW	1
4	195910	LABEL, VITALS INCONTINENCE BLANK	1
	199764	LABEL, VITALS-INCONTINENCE	1
5	198430	PCB ASSY, GENESIS, SV2 CONTROL	1
6	19902703	ASSY, PROJECTOR, LOW LOW	1
7	19902702	ASSY, PROJECTOR, BED EXIT ON	1
8	198433	PCB ASSY, GENESIS, SV2 LIGHT	1
9	19902701	ASSY, PROJECTOR, BED EXIT OFF	1
10	19902704	ASSY, PROJECTOR, RAILS	1
11	19902705	ASSY, PROJECTOR, INC DETECT	1
12	198436	PCB ASSY, GENESIS, DOWSER/ES LGT	1

NOTES:

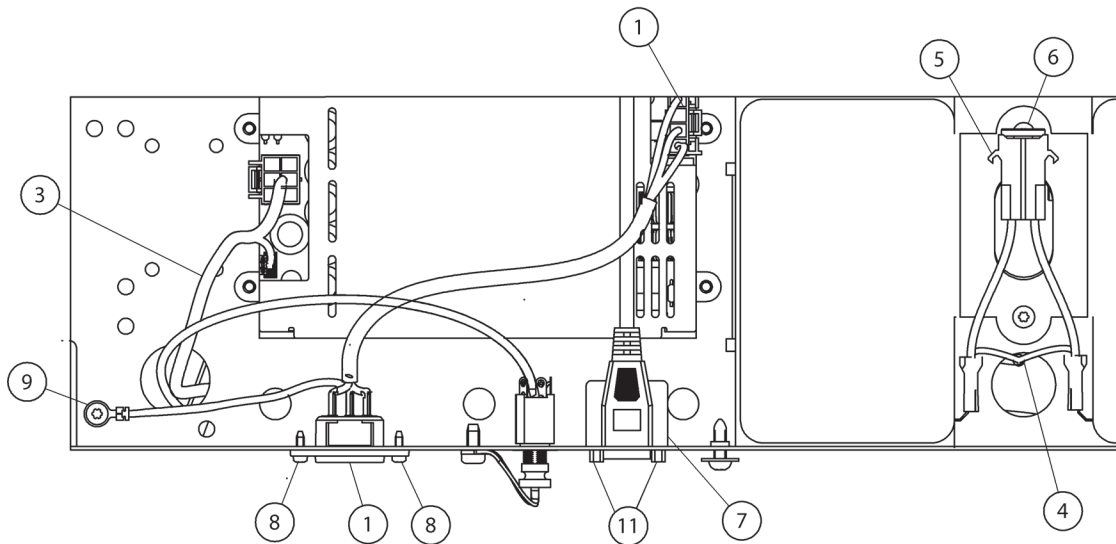
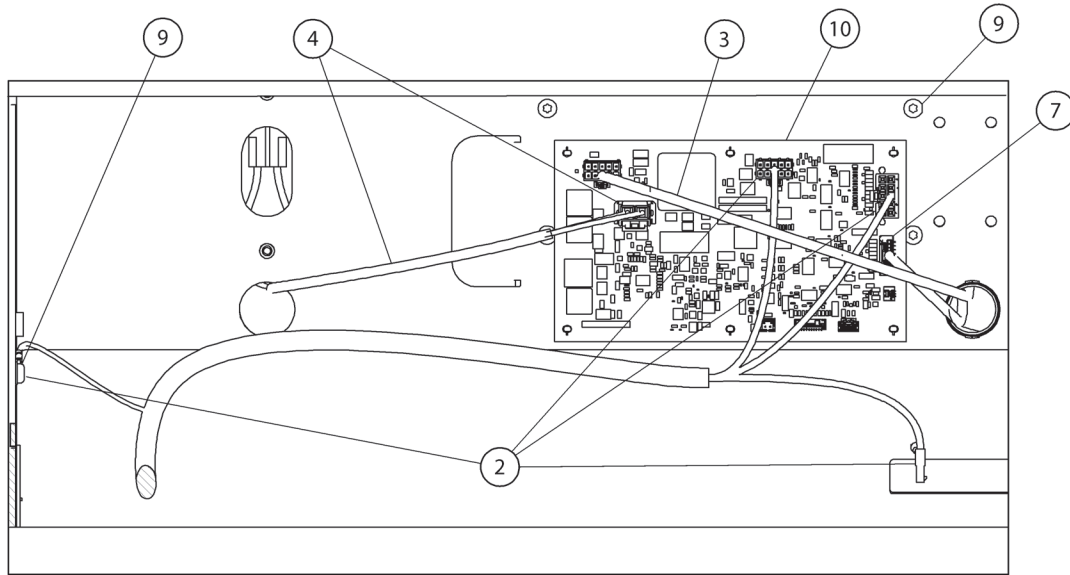
ELECTRONIC MODULE (SHEET 1 OF 4)



193588_4_202

Item	Part Number	Description	Quantity
1	4840501	BATTERY, LEAD ACID, SEALED, 12V	2
2	195549	PCB ASSY,GENESIS,BATTERY CHRG	1
3	3976301	STANDOFF,RND,SNP/SNP,.213,.766	6
4	138043	RIVET, RATCHET, .281, .813, DM, NYL	2
5	199545	COVER, 37 PIN	1
6	70348	SCREW,RLG,PAN,TX,M3,.787,STL (P7900A0/P7900B0)	2
		SCREW,RLG,PAN,TX,M3,.787,STL (P7900B1/NEWER)	3
7	194654	CABLE ASSY,AC INLET TO PSM	1
8	198789	CLAMP, COIL CABLE	1
9	20743401	POWER SUPPLY BRICK, 28VDC,750W	1
10	70341	SCREW,RLG,PAN,TX,M5,.472,STL	1
11	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	3
12	69988	SCREW,ROLL,PAN,TX,M4-.7,12,ZN	2
13	4214102	SCREW,HILO,PAN,TX,6-19,.58,STL	4
14	34512P	PLUG, DUMMY	1
15	199276	CABLE ASSY,SIDECOM,COILED 37CONDUCTORS (P7900A0/P7900B0)	1
	205472	CABLE ASSY,SIDECOM, 37CONDUCTORS (P7900B1/NEWER)	1
16	192025	PCB ASSY, SIDECOM	1

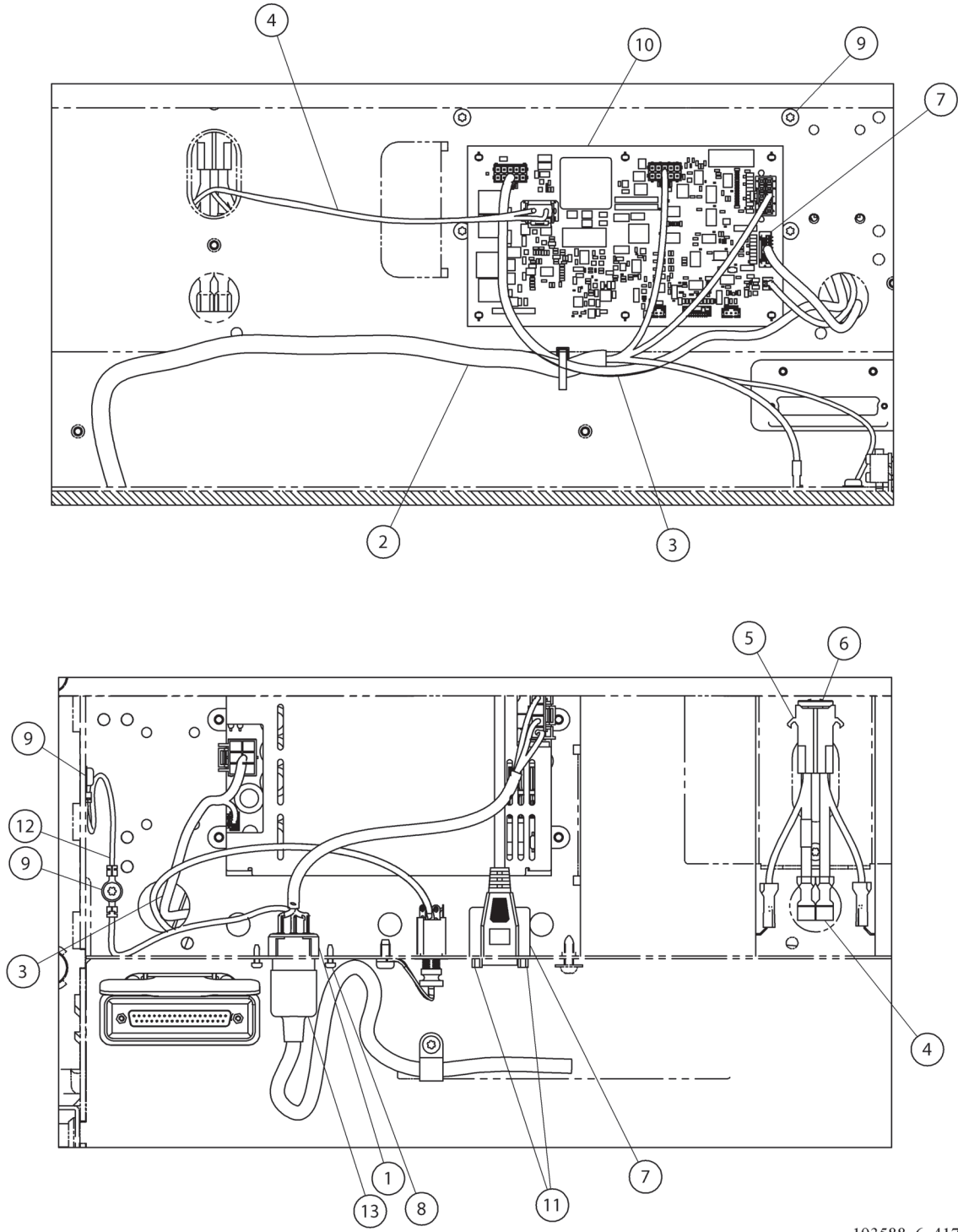
ELECTRONIC MODULE (P7900A0 AND P7900B0) (SHEET 2 OF 4)



193588_6_203

Item	Part Number	Description	Quantity
1	194654	CABLE ASSY,AC INLET TO PSM	1
2	194641	CABLE ASSY, BCB/MCB, POWER	1
3	194655	CABLE ASSY,PSM TO BCB	1
4	194874	CABLE ASSY, BATTERY CABLE	1
5	194877	CABLE ASSY,BATT FUSE,W/O FUSE	1
6	196538	FUSE, ATO, 30A	1
7	199837	CABLE ASSY,OHA,BED FRAME	1
8	182273	SCREW,ROLL,PAN,TX,M3X.5,10,ZN	2
9	70341	SCREW,RLG,PAN,TX,M5,.472,STL	2
10	195549	PCB ASSY,GENESIS,BATTERY CHRG	1
11	28968	SCREW,CAP,HEX,HXST,4-40,.250	2

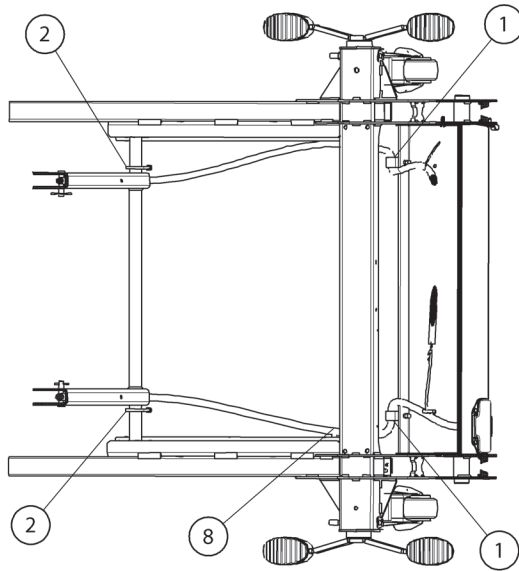
ELECTRONIC MODULE (P7900B1 AND NEWER) (SHEET 2 OF 4)



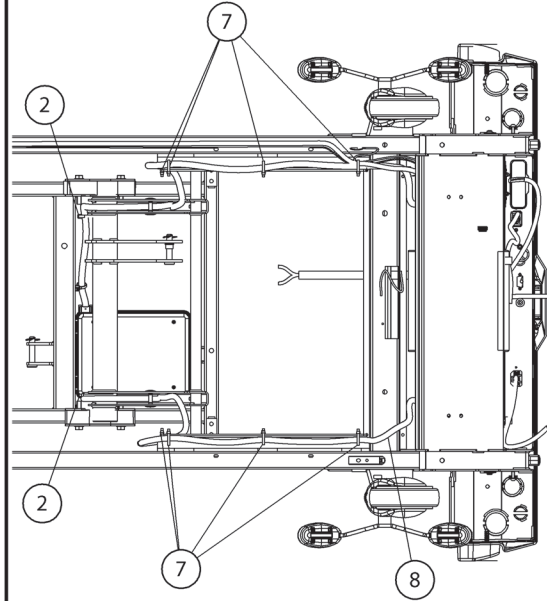
193588_6_417

Item	Part Number	Description	Quantity
1	194654	CABLE ASSY,AC INLET TO PSM	1
2	205471	CABLE ASSY, BCB/MCB, POWER	1
3	194655	CABLE ASSY,PSM TO BCB	1
4	194874	CABLE ASSY, BATTERY CABLE	1
5	194877	CABLE ASSY,BATT FUSE,W/O FUSE	1
6	196538	FUSE, ATO, 30A	1
7	199837	CABLE ASSY,OHA,BED FRAME	1
8	182273	SCREW,ROLL,PAN,TX,M3X.5,10,ZN	2
9	70341	SCREW,RLG,PAN,TX,M5,.472,STL	2
10	195549	PCB ASSY,GENESIS,BATTERY CHRG	1
11	28968	SCREW,CAP,HEX,HXST,4-40,.250	2
12	16940704	GROUND STRAP ASSEMBLY, 4.0"	1
13	6342201	POWER CORD DETACHABLE 110V	1
	6342202	POWER CORD DETACHABLE 220V, AUSTRALIA, NEW ZEALAND	1
	6342203	POWER CORD DETACHABLE, CONTINENTAL EUROPE	1
	6342204	POWER CORD DETACHABLE, UNITED KINGDOM, IRELAND	1
	6342211	POWER CORD DETACHABLE, JIS 8303, JAPAN	1
	6342212	POWER CORD DETACHABLE, SAUDI ARABIA, GUAM, MEXICO	1

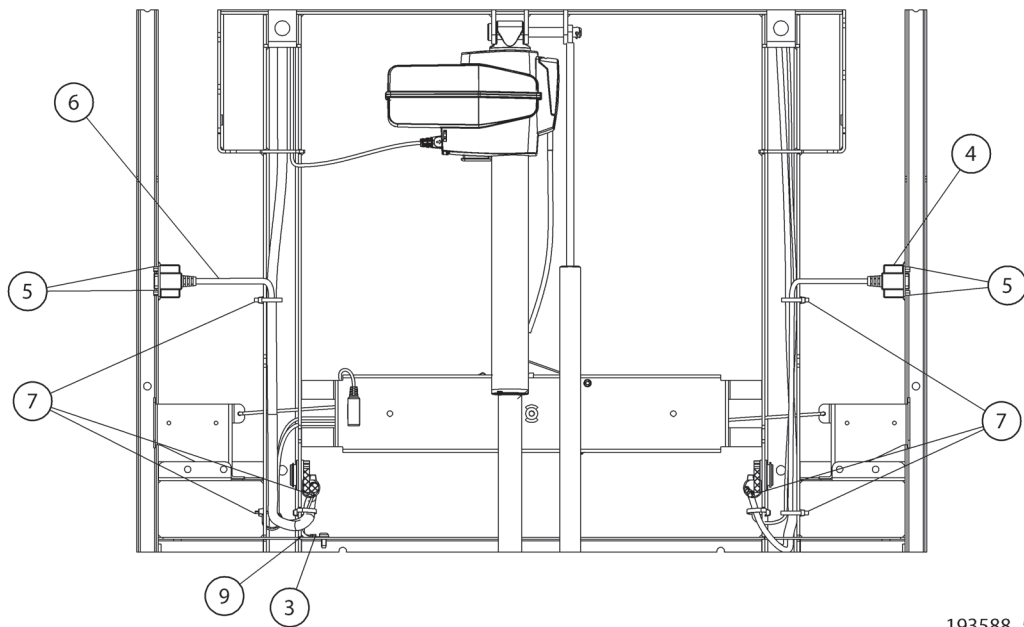
ELECTRONIC MODULE (SHEET 3 OF 4)



P7900A0/P7900B0



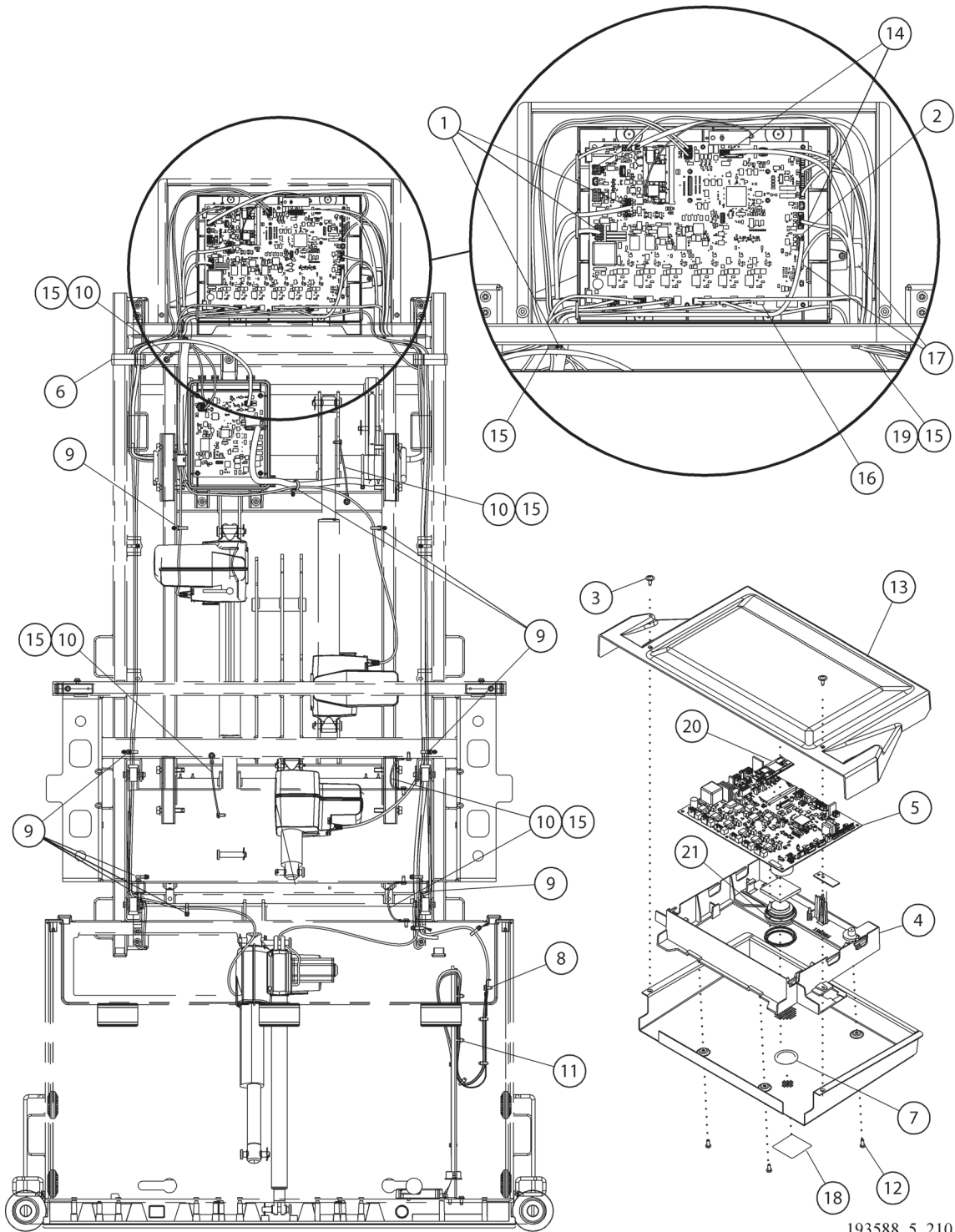
P7900B1



193588_5_204

Item	Part Number	Description	Quantity
1	162768	CLIP, P SHAPE, SNAP FIT (P7900A0/P7900B0)	2
2	31844	WIRE TIE	2
3	70341	SCREW,RLG,PAN,TX,M5,.472,STL	1
4	194636	CABLE ASSY,PATIENT PENDANT/MCB,INT. CONN	1
5	28968	SCREW,CAP,HEX,HXST,4-40,.250	6
6	211393	CABLE ASSY,HOB HARNESS	1
7	19124	WIRE TIE (P7900A0/P7900B0)	6
		WIRE TIE (P7900B1/NEWER)	14
8	199276	CABLE ASSY,SIDECOM,COILED 37 CONDUCTORS (P7900A0/P7900B0)	1
	205472	CABLE ASSY,SIDECOM, 37 CONDUCTORS (P7900B1/NEWER)	1
9	16940718	GROUND STRAP ASSY 33.0"	1

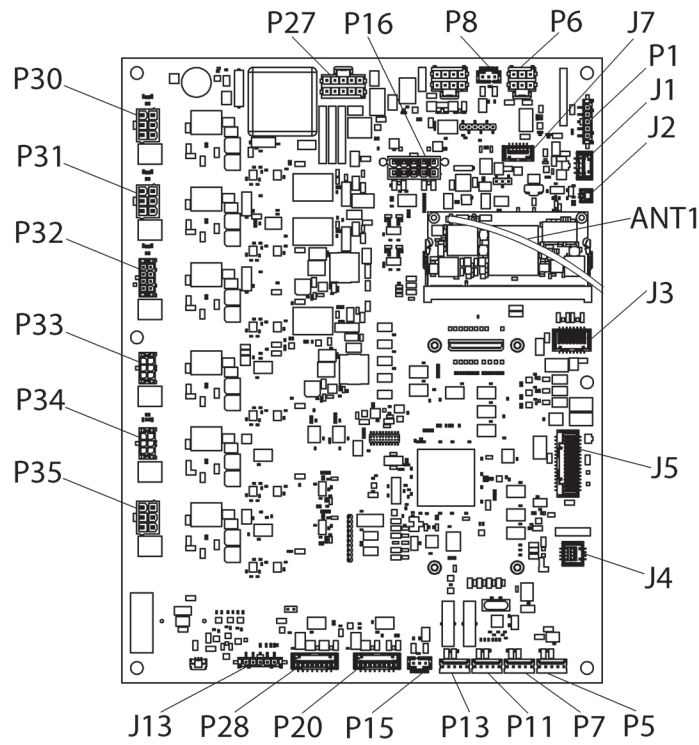
ELECTRONIC MODULE (SHEET 4 OF 4)



193588_5_210

Item	Part Number	Description	Quantity
1	194641	CABLE ASSY, BCB/MCB, POWER (P7900A0/P7900B0)	1
	205471	CABLE ASSY, BCB/MCB, POWER (P7900B1/NEWER)	1
2	194636	CABLE ASSY,PTP/MCB,INT. CONN	1
3	71993	SCREW,ROLL,PAN,TX,M5X.8,.630	2
4	196565	CHASSIS, MCB	1
5	192022	PCB ASSY, MASTER CONTROL	1
	208195	PCB ASSY, MASTER CONTROL, OIML	1
6	199518	WIRE LOOM	2
7	196850	VENT, ACOUSTIC BREATHER	1
8	14450	WIRE TIE	7
9	186023	WIRE TIE, PUSH MOUNT	9
10	16940717	GROUND STRAP ASSY 6.0"	5
11	16940718	GROUND STRAP ASSY 33.0"	1
12	42142	SCREW,HILO,PAN,TX,10-16,.500	4
13	196836	COVER, MCB	1
14	211393	CABLE ASSY,HOB HARNESS	1
15	70341	SCREW,RLG,PAN,TX,M5,.472,STL	18
16	195630	CABLE ASSY,MOTOR EXT,HEAD	1
17	194651	CABLE ASSY,PED DCP	1
18	200404	LABEL, SPEAKER HOLE COVER	1
19	16940716	GROUND STRAP ASSY 27"	1
20	200135015	SOM,IMX6SOLO,1G,128NAND,8GEMMC	1
21	194862	SPEAKER, GENESIS, 8 OHM, 1W	1

MCB CABLES



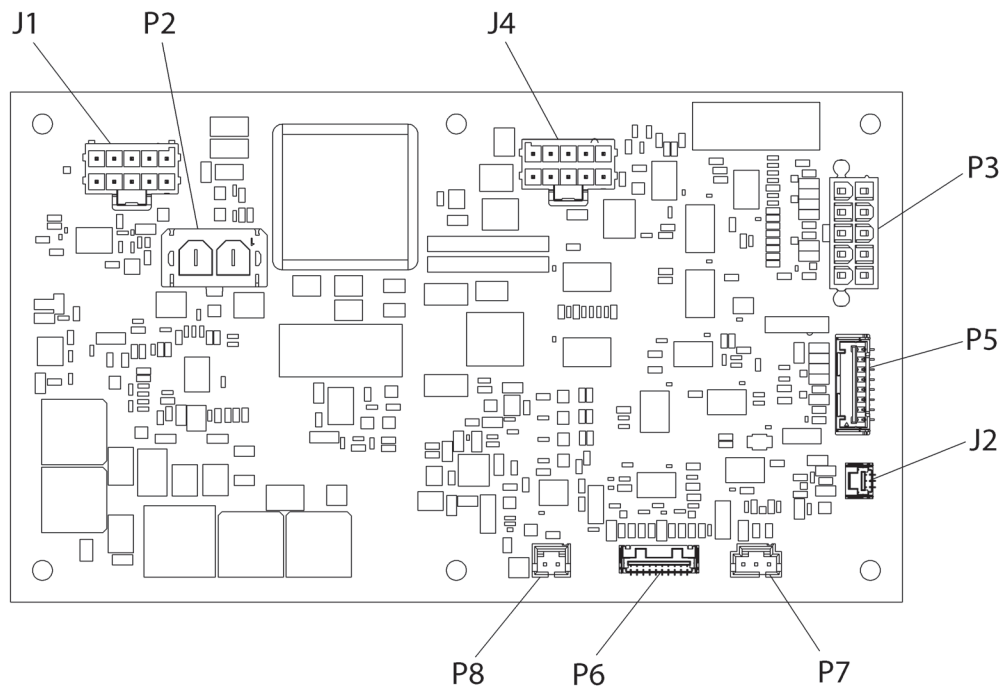
193588_5_233

Item	Part Number	Description	Quantity
P27 and P16	194641	CABLE ASSY, MCB-BCB, PWR/SPI (P7900A0/P7900B0)	1
	205471	CABLE ASSY, MCB-BCB, PWR/SPI (P7900B1/NEWER)	1
P8	19587202	CABLE ASSY, SIDERAIL UP SW, FT	1
P6	211335 ^a	CABLE ASSY, ACB - MCB HARNESS	1
	208830	CABLE ASSY, PRO+ SURFACE CONNECTION	1
P1	194884	CABLE ASSY, MCB - DCB, PWR/CAN	1
J2	194862	SPEAKER, 8 OHM, 1W, 50X13.2MM	1
ANT1 (SOM)	194649	CABLE ASSY, WIFI/BT ANTENNA	1
J3	194644	CABLE ASSY, SCB/MCB	1
J5 and P28	211393	CABLE ASSY, HOB HARNESS	1
J4	194638	CABLE ASSY, SAFEVIEW	1
P5	169105	LOAD BEAM, RIGHT HEAD	1
	16910501	LOAD BEAM, RIGHT HEAD (OIML)	1
P7	137757	LOAD BEAM, RIGHT FOOT	1
	13775701	LOAD BEAM, RIGHT FOOT (OIML)	1
P11	137757	LOAD BEAM, LEFT FOOT	1
	13775701	LOAD BEAM, LEFT FOOT (OIML)	1

Item	Part Number	Description	Quantity
P13	169105	LOAD BEAM, LEFT HEAD	1
	16910501	LOAD BEAM, LEFT HEAD (OIML)	1
P15	19587202	CABLE ASSY,SIDERAIL UP SW,FT	1
P20	194636	CABLE ASSY,PTP/MCB,INT. CONN	1
J13	194651	CABLE ASSY,PED DCP	1
P35	195630	CABLE ASSY,MOTOR EXT,HEAD	1
P34	193629	ACTUATOR, FOOT EXTENSION	1
P33	193627	ACTUATOR, THIGH	1
P32	193628	ACTUATOR, FOOT	1
P31	193626	ACTUATOR, HILO FOOT	1
P30	193626	ACTUATOR, HILO, HEAD	1
J7	198378	WATCHCARE® POWER	1
J1	199378	CABLE ASSY, VITALS JACK	1

- a. Part number 195598, MCB - ACB junction cable, is no longer available. The junction box has been removed. The 211335 ACB - MCB harness cable goes directly to the MCB from the ACB.

BCB CABLES

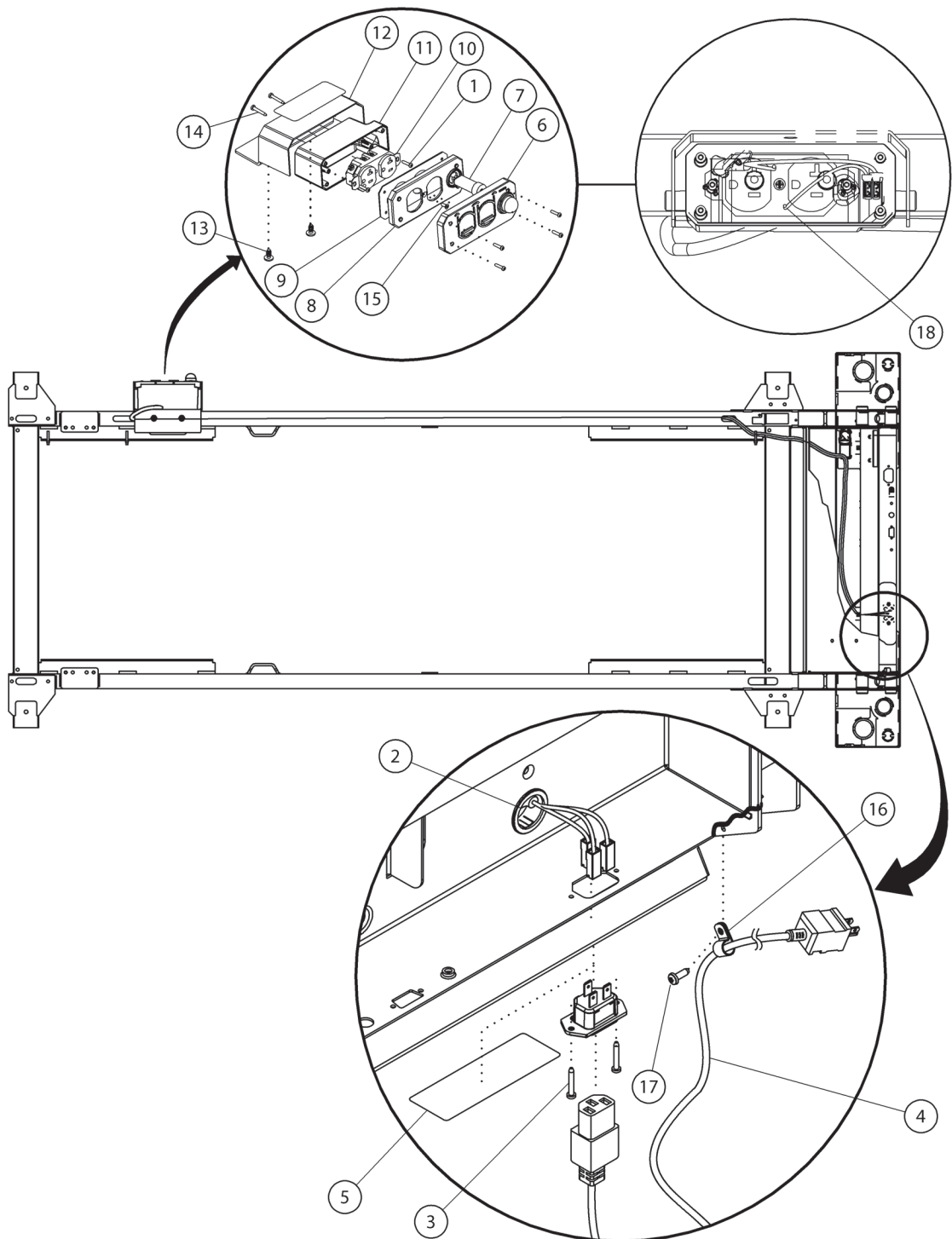


193588_5_237

Item	Part Number	Description	Quantity
J1	194655	CABLE ASSY, PSM TO BCB	1
P2	194874	CABLE ASSY, BATTERY CABLE	1
J4	194884	CABLE ASSY, MCB - DCB, PWR/CAN	1
P3			
P5	199837	CABLE ASSY, EXPERIENCE POD® DEVICE, BED FRAME	1
P6	198860	ASSEMBLY, NIGHT LIGHT	
J2	194652	CABLE ASSY, PHONO JACK, NC	1
P7	195904	CABLE ASSY, BRAKE SW	1
P8	207632	CABLE, OB DETECT, HEAD	1

NOTES:

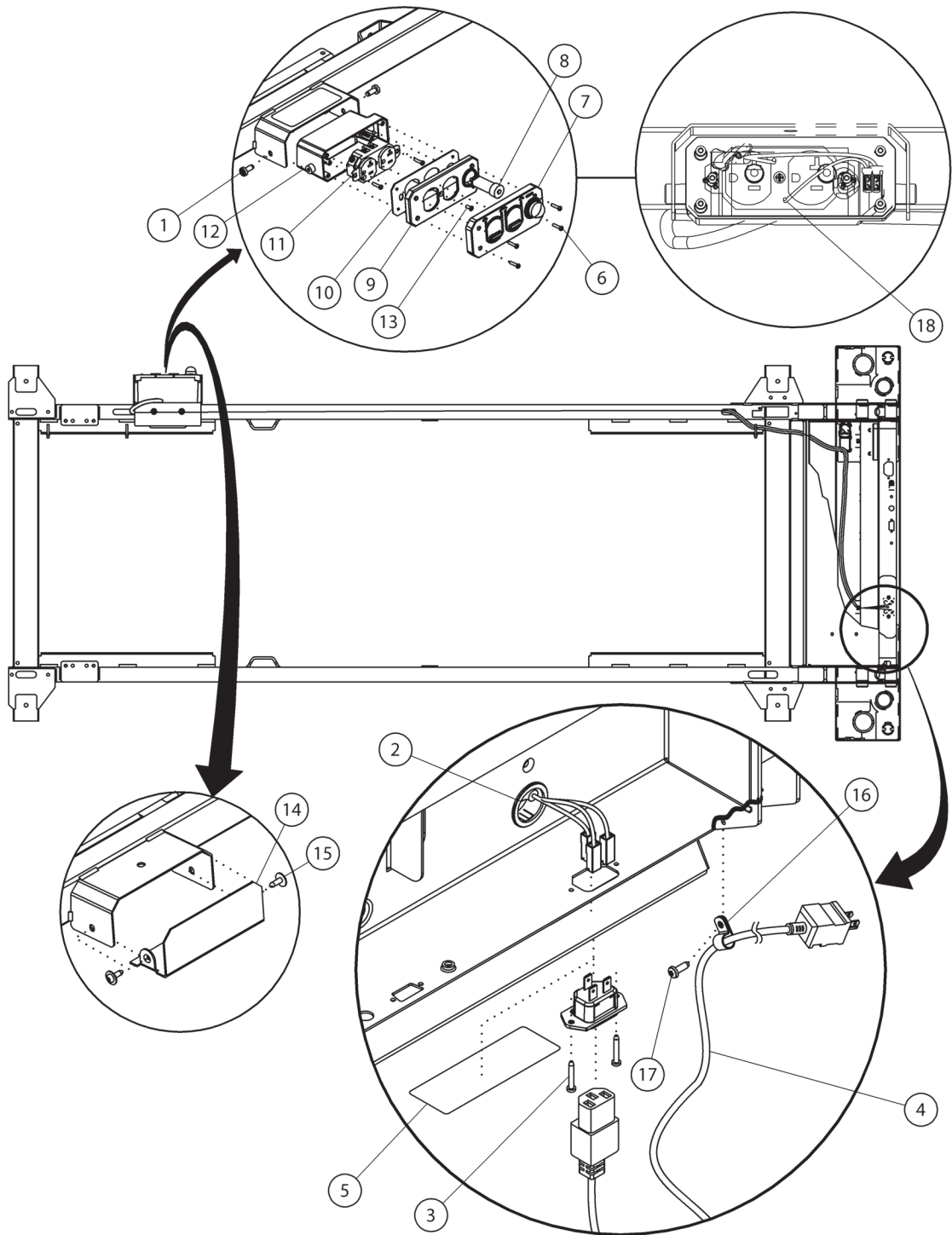
AUXILIARY OUTLET (P7900A0 AND P7900B0 BED)



193588_6_238

Item	Part Number	Description	Quantity
1	4214102	SCREW,HILO,PAN,TX,6-19,.58,STL	6
2	185178	GROMMET, HEYCO 3128	1
3	182273	SCREW,ROLL,PAN,TX,M3X.5,10,ZN	2
4	16874001	AUX OUTLET CORD, USA	1
5	186473	LABEL, COVER NON SIDECOM	3
6	180530	PROTECTIVE COVER, AUX OUTLET	1
7	146368	CIRCUIT BREAKER, 12A, 250VAC,THERM,PNLM	1
8	18225721	AUX OUTLET COVER	1
9	180527	GASKET, AUX OUTLET	1
10	28439	OUTLET, DUPLEX, 20A, IVORY	1
11	198807	BACKBOX, SINGLE GANG, IPX	1
12	199364	WELDMENT, AUX OUTLET	1
13	182389	SCREW,MACH,PAN,TX,M6-1,10,ZN	2
14	69817	SCREW,TY,PAN,TX,13-10,1/2,ZN	2
15	20021501	SCREW,MACH,FL,PH,6-32,.375,SS	1
16	0300200010	SPEED CLAMP	1
17	70341	SCREW,ROLL,PAN,TX, M4-.7,12,ZN	1
18	144319	WIRE ASSEMBLY	1

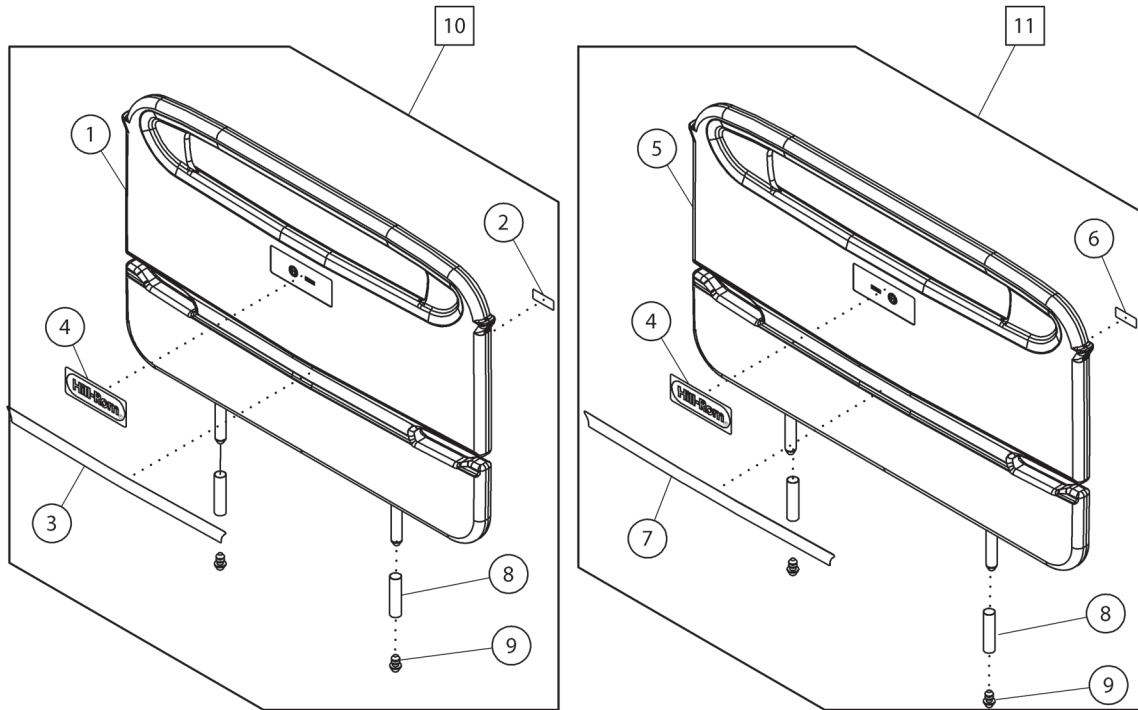
AUXILIARY OUTLET (P7900B1 AND NEWER)



193588_6_416

Item	Part Number	Description	Quantity
1	179011	SCREW, 1/4 x 5/8 PAN HD	2
2	185178	GROMMET, HEYCO 3128	1
3	182273	SCREW,ROLL,PAN,TX,M3X.5,10,ZN	2
4	16874001	AUX OUTLET CORD, USA	1
5	186473	LABEL, COVER NON SIDECOM	3
6	4214102	SCREW,HILO,PAN,TX,6-19,.58,STL	6
7	180530	PROTECTIVE COVER, AUX OUTLET	1
8	146368	CIRCUIT BREAKER, 12A, 250VAC,THERM,PNLM	1
9	18225721	AUX OUTLET COVER	1
10	180527	GASKET, AUX OUTLET	1
11	28439	OUTLET, DUPLEX, 20A, IVORY	1
12	198807	BACKBOX, SINGLE GANG, IPX	1
13	20021501	SCREW,MACH,FL,PH,6-32,.375,SS	1
14	205447	AUX OUTLET BLANK	1
15	71993	SCREW,RLG,PAN,TX,M5,.472,STL	2
16	0300200010	SPEED CLAMP	1
17	70341	SCREW,ROLL,PAN,TX, M4-.7,12,ZN	1
18	144319	WIRE ASSEMBLY	1

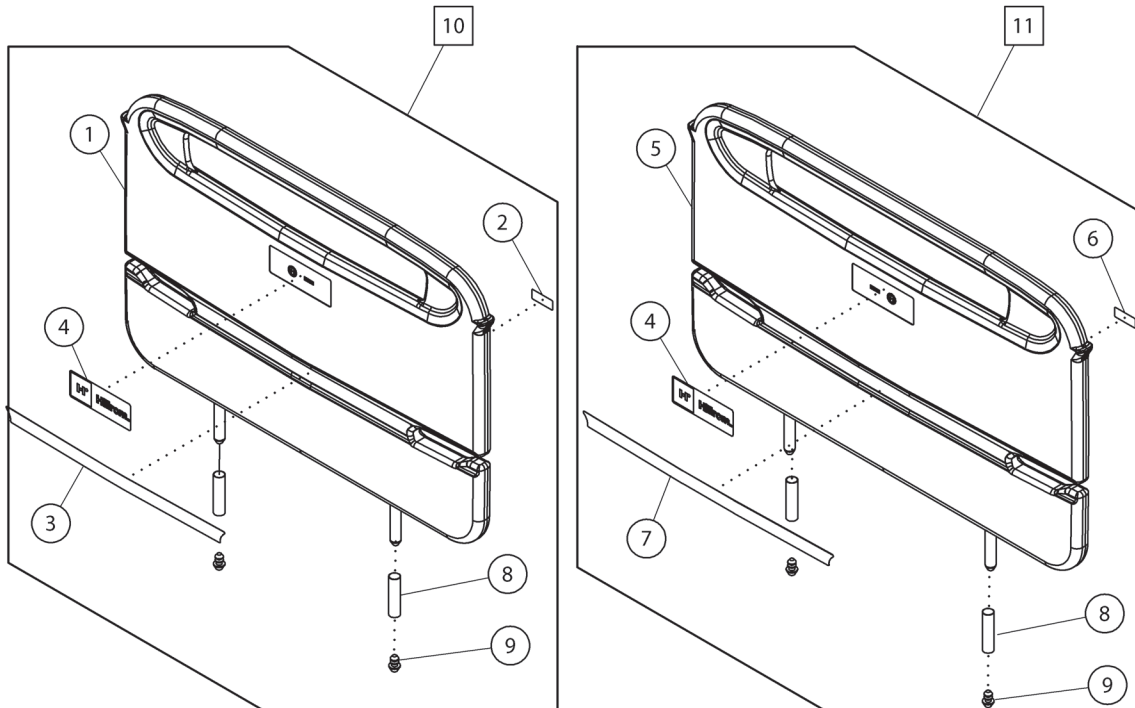
HEADBOARD MODULE - P7900A



193588_11_253

Item	Part Number	Description	Quantity
1	19188601	HEADBOARD ASSEMBLY, STANDARD	1
2	19467401	LABEL, HB ID, NARROW (DECK), PREMIUM	1
3	19653101	LABEL, HB DECO NARROW (DECK), PREMIUM	1
4	213343	LABEL KIT, HILL-ROM LOGO, SMALL	1
5	19188602	HEADBOARD ASSEMBLY, WIDE (DECK)	1
6	19467404	LABEL, HB ID, WIDE, (DECK) PREMIUM	1
7	19653201	LABEL, HB DECO WIDE (DECK), PREMIUM	1
8	70490	PLASTIC SLEEVE	2
9	406370148	END CAP	2
10	198988015	HEADBOARD, NARROW, PREMIUM	1
11	198988045	HEADBOARD, WIDE, PREMIUM	1

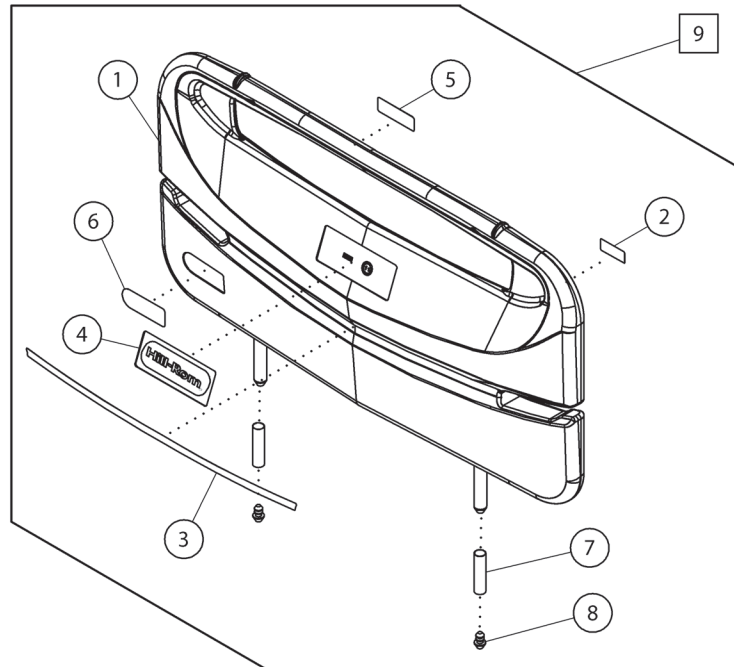
HEADBOARD MODULE - P7900B2



193588_11_512

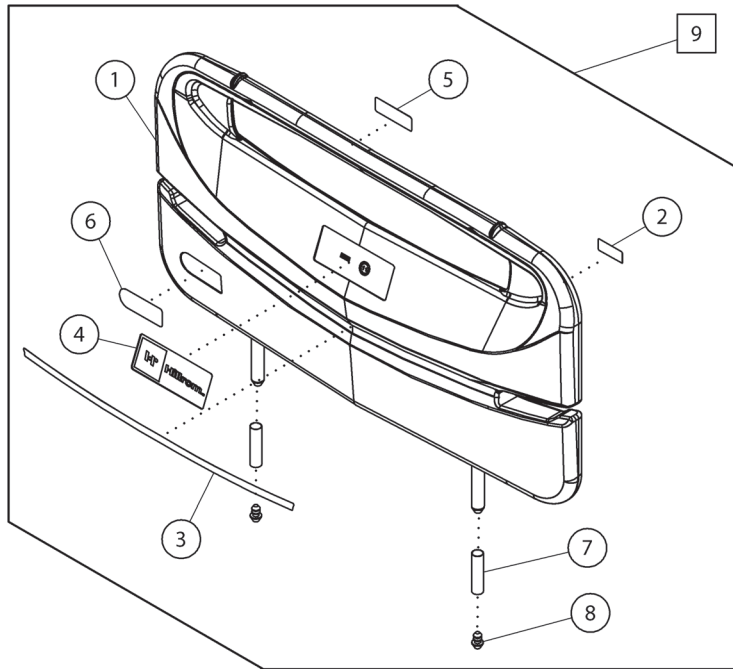
Item	Part Number	Description	Quantity
1	19188601	HEADBOARD ASSEMBLY, STANDARD	1
2	21672001	LABEL, HB ID, NARROW (DECK), PREMIUM	1
3	19653101	LABEL, HB DECO NARROW (DECK), PREMIUM	1
4	212453	LABEL KIT, HILL-ROM LOGO, LARGE	1
5	19188602	HEADBOARD ASSEMBLY, WIDE (DECK)	1
6	21672004	LABEL, HB ID, WIDE, (DECK) PREMIUM	1
7	19653201	LABEL, HB DECO WIDE (DECK), PREMIUM	1
8	70490	PLASTIC SLEEVE	2
9	406370148	END CAP	2
10	216718015	HEADBOARD, NARROW, PREMIUM	1
11	216718045	HEADBOARD, WIDE, PREMIUM	1



FOOTBOARD MODULE - P7900A

193588_3_254

Item	Part Number	Description	Quantity
1	191893	FOOTBOARD ASSEMBLY	1
2	19467201	LABEL, FOOTBOARD ID	1
3	19592201	LABEL, FOOTBOARD DECO	1
4	213305	LABEL, HILL-ROM LOGO	1
5	202198	LABEL, FOOTBOARD SAFE WORKING LOAD	1
6	202633	LABEL, FOOTBOARD LOGO	1
7	70490	PLASTIC SLEEVE	2
8	406370148	END CAP	2
9	19898901S	FOOTBOARD	1

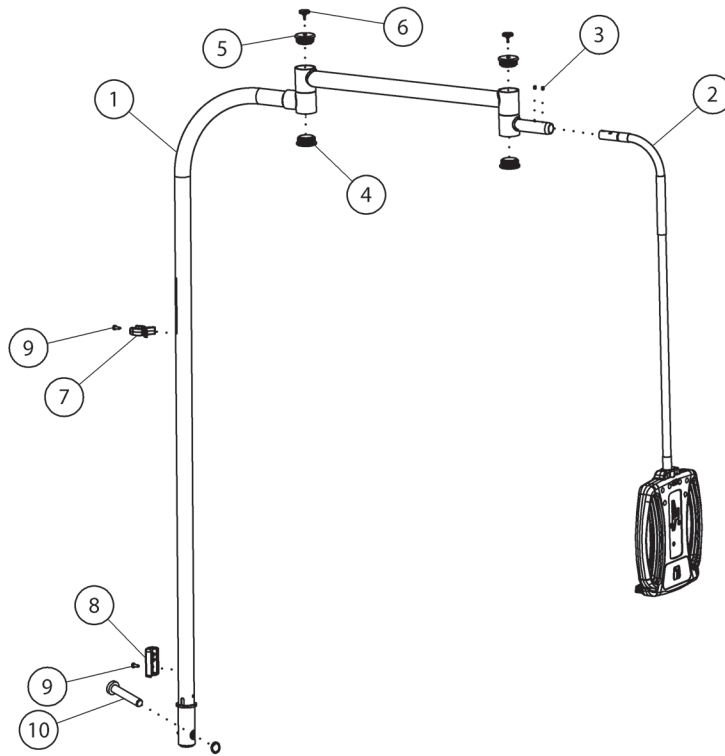
FOOTBOARD MODULE - P7900B2

193588_11_513

Item	Part Number	Description	Quantity
1	191893	FOOTBOARD ASSEMBLY	1
2	21672101	LABEL, FOOTBOARD ID	1
3	19592201	LABEL, FOOTBOARD DECO	1
4	212453	LABEL, HILL-ROM LOGO	1
5	202198	LABEL, FOOTBOARD SAFE WORKING LOAD	1
6	213110	LABEL, FOOTBOARD LOGO	1
7	70490	PLASTIC SLEEVE	2
8	406370148	END CAP	2
9	216719015	FOOTBOARD	1

5

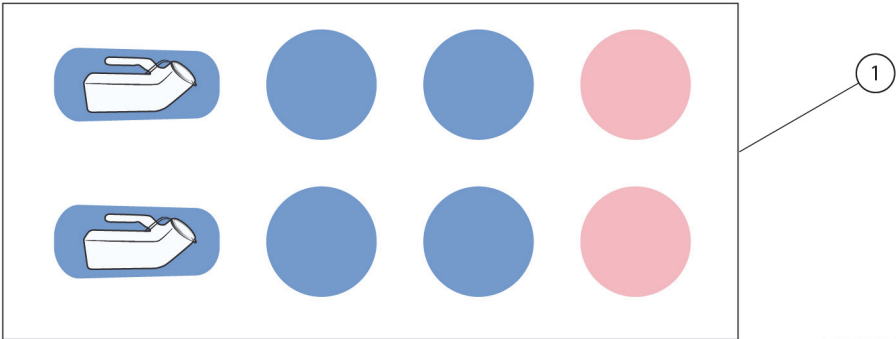
EXPERIENCE POD® DEVICE



193588_7_256

Item	Part Number	Description	Quantity
1	201921	ASSEMBLY, FRAME	1
	214286	ASSEMBLY, FRAME, BASIC (P7926A07)	1
2	20009303	ASSEMBLY, POD HOUSING, STANDARD WITHOUT ENTERTAINMENT	1
	20009304	ASSEMBLY, POD HOUSING, STANDARD WITH ENTERTAINMENT	1
	20009305	ASSEMBLY, POD HOUSING, PREMIUM WITHOUT ENTERTAINMENT	1
	20009306	ASSEMBLY, POD HOUSING, PREMIUM WITH ENTERTAINMENT	1
	20009307	ASSEMBLY, POD HOUSING, BASIC (P7926A07)	1
3	201798	SCREW, SET HXST, M5-.8,6,SS	2
4	201796	CAP, PIVOT, LOWER	2
5	207624	CAP, PIVOT, UPPER	2
6	14840	PLUG, BUMPER	2
7	201889	CLIP, STORAGE, FLEX ARM	1
8	201886	COVER, CABLE, BASE TUBE	1
9	63166	SCREW, CUT, PAN, TX, 10-32, .563	2
10	214912	PIN, WITH RETAINING RING, BASIC (P7926A07)	1

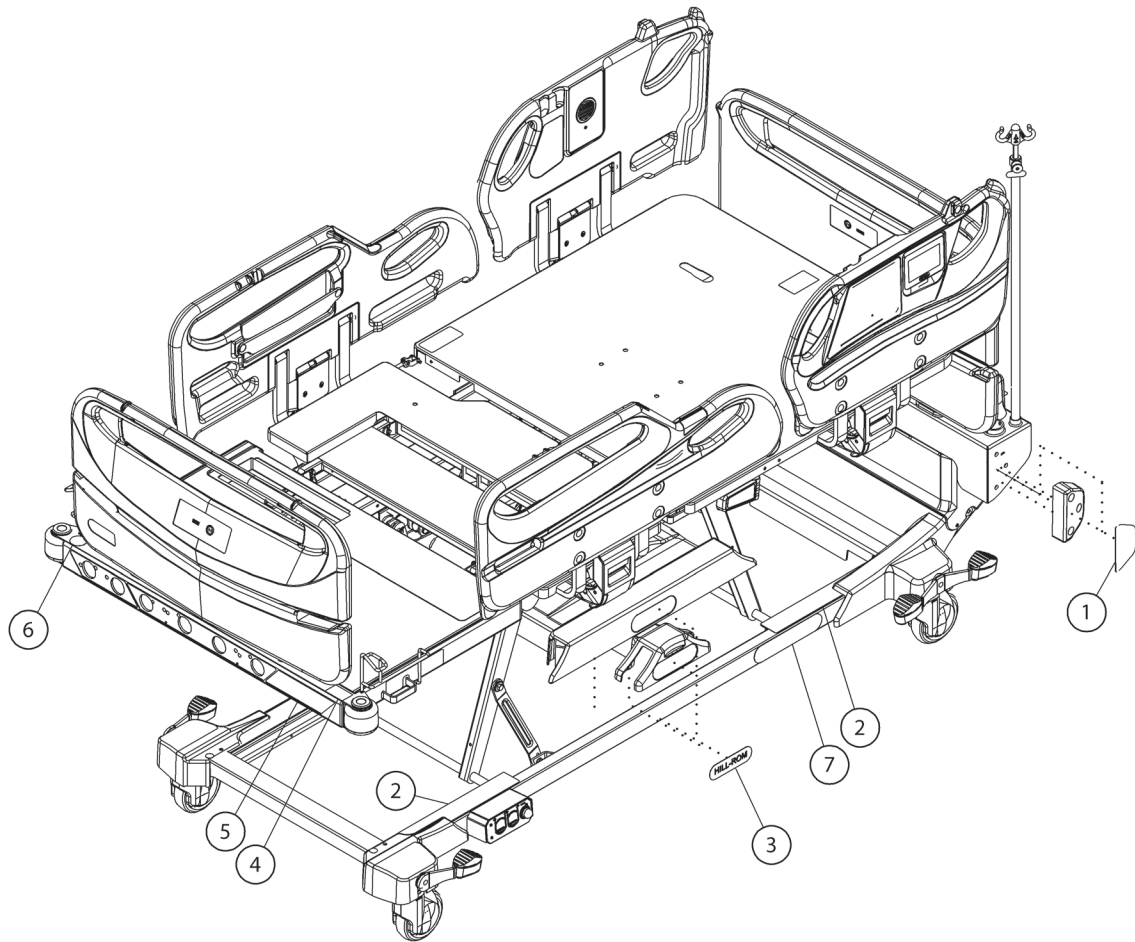
LABEL KIT—URINAL, PED, PENDANT



193588_3_265

Item	Part Number	Description	Quantity
1	202936	LABEL KIT, URINAL, PED, PENDANT	1

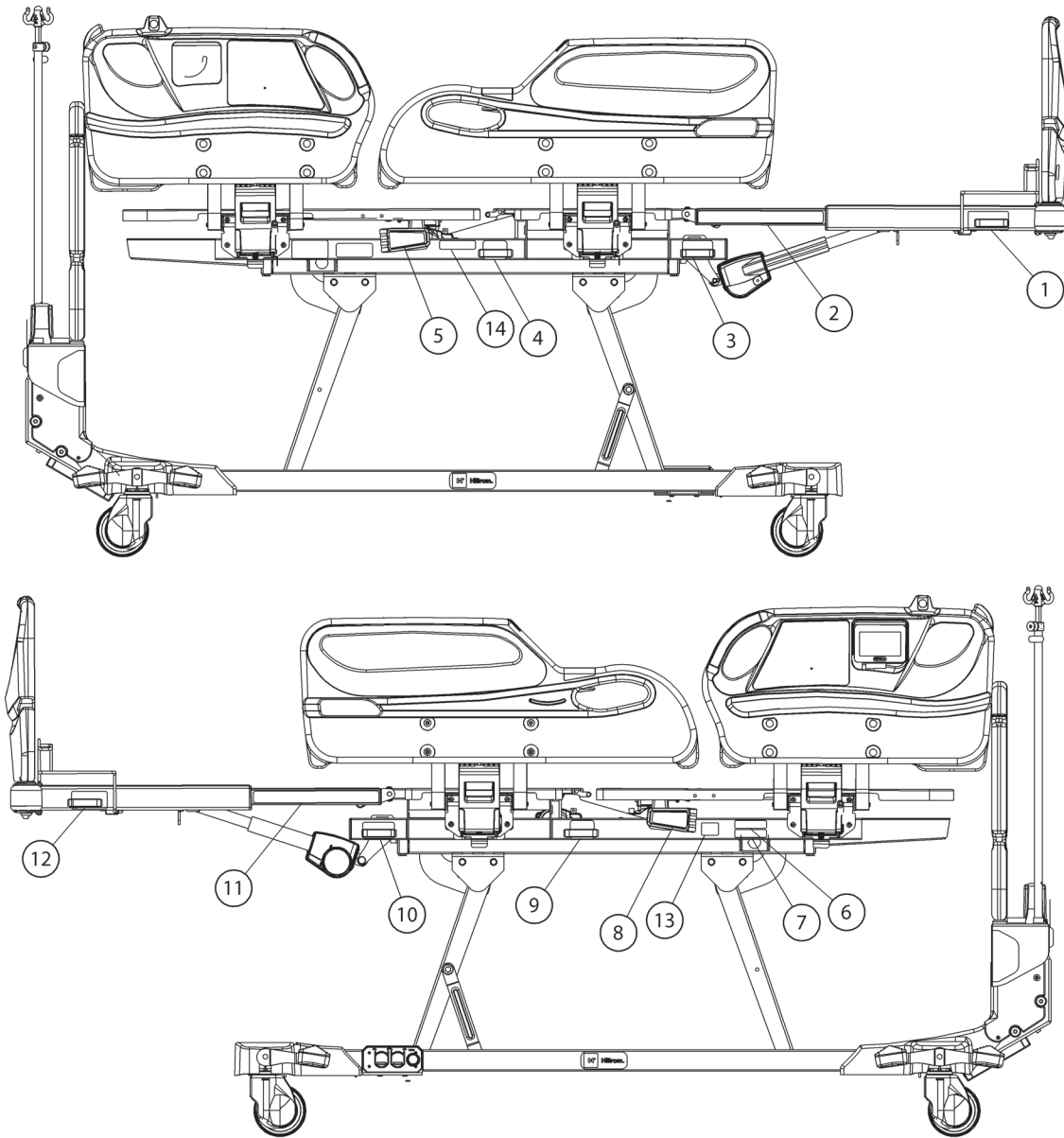
BED LABELS (SHEET 1 OF 3)



193588_7_300

Item	Part Number	Description	Quantity
1	209753	LABEL KIT, 5 MIL COMMON (WIDE BED GAPPER)	1
2	209750	LABEL KIT, 5 MIL COMMON (NO STEP)	1
3	202939	LABEL KIT, HILL-ROM LOGO	1
4	199643	LABEL, MANUAL FOOT INSTRUCTION	1
5	202006101	LABEL, FT. AIR-USB-CHAIR (WIFI), ENGLISH	1
	202006102	LABEL, FT. FOAM-USB-CHAIR (WIFI), ENGLISH	1
	202006103	LABEL, FT. FOAM-CHAIR-NL (WIFI), ENGLISH	1
	202006104	LABEL, FT. AIR-VITALS-USB (WIFI), ENGLISH	1
	202006105	LABEL, FT. FOAM-VITALS-USB (WIFI), ENGLISH	1
	202006106	LABEL, FT. AIR-VITALS-INC (WIFI), ENGLISH	1
	202006107	LABEL, FT. FOAM-VITALS-INC (WIFI), ENGLISH	1
	202006108	LABEL, FT. FOAM-INC-CHAIR (WIFI), ENGLISH	1
	202006109	LABEL, FT. FOAM-CHAIR-NL, ENGLISH	1
	202006301	LABEL, FT. AIR-USB-CHAIR (WIFI), FRENCH	1
	202006302	LABEL, FT. FOAM-USB-CHAIR (WIFI), FRENCH	1
	202006303	LABEL, FT. FOAM-CHAIR-NL (WIFI), FRENCH	1
	202006304	LABEL, FT. AIR-VITALS-USB, FRENCH	1
	202006305	LABEL, FT. FOAM-VITALS-USB, FRENCH	1
	202006309	LABEL, FT. FOAM-CHAIR-NL, FRENCH	1
	2020061201	LABEL, FT. AIR-USB-CHAIR (WIFI), JAPANESE	1
	2020061202	LABEL, FT. FOAM-USB-CHAIR (WIFI), JAPANESE	1
	2020061203	LABEL, FT. FOAM-CHAIR-NL(WIFI), JAPANESE	1
2020061209	LABEL, FT. FOAM-CHAIR-NL, JAPANESE	1	
6	17173401	LABEL, NO OXYGEN TENT, DOMESTIC	1
	17173402	LABEL, NO OXYGEN TENT, INTERNATIONAL	1
7	171628	LABEL, RENTAL SERVICE	2

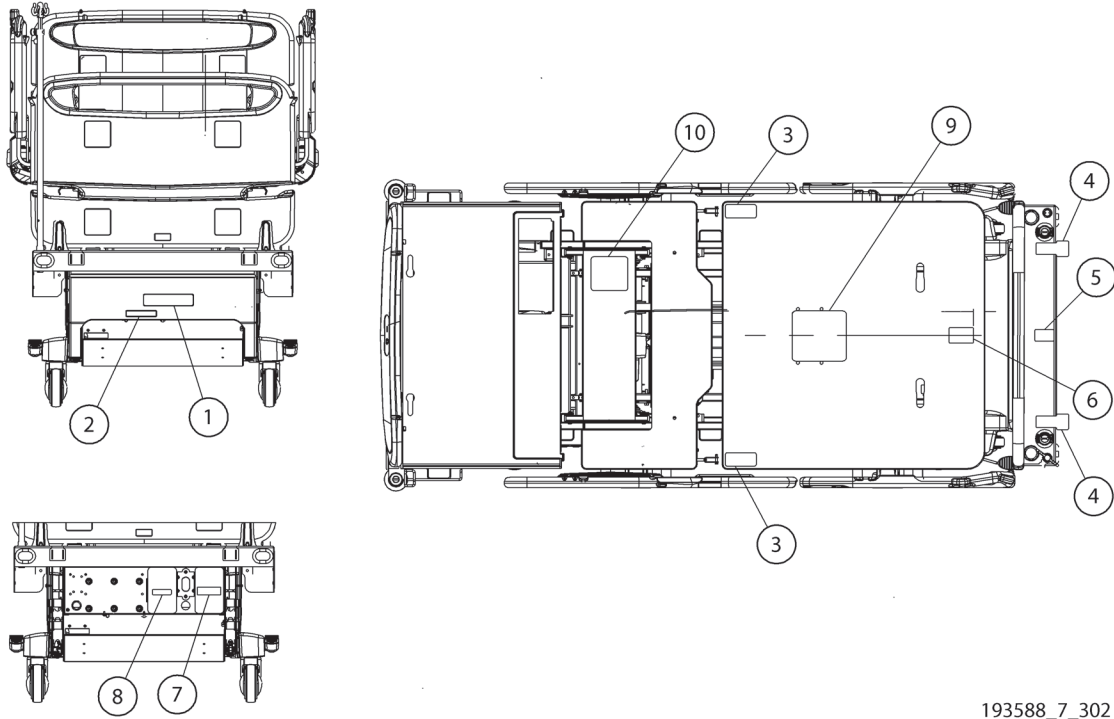
BED LABELS (SHEET 2 OF 3)



193588_7_301

Item	Part Number	Description	Quantity
1	2029421	LABEL KIT, COMMON - ENGLISH (FOLEY & ANKLE RST, RH)	1
	2029423	LABEL KIT, COMMON - FRENCH (FOLEY & ANKLE RST, RH)	1
	20294212	LABEL KIT, COMMON - JAPANESE (FOLEY & ANKLE RST, RH)	1
2	209750	LABEL KIT, 5 MIL COMMON (FOOT EXTENSION RIGHT)	1
3	202941	LABEL KIT, 2 MIL COMMON (WRIST RESTRAINT RIGHT)	1
4	202941	LABEL KIT, 2 MIL COMMON (VEST AND WRIST RESTRAINT RH)	1
5	185711101	LABEL, CPR HANDLE, LH - ENGLISH	1
6	209751	LABEL KIT, 2 MIL COMMON (PATENTS)	1
7	196113	LABEL, FCC WIRELESS	1
8	196111	LABEL, CPR LEVER, RH	1
9	202941	LABEL KIT, 2 MIL COMMON (VEST AND WRIST RESTRAINT LH)	1
10	202941	LABEL KIT, 2 MIL COMMON (WRIST RESTRAINT LEFT)	1
11	209750	LABEL KIT, 5 MIL COMMON (FOOT EXTENSION LEFT)	1
12	2029421	LABEL KIT, COMMON - ENGLISH (FOLEY & ANKLE RST, LH)	1
	2029423	LABEL KIT, COMMON - FRENCH (FOLEY & ANKLE RST, LH)	1
	20294212	LABEL KIT, COMMON - JAPANESE (FOLEY & ANKLE RST, LH)	1
13	212672	LABEL, COMPLIANCE, SINGAPORE	1
14	208516	LABEL, OIML SCALE CERTIFICATION	1
Not shown	212226	LABEL, HR/RR ACTIVATED	1

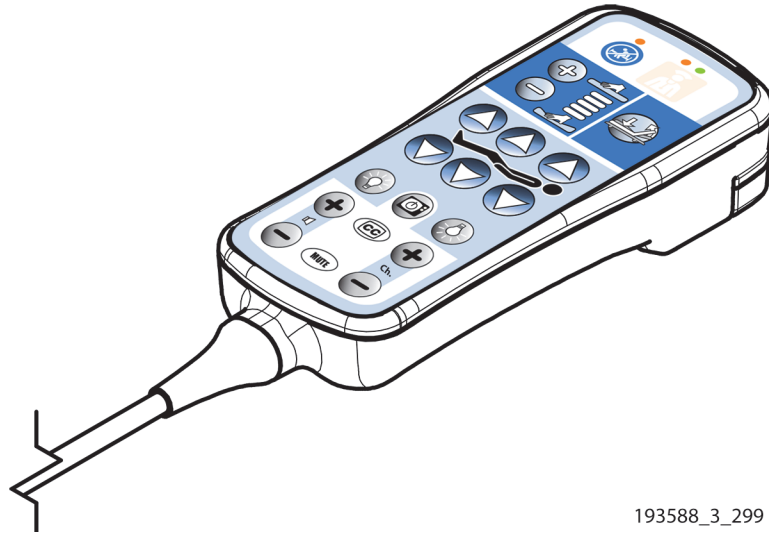
BED LABELS (SHEET 3 OF 3)



193588_7_302

Item	Part Number	Description	Quantity
1	2029421	LABEL KIT, COMMON - ENGLISH (ELECTRIC SHOCK HAZARD)	1
	2029423	LABEL KIT, COMMON - FRENCH (ELECTRIC SHOCK HAZARD)	1
	20294212	LABEL KIT, COMMON - JAPANESE (ELECTRIC SHOCK HAZARD)	1
2	19964401	LABEL, ELECTRICAL CONNECTION, WITH NURSE CALL	1
	19964402	LABEL, ELECTRICAL CONNECTION, WITHOUT NURSE CALL	1
3	195885	LABEL, TURN ASSIST CAUTION	2
4	209751	LABEL KIT, 2 MIL COMMON (IV POLE WARNING)	1
5	209751	LABEL KIT, 2 MIL COMMON (TRANSPORT/GROUND WARNING)	1
6	209751	LABEL KIT, 2 MIL COMMON (MATTRESS ATTACHMENT)	1
7	209751	LABEL KIT, 2 MIL COMMON (BATTERY CAUTION)	1
8	209751	LABEL KIT, 2 MIL COMMON (FUSE WARNING)	1
9	2010651	LABEL, HEAD DECK, VITALS - ENGLISH	1
	2010653	LABEL, HEAD DECK, VITALS - FRENCH	1
10	214992	LABEL, PRO+ ROUTING	1

PENDANT

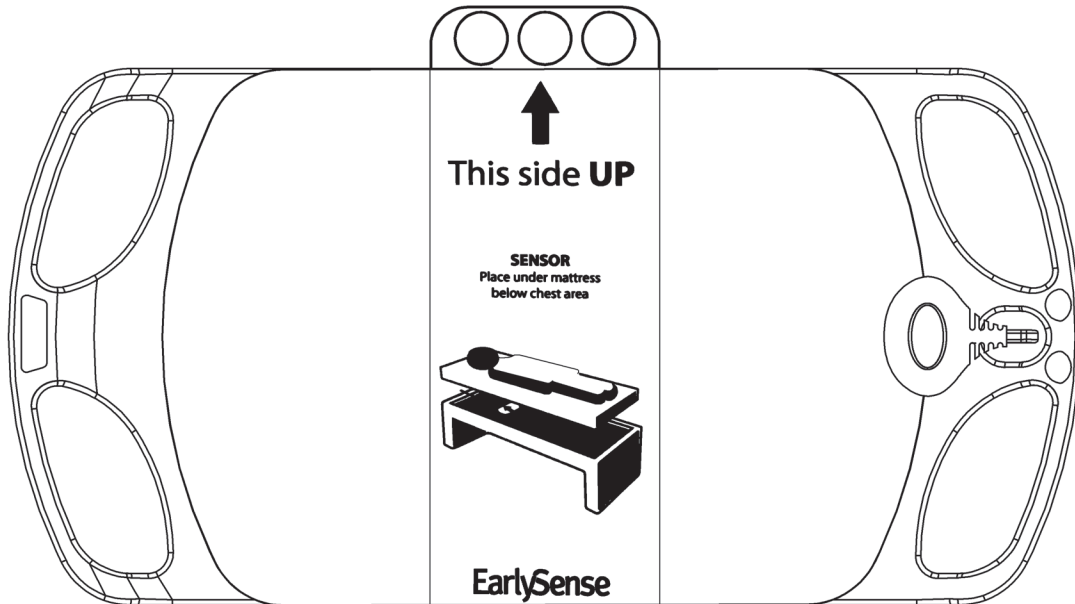


193588_3_299

Part Number	Description	Quantity
P7932B03	PENDANT STANDARD, WITHOUT ENTERTAINMENT	1
P7932B04	PENDANT STANDARD, WITH ENTERTAINMENT	1
P7932B05	PENDANT PREMIUM, WITHOUT ENTERTAINMENT	1
P7932B06	PENDANT PREMIUM, WITH ENTERTAINMENT	1

NOTES:

HR/RR MONITORING SENSOR

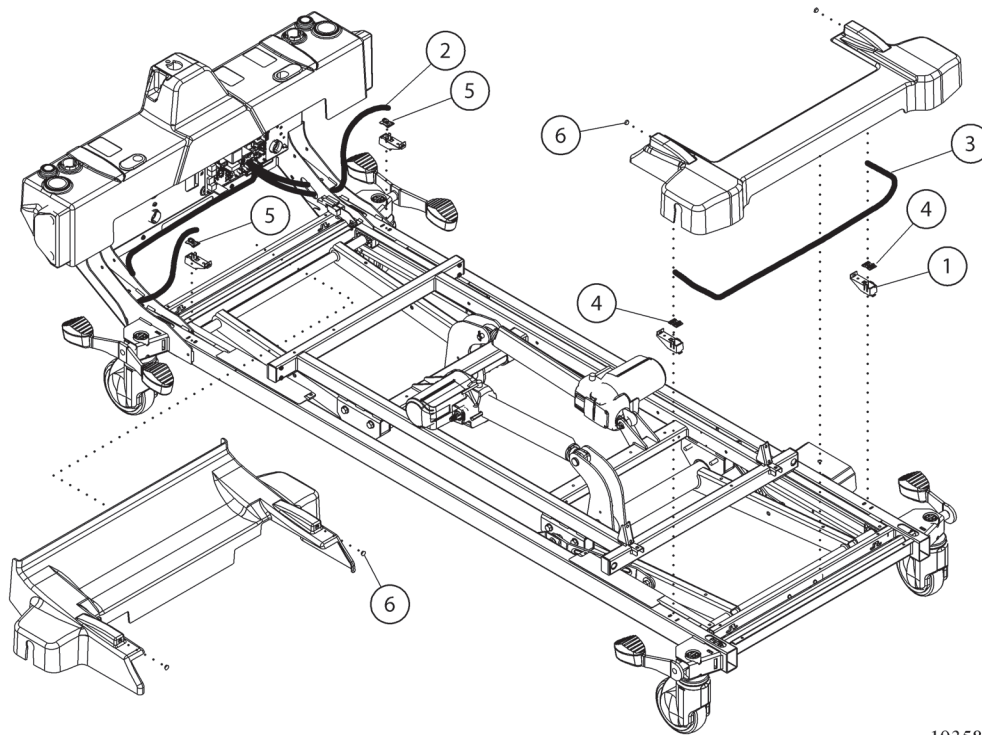


193588_4_284

Item	Part Number	Description	Quantity
1	P00873801	HR/RR MONITORING, INDIVIDUAL RENEWAL	1
	P00873802	HR/RR MONITORING, RENEWAL 10-PACK	1

NOTES:

OBSTACLE DETECT® SYSTEM

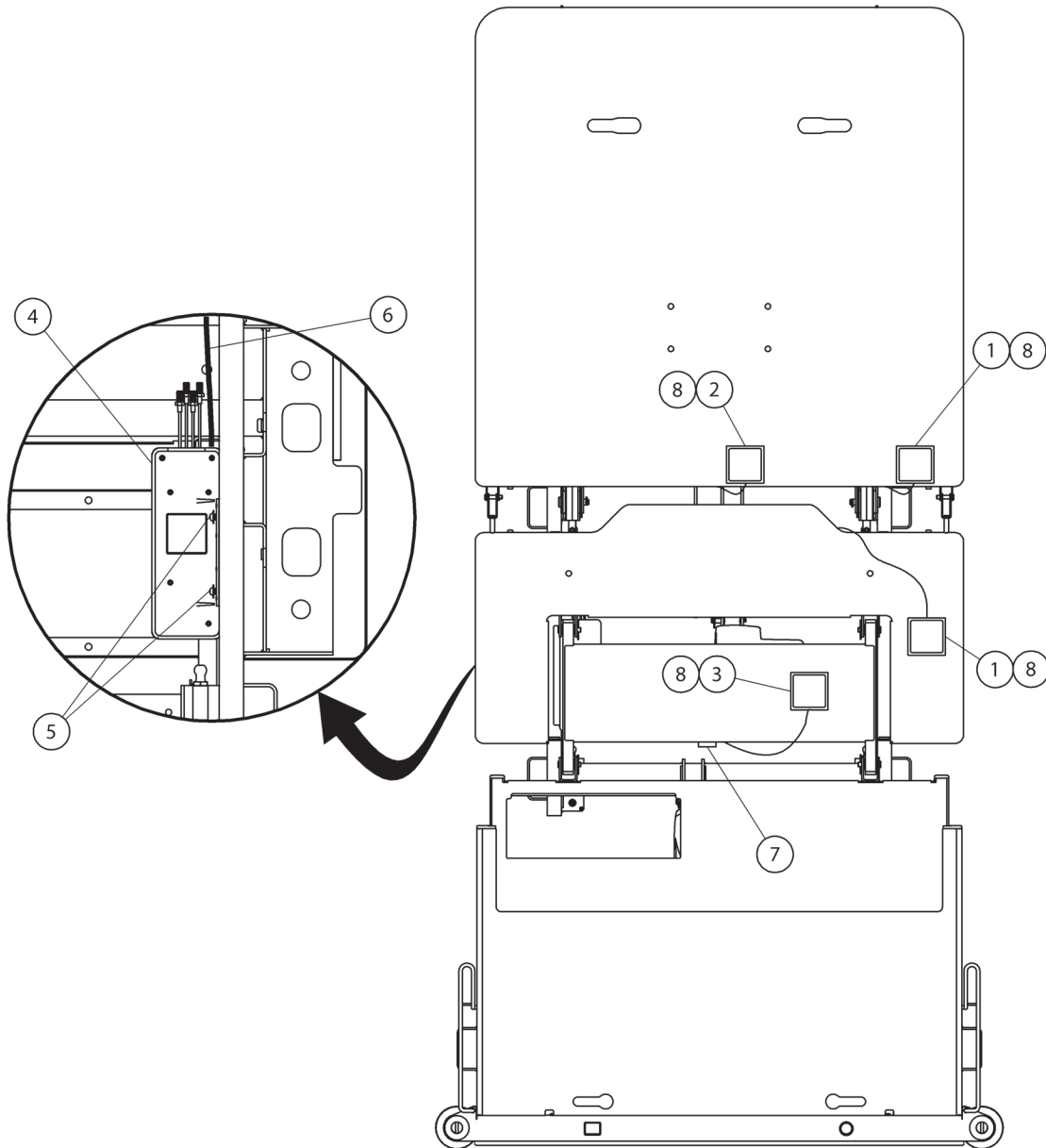


193588_5_394

Item	Part Number	Description	Quantity
1	207635	SENSOR MOUNT	4
2	207632	CABLE, OBSTACLE DETECT®, HEAD END	1
3	207633	CABLE, OBSTACLE DETECT®, FOOT END	1
4	207287	PCB ASSEMBLY, TRANSMITTER	2
5	207290	PCB ASSEMBLY, RECEIVER	2
6	207919	LENS, OBSTACLE DETECT	4

NOTES:

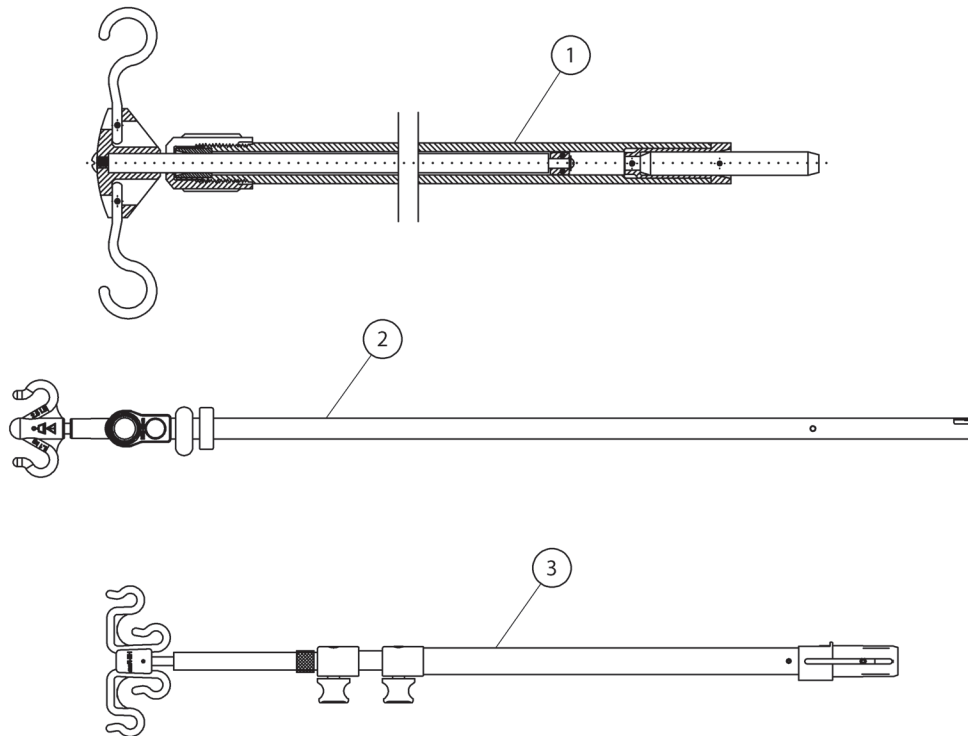
WATCHCARE® INCONTINENCE MANAGEMENT SYSTEM



193588_5_359

Item	Part Number	Description	Quantity
1	20863301	ANTENNA ASSEMBLY, 1025 MM (GREEN INDICATOR; INCLUDES GASKET)	2
2	20863303	ANTENNA ASSEMBLY, 795 MM (BLACK INDICATOR; INCLUDES GASKET)	1
3	20863304	ANTENNA ASSEMBLY, 905 MM (RED INDICATOR; INCLUDES GASKET)	1
4	209675	INCONTINENCE READER ASSEMBLY (INCLUDES THE ANTENNAS AND POWER CABLE)	1
5	71993	SCREW, READER	2
6	198378	POWER CABLE	1
7	64565	CABLE TIE MOUNT, ADHESIVE BACK	2
8	199672	ANTENNA GASKET	4
Not shown	210211	Y CABLE (ADAPTER CABLE)	1
Not shown	19124	CABLE TIE, REGULAR, 8.5, .15, 40 LB, NYLON	11
Not shown	P006980	SMART PAD (PACKAGE OF 40 PADS)	As required
Not shown	210795	LABEL, WC, HEAD (ANTENNA LOCATION)	1
Not shown	210796	LABEL, WC, SEAT (ANTENNA LOCATION)	1
Not shown	210797	LABEL, WC, THIGH (ANTENNA LOCATION)	1

IV POLE—P2217, P158, AND P7511

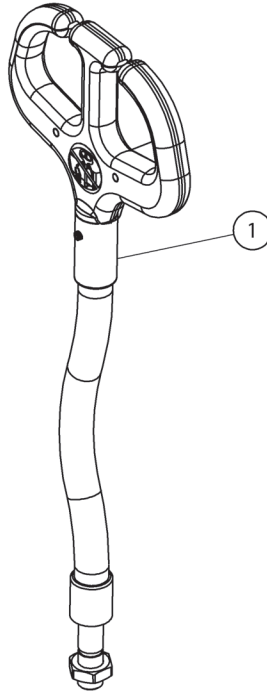


193588_5_400

Item	Part Number	Description	Quantity
1	P2217A	IV POLE ASSY, REM, HD AND FT MOUNT	1
2	P158A	IV POLE ASSY, INFUSION SUPPORT SYSTEM (ISS)	1
3	P7511A	KIT, ASSY, PERMANANT IV POLE KIT	1

NOTES:

LINE MANAGERS—P7512A

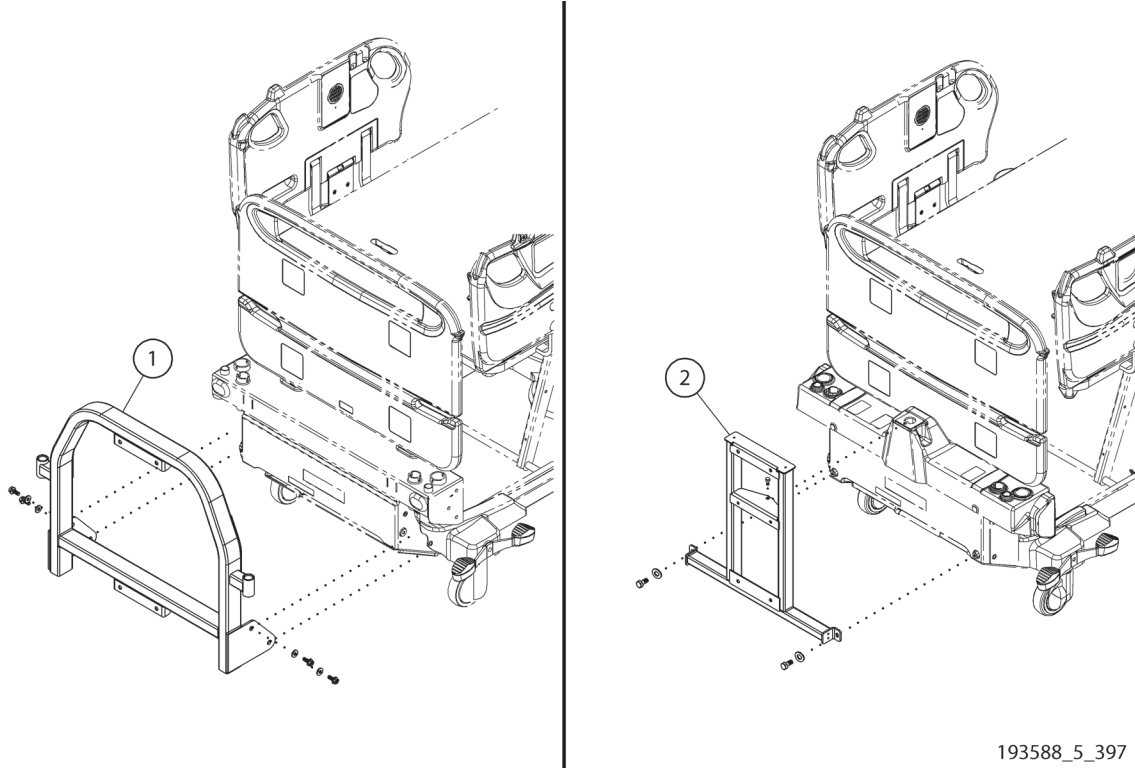


193588_5_396

Item	Part Number	Description	Quantity
1	P7512A	LINE MANAGER ASSEMBLY	1

NOTES:

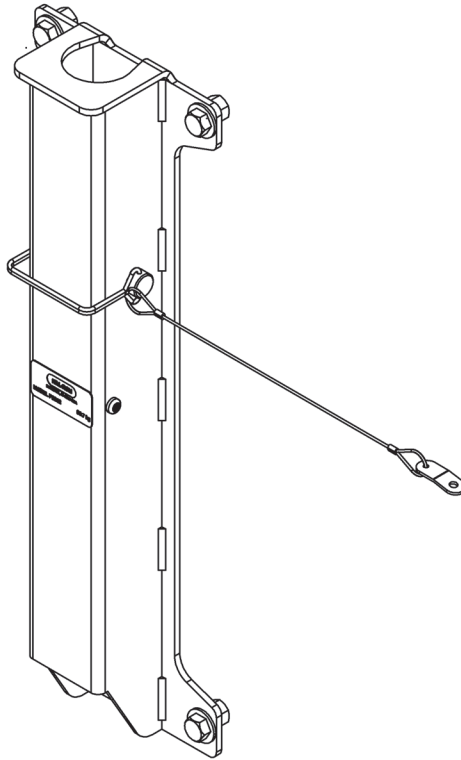
PATIENT HELPER SUPPORT—P7928A AND P7938A



193588_5_397

Item	Part Number	Description	Quantity
1	P7928A	PATIENT HELPER SUPPORT (P7900A0 AND P7900B0)	1
2	P7938A	PATIENT HELPER SUPPORT (P7900B1 AND NEWER)	1

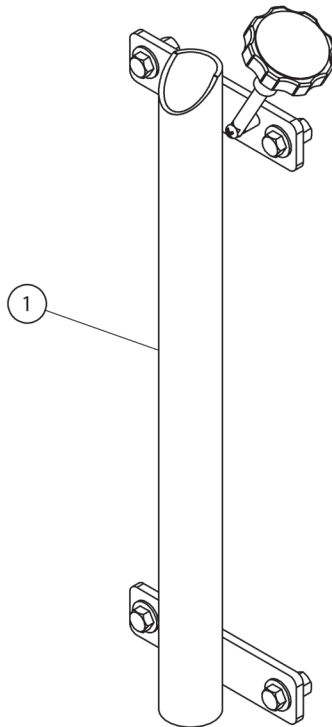
HD PATIENT HELPER MOUNT—P9739A



193588_7_465

Item	Part Number	Description	Quantity
1	P7939A	HD PATIENT HELPER MOUNT	1

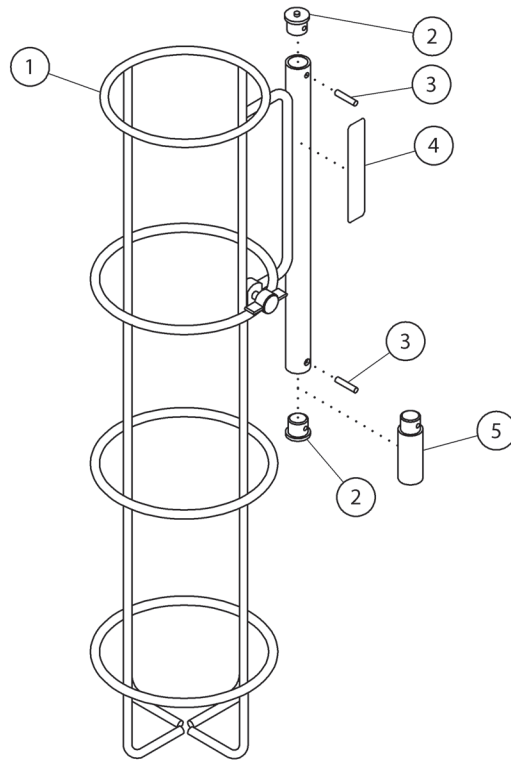
PATIENT HELPER SLEEVE—P3212A



193588_5_398

Item	Part Number	Description	Quantity
1	P3212A	PATIENT HELPER SLEEVE	1

OXYGEN TANK HOLDER—P276 AND P27601

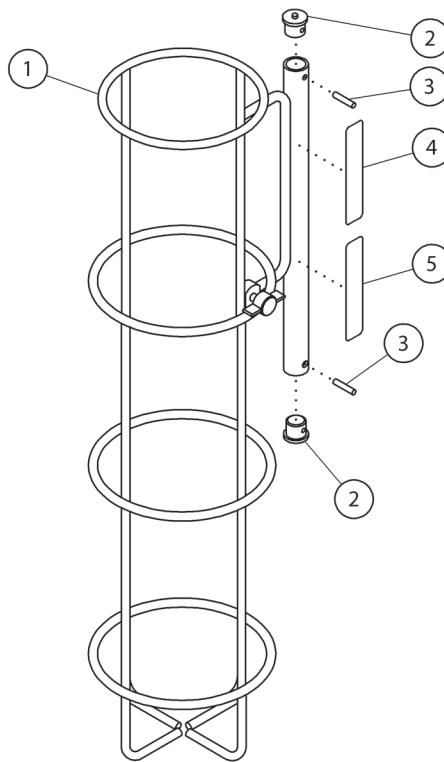


193588_5_399

Item	Part Number	Description	Quantity
1	42703	OXYGEN TANK HOLDER	1
2	36339PLS	TUBE END	2
3	9685	ROLL PIN	2
4	67873	LABEL	1
5	3633901PL	TUBE END, LONG	1



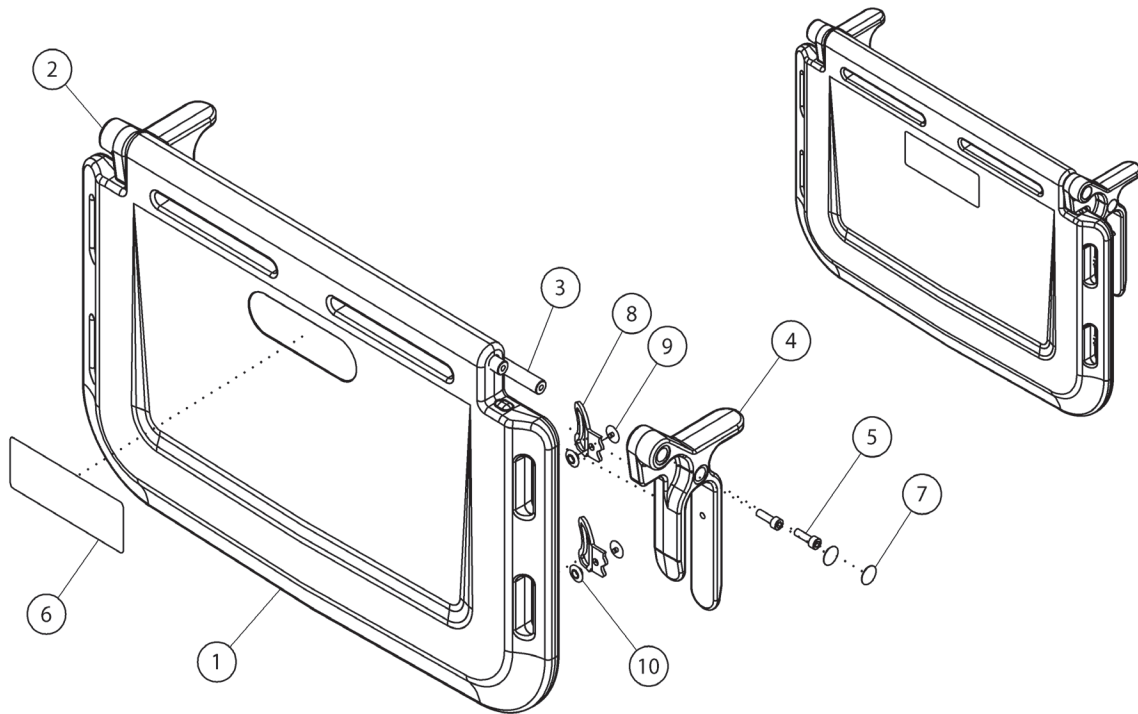
OXYGEN TANK HOLDER—P009408



193588_11_503

Item	Part Number	Description	Quantity
1	214987	FRAME, OXYGEN TANK HOLDER	1
2	36339PLS	TUBE END	2
3	9685	ROLL PIN	2
4	6787302	CAUTION, O2 HOLDER LABEL, 150MM	1
5	139445	LABEL, SWL CONVERTIBLE FB	1

TRANSPORT SHELF—P7524

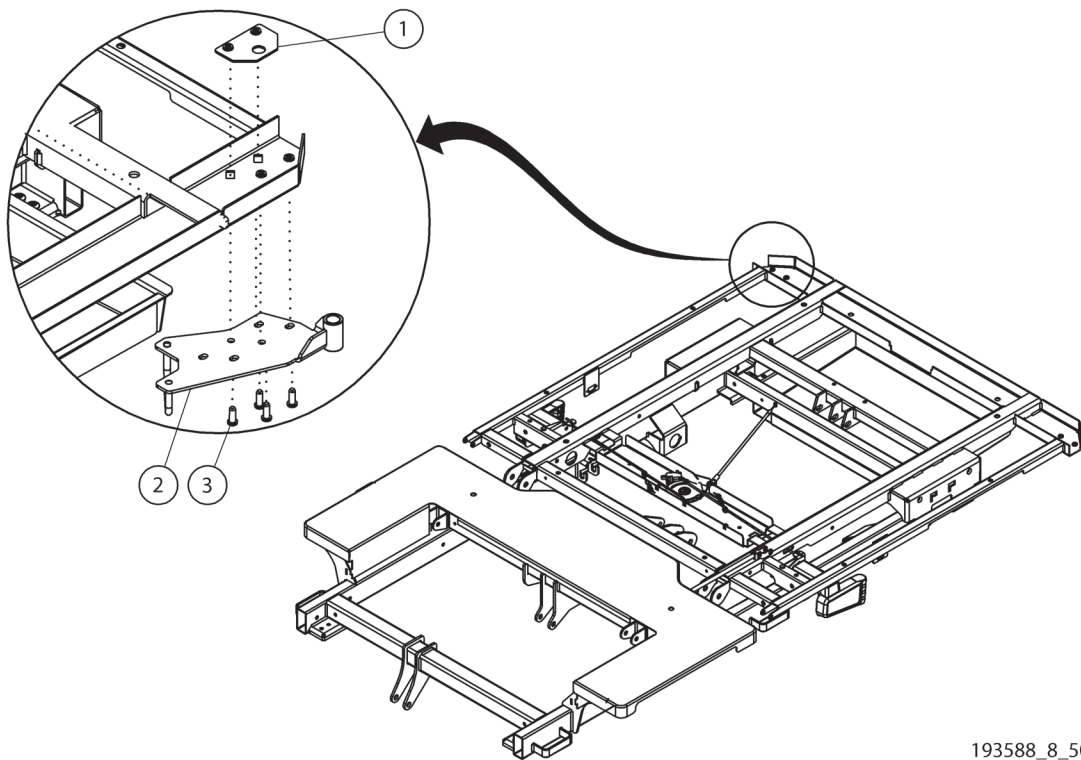


193588_7_436

Item	Part Number	Description	Quantity
1	186567	SHELF	1
2	18657302	SHELF MOUNT RH	1
3	186568	TIE ROD	2
4	18657301	SHELF MOUNT LH	1
5	137657	M6 X 20 SHCS	4
6	175714	LABEL, HILL-ROM LOGO	1
7	169427	LABEL, RAIL COVER DOT	4
8	37238	EQUIPMENT STRAP	2
9	37290	GROMMET MALE	2
10	37291	GROMMET FEMALE	2



ARM UP RESTRAINT



193588_8_502

Item	Part Number	Description	Quantity
1	212108	ARM UP BACKUP PLATE	1
2	21210401	ARM UP RESTRAINT, RH	1
	21210402	ARM UP RESTRAINT, LH	1
3	70762	SCREW	4
Not shown	212109	KIT, LABEL ARM UP RESTRAINT, RH AND LH	1

NOTES:

Chapter 6

Cleaning, Disinfecting, and Preventive Maintenance

CLEANING AND DISINFECTING

For cleaning and disinfecting instructions, refer to the applicable manual:

- *Centrella® Smart+ Bed Instructions for Use* (193587)
- *pro+ Mattress Instructions for Use* (209196)

PREVENTIVE MAINTENANCE



WARNING:

Only facility-authorized persons should service the Centrella® Smart+ Bed. Service by unauthorized persons could cause injury or equipment damage.

It is necessary for the Centrella® Smart+ Bed to have an effective maintenance program. We recommend that you do the first preventive maintenance (PM) in year 2 of ownership and annually thereafter for Joint Commission certification. PM not only meets Joint Commission requirements but can help make sure of a long, operative life for the bed. Two effective ways to reduce downtime and make sure the patient remains comfortable are to keep accurate records and maintain the bed.

The PM Checklist that follows is designed to keep a maintenance history for one Centrella® Smart+ Bed. The PM Checklist is to be used along with the “Specified Checks” on page 6-3. The Specified Checks include specific items to examine as you complete the PM Checklist. (Your facility can change this checklist or design another to fit your needs.)

NOTE:

For the preventive maintenance for the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

PM CHECKLIST

Use this checklist with the "Specified Checks" on page 6-3.

Date														Feature	
Hill-Rom	Manufacturer														Overall condition
															Mattress
															Braking, steering, 5th wheel
															Powered drive system
															Power cord
															Electrical checks
															Battery
															Siderails
	Model Number														Experience Pod® Device
															Function controls
															Verbal alerts
															CPR feature
															Scale system
															SideCom®, Bed Exit and Safe-View®+ Systems, and Wireless Connectivity
															Accessories
	Serial Number														
	Total Cost														Labor Time:
															Repair Cost:
															Inspected by:
														Legend L=Lube C=Clean A=Adjust R=Repair or Replace O=Okay N=Not Applicable	


SPECIFIED CHECKS

If any of these checks fail, make adjustments, repair, or replace the part as applicable (see the service manual). If the repair or replacement does not correct the problem, remove the unit from service and contact Hill-Rom technical support or your local Hill-Rom representative.

Overall Condition	<ol style="list-style-type: none"> 1. Examine the overall condition of the bed. Make sure there are no cracks or unacceptable cosmetic damage and that the bed frame and base are not twisted. 2. Make sure the structure and welded assemblies are in good condition. 3. Make sure all hardware is correctly installed. 4. Make sure all labels are present, correctly installed, and can be read. 5. If the bed has push handles, make sure they are in good condition and raise and lower correctly. 6. Remove the headboard and removable footboard. Examine them for damage. Make sure they do not bind when you remove and install them. 7. If the bed has a night light, make sure it operates correctly. 8. Touch up paint as necessary.
Mattress	<ol style="list-style-type: none"> 1. Examine for punctures, rips, tears, or other damage to the top and bottom covers. Make sure to carefully examine these areas; look for abrasions, cuts, or other damage: <ul style="list-style-type: none"> • The bottom cover • Areas where there are pivot points • Areas next to the moving sections of the frame • The x-ray sleeve, if applicable 2. Replace the covers as necessary. 3. Make sure the mattress attachment mechanisms are in good condition and securely hold the mattress on the bed frame, if applicable. 4. If the bed has an integrated air mattress, make sure— <ul style="list-style-type: none"> • All connectors are correctly installed and not damaged. • All mattress functions operate correctly (see the user manual).
Braking, Steering, and 5th Wheel	<ol style="list-style-type: none"> 1. Do as follows. Make sure there is no abnormal noise during the braking and steering movement. <ol style="list-style-type: none"> a. Set the brake, and make sure you can not move the bed. b. Plug the bed in, and put it into neutral. Make sure the Brake Not Set alert sounds. c. Put the bed into steer, and make sure you can move the bed forward and backward. If the bed has the 5th wheel option, make sure the wheel deploys and operates correctly. d. Set the brake. Make sure the Brake Not Set alert stops sounding. If the bed has the 5th wheel option, make sure the wheel retracts. e. Unplug the bed. 2. Examine the casters. Make sure they are in good condition and correctly installed.
Powered Drive System	<ol style="list-style-type: none"> 1. If the bed has this option, do as follows to make sure the system operates correctly: <ol style="list-style-type: none"> a. Put the bed into steer. b. Use each transport handle individually to move the bed forward and reverse. c. Set the brake, and make sure the system disengages. d. Make sure all of the pod controls and their indicators operate correctly.

Power Cord	<ol style="list-style-type: none"> 1. Examine the entire length of the power cord. Make sure there are no cuts or exposed wires. 2. Make sure the plug is a one-piece molded plug assembly. 3. Examine the plug for damage. Replace the power cord if the plug shows— <ul style="list-style-type: none"> • Discoloration of the plug molding on or around the plug blades • Signs of cracking • Loose fit of the plug blade (the plug blade moves in the molding) 4. Make sure the strain relief p-clip is installed.
Electrical Checks	<ol style="list-style-type: none"> 1. Do as follows to measure the leakage current: <ol style="list-style-type: none"> a. Unplug the bed. b. Connect the bed to the safety tester, and connect the tester to the power outlet. c. Make sure the bed power is correctly supplied by the tester: the indicators on the caregiver control panel are On (unlock the functions if necessary). d. Measure the leakage current without operating any function. The value must be less than 300 μA. <p style="margin-left: 20px;">Leakage current: _____</p> 2. Measure the ground resistance. The value must be equal to or less than 200 milliohms. <p style="margin-left: 20px;">Ground resistance: _____</p>
Battery	<ol style="list-style-type: none"> 1. Unplug the bed. 2. Activate the battery backup. 3. Use the caregiver controls to engage the battery-operated functions (see the user manual). Make sure the battery has sufficient power to operate the functions. If there is not sufficient power, or the battery indicator is Off, charge or replace the batteries.
Siderails	<ol style="list-style-type: none"> 1. Examine each siderail for damage. 2. Do as follows: <ol style="list-style-type: none"> a. Raise each siderail, and make sure it locks into position. Listen for a click. b. Lower each siderail. Let the siderail fall freely. It should lower slowly and smoothly. c. Examine the visible cable routing for pinching, binding, and damage. d. If the siderail has a USB port, use your PED and its charger to make sure the USB port operates correctly.
Experience Pod™ Device	<ol style="list-style-type: none"> 1. If the bed has this option, do as follows: <ol style="list-style-type: none"> a. Make sure the patient controls and reading light operate correctly (if applicable). b. Use your PED and its charger to make sure the USB port operates correctly. c. Examine the condition of the PED holder mechanism. d. Make sure the storage feet are present and the arm latches correctly.

Function Controls	<ol style="list-style-type: none"> 1. Use the caregiver controls on both sides of the bed to do as follows: <ul style="list-style-type: none"> • Make sure the lockouts operate. • Make sure all function controls operate. As the bed articulates, make sure there is no abnormal noise. <ul style="list-style-type: none"> – If the bed has the Obstacle Detect® System, make sure the system operates correctly. – When the bed is in its lowest position, make sure the Bed in Lowest Position indicator is On. – When the head section is in its lowest position, make sure the digital Head Angle Display shows $0^\circ \pm 2^\circ$, and when the head section is in its highest position, the display shows $65^\circ \pm 2^\circ$. 2. Use the patient controls on both sides of the bed to make sure all function controls operate. When you press the Head Up and Head Down controls, make sure the Auto Contour™ Feature operates. 3. If the bed has a patient pendant (hand control), make sure all function controls operate.
Verbal Alerts	If the bed has this option, make sure the alerts operate correctly (see the user manual).
CPR Feature	Make sure the CPR feature operates correctly.
Scale System—NA Scale (standard)	<ol style="list-style-type: none"> 1. Put the bed in the recommended weigh position. If a recommended weigh position is not specified, put the bed in the flat position. 2. Zero the scale. 3. Put 100 lb (45.4 kg) of calibrated weight on the bed distributed between the seat and chest sections. 4. Take a weight reading, and record it. Weight reading: _____ 5. If the reading is between 99 lb and 101 lb (44.9 kg and 45.8 kg), no further action is necessary. If it is not, examine the weigh frame for interference, and see the service manual to repair or calibrate the scale. 6. Make sure all scale functions operate correctly.

Scale System—OIML EN 45501 Class	<p> CAUTION: Caution—Local country laws or regulations may require mandatory verification of OIML scales that are certified in accordance to the NAWI directive.</p> <ol style="list-style-type: none"> 1. Put the bed in the recommended weigh position. If a recommended weigh position is not specified, put the bed in the flat position. 2. Fully extend the foot section. 3. Zero the scale. 4. Put 100 kg (220 lb) of calibrated weight on the bed distributed between the seat and chest sections. 5. Take a weight reading, and record it. <p style="text-align: center;">Weight reading: _____</p> <ol style="list-style-type: none"> 6. If the reading is between 99.5 kg and 100.5 kg (219 lb and 221 lb), no further action is necessary. If it is not, examine the weigh frame for interference, and see the service manual to repair or calibrate the scale. <p>NOTE: If you make repairs or adjustments, or if mandatory verification after inspection is required by local law, have a qualified and approved person verify the scale.</p>
SideCom[®], Bed Exit and SafeView[®]+ Systems, and Wireless Connectivity	<ol style="list-style-type: none"> 1. If the bed has the SideCom[®] Communication System option, make sure the SideCom[®] connector is in good condition and all hardware is correctly installed. 2. Examine the communication cable, including the male and female pins in the plug. 3. Connect the SideCom[®] tester to the bed, and do as follows: <ol style="list-style-type: none"> a. With the weight from the scale check on the bed, turn the Bed Exit System On. b. Remove at least half of the weight from the bed. c. Make sure of these: <ul style="list-style-type: none"> – The Bed Exit alert sounds. – If the bed has the SafeView[®] Alerts option, the indicators flash amber. – If the bed has the IllumiGuide[®] Handgrip option, the siderail lights flash amber. – The tester’s Nurse Call indicator is On. – Activate the Alarm Silence option. – Turn the Bed Exit Alert System Off. 4. If the bed has the Wireless Connectivity (WiFi) feature, make sure the WiFi indicators operate correctly (see the user manual).
Accessories	<p>Make sure all accessories installed on the bed operate correctly.</p>

EXPECTED LIFE

NOTE:

For the expected life for the pro+ non-integrated mattress (P7924), see the *pro+ Mattress Service Manual* (209197).

The expected life of the bed is ten years of normal use provided that recommended preventive maintenance is performed by the facility. However, certain components have a short life cycle and will need to be replaced in order for the bed to meet its expected life. These components are listed below:

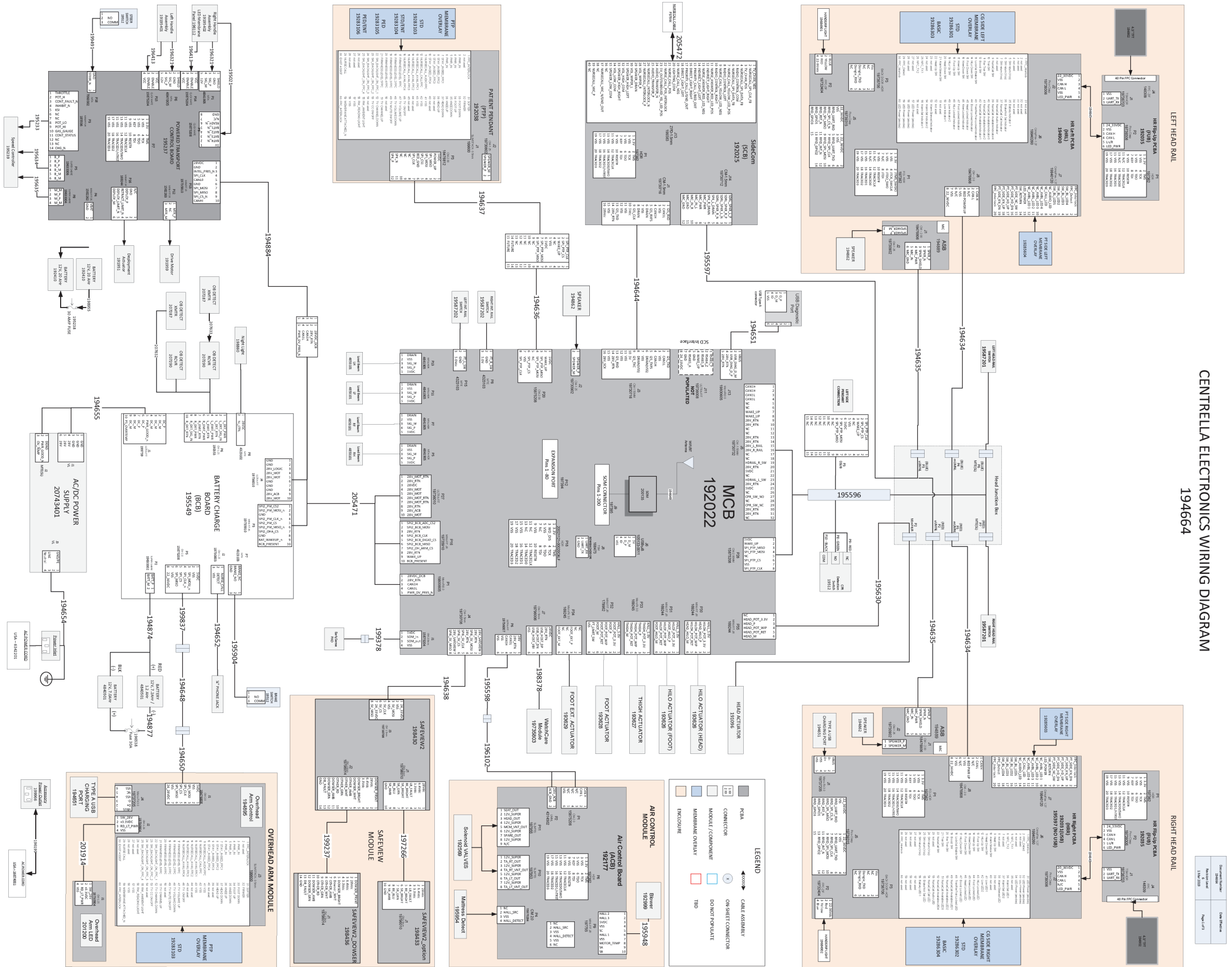
- Batteries have a three-year life expectancy:
- With the exception of the top cover and blower unit (as applicable), the core mattress (P7920), pro mattress (P7921), max mattress (P7922), and pro+ mattress (P7923) have a five-year life expectancy.
- The top cover for the core mattress (P7920), pro mattress (P7921), pro+ mattress (P7923), and max mattress (P7922) has a two-year life expectancy.
-

NOTE:

Laundering reduces the life expectancy of the top cover. Always carefully examine a laundered cover for damage before use.

- The blower unit for the P7922 has a two-year life expectancy.

NOTES:



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