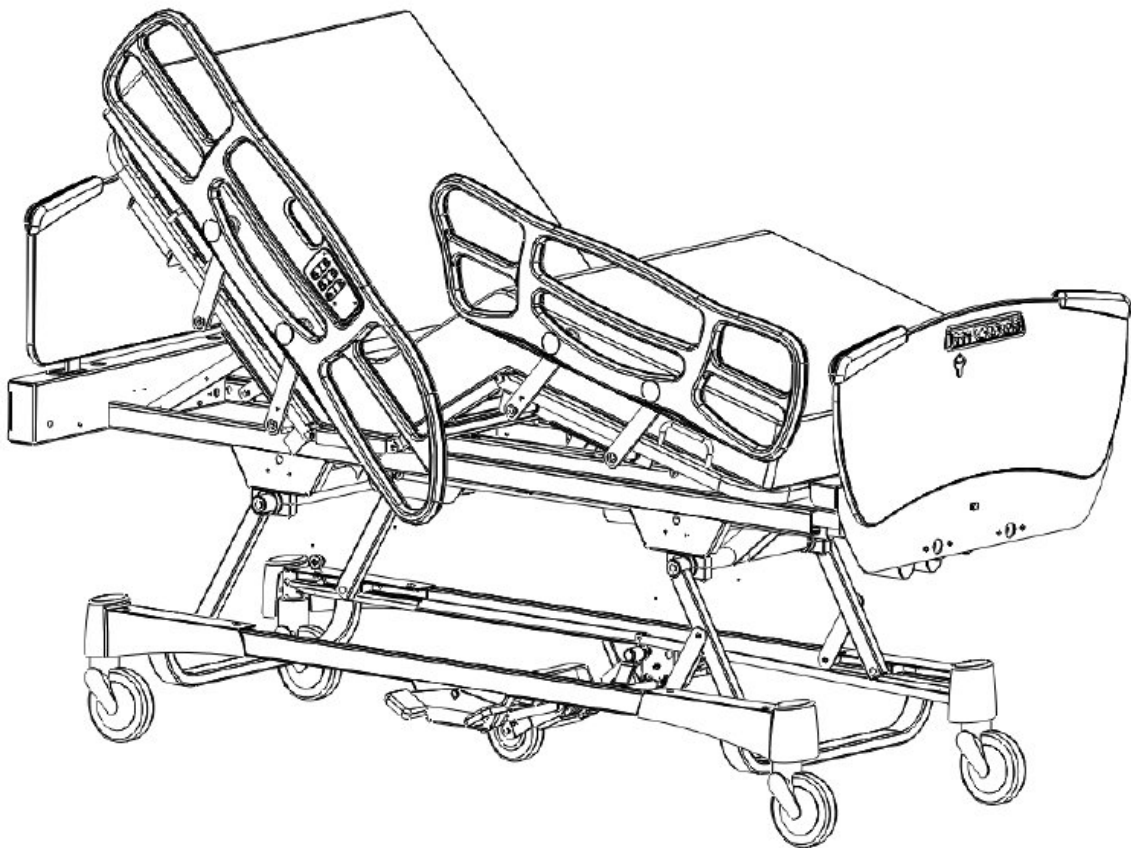


### ELECTRIC ACUTE CARE BED FL17E Model



#### TECHNICAL ASSISTANCE AND PARTS

1 800 327 0770

Outside the United States: Contact your local representative



# TABLE OF CONTENTS

1. INTRODUCTION.....	5
1.1 Bed Specifications .....	5
1.2 Technical Support.....	5
1.3 Safety .....	6
Warning / Caution / Note Definition.....	6
Static Discharge Precautions.....	6
1.4 Warranty.....	7
Limited Warranty .....	7
To Obtain Service and/or Parts .....	7
Return Authorization.....	8
Damaged Merchandise .....	8
2. PREVENTATIVE MAINTENANCE .....	9
2.1 Bed Cleaning and Mattress care.....	9
2.2 Lubrication.....	10
Annual Checklist.....	10
Two Year Interval Checklist.....	10
Five Years Interval Checklist .....	10
Lubrication Points.....	11
2.3 Preventative Maintenance Program.....	12
Annual Checklist.....	12
Recommended Spare Parts .....	13
3. TROUBLESHOOTING .....	14
3.1 Troubleshooting Guide.....	14
4. MAINTENANCE PROCEDURES .....	15
4.1 Siderail Assembly Component Replacement .....	15
Foot Siderail Assembly.....	15
Head Siderail Assembly .....	16
Head Rail .....	18
4.2 Membrane Replacement - Foot Board Control Panel.....	19
4.3 Membrane Replacement - Siderail Control Panel .....	20
4.4 Nurse Call (Optional) Component Replacement .....	21
4.5 Foot Board Connector Replacement.....	23
4.6 Foot End Casing Connector Replacement.....	24
4.7 Motor Control Board .....	25
4.8 Power Switch Replacement .....	26
4.9 Power Cord Replacement.....	27
4.10 Night Light Component Replacement .....	28

4.11	Mattress Support Section Replacement .....	30
	Foot Section.....	30
	Thigh Section.....	31
	Seat Section Replacement.....	32
	Head Section .....	33
	Bed without Optional CPR.....	33
	Bed with Optional CPR.....	35
4.12	Actuator Replacement.....	37
	Thigh Actuator .....	38
	Head Actuator.....	39
	Hi-Lo Actuator.....	40
4.13	Actuator Screw Lubrication Procedure .....	42
	Head and Thigh Actuator Screws.....	42
	Hi-Lo Actuator Screws .....	42
4.14	CPR Mechanism Component Replacement .....	43
	Spring and/or Damper.....	43
	Micro Switch Located Under the Head Section .....	44
	Micro Switch Located Under the Mattress Support.....	45
4.15	Auto Contour Micro switch Replacement.....	46
	Thigh Section Micro switch .....	46
	Head Section Microswitch.....	46
4.16	Brake/Steer Pedal Replacement .....	47
4.17	Steer Wheel Component Replacement .....	48
	5th Wheel Caster .....	48
	Activation Lever .....	49
	Swing Arm Assembly .....	50
4.18	Caster Replacement.....	52
Appendix A: Motor Connection Diagram .....		54
Appendix B: Toroidal Transformer Connection Diagram (FL17E International Series) .....		55
Appendix C: Toroidal Transformer Replacement (FL17E International Series) .....		56
Appendix D: Bed Positions for Maintenance Purpose .....		57

## 1. INTRODUCTION

This manual is designed to assist you with the servicing of Stryker Model FL17E Acute Care bed. Before servicing the bed, it is important to read and understand all information in this manual. Qualified maintenance personnel should be able to refer to this manual at all time when servicing the bed.

This Maintenance Manual is an integral part of the unit and should be included if the bed is sold or transferred.

### 1.1 BED SPECIFICATIONS \*

Maximum Charge Capacity	500 lb (227kg) including 100 lb (45.5 kg) of boards and accessories
Overall Bed Length/Width: - Siderails Up - Siderails Down	93 x 42 9/16" (236.2 x 108.1 cm) 93 x 38 3/4" (236.2 x 98.4 cm)
Overall Weight	385 lb (175 kg)
Sleep Surface	35 x 80" (89 to 203 cm) extendable to 82" (208 cm) and 84" (213 cm)
Mattress Size Recommended: Mattress Thickness:	35 x 80 or 84" (89 x 203 or 213 cm) 5 to 6 1/2" (13 to 16 cm)
Minimum/Maximum Bed Height	14 to 29" (35.5 to 73.7 cm)
Sound Level	< 58 dBa
Fowler Angle	0 to 65°
Knee Gatch Angle: w/o Auto Contour Positioning w/Auto Contour Positioning	0 to 32° 0 to 24°
Trendelenburg/Reverse Trendelenburg	-14 to +14°
Electrical Requirements - All electrical requirements meet UL 544 specifications.	100 V~, 50-60 Hz, 6.3 A 120 V~, 50-60 Hz, 4.8 A 120 V~, 50-60 Hz, 9.8 A w/auxiliary outlet 200 V~, 50-60 Hz, 3.2 A 220 V~, 50-60 Hz, 2.9 A 240 V~, 50-60 Hz, 2.7 A

\* Stryker pays special attention to product improvement and reserves the right to change specifications without notice.

### 1.2 TECHNICAL SUPPORT

For questions regarding this product, contact the following Technical Service department or your local representative.

Stryker Medical  
1 800 327-0770  
3800, East Centre Avenue  
Portage, MI 49002  
USA

### 1.3 SAFETY

#### WARNING / CAUTION / NOTE DEFINITION

The words WARNING, CAUTION and NOTE carry special meanings and should be carefully reviewed.



#### WARNING

The personal safety of the patient or user may be involved. Disregarding this information could result in injury to the patient or user.



#### CAUTION

These instructions point out special procedures or precautions that must be followed to avoid damaging the equipment.

#### NOTE

Notes provide special information to make maintenance easier or important instruction clearer.

#### STATIC DISCHARGE PRECAUTIONS

The electronic circuits of the bed are protected from static electricity damage only while the bed is assembled in plant. It is extremely important that all service personnel always use adequate static protection when servicing the electronic components of the bed.

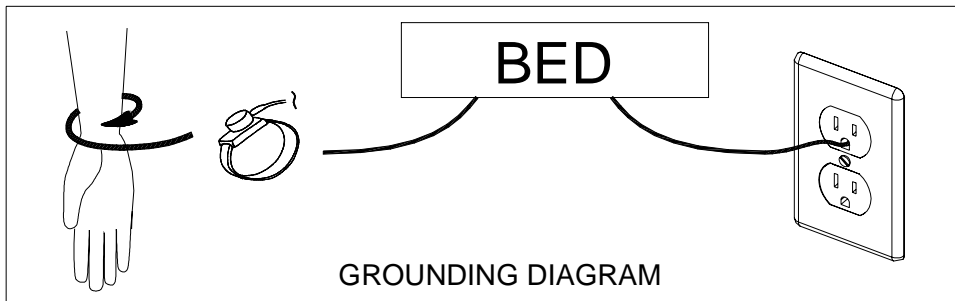
#### Static Protection Equipment

The necessary equipment for a proper static protection is:

- 1 static wrist strap
- 1 grounding plug
- 1 test lead with a banana plug on one end and an alligator clip on the other

#### Static Protection Procedure

1. Unplug the bed power cord from the wall receptacle.
2. Insert the grounding plug into a properly grounded hospital grade wall receptacle. Plug the banana plug of the test lead into the receptacle on the grounding plug. Connect the alligator clip on the other end of the test lead to a ground point on the bed.
3. Place the static wrist strap on your wrist. Connect the clip at the other end of the wrist strap cord to a ground point on the bed.



## 1.4 Warranty

### LIMITED WARRANTY

All Stryker products are guaranteed against material or manufacturing defects, improper operation of mechanisms, and premature wear of bed components under normal use conditions.

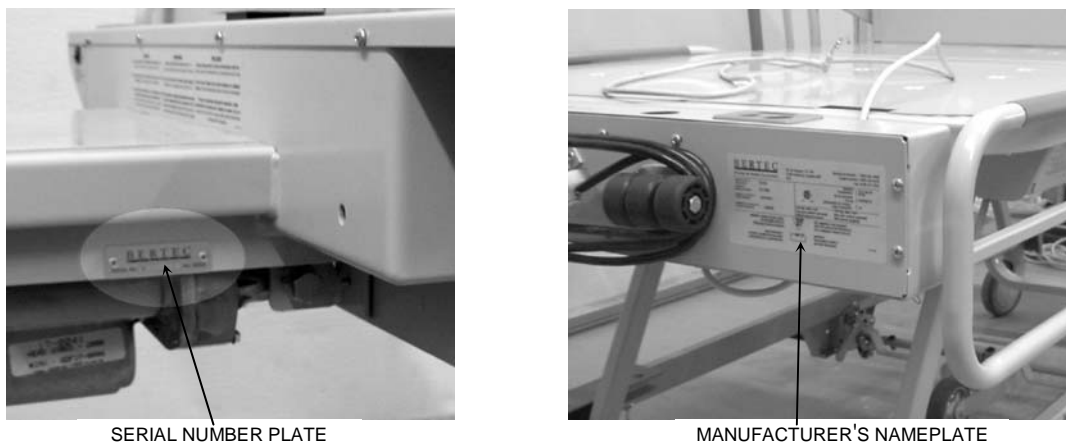
For questions regarding the warranty, please contact the Technical Service department (see section 1.2) or your local representative.

### TO OBTAIN SERVICE AND/OR PARTS

#### To Require Service

To obtain the service of a Field Service Representative for an on-site diagnosis and/or repair of a bed malfunction, contact the Technical Service department (see section 2.1) or your local representative.

#### To Order Parts



**Figure 1.4**

In order to correctly identify and order parts to be replaced, proceed as follows:

- Once you have established the nature of the problem, locate the serial number plate (fig. 1.4) and the manufacturer's nameplate (fig. 1.4) affixed respectively on the right side of the mobile frame at the foot end of the bed, and on the right side of the head end casing cover.
- Write down the serial number, the production number (e.g. FL17-XXXX) and the bed model (manufacturer's nameplate).
- Locate the Parts manual or Customer's guide (containing the Parts manual needed) number on the manufacturer's nameplate, and refer to its drawings and part lists to identify the defective part. Write down the name of the part and its part number. Also write down the problem encountered while using the equipment.

#### NOTE

It is very important that you refer to the drawings and parts lists that are specific to the bed needing repair.

- Contact the Technical Service department (see section 1.2) or your local representative and provide all the previously noted information:
  - Bed model
  - Serial number and production number
  - Name and part number of the defective part(s)
  - Problem encountered

**NOTE**

The Technical Service representative will help you identify the parts to be replaced. However, if an error occurs when ordering, the user remains responsible for identifying parts to change. Stryker will take back wrong parts ordered but will not assume shipping charges and restocking fees will be charged to the user unless a Technical Service representative has been requested for an on-site diagnosis of the malfunction.

**RETURN AUTHORIZATION**

Merchandise cannot be returned without approval from the Technical Service department. An authorization number will be provided, which must be clearly printed on the returned merchandise. Stryker reserves the right to charge shipping and restocking fees on returned items.

**DAMAGED MERCHANDISE**

Claims for damaged merchandise must be made with the carrier within fifteen (15) days of receipt of merchandise. **DO NOT ACCEPT DAMAGED SHIPMENTS UNLESS SUCH DAMAGE IS NOTED ON THE DELIVERY RECEIPT AT THE TIME OF RECEIPT.** Upon prompt notification, Stryker will file a freight claim with the appropriate carrier for damages incurred. Claims will be limited in amount to the actual replacement cost. In the event that this information is not received by Stryker within the fifteen (15) days period following the delivery of the merchandise, or the damage was not noted on the delivery notice at the time of receipt, the customer will be responsible for payment of the original invoice in full.

Claims for any short shipment must be made within 5 days of invoice.



## 2. PREVENTATIVE MAINTENANCE

### NOTE

In the text, the words "right and "left" refer to the right and left sides of a patient lying face up on the bed.

### 2.1 BED CLEANING AND MATTRESS CARE



#### CAUTION

Do not use harsh cleaners, solvents or detergents. Do not steam clean, hose off or ultrasonically clean the bed. Do not immerse any part of the bed. The bed electrical parts may be damaged by exposure to water.

Germicidal disinfectant, used as directed, and/or Chlorine Bleach products are not considered mild detergents. These products are corrosive in nature and may cause damage to your bed if used improperly. If these types of products are used, ensure the beds are rinsed with clean water and thoroughly dried following cleaning. Failure to properly rinse and dry the beds will leave a corrosive residue on the surface of the bed, possibly causing premature corrosion of critical components. Failure to follow the above directions when using these types of cleaners may void this product warranty.

#### CLEANING BEDS

Hand wash all surfaces of the bed with a soft cloth moistened with a solution of lukewarm water and a mild detergent.

Wipe the bed clean and dry thoroughly to avoid build up of cleaning solution.

### NOTE

Do not use cleaning solutions containing a degreaser near the siderail pivots (see figure 2.2B on page 11) to avoid deteriorating the properties of the grease used to ensure a smooth movement of the siderails.

#### MATTRESS CARE



#### WARNING

Inspect the mattress after each use. Discontinue use if any cracks or rips are found in the mattress cover, which may allow fluid to enter the mattress. Failure to properly clean the mattress, or dispose of it if defective, may increase the risk of exposure to pathogenic substances and may bring about diseases to the patient and/or user.

- **Inspection**

Implement local policies to address regular care, maintenance, and cleaning of mattresses and covers. The cover cleaning procedure can be found below and on the bed label.

Inspect mattress cover surface (also zip fasteners and cover inner surface if mattresses have zip fasteners) regularly for signs of damage. If the mattress cover is heavily stained or soiled, or torn, remove the mattress from service.

- **Cleaning**

Stains: Wash with lukewarm water using a mild detergent. Rinse with water and let dry. For tough stains use bleach diluted with ten parts of water.

## 2.2 LUBRICATION

Listed below are the lubrication points and their recommended time interval check. When needed, lubricate these points with OG2 grease (part number M0019).

---



### WARNING

The use of types of grease other than the one recommended (OG2 grease) could lead to deterioration of critical parts and to mechanism failure, resulting in injury to the patient or user and damage to the bed.

---



### CAUTION

The FL17E uses oil-impregnated shoulder spacers at hinge points. **Do not** lubricate these shoulder spacers. When they are found worn, replace them.

---

### ANNUAL CHECKLIST:

- \_\_\_ The Hi-Lo lever nylon sliders and their shafts (see fig. 2.2A, page 11). Verify that grease is still present along the course of the sliders (inner surfaces (bottom and side) of the rail).
- \_\_\_ The lower mounting points (see fig. 2.2A, page 11) of the Hi-Lo system stabilizers.
- \_\_\_ The siderail plungers and plunger springs (see fig. 2.2B, page 11).
- \_\_\_ The siderail arm glide rods (see fig. 2.2B, page 11).

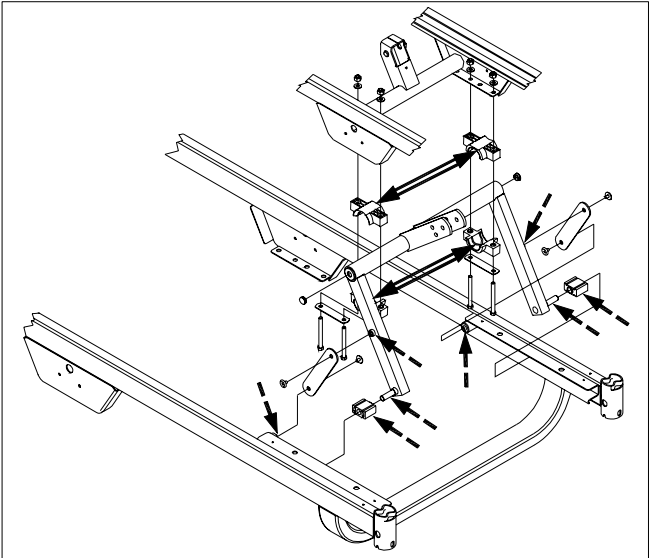
### TWO YEAR INTERVAL CHECKLIST:

- \_\_\_ The two Hi-Lo and the head section actuator tubes (see fig. 2.2C, page 11) to facilitate their sliding into their metal support tubes. Bring the bed and the head section to full up before applying grease on the actuator tubes.
- \_\_\_ The four actuator screws (see fig. 2.2C, page 11). Note that the foot actuator screw does not appear on figure 2.2C.
- \_\_\_ The clevis pins and nylon washers linking the actuator tubes to the head and thigh section lever arms and the two Hi-Lo lever arms (see fig. 2.2C, page 11).
- \_\_\_ The actuator bolt that holds each actuator to its bracket, as well as the inner side of the four brackets, including the pivot pin (see fig. 2.2C, page 11).
- \_\_\_ Micro switch activator (see fig. 2.2E, page 11) of the optional Auto Contour mechanism.

### FIVE YEAR INTERVAL CHECKLIST:

- \_\_\_ The siderail shafts and transfer plate sleeves (see fig. 2.2B, page 11).
- \_\_\_ The inside of the Hi-Lo lever molded bearings (see fig. 2.2A, page 11).
- \_\_\_ The damper lower spacer sleeves, the pivot shaft of the CPR support, and the activation rod pivot sleeve (see fig. 2.2D, page 11), all from the CPR mechanism.

LUBRICATION POINTS



LEGEND:  
1 YEAR 2 YEARS 5 YEARS

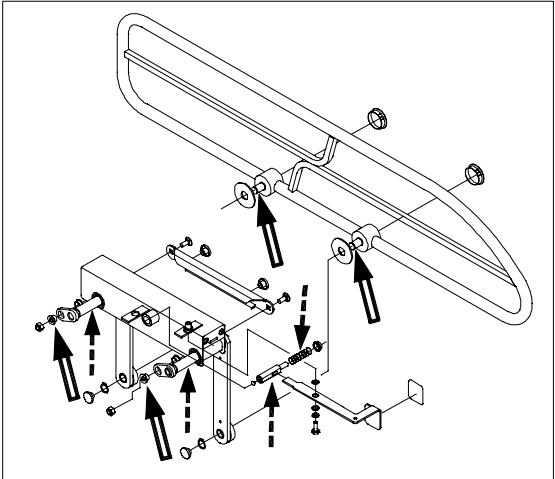


Figure 2.2B

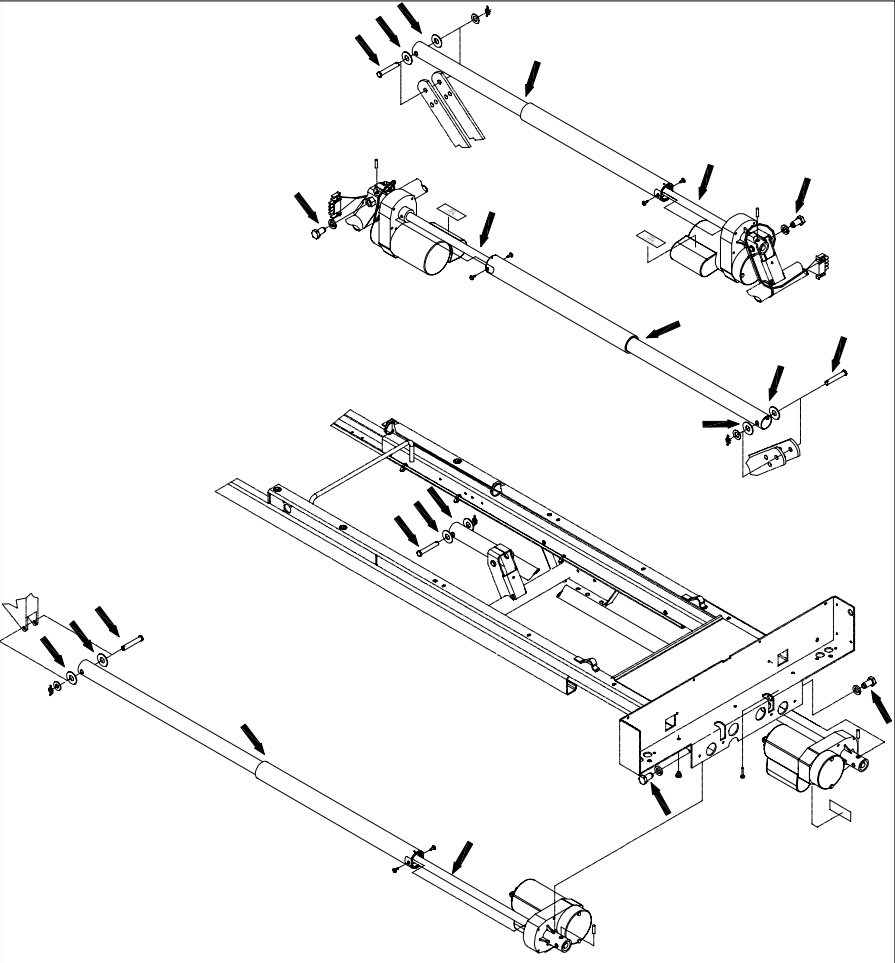


Figure 2.2C

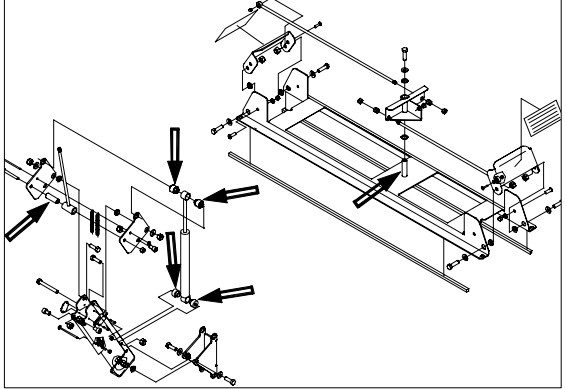


Figure 2.2D

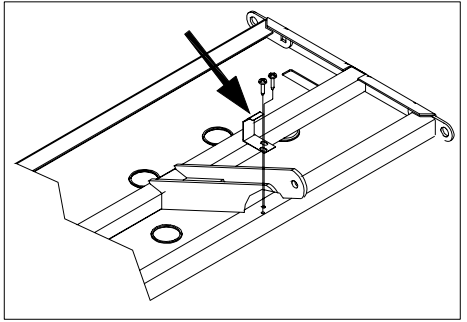


Figure 2.2E

Figure 2.2

**2.3 PREVENTATIVE MAINTENANCE PROGRAM**

**ANNUAL CHECKLIST**

- \_\_\_ Inspect for excessive wear the oil-impregnated bronze shoulder spacers found at the bed hinge points. **Do not** lubricate these spacers; replace as needed.
- \_\_\_ Inspect and lubricate when needed the bed lubrication points described in section 2.2.
- \_\_\_ Inspection of all bolt, locknut and screw tightening. Tighten if necessary.
- \_\_\_ Engage the brake pedal on both sides of the bed and ensure the braking mechanism operates properly. Toggle the pedal to neutral and ensure the brakes are released.
- \_\_\_ Engage the steer pedal on both sides of the bed and ensure the 5th steer wheel operates properly. Toggle the pedal to neutral and ensure the steer wheel is disengaged.
- \_\_\_ Siderails move, latch and stow properly.
- \_\_\_ All functions on the foot board control panel working properly (give special attention to the lockout switches and Trendelenburg positioning LEDs).
- \_\_\_ All functions of the head siderail outer/inner control panels working properly. Ensure the optional nurse call signal reaches the nurse station.
- \_\_\_ Optional CPR emergency release handles working properly. The Fowler and Knee Gatch lower completely and the Fowler motor resets itself automatically once the Fowler is down.
  - \_\_\_ Wait about 20 seconds, the time for the Fowler motor to reset itself, then raise the Fowler to check that the Fowler motor has indeed reset itself.
- \_\_\_ Verify the Fowler and Knee Gatch movements to ensure their motor course is properly adjusted. Refer to Caution following step 11 of the "Thigh Actuator" and the "Head Actuator" replacement procedures found at page 38 and 40 respectively.
- \_\_\_ Optional 120 volt auxiliary outlet working properly.
- \_\_\_ Optional photoelectric night light working properly.
- \_\_\_ Optional Auto Contour working properly.
- \_\_\_ Foot prop rod working properly when Knee Gatch or Auto Contour function is activated.
- \_\_\_ No cracks or splits in head and foot boards.
- \_\_\_ Head end bumpers tightly secured to frame and working properly.
- \_\_\_ No rips or cracks in mattress cover. Remove from service if damaged.
- \_\_\_ On/Off switch and associated LED indicator working properly. Power cord not frayed. No cables worn or pinched. All electrical connections tight. All ground secured to the frame.
- \_\_\_ All casters roll properly. Verify caster tire for cuts or wear.
- \_\_\_ Ground chain intact and in place.
- \_\_\_ Measure the current leakage and the grounding continuity of the bed and the optional 120V auxiliary outlet. Verify with our Technical Service department (see section 1.2) for the acceptable values for this bed.

**NOTE**

We recommend that the bed actuator tubes be replaced after 10 years of service (see Recommended Spare Parts next page).

Preventive maintenance may need to be performed more frequently based on the usage level of the bed.

Serial Number: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

**RECOMMENDED SPARE PARTS**

Listed below are the recommended spare parts to keep on hand for the FL17E.

**Electronic/Electrical Parts**

Motor control board	QDF14-0990
Toroidal transformer (International Series Only)	QDF14-1160
Stand-off pins	QDF8011
Strain relief bushing	QDF9541
120V Power cord/Connector	QDF17-0236/QDF8041
Micro switch	1325P003
Night light	QDF9539

**Actuator Assembly Parts**

S.A. Hi-Lo actuator	80-0039G
S.A. Thigh actuator	80-0041
S.A. Head actuator	80-0040G

**Control Panel Assembly**

Foot end control panel - Plate and membrane -	QDF17-0127/QDF17-0180
Right siderail outer control panel	17-0370
Right siderail inner control panel - w/o Nurse call	17-0372
Right siderail inner control panel - w/Nurse call	17-0374
Left siderail outer control panel	17-0371
Left siderail inner control panel - w/o Nurse call	17-0373
Left siderail inner control panel - w/Nurse call	17-0375

**Siderail Assembly Parts**

S.A. Siderail right latch release	90-1114
S.A. Siderail left latch release	90-1113
Dome cap	QDFP1514
Protective cap	QP18748-07

**Mattress Support Assembly Parts**

Side mattress retainer	QP14034-07
Foot end mattress retainer	17-0211G

**Base Assembly Parts**

Caster with brake system	RT61C
Caster without brake system	RT61CSW
Steer wheel caster	RL5
Steer wheel swing arm assembly	80-0042G
S.A. Left brake/steer pedal	80-3079G
S.A. Right brake/steer pedal	80-3078G
Anchor washer for the treadle tips	VW00A06

**Miscellaneous**

Shoulder spacers	QDF17-0020
Rue ring cotter dia. 3/8"	QDF7878
OG2 grease	M0019
Threadlocker - medium strength (blue)	M008
"Sand Grey" aerosol spray paint	DDCAP-GSP

### 3. TROUBLESHOOTING

Please consult the following troubleshooting checklist and call our Technical Service department (see section 1.2) if none of the recommended actions described below solves the problem.

#### 3.1 TROUBLESHOOTING GUIDE

PROBLEM/FAILURE	WHAT TO VERIFY
No power to bed	<p><b>A:</b> Is the bed power switch turned on?</p> <p><b>B:</b> Is the power cord plugged into the wall outlet?</p> <p><b>C:</b> Is the power cord severed? Replace if needed.</p> <p><b>D:</b> Verify power at wall outlet.</p>
<p>No bed up or down motion when:</p> <ol style="list-style-type: none"> <li>1. the foot board command is used</li> <li>2. the siderail command is used</li> </ol>	<p><b>1:</b> Verify the “No power to bed” section above.</p> <p><b>2 A:</b> Verify the “No power to bed” section above.</p> <p><b>2 B:</b> Are the siderail Hi-Lo controls locked (LED off) in the foot board control panel? Unlock them.</p> <p><b>2 C:</b> Is the siderail control panel cable properly connected to the bed connector under the sleep surface?</p>
<p>No Fowler up or down motion when:</p> <ol style="list-style-type: none"> <li>1. the foot board command is used</li> <li>2. the siderail command is used</li> </ol>	<p><b>1:</b> Verify the “No power to bed” section above.</p> <p><b>2 A:</b> Verify the “No power to bed” section above.</p> <p><b>2 B:</b> Are the siderail Fowler controls locked (LED off) in the foot board control panel? Unlock them.</p> <p><b>2 C:</b> Is the siderail control panel cable connected to the bed connector under the sleep surface?</p>
<p>No Knee Gatch up or down motion when:</p> <ol style="list-style-type: none"> <li>1. the foot board command is used</li> <li>2. the siderail command is used</li> </ol>	<p><b>1:</b> Verify the “No power to bed” section above.</p> <p><b>2 A:</b> Verify the “No power to bed” section above.</p> <p><b>2 B:</b> Are the siderail Knee Gatch controls locked (LED off) in the foot board control panel? Unlock them.</p> <p><b>2 C:</b> Is the siderail control panel cable connected to the bed connector under the sleep surface?</p>
No Auto Contour motion	<p><b>A:</b> Verify the “No power to bed” section above.</p> <p><b>B:</b> Are the siderail Knee Gatch controls locked (LED off) in the foot board control panel? Unlock them.</p>

## 4. MAINTENANCE PROCEDURES



### WARNING

Always unplug the bed power cord from the wall outlet when cleaning or servicing the bed. When working under the bed with the bed in the high position, always place blocks under the mattress support frame to prevent injury in case the bed-down switch is accidentally pressed. Only qualified maintenance personnel should perform the procedures detailed in this maintenance guide. Failure to observe this restriction can result in serious damage to material and/or severe injury to people. Use only identical replacement parts provided by Stryker.

### NOTE

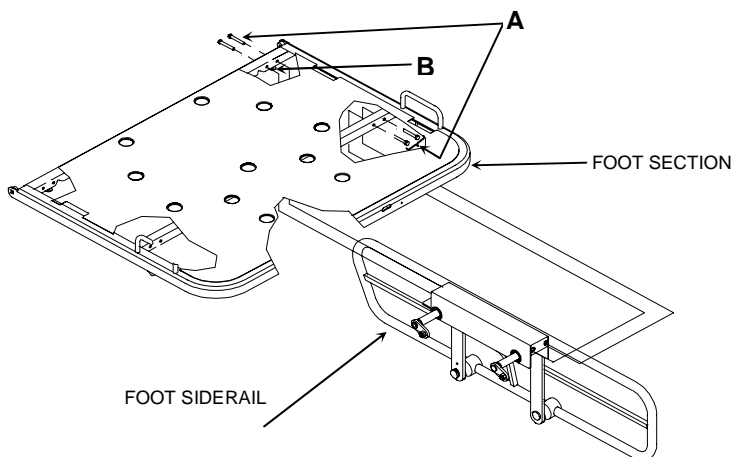
Except for rare exceptions, reference points - i.e. A, B, C, appearing in sequence of instructions refer to a figure immediately preceding this sequence of instructions.

## 4.1 SIDERAIL ASSEMBLY COMPONENT REPLACEMENT

### FOOT SIDERAIL ASSEMBLY

#### NOTE

This procedure applies for both types of siderails - plastic and steel.



**Figure 4.1A**

Appendix D).

6. Using a 5/32" Allen key, remove the four screws (**A**) holding the siderail assembly to the foot section.



### WARNING

The four screws (**A**) used to mount the siderail assembly cannot be reused because their Scotch-Grip coating is less efficient once they have been tightened and removed thereafter. They **must** be replaced with new identical screws.

7. Lift up the assembly to disengage it from the anchor point (**B**) and remove it.
8. Reverse the above steps to install the replacement foot siderail assembly.
9. Verify the foot siderail for proper operation before returning the bed to service.

#### Required Tools:

5/32" Allen Key

#### Procedure:

1. Raise the bed fully up and apply the brakes.
2. Lower the head siderails and raise the foot siderails.
3. Raise the Knee Gatch to the high position.
4. Unplug the power cord from the wall receptacle.
5. Manually lift and fold the foot section back towards the head end of the bed (see figure 4.1 in

## HEAD SIDERAIL ASSEMBLY

### NOTE

This procedure applies for both types of siderails - plastic and steel.

If the bed being repaired is equipped with the nurse call option, be sure to provide this information to the Technical Service representative when ordering a new head siderail assembly.

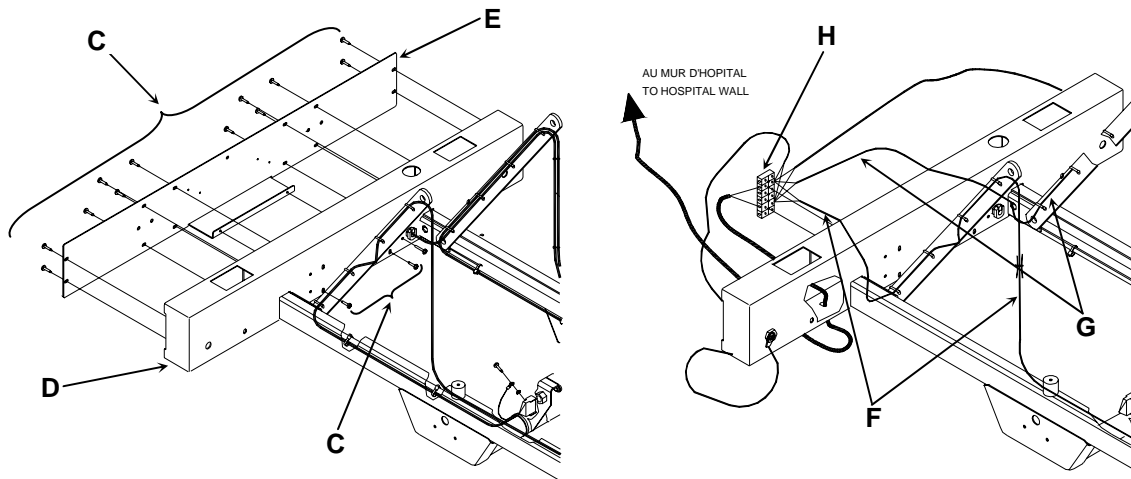


Figure 4.1B

### Required Tools:

5/32" Allen Key

Phillips Screwdriver

Small Slotted Screwdriver

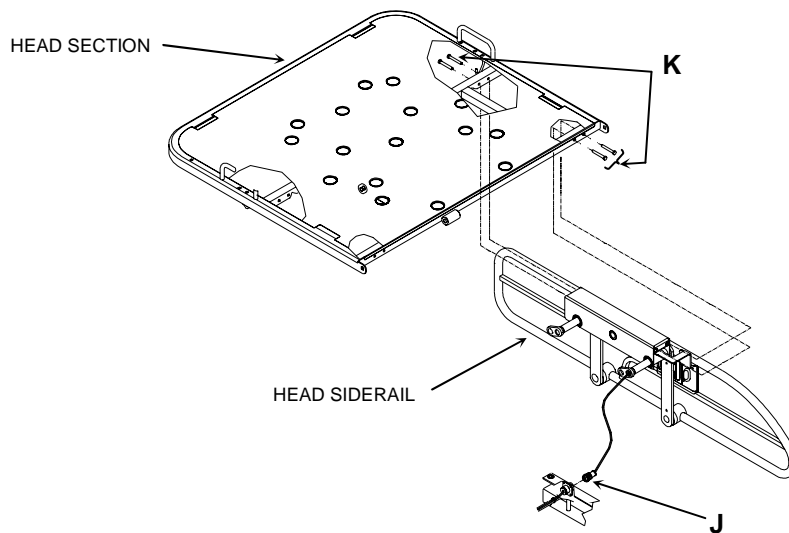
### Procedure:

1. Raise the bed to the high position and apply the brakes.
2. Raise the head siderail to be replaced and raise the Fowler to high position.
3. Unplug the power cord from the wall receptacle.
4. Unscrew the lock ring of the siderail cable plug (J, fig. 4.1C, page 17) and remove the cable from the bed receptacle.
5. If the bed being repaired **is not** equipped with the optional nurse call function, proceed with step 10.

If the bed being repaired **is** equipped with the optional nurse call function, and its version is prior to 03 (bed with serial number  $\leq$  C02025), proceed with step 6. For version 03 (bed with serial number  $\geq$  C02026) and higher, equipped with the optional nurse call function, proceed with step 10.

6. Using a Phillips screwdriver, remove the fourteen screws (C) holding the head end casing (D) cover and remove the cover (E).
7. Identify the right (F) or left (G) nurse call cable wires in the head end casing, cut the cable tie if necessary.
8. Using a small slotted screwdriver, loosen the two screws holding the two groups of red and black wires on the multiple connector (H). Remove both groups of wires and segregate from them the red and black wires of the nurse call cable involved in the procedure.
9. Pull on the cable to disengage it from the cable ties. It might be necessary to cut the cable ties to install the new nurse call cable.





**Figure 4.1C**

10. Using a 5/32" Allen key, remove the four screws (**K**) holding the siderail assembly to the head section. First remove the two screws located near the latch lever followed by the two others. Support the assembly when removing the two last screws.



**WARNING**

The four screws (**K**) used to mount the siderail assembly cannot be reused because their Scotch-Grip coating is less efficient once they have been tightened and removed thereafter. They **must** be replaced with new identical screws.

11. Lift up the assembly to disengage it from the anchor pin and remove it.
12. Reverse the above steps to install the replacement head siderail assembly.

**NOTE**

Be sure to connect the siderail cable to the bed receptacle before verifying the bed.

13. Verify the siderail motion, all siderail controls, and, if present, the nurse call function for proper operation before returning the bed to service.

## FOOT RAIL

### NOTE

This procedure applies for both types of siderails - plastic and steel.

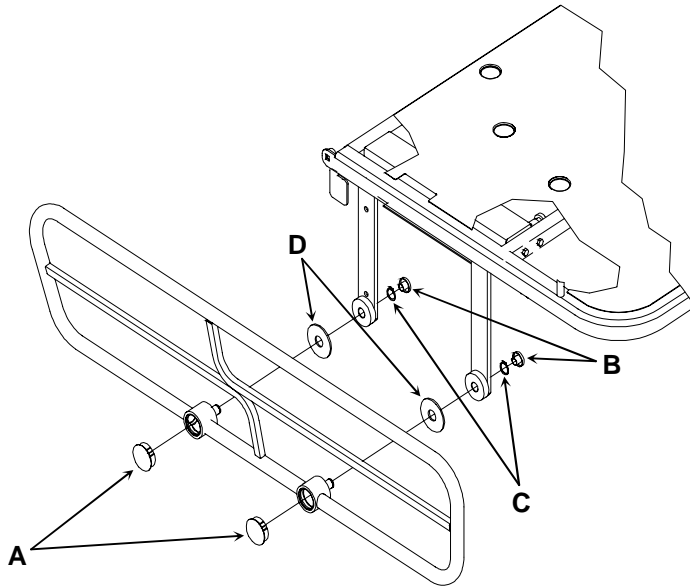


Figure 4.1D

### Required Tools:

Small Slotted Screwdriver

Hammer

Blunt-Ended Tool

OG2 Grease

### Procedure:

1. Raise the bed to the high position and apply the brakes.
2. Raise the siderail needing a rail replacement.
3. Unplug the power cord from the wall receptacle.
4. Using a small slotted screwdriver, remove the plastic dome caps (A) sealing the front part of the two rail shafts.

### NOTE

We recommend having some of these dome caps on hand because they can hardly be removed without damaging them.

5. Using a hammer and a blunt-ended tool, remove the nylon protective caps (B) from the rear part of the two rail shafts.
6. Remove the lock rings (C) from each shaft and remove the defective rail. Keep the nylon washers (D).

### NOTE

Apply grease on the rail shafts before reinstalling them.

7. Reverse the above steps to install the replacement rail.

## HEAD RAIL

Replacing the rail of head siderail is a complex task requiring a thorough knowledge of the product. We strongly recommend that you contact our Technical Service department (see section 1.2) in order for them to suggest an appropriate solution to the problem.

## 4.2 MEMBRANE REPLACEMENT - FOOT BOARD CONTROL PANEL

### NOTE

The membrane comes with the control panel plate, already affixed to it.

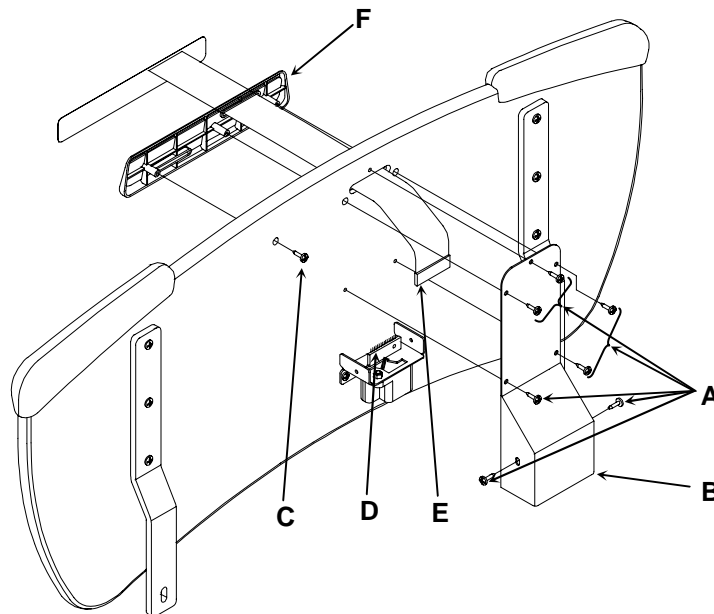


Figure 4.2

### Required Tools:

Phillips Screwdriver

### Procedure:

1. Raise the bed to the high position and apply the brakes.
2. Unplug the power cord from the wall receptacle.
3. Remove the foot board and lay it on a workbench.
4. Using a Phillips screwdriver, remove the 7 screws (A) holding the support cover (B) to the inner face of the foot board and remove the cover.
5. Using a Phillips screwdriver, remove the screw (C) holding the membrane support to the foot board.
6. Disconnect the membrane cable (E) from the board connector (D).
7. Remove the control panel plate (F).

### NOTE

On some beds, the membrane cable may be stuck to the inner face of the board using a small transfer tape.

8. Reverse the above steps to install the replacement membrane.

### NOTE

Be sure to connect the new membrane cable correctly. The side of the membrane connector bearing the inscription "1" must face the black wire of the foot board connector.

9. Verify all the foot board controls for proper operation before returning the bed to service.

### 4.3 MEMBRANE REPLACEMENT - SIDERAIL CONTROL PANEL

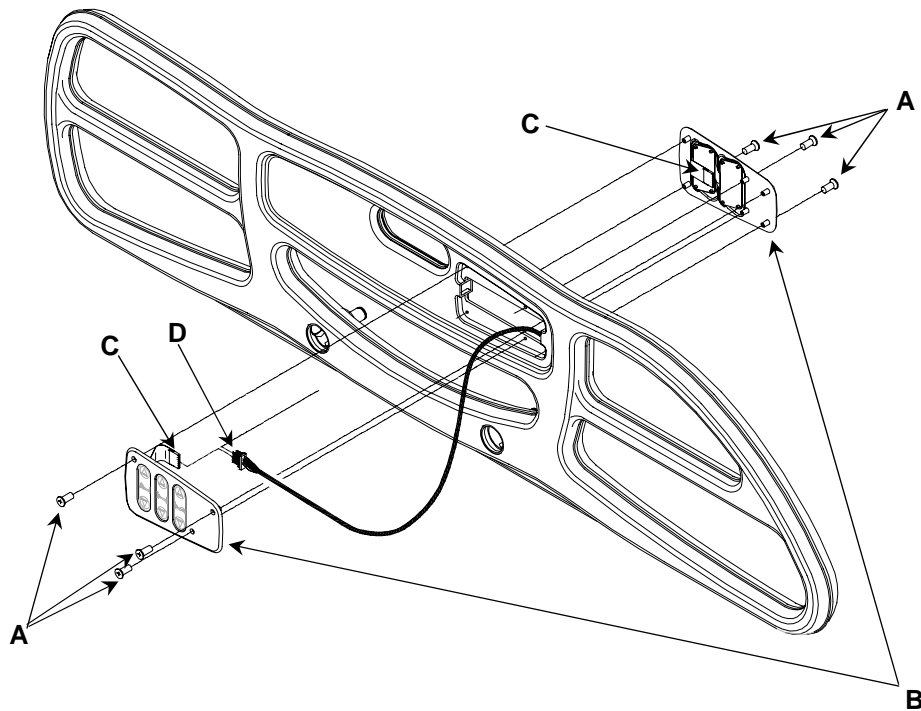


Figure 4.3

**Required Tools:**

Phillips Screwdriver

**Procedure:**

1. Raise the bed to high position and apply the brakes.
2. Raise the head siderail needing a membrane replacement.
3. Unplug the power cord from the wall receptacle.
4. Using a Phillips screwdriver, remove the six screws (**A**) holding together the two sections of the control panel housing (**B**).
5. Disconnect the faulty membrane cable (**C**) from the siderail connecting board (**D**) and remove the membrane assembly.
6. Reverse the above steps to install the replacement membrane assembly.

**NOTE**

Make sure to connect the new membrane cable correctly. The side of the connector bearing the inscription "1" must face the brown wire of the connecting board.

7. Verify all the siderail controls (inner and outer sides) for proper operation before returning the bed to service.

#### 4.4 NURSE CALL (OPTIONAL) COMPONENT REPLACEMENT

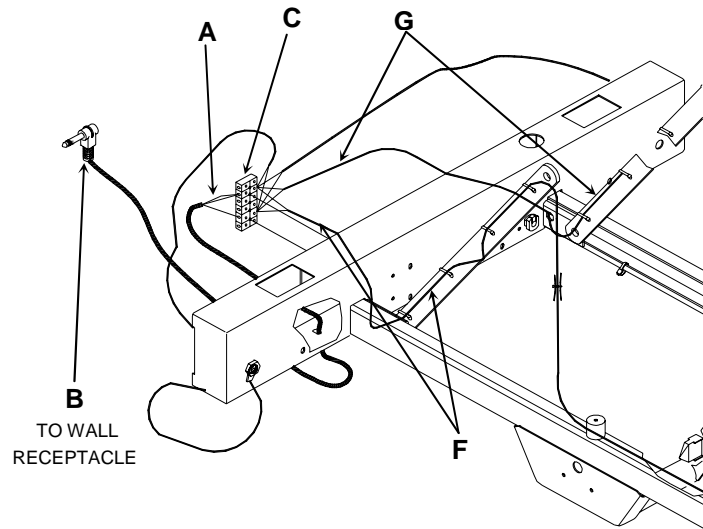


Figure 4.4

#### Required Tools:

Phillips Screwdriver

Small Slotted Screwdriver

Soldering Iron and Welding Wire

#### Procedure:

1. Raise the bed to high position and apply the brakes.
2. Remove the head board.
3. Using a Phillips screwdriver, remove the fourteen screws (**C**, fig. 4.1B, page 16) holding the head end casing cover (**E** fig. 4.1B, page 16) to the head end casing and remove the cover.
4. Identify the wires (**A**) of the nurse call wall connector cable (**B**). Using a small slotted screwdriver, loosen the two screws holding the cable wires to the multiple connector (**C**) and remove the wires.

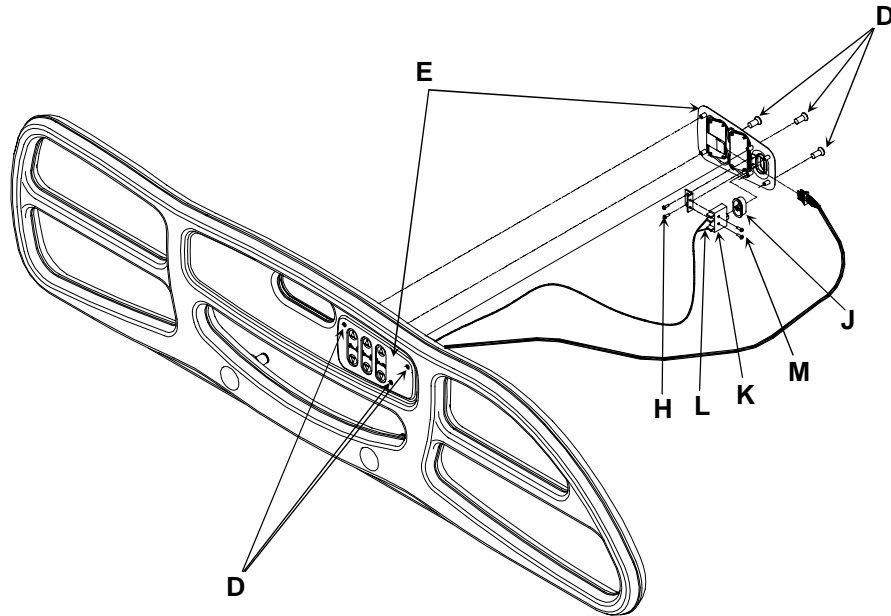
#### NOTE

If the wall connector cable is made of three wires, ensure that the red and orange wires are connected together in the same multiple connector slot.

5. Verify the nurse call wall connector cable.
  - if defective, proceed with step 6 through step 8 and end the procedure.
  - if functioning properly, proceed with step 9.
6. Remove the nurse call wall connection cable.
7. Reverse the above steps to install the replacement cable.
8. Verify the nurse call function for proper operation before returning the bed to service.

End of procedure

9. Identify the right (**F**) or left (**G**) nurse call cable wires, cut the cable tie if necessary.
10. Using a small slotted screwdriver, loosen the two screws holding the two groups of red and black wires on the multiple connector (**C**). Remove both groups of wires and segregate the red and black wires of the defective nurse call control.



**Figure 4.4A**

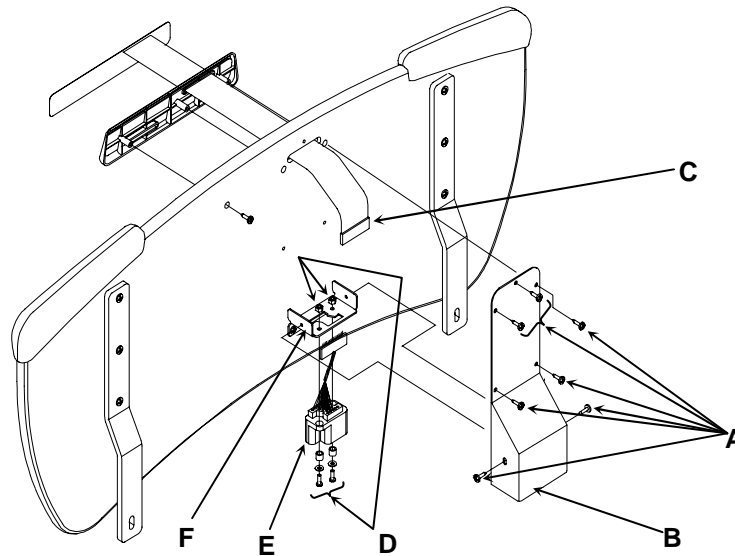
11. Using a Phillips screwdriver, remove the six screws (**D**) holding together the two sections of the control panel housing (**E**).
12. Remove the two screws (**H**) holding the switch support to the housing. Remove the nurse call button (**J**) and clean it as well as its housing.
13. Test the switch (**K**) and the two sections of the nurse call cable to determine which is responsible for the problem. Note that in prior versions of the FL17E (beds with a serial number  $\leq$  C02025), the nurse call cable is in one section, running from the nurse call switch to the multiple connector located in the head end casing.
  - if the switch is defective but the cable functions properly, proceed with step 14 through step 18 and end the procedure.
  - if one of the cable sections is defective, read the following note.

**NOTE**

Replacing a defective nurse call cable is a complex task requiring a good knowledge of the product. We recommend that you contact our Technical Service department (see section 1.2) in order for them to suggest an appropriate solution to the problem.

14. Unsolder the two nurse call cable wires (**L**) from the defective switch. Note the position of each soldered wire on the switch.
15. Using a Phillips screwdriver, remove the two screws (**M**) holding the switch to its support.
16. Unsolder from the replacement switch the two wires attached to it. Keep the cable as an on-hand replacement part.
17. Solder to the replacement switch the two wires of the original nurse call cable.
18. Reverse the above steps to install the replacement nurse call switch and finalize the installation of the nurse call assembly.
19. Verify the nurse call function for proper operation before returning the bed to service.

## 4.5 FOOT BOARD CONNECTOR REPLACEMENT



**Figure 4.5**

### Required Tools:

Phillips Screwdriver

3/8" Wrench

### Procedure:

1. Raise the bed to high position and apply the brakes.
2. Remove the foot board and lay it on a workbench.
3. Using a Phillips screwdriver, remove the 7 screws (A) securing the support cover (B) to the inner face of the foot board and remove it.
4. Disconnect the foot board control panel membrane (C) from the connector.
5. Using a 3/8" wrench and a Phillips screwdriver, remove the two locknuts/sleeves/washers/screws (D) holding the connector (E) to its support (F) and remove the defective connector.
6. Reverse the above steps to install the replacement foot board connector.

### NOTE

Make sure to connect the foot board control panel cable correctly. The side of the cable connector bearing the inscription "1" must be aligned with the black wire of the foot board connector.

7. Verify all the foot board controls for proper operation before returning the bed to service.

## 4.6 FOOT END CASING CONNECTOR REPLACEMENT

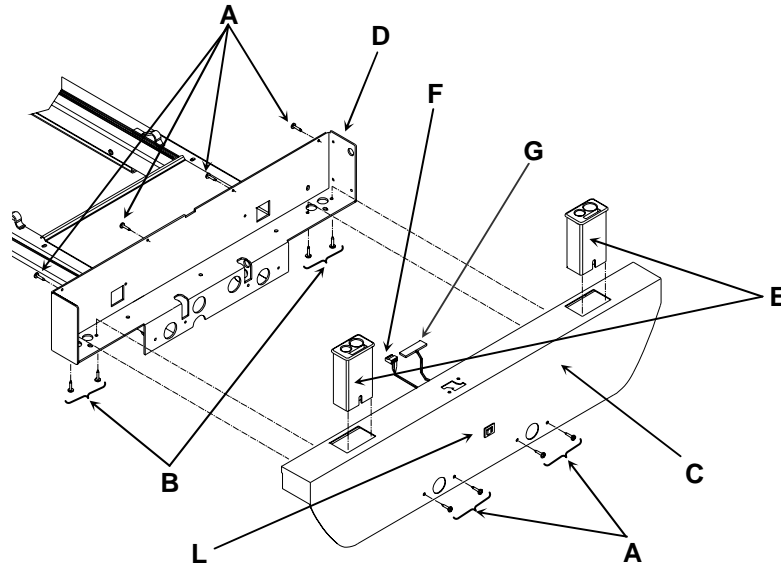


Figure 4.6A

### Required Tools:

Phillips Screwdriver

3/8" Wrench

### Procedure:

1. Raise the bed to high position, apply the brakes and remove the foot board.
2. Unplug the power cord from the wall receptacle.
3. Using a Phillips screwdriver, remove the 12 screws (**A**, **B**) holding the foot end casing cover (**C**) and the two IV pole holders (**E**) to the foot end casing (**D**).
4. Lift up and hold the cover while disconnecting from the PC Board the On/Off switch cable (**F**) and the PC Board to the foot end casing connector cable (**G**). Carefully note the connecting positions of the cable connectors to the PC Board connectors - On/Off switch: connector green wire facing pin 11 of the board connector; foot end casing connector cable: connector black wire facing pin 1 of the board connector. Lay cover on a workbench.
5. Using a 3/8" wrench and a Phillips screwdriver, remove the two locknuts/shoulder sleeves/screws (**H**) holding the connector (**J**) to the foot end casing cover (**C**) and remove the defective connector. Keep the seal (**K**).
6. Reverse the above steps to install the replacement foot end casing connector.

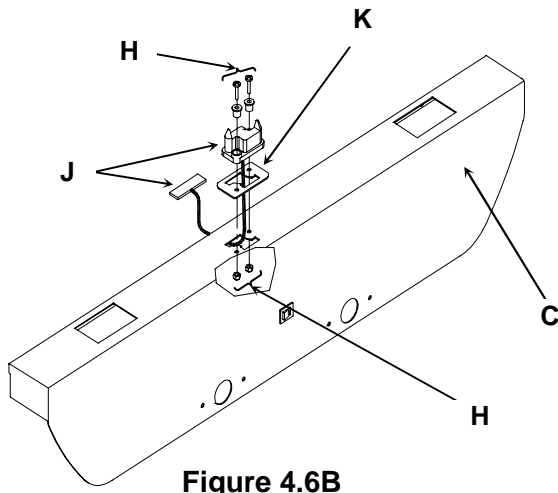


Figure 4.6B

**NOTE**  
Make sure to properly connect the foot casing connector cable to the PC Board connector. See step 4.

7. Verify all the foot end controls for proper operation before returning the bed to service.



## 4.7 MOTOR CONTROL BOARD

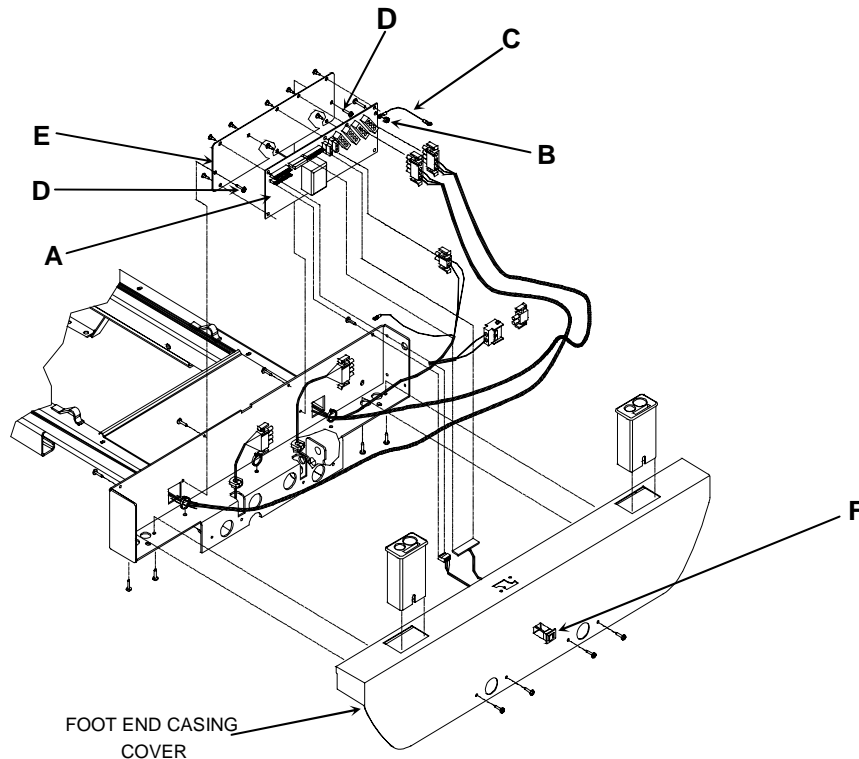


Figure 4.7

### Required Tools:

Phillips Screwdriver

3/8" Wrench

Long Nose Pliers

### Procedure:

1. Raise the bed to high position and apply the brakes.
2. Unplug the power cord from the wall receptacle.
3. Remove the foot board.
4. Properly ground yourself (see "Static Discharge Precautions", page 6).
5. Using a Phillips screwdriver, remove the 12 screws (A, B, fig. 4.6A, page 24) holding the foot end casing cover (C, fig. 4.6A, page 24) and the two IV pole holders (E, fig. 4.6A, page 24) to the foot end casing.
6. Lift up and hold the cover while disconnecting from the PC Board the On/Off switch cable (F) and the PC Board to the foot end casing connector cable (G). Carefully note the connecting positions of the cable connectors to the PC Board connectors - On/Off switch: connector green wire facing pin 11 of the board connector; foot end casing connector cable: connector black wire facing pin 1 of the board connector. Lay cover aside.
7. Disconnect the cables from the PC board, but carefully identify the position of all the cables before doing so.
8. Using a 3/8" wrench, remove the locknut (B) holding the PC Board ground wire (C).
9. Using a Phillips screwdriver, remove the two screws (D) holding the PC Board support (E) to the frame and remove the PC Board.
10. Using long nose pliers, disengage the PC Board from the stand-off pins and remove it.
11. Reverse the above steps to install the replacement PC Board.
12. Verify all the bed functions through the foot board and the siderails control panels for proper operation before returning the bed to service.

## 4.8 POWER SWITCH REPLACEMENT

### NOTE

Refer to fig. 4.6A, page 24, for illustration of the reference points mentioned in this section.

### Required Tools:

Phillips Screwdriver

### Procedure:

1. Raise the bed to high position and apply the brakes.
2. Unplug the power cord from the wall receptacle.
3. Remove the foot board.
4. Properly ground yourself (see "Static Discharge Precautions", page 6).
5. Using a Phillips screwdriver, remove the 12 screws (**A**, **B**) holding the foot end casing cover (**C**) and the two IV pole holders (**E**) to the foot end casing.
6. Lift up and hold the cover while disconnecting from the PC Board the power switch cable (**F**) and the PC Board to the foot end casing connector cable (**G**). Carefully note the connecting positions of the cable connectors to the PC Board connectors - On/Off switch: connector green wire facing pin 11 of the board connector; foot end casing connector cable: connector black wire facing pin 1 of the board connector. Lay cover aside.
7. Remove the power switch (**L**) by squeezing both sides and passing it through its housing aperture.
8. Reverse the above steps to install the replacement power switch.
9. Verify the power switch and its associated LED for proper operation before returning the bed to service.

## 4.9 POWER CORD REPLACEMENT

### NOTE

Step 8 of this procedure requires that the connector be removed from the extremity of the power cord in order to remove the cord from the head end casing. The power cord connector does not pass through the orifice provided for the power cord. A special tool exists that enables the removal of the connector without damaging the cord wires or the connector female sockets. If this tool is not available and you have to cut the wires to remove the connector, be sure to order the connector (P/N QDF8042) in addition to the power cord.

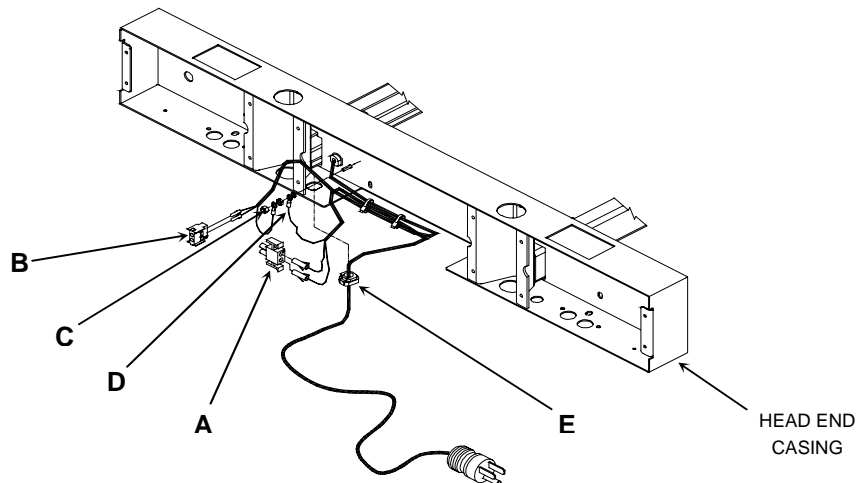


Figure 4.9

### Required Tools:

Phillips Screwdriver

Side Cutter

3/8" Wrench

Pliers

### Procedure:

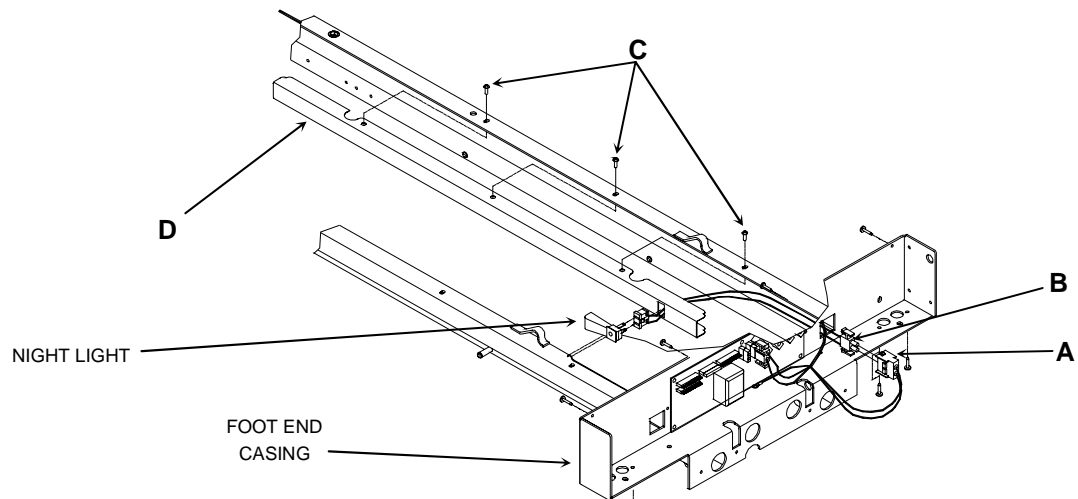
1. Raise the bed to high position and apply the brakes.
2. Unplug the power cord from the wall receptacle. Remove the head board.
3. Using a Phillips screwdriver, remove the fourteen screws (C, fig. 4.1B, page 16) holding the head end casing cover and remove the cover. Cut the cable tie holding the wires together.
4. Disconnect the power cord connector (A) from the PC Board power cord connector (B). Note the connecting position of the connectors, white wire opposite white wire, black opposite black.
5. Using a 3/8" wrench, remove the locknuts (C) holding the PC board and power cord ground wires to the head end casing. Note the position of the power cord green ground wire (D) and remove it.

### NOTE

Replace the power cord ground wire under the PC board ground wire.

6. Use pliers to squeeze the strain relief bushing (E) and remove it from its location by pulling the cable from under the head end casing. Remove the bushing from the cable.
7. Remove the connector (A) from the end of the power cord.
8. Remove the defective power cord.
9. Reverse the above steps to install the replacement power cord.
10. Verify the power cord for proper operation before returning the bed to service.





**Figure 4.10**

14. Disconnect the night light cable connector (A) from the PC Board power cord connector (B). Note the connecting position of the connectors, white wire facing white wire, black facing black.
15. Cut the cable tie holding cables together.
16. Using a Phillips screwdriver, remove the 3 screws (C) holding the rail cover (D) to the left rail and slowly remove the rail cover from its location. The night light wiring will follow.
17. Make the necessary tests to detect the faulty component.
18. Reverse the above steps to install the night light assembly with the replacement component.
19. Verify the night light for proper operation before returning the bed to service.

## 4.11 MATTRESS SUPPORT SECTION REPLACEMENT

### FOOT SECTION

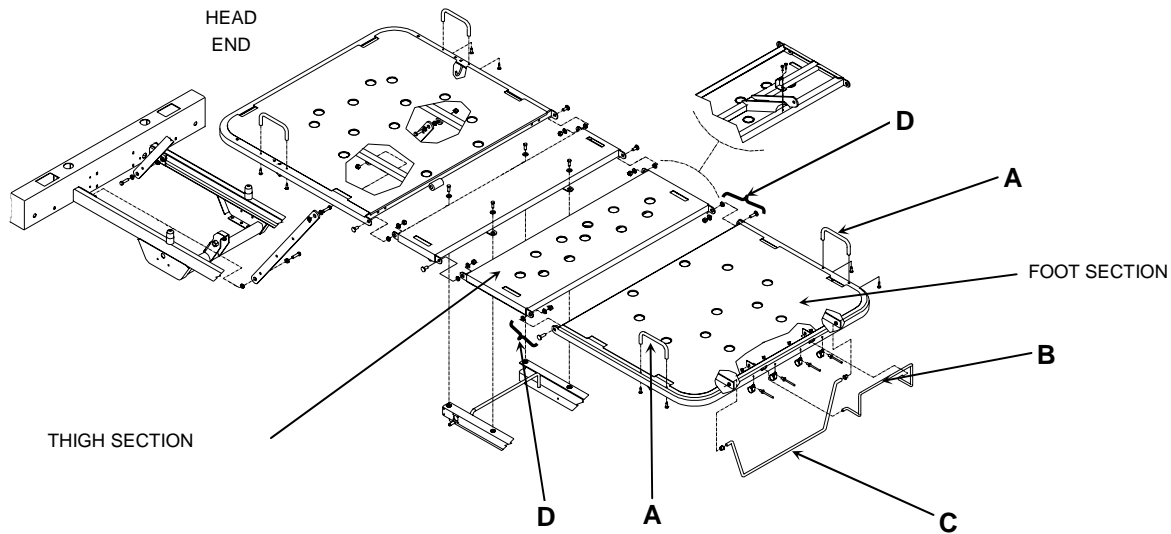


Figure 4.11A

#### Required Tools:

Phillips Screwdriver

5/32" Allen Key

1/2" Wrench

#### Procedure:

1. Raise the bed to high position and apply the brakes.
2. Lower the head siderails and raise the foot siderails.
3. Raise the Knee Gatch fully up.
4. Unplug the power cord from the wall receptacle.
5. Manually lift and fold the foot section back towards the head end of the bed (see figure 4.1 in Appendix D).
6. Using a Phillips screwdriver, remove from the foot section the parts that will be transferred to the replacement foot section, i.e. foot mattress retainer (B), prop rod (C) and side mattress retainers (two) (A).
7. Remove both foot end siderail assemblies. Refer to the "Foot Siderail Assembly" replacement procedure, page 15.
8. Manually bring the foot section back to its normal flat position. Plug the bed power cord and bring the Knee Gatch down to flat position. Unplug the bed power cord.
9. Using a 1/2" wrench, remove the two locknuts/flat washers/shoulder spacers/bolts (D) linking the foot and thigh sections together and remove the foot section.
10. Reverse the above steps to install the replacement foot section.
11. Verify the foot section mobility for proper operation before returning the bed to service.

## THIGH SECTION

### NOTE

Before ordering a replacement thigh section, verify if the bed is equipped with the Auto Contour option and, if so, mention it when ordering the part.

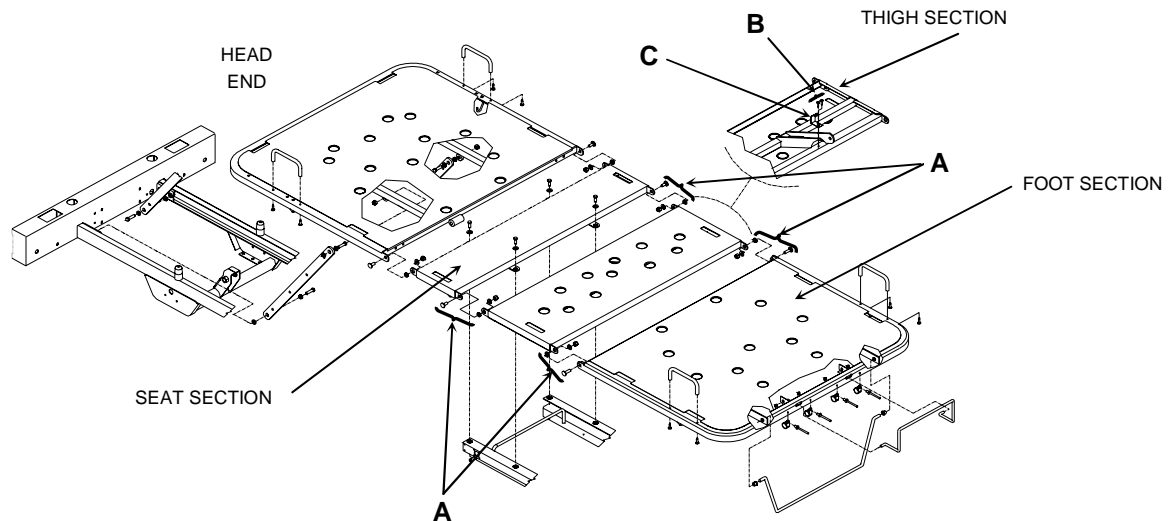


Figure 4.11B

### Required Tools:

Needle Nose Pliers

Phillips Screwdriver

1/2" Wrench

OG2 Grease

### Procedure:

1. Raise the bed to high position, then lower it by three inches. Apply the brakes and bring the mattress support to horizontal position.
2. Unplug the power cord from the wall receptacle.
3. Lower the four siderails without pushing them against the bed.
4. Using needle nose pliers, remove the Rue ring/nylon washers(2)/clevis pin (A, fig. 4.12, page 37) hooking up the thigh actuator tube to the thigh section lever arms.

### NOTE

Apply grease on the clevis pin and the nylon washers before hooking back the thigh section to the actuator tube.

5. Using a 1/2" wrench, remove the four bolts/shoulder spacers/flat washers/locknuts (A) linking the thigh section to the foot and seat sections. Remove the thigh section.
6. **If the bed is equipped with the Auto Contour option**, use a Phillips screwdriver to remove the two screws (B) holding the micro switch activator (C) underneath the thigh section and save the activator for the replacement thigh section.

### NOTE

Apply grease on the activator after having replaced it back underneath the replacement thigh section.

7. Reverse the above steps to install the replacement thigh section. **Before hooking up the actuator tube to the thigh section lever arms**, carefully read the caution appearing at step 11 of the "Thigh Actuator " replacement procedure, page 38. The caution explains the importance of adjusting the thigh actuator course before finalizing the installation.
8. Verify the Knee Gatch operation before returning the bed to service.

## SEAT SECTION REPLACEMENT

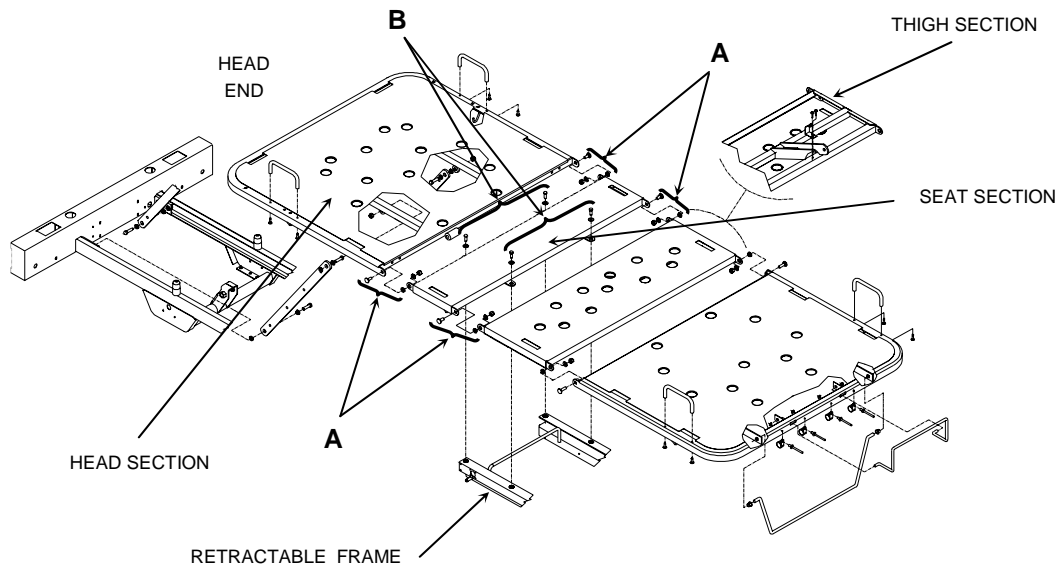


Figure 4.11C

### Required Tools:

1/2" Wrench                      1/2" Socket and Ratchet

### Procedure:

1. Raise the bed to high position, apply the brakes and bring the mattress support to horizontal position.
2. Unplug the power cord from the wall receptacle.
3. Lower the four siderails without pushing them against the bed.
4. Using a 1/2" wrench, remove the four bolts/shoulder spacers/flat washers/locknuts (**A**) linking the seat section to the thigh and head sections.
5. Using a 1/2" socket and ratchet, remove the four bolts/washers (**B**) holding the seat section to the mobile frame and remove the seat section.



### WARNING

The four bolts (**B**) used to link a seat section to the mobile frame cannot be reused because their Scotch-Grip coating is less efficient once they have been tightened and removed thereafter. They **must** be replaced with new identical bolts.

6. Reverse the above steps to install the replacement seat section.
7. Verify the Fowler and Knee Gatch operation before returning the bed to service.



## HEAD SECTION

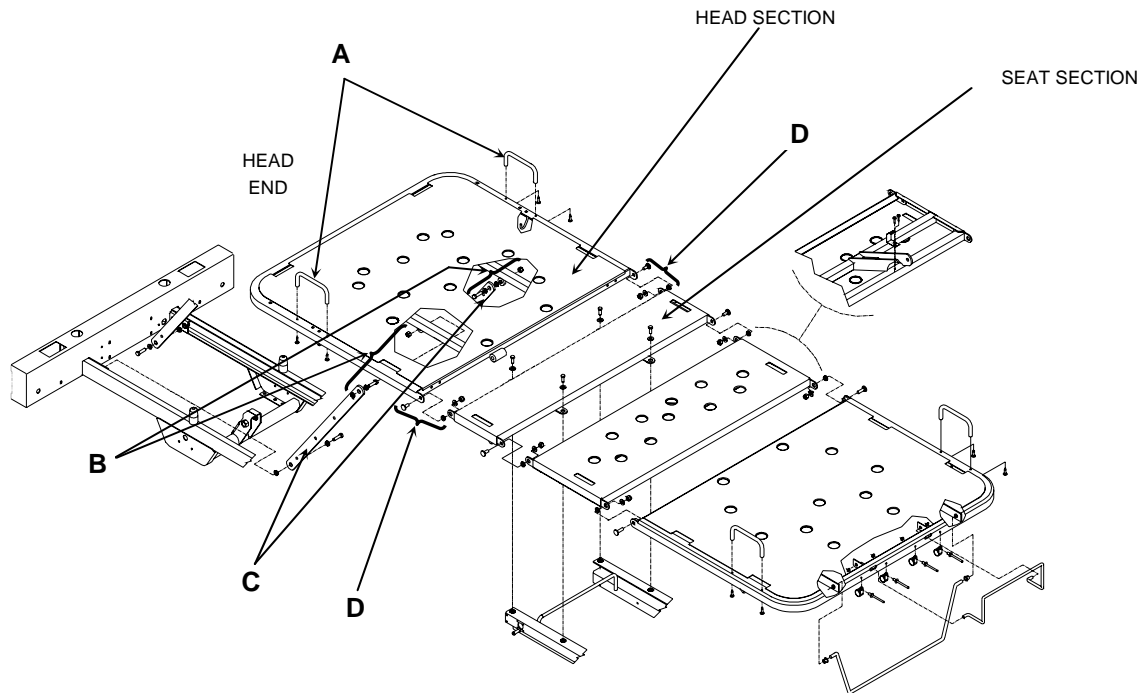


Figure 4.11D

- **BED WITHOUT OPTIONAL CPR**

**Required Tools:**

Phillips Screwdriver	5/32" Allen Key	Needle Nose pliers	Ratchet Tie-Down Strap
1/2" Wrench	OG2 Grease		

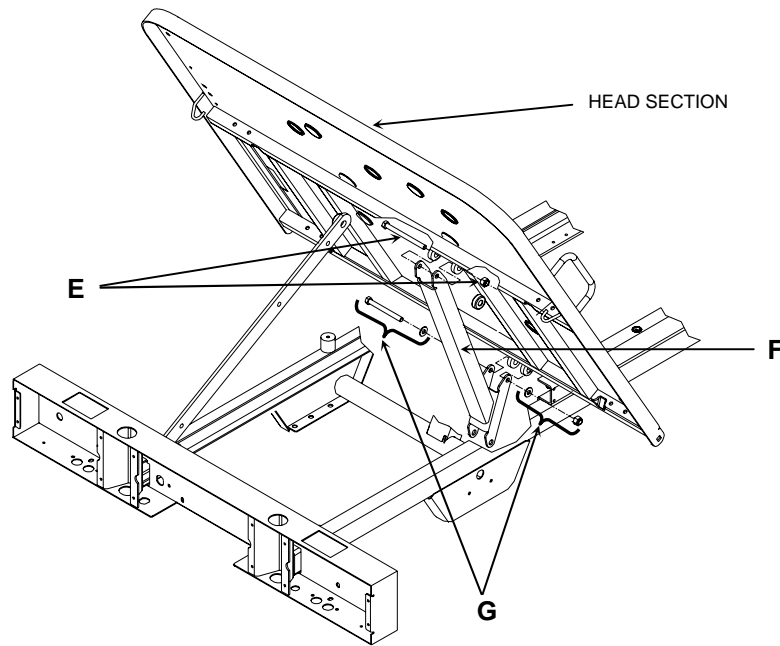
**Procedure:**

1. Raise the bed to high position, apply the brakes and bring the mattress support to horizontal position.
2. Remove the head board and raise the Fowler to high position.
3. Unplug the power cord from the wall receptacle.
4. Remove both head siderails. Refer to the "Head Siderail Assembly" replacement procedure, page 16.
5. Using a Phillips screwdriver, remove the two side mattress retainers (A) and save them for the replacement head section.
6. Plug the bed power cord and bring the Fowler back to horizontal position.
7. Using needle nose pliers, remove the Rue ring/nylon washers(3)/clevis pin (E, fig. 4.12, page 37) hooking up the head actuator tube to the head section lever arms.

**NOTE**

Apply grease on the clevis pin and the nylon washers before hooking up the actuator tube to the head section.

8. Manually lift the head section completely and attach it securely to the foot section using a ratchet tie-down strap to prevent the head section from dropping off when the upper part of the compression bar is removed from the head section at step 9.



**Figure 4.11E**

9. Using a 1/2" wrench, remove the bolt/locknut (**E**) holding the upper part of the compression bar (**F**) to the head section and lay it down. Ensure that the head section is securely attached to the bed before disassembling the compression bar.
10. Using a 1/2" wrench, remove the bolt/flat washers(2)/locknut (**G**) linking the lower part of the compression bar to the head section and remove the compression bar.
11. Using a 1/2" wrench, remove the two bolts/shoulder spacers(4)/locknuts (**B**, fig. 4.11D, page 33) holding the upper part of the two head arms (**C**, fig. 4.11D, page 33) to the head section. Lay them down.
12. Remove the strap holding the head section to the bed and bring the head section back to horizontal position. Be careful, hold the head section tight when removing the strap.
13. Using a 1/2" wrench, remove the two bolts/shoulder spacers/flat washers/locknuts (**D**, fig. 4.11D, page 33) linking the head section to the seat section. Remove the head section.
14. Reverse the above steps to install the replacement head section. **Before hooking up the actuator tube to the head section lever arms**, carefully read the caution appearing at step 11 of the "Head Actuator" replacement procedure, page 40. The caution explains the importance of adjusting the head actuator course before finalizing the installation.
15. Verify the Fowler operation before returning the bed to service.

- **BED WITH OPTIONAL CPR**

**Required Tools:**

Phillips Screwdriver	5/32" Allen Key	Needle Nose pliers	Ratchet Tie-Down Strap
7/16" Wrench	1/2" Wrench	OG2 Grease	

**Procedure:**

1. Raise the bed to high position, apply the brakes and bring the mattress support to horizontal position.
2. Remove the head board.
3. Raise the Fowler to high position.
4. Unplug the power cord from the wall receptacle.
5. Remove both head siderails. Refer to the "Head Siderail Assembly" replacement procedure, section 4.1, page 16).
6. Using a Phillips screwdriver, remove the two side mattress retainers (**A**, fig. 4.11D, page 33) and save them for the replacement head section.
7. Plug the bed, bring the Fowler back to horizontal position and unplug the bed.
8. Using long nose pliers, remove the Rue ring/washer/nylon washers(2)/clevis pin (**E**, fig. 4.12, page 37) hooking up the head actuator tube to the head section lever arms.

**NOTE**

Apply grease on the clevis pin and the nylon washers before hooking up the actuator tube to the head section.

9. Manually lift the head section completely and attach it securely to the foot section using a ratchet tie-down strap to prevent the head section from dropping off when the upper part of the small locking lever is disassembled from the head section at step 13.

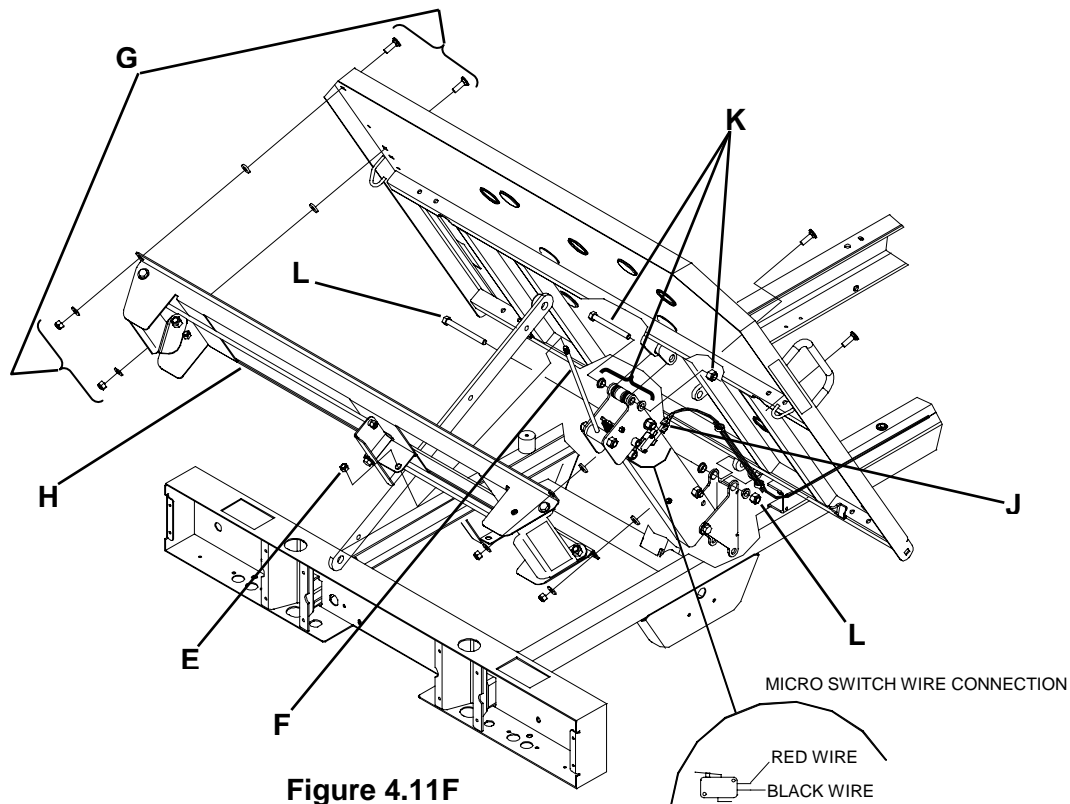
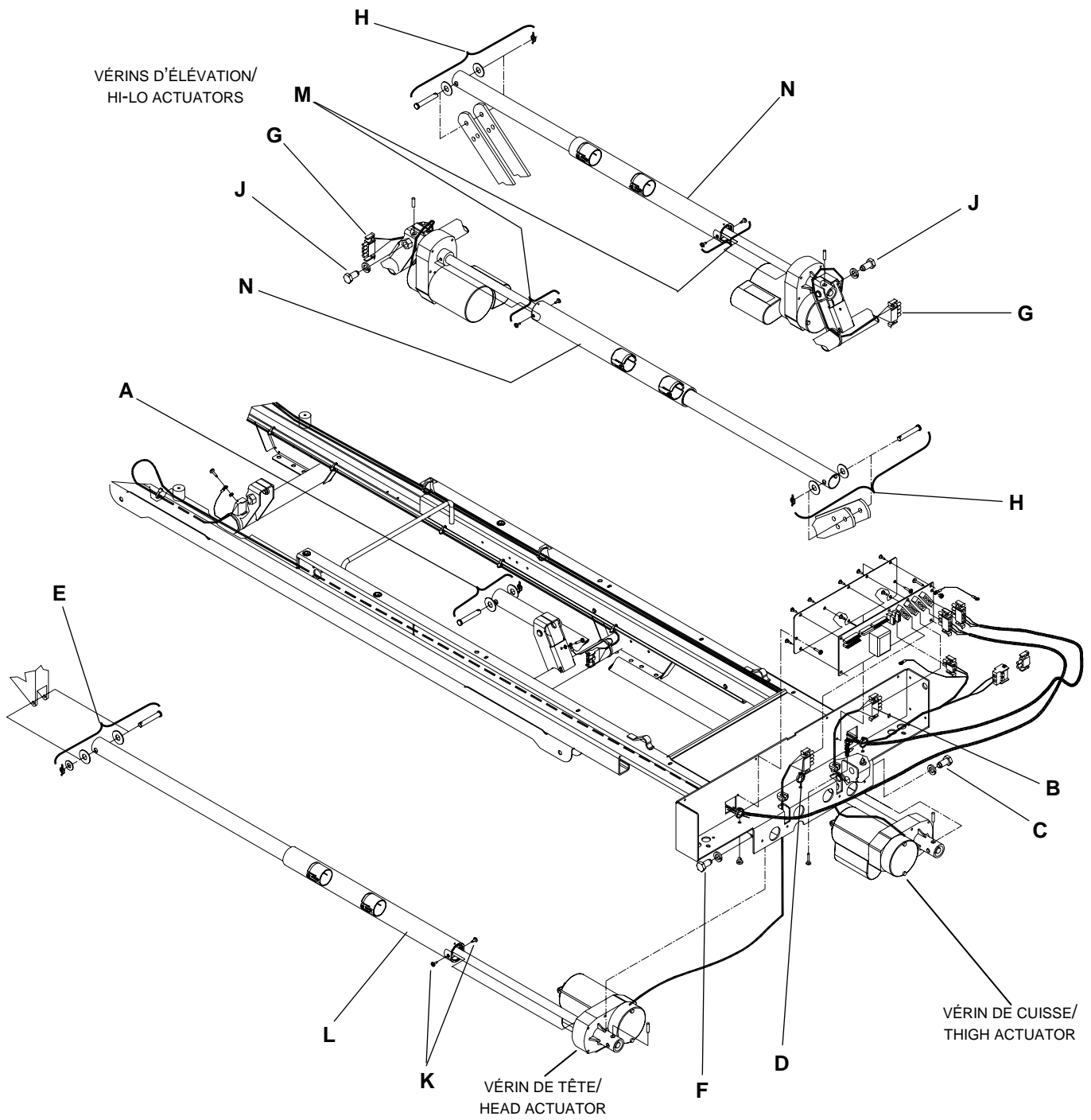


Figure 4.11F

10. Using a 7/16" wrench, remove the locknut (E) holding the activation rod (F) to the activation lever, disengage the rod and lay it down.
11. Using a 7/16" wrench, remove the four bolts/flat washers/locknuts (G) holding the CPR support (H) to the head section and remove the CPR support.
12. Disconnect the two wires (J) from the micro switch. Note the wire connecting positions.
13. Using a 1/2" wrench, remove the bolt/shoulder spacers(4)/washers(4)/locknut (K) holding the upper part of the small locking lever to the head section and lay the assembly down. Ensure that the head section is securely attached to the bed before disassembling the small locking lever.
14. Using a 1/2" wrench, remove the bolt/shoulder spacers(2)locknut (L) linking the upper part of the mattress support lever to the head section and lay the assembly aside.
15. Using a 1/2" wrench, remove the two bolts/shoulder spacers(4)/locknuts (B, fig. 4.11D, page 33) holding the upper part of the two head arms (C, fig. 4.11D, page 33) to the head section. Lay them down.
16. Remove the strap holding the head section to the bed and bring the head section back to horizontal position. Be careful, hold the head section tight when removing the strap.
17. Using 1/2" wrench, remove the two bolts/shoulder spacers/flat washers/locknuts (D, fig. 4.11D, page 33) linking the head section to the seat section. Remove the head section.
18. Reverse the above steps to install the replacement head section. **Before hooking up the actuator tube to the head section lever arms**, carefully read the caution appearing at step 11 of the "Head Actuator Replacement" procedure, page 40. The caution explains the importance of adjusting the head actuator course before finalizing the installation.
19. Verify the Fowler and the CPR mechanism operation before returning the bed to service.

**4.12 ACTUATOR REPLACEMENT**



**Figure 4.12**

**NOTE**

Unless otherwise stated, all reference points of section 4.12 procedures refer to figure 4.12 above.

## THIGH ACTUATOR

### Required Tools:

Needle Nose Pliers      Phillips Screwdriver      3/4" Wrench      OG2 Grease

### Procedure:

1. Raise the bed to high position, then lower it by three inches. Apply the brakes and bring the mattress support to horizontal position.
2. Lower the head siderails and raise the foot siderails.
3. Unplug the power cord from the wall receptacle.
4. Remove the foot board.
5. Using needle nose pliers, remove the Rue ring/nylon washers(2)/clevis pin (**A**) holding the thigh actuator tube to the thigh section lever arms.

### NOTE

Apply grease on the clevis pin and the nylon washers before hooking up the actuator tube to the thigh section.

6. Manually lift and fold the foot and thigh sections back towards the head end of the bed until they come to rest on the head section.
7. Using a Phillips screwdriver, remove the 12 screws (**A**, **B**, fig. 4.6A, page 24) holding the foot end casing cover and the two IV pole holders (**E**, fig. 4.6A, page 24) to the foot end casing.
8. Lift up and hold the cover while disconnecting from the PC Board the On/Off switch cable (**F**, fig. 4.6A, page 24) and the PC Board to foot end casing connector cable (**G**, fig. 4.6A, page 24). Carefully note the connecting positions of the cable connectors to the PC Board connectors - On/Off switch: connector green wire facing pin 11 of the board connector; foot end casing connector cable: connector black wire facing pin 1 of the board connector. Lay cover aside.
9. Disconnect the thigh actuator cable (**B**) from the PC Board and disengage it from the strain relief bushing.
10. Using a 3/4" wrench, loosen the bolt (**C**) holding the thigh actuator to the bracket until the actuator can be rotated downward and removed from its location.

### NOTE

Apply grease on the bolt, the spring washer and the inner sides of the bracket, including the pivot pin, when reassembling the actuator.

11. Reverse the above steps to install the replacement thigh actuator. **Before hooking up the actuator tube to the thigh section lever arms**, carefully read the following Caution regarding the thigh actuator adjustment.



### CAUTION

**It is of utmost importance** that the course of the replacement thigh actuator be adjusted before hooking up its tube to the thigh section. An improper adjustment of the actuator can damage the thigh section structure.

- 11.1 To adjust the course of the replacement thigh actuator, proceed as follows:
  - A. Raise the four siderails and plug the bed power cord. Ensure the actuator cable is connected to the PC Board.
  - B. Grab the new actuator tube and position its holes horizontally. While holding the tube firmly to prevent it from rotating, press the Knee Gatch up control for a few seconds, then press the down control until the actuator stops. This will be the lower limit of the actuator course.

- C. Gently turn the tube in either direction to align the tube holes with those of the thigh section lever arms. Then raise again the Knee Gatch a few inches while holding firmly the tube and lower it completely.
- D. Check the alignment of the holes. If the tube holes are not aligned any more with those of the lever arms, repeat steps **B** and **C** until they are. Once the holes aligned, install the washers and the clevis pin. Slightly raise the thigh section manually to ease the insertion of the clevis pin.
- E. Before installing the rue ring cotter to finalize the actuator replacement, raise and lower completely the Knee Gatch. Check that the actuator stops working as soon as the thigh section reaches the frame.

## HEAD ACTUATOR

### Required Tools:

Needle Nose Pliers      Phillips Screwdriver      3/4" Wrench      OG2 Grease

### Procedure:

1. Raise the bed to high position, apply the brakes and bring the Fowler to horizontal position.
2. Raise the Knee Gatch to high position.
3. Unplug the power cord from the wall receptacle.
4. Remove the foot board.
5. Manually lift and fold the foot section back towards the head end of the bed (see figure 4.1 in Appendix D).
6. Using a Phillips screwdriver, remove the 12 screws (**A**, **B**, fig. 4.6A, page 24) holding the foot end casing cover and the two IV pole holders (**E**, fig. 4.6A, page 24) to the foot end casing.
7. Lift up and hold the cover while disconnecting from the PC Board the On/Off switch cable (**F**, fig. 4.6A, page 24) and the PC Board to foot end casing connector cable (**G**, fig. 4.6A, page 24). Carefully note the connecting positions of the cable connectors to the PC Board connectors - On/Off switch: connector green wire facing pin 11 of the board connector; foot end casing connector cable: connector black wire facing pin 1 of the board connector. Lay cover aside.
8. Disconnect the head actuator cable (**D**) from the PC Board and disengage it from the strain relief bushing.
9. Remove the Rue ring/nylon washers(3)/clevis pin (**E**) holding the head actuator tube to the head section lever arms.

### NOTE

Apply grease on the clevis pin and the nylon washers before hooking up the actuator tube to the head section.

10. Using a 3/4" wrench, loosen the bolt (**F**) holding the head actuator to the bracket until the actuator can be rotated downward and removed from its location.

### NOTE

Apply grease on the bolt, the spring washer and the inner sides of the bracket, including the pivot pin, when reassembling the actuator.

11. Reverse the above steps to install the replacement head actuator. **Before hooking up the actuator tube to the head section lever arms**, carefully read the following Caution regarding the head actuator adjustment.
- 



**CAUTION**

---

**It is of utmost importance** that the course of the replacement head actuator be adjusted before hooking up its tube to the head section. An improper adjustment of the actuator can damage the head section structure.

- 11.1 To adjust the course of the replacement head actuator, proceed as follows:
- A. Plug the bed power cord. Ensure the actuator cable is connected to the control board.
  - B. Grab the new actuator tube and position its holes horizontally. While holding the tube firmly to prevent it from rotating, press the Fowler up control for a few seconds, then press the down control until the actuator stops. This will be the lower limit of the actuator course.
  - C. Gently turn the tube in either direction to align the tube holes with those of the head section lever arms. Then raise again the Fowler a few inches while holding firmly the tube and lower it completely.
  - D. Check the alignment of the holes. If the tube holes are not aligned any more with those of the lever arms, repeat steps **B** and **C** until they are. Once the holes aligned, install the washers and the clevis pin. Slightly raise the head section manually to ease the insertion of the clevis pin.
  - E. Before installing the Rue ring to finalize the head actuator replacement, fully raise and completely lower the Fowler, and verify that the actuator stops working as soon as the head section reaches the frame.

**HI-LO ACTUATOR**

**NOTE**

In order to preserve the adjustment of the bed lowest position when replacing a Hi-Lo actuator, a special tool kit designed for that purpose must be used. To obtain this kit, contact our Service department (see section 1.2) and order part number KR0054.

**Required Tools:**

Needle Nose Pliers	Phillips Screwdriver	3/4" Wrench	OG2 Grease
Kit KR0054	Angle Indicator		

**Procedure:**

1. Lower the head siderails and raise the foot siderails.
2. Using an angle indicator, raise the Fowler by approximately 50°, so that the loosening of the bolt (**J**) holding the Hi-Lo actuator to its support is not hindered.
3. Raise the Knee Gatch to the high position.
4. Manually lift and fold the foot section back towards the head end of the bed (see fig. 4.1 in Appendix D).
5. Place the alignment jigs on the base of the bed as illustrated in figure 4.12A in Appendix D.
6. Lower the bed until it rests completely on the jigs. If one or both Hi-Lo actuators are defective, use a ratchet and the socket included in the tool kit to lower the bed on the jigs.
7. Unplug the power cord from the wall receptacle.
8. Disconnect the actuator cable (**G**) and cut the cable ties holding it onto the frame.
9. Using long nose pliers, remove the Rue ring/nylon washers(2)/clevis pin (**H**) holding the Hi-Lo actuator tube to the Hi-Lo lever arms.



**NOTE**

Apply grease on the clevis pin and the nylon washers before hooking back the actuator tube to the Hi-Lo lever arms.

10. Using a 3/4" wrench, loosen the bolt (**J**) holding the Hi-Lo actuator to the bracket until the actuator can be rotated downward and removed from its location.

**NOTE**

Apply grease on the bolt, the spring washer and the inner sides of the bracket, including the pivot pin, when reassembling the actuator.

11. Reverse the above steps to install replacement Hi-Lo actuator. **Read the following caution before hooking up the actuator tube to the Hi-Lo lever arms.**

**CAUTION**

---

**It is of utmost importance** that the course of the replacement Hi-Lo actuator be adjusted before hooking its tube to the Hi-Lo lever. An improper adjustment of the actuator can damage the bed mechanisms.

- 11.1. To adjust the course of the replacement Hi-Lo actuator, proceed as follows:
  - A. Once the new actuator cable is connected, plug the bed power cord and press the bed down control until the actuator stops. This will be the lower limit of the actuator course.
  - B. Link the actuator to the Hi-Lo lever.
  - C. The alignment jigs still in position, raise and lower completely the bed to ensure that the bed lower limit has been preserved (the bed lowering movement must stop at the alignment jig level).

## 4.13 ACTUATOR SCREW LUBRICATION PROCEDURE

### NOTE

Unless otherwise stated, refer to fig. 4.12, page 37 for illustration of the reference points mentioned in this section.

### HEAD AND THIGH ACTUATOR SCREWS

#### Required Tools:

Ratchet and 5/16" Socket

Bungee Cord

OG2 Grease and Brush

#### Procedure:

1. Raise the bed to high position and apply the brakes. Bring the head siderails down and raise the foot siderails.
2. Raise Fowler to the high position (in this position, the head actuator will reach its maximum extension) and bring the Knee Gatch down until flat (in this position, the thigh actuator will reach its maximum extension).
3. Unplug the power cord from the wall receptacle.
4. Manually lift and fold the foot section back towards the head end of the bed. You must secure this position by tying the foot section to another part of the bed head end section using a bungee cord.
5. Using a ratchet and a 5/16" socket, remove the two screws (**K**) holding the head actuator tube support (**L**) to the actuator motor and slide the support back to uncover the actuator screw.
6. Using a ratchet and a 5/16" socket, remove the two screws holding the thigh actuator plastic dust cover (the two screws and the dust cover are not illustrated in fig. 4.12) and slide the dust cover back to uncover the actuator screw.
7. Apply grease all over the screw treads with a brush making sure the grease reaches the bottom of the treads.
8. Replace and fasten the support tube and the dust cover.
9. Remove the bungee cord, replace the foot section to horizontal position and run both Fowler and Knee Gatch up and down completely a few times to spread the grease evenly.

### HI-LO ACTUATOR SCREWS

1. Raise the bed to high position (in this position, the two Hi-Lo actuators will reach their maximum extension) and apply the brakes.
2. Raise the Fowler and Knee Gatch to the high position.
3. Unplug the power cord from the wall receptacle.
4. Lower the head siderails and raise the foot siderails.
5. Manually lift and fold the foot section back towards the head end of the bed (see fig. 4.1 in Appendix D).
6. Using a ratchet and a 5/16" socket, remove the two screws (**M**) holding the Hi-Lo actuator tube supports (**N**) and slide them back to uncover the actuator screws.
7. Apply grease all over the screw treads with a brush making sure the grease reaches the bottom of the treads.
8. Replace and fasten the two tube supports.
9. Replace the foot section to horizontal position and run the Hi-Lo function up and down completely a few times to spread grease evenly.

**4.14 CPR MECHANISM COMPONENT REPLACEMENT****SPRING AND/OR DAMPER****NOTE**

Unless otherwise stated, refer to fig. 4.11F, page 36 for illustration of the reference points mentioned in this section.

**Required Tools:**

Long Nose Pliers      Ratchet Tie-Down Strap      7/16" Wrench      1/2" Wrench  
OG2 Grease

**Procedure:**

1. Raise the bed to high position, apply the brakes and bring the mattress support to horizontal position.
2. Remove the head board.
3. Using long nose pliers, remove the Rue ring/washer/nylon washers(2)/clevis pin (**E**, fig. 4.12, page 37) holding it to the head section lever arms to free the head actuator tube.

**NOTE**

Apply grease on the clevis pin and the nylon washers before hooking up the actuator tube to the head section.

4. Manually lift the head section completely and attach it securely to the foot section using a ratchet tie-down strap to prevent the head section from dropping off when the upper part of the small locking lever is removed from the head section at step 7.
5. Unplug the power cord from the wall outlet
6. Using a 7/16" wrench, remove the nut (**E**) holding the activation rod (**F**) to the activation lever, disengage the rod and lay it down.
7. Using a 1/2" wrench, remove the bolt/shoulder spacers(4)/washers(4)/locknut (**K**) holding the upper part of the small locking lever to the head section and lay the assembly down. Ensure that the head section is securely attached to the bed before disassembling the small locking lever.
8. Using a 1/2" wrench, remove the bolt/shoulder spacers(2)locknut (**L**) linking the upper part of the mattress support lever to the head section. Remove the CPR mechanism and lay on a workbench.
9. Replace the defective part (spring and/or damper) of the CPR mechanism.

**NOTE**

Apply grease on the lower damper spacer sleeves (**D**, figure 4.14, page 44) before replacing the damper.

10. Reverse the above steps to install the CPR mechanism.
11. Verify the CPR mechanism for proper operation before returning the bed to service.

## MICRO SWITCH LOCATED UNDER THE HEAD SECTION

### Required Tools:

Ratchet Tie-Down Strap 7/16" Wrench 1/2" Wrench Phillips Screwdriver Bungee Cords

### Procedure:

1. Raise the bed to the high position and apply the brakes.
2. Raise the head section to the high position and attach it securely to the foot section using bungee cords to prevent it from dropping off when the upper part of the small locking lever is disassembled from the head section at step 7.
3. Unplug the power cord from the wall receptacle.
4. Remove the head board.
5. Using a 7/16" wrench, remove the nut (E) holding the activation rod (F) to the activation lever, disengage rod and lay it down.
6. Disconnect the two wires (J, fig. 4.11F, page 36) from the micro switch. Note the wire connecting positions.
7. Using a 1/2" wrench, remove the bolt/shoulder spacers(4)/washers(4)/locknut (K, fig. 4.11F, page 36) linking the upper part of the small locking lever to head section. Disengage the lever and lay the assembly down. Ensure that the head section is securely attached to the bed before disassembling the small locking lever.

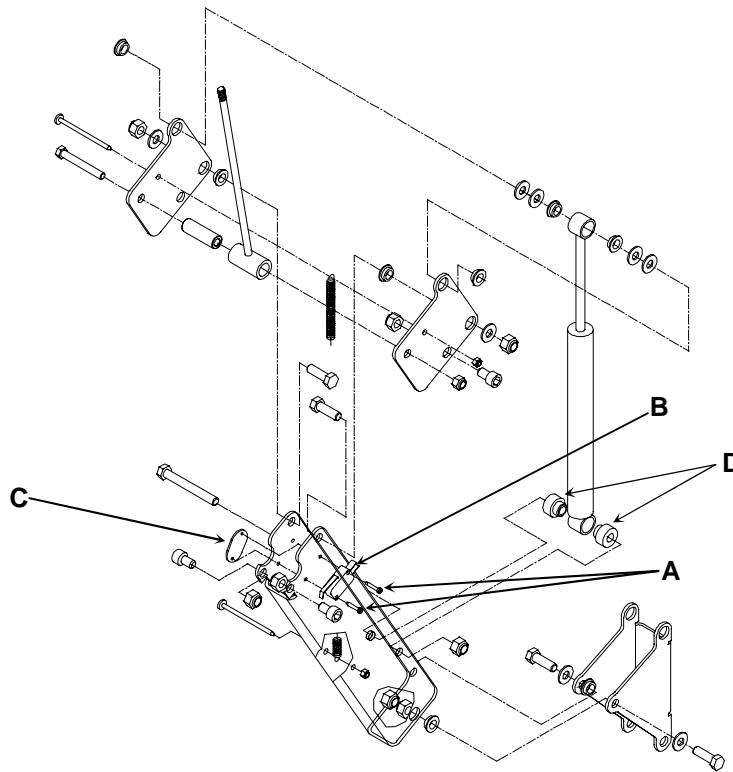
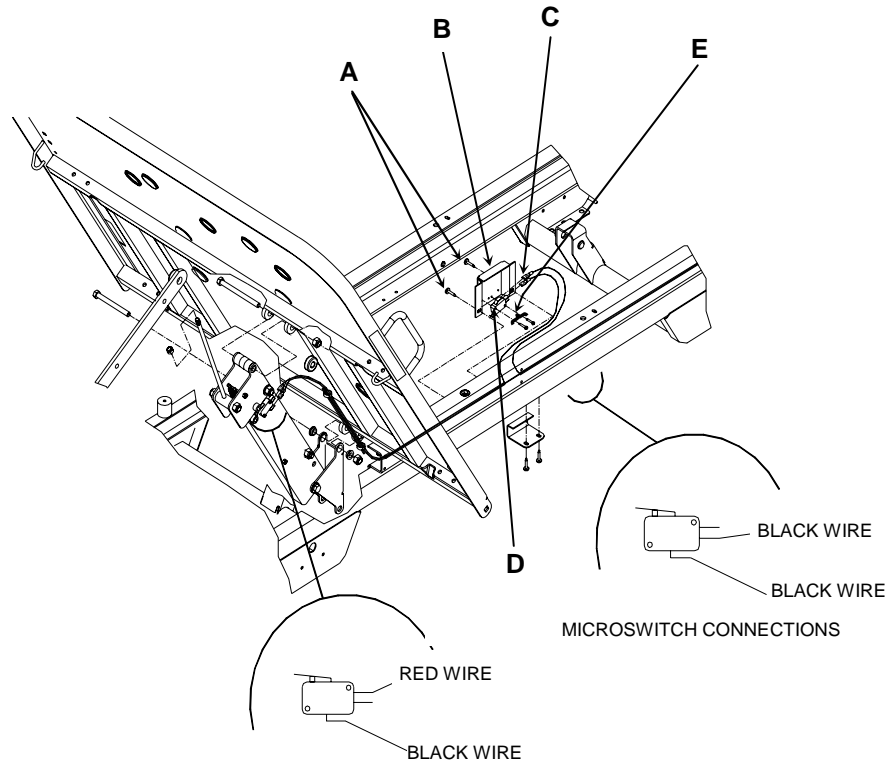


Figure 4.14

8. Using a Phillips screwdriver, remove the two screws (A) holding the micro switch (B) to the head section long lever. Keep the mounting plate (C). Remove the defective micro switch.
9. Reverse the above steps to install the replacement micro switch.
10. Verify the CPR mechanism for proper operation before returning the bed to service.

## MICRO SWITCH LOCATED UNDER THE MATTRESS SUPPORT



**Figure 4.14A**

### Required Tools:

Phillips Screwdriver

### Procedure:

1. Raise the bed to the high position and apply the brakes.
2. Raise the Knee Gatch to maximum height.
3. Manually lift and fold the foot section back towards the head end of the bed (see fig. 4.1 in Appendix D).
4. Using a Phillips screwdriver, remove the two screws (**A**) holding the micro switch support (**B**) to the mobile frame right rail. Remove the support.
5. Disconnect the two wires (**C**) from the micro switch (**D**). Note the wire connecting positions.
6. Using a Phillips screwdriver, remove the two screws (**E**) holding the micro switch to its support.
7. Reverse the above steps to install the replacement micro switch.
8. Verify the CPR mechanism for proper operation before returning the bed to service.

## 4.15 AUTO CONTOUR MICRO SWITCH REPLACEMENT

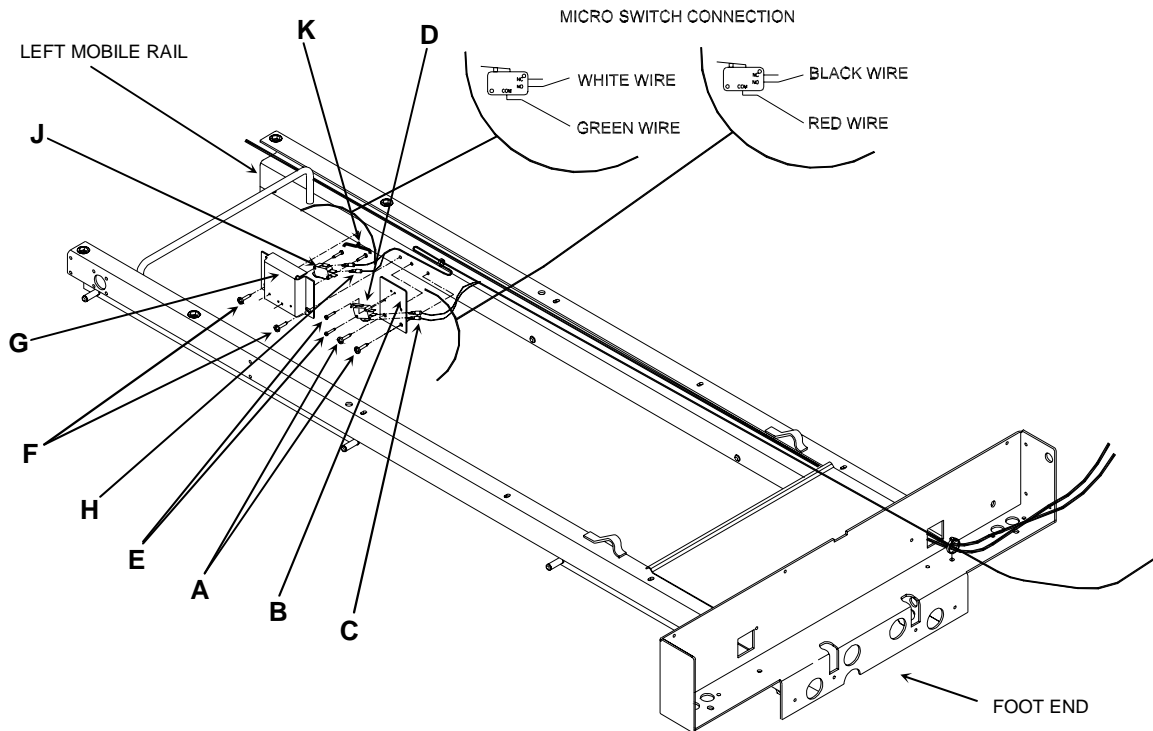


Figure 4.15

### THIGH SECTION MICROSWITCH

#### Required Tools:

Phillips Screwdriver    Angle Indicator

#### Procedure:

1. Raise the bed to the high position and apply the brakes.
2. Unplug the power cord from the wall receptacle.
3. Remove the two screws (A) holding the micro switch support (B) to the left rail of the mobile frame. Remove the support.
4. Disconnect the two wires (C) from the micro switch (D). Note the wire connecting positions.
5. Remove the two screws (E) holding the micro switch to its support and remove micro switch.
6. Reverse the above steps to install the replacement the micro switch.
7. Verify the Auto Contour function for proper operation before returning the bed to service.

### HEAD SECTION MICROSWITCH

1. Raise the bed to the high position and apply the brakes.
2. Using an angle indicator, raise the Fowler to approximately 40 degrees. Unplug the power cord from the wall receptacle.
3. Using a Phillips screwdriver, remove the two screws (F) holding the micro switch support (G) to the left rail of the mobile frame. Remove the support.
4. Disconnect the two wires (H) from the micro switch (J). Note the wire connecting positions.
5. Using a Phillips screwdriver, remove the two screws (K) holding the micro switch to its support and remove the micro switch.
6. Reverse the above steps to install the replacement micro switch.
7. Verify the Auto Contour function for proper operation before returning the bed to service.

## 4.16 BRAKE/STEER PEDAL REPLACEMENT

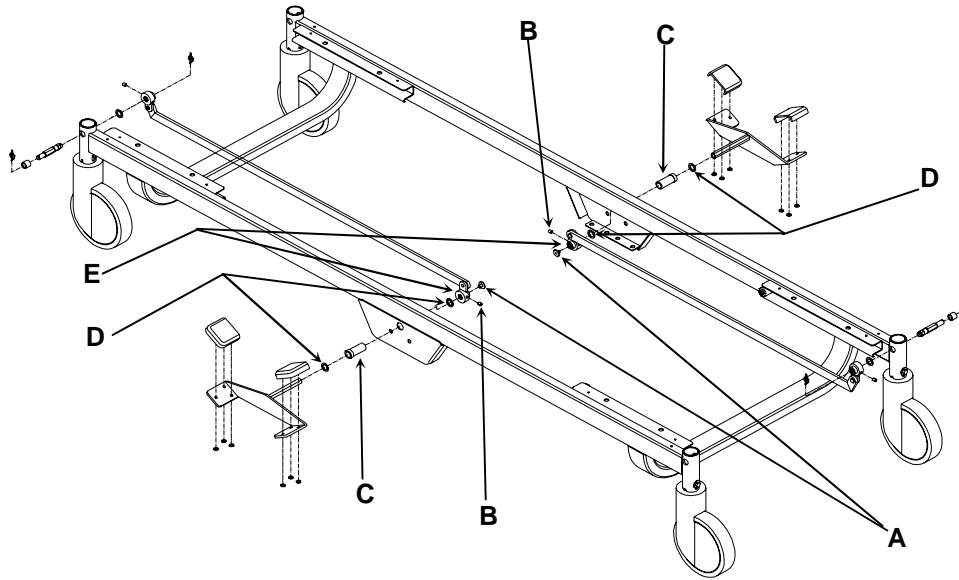


Figure 4.16

### Required Tools:

Phillips Screwdriver      1/8" Allen Key      OG2 Grease      Medium Strength Threadlocker

### Procedure:

1. Raise the bed to the high position and unplug the power cord.
2. Bring the brake/steer pedal to horizontal position (neutral) and use a Phillips screwdriver to remove the machine screw (A) located at the end of the right or left pedal shaft. *Note that in prior versions (beds with serial number  $\leq$  C01340), the FL17E is equipped with a protective cap instead of a machine screw. If it is the case with your bed, remove the protective cap and proceed with step 3, disregarding the note that follows.*

#### NOTE

Before replacing the machine screw, apply medium strength threadlocker (blue) on its tread. When reassembling, the machine screw must first be inserted and tightened **before** tightening the pressure screws mentioned in steps 3 and 4.

3. Using a 1/8" Allen key, remove the pressure screw (G, fig. 4.17, page 48) located on the right or left socket (H, fig. 4.18, page 48) of the 5th wheel activation lever (J, fig. 4.17, page 48).

#### NOTE

Before replacing the pressure screw, apply medium strength threadlocker (blue) on its tread.

4. Using a 1/8" Allen key, remove the pressure screw (B) on the head or foot locking lever (E).

#### NOTE

Before replacing the pressure screw, apply medium strength threadlocker (blue) on its tread.

5. Remove the defective pedal. Leave the pedal sleeve (C) in place. Keep the nylon washers (D).

#### NOTE

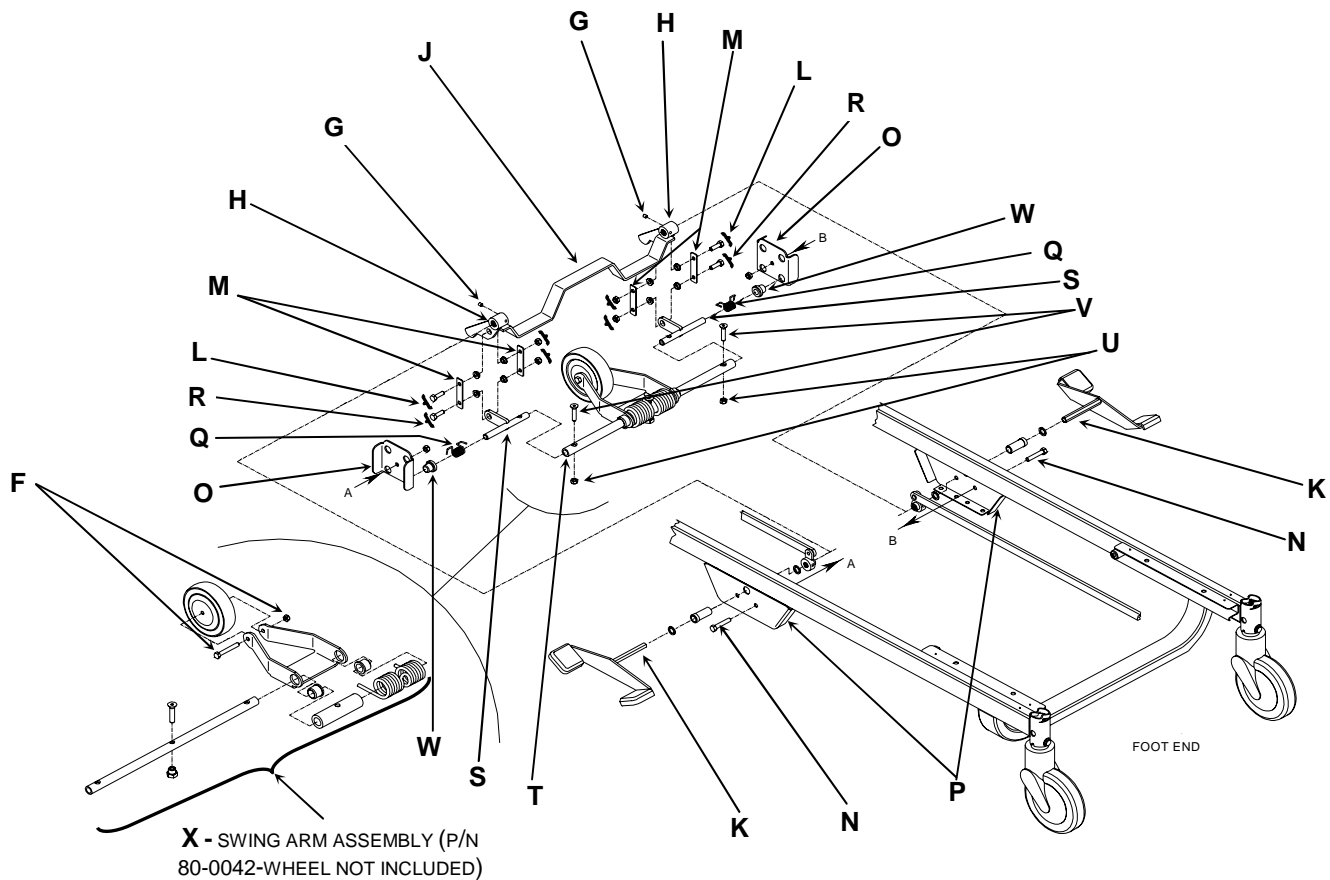
Apply grease on the replacement pedal shaft before installing it.

6. Reverse the above steps to install the replacement brake/steer pedal. Be sure to position the pedal horizontally (neutral) before inserting its shaft into the sockets of the locking lever and the 5th wheel activation lever. Verify the pedal for proper operation.

#### NOTE

When inserting the pedal shaft into the sockets, make sure that the locking lever (E) is vertically positioned and that the upper flat part of the 5th wheel activation lever (J, fig. 4.17, page 48) is parallel to the floor (bring the 5th wheel caster near the floor by exerting a pressure on it to ease this operation).

**4.17 STEER WHEEL COMPONENT REPLACEMENT**



**Figure 4.17**

**NOTE**

Unless otherwise stated, all reference points mentioned in the procedures contained in section 4.17 refer to figure 4.17 above.

**5TH WHEEL CASTER**

**Required Tools:**

1/2" Wrench

**Procedure:**

1. Raise the bed to the high position.
2. Unplug the power cord from the wall receptacle.
3. Bring the brake/steer pedal to horizontal position (neutral).
4. Using a 1/2" wrench, remove the bolt/locknut (F) holding the caster to the swing arms. Remove the defective caster.
5. Reverse the above steps to install the replacement 5th wheel caster.
6. Verify the 5th wheel for proper operation before returning the bed to service.



**ACTIVATION LEVER (J, FIGURE 4.17)****Required Tools:**

Phillips Screwdriver      1/8" Allen Key      1/2" Wrench

**Procedure:**

1. Raise the bed to the high position.
2. Unplug the power cord from the wall receptacle.
3. Bring the brake/steer pedal to horizontal position (neutral).
4. Remove the machine screw (**A**, fig. 4.16, page 47) located at the end of the right and left pedal shafts. Note that in prior versions (beds with serial number  $\leq$  C01340), the FL17E is equipped with protective caps instead of machine screws. If it is the case with your bed, remove the protective cap and proceed with step 5, disregarding the note that follows.

**NOTE**

Before replacing the machine screws, apply medium strength threadlocker (blue) on their treads.

When reassembling, the machine screws must first be inserted and tightened **before** tightening the pressure screws mentioned in steps 5 and 6.

5. Using a 1/8" Allen key, remove the pressure screws (**G**) located on the right and left sockets (**H**) of the 5th wheel activation lever (**J**).

**NOTE**

Before replacing the pressure screws, apply medium strength threadlocker (blue) on their treads.

6. Using a 1/8" Allen key, remove the pressure screws (**B**, fig. 4.16, page 47) located on the head and foot locking levers (**E**, fig. 4.16, page 47).

**NOTE**

Before replacing the pressure screws, apply medium strength threadlocker (blue) on their treads.

7. Gradually pull out each pedal until the pedal shafts (**K**) disengage from the 5th wheel activation lever sockets (**H**) and then stop.
8. Using a 1/2" wrench, remove the two bolts/shoulder spacers(4)/locknuts (**L**) holding both extremities of the activation lever to the upper part of the two counter-levers (**M**).
9. Remove the activation lever (**J**).
10. Reverse the above steps to install the replacement activation lever.

**NOTE**

Be sure to position the activation lever horizontally before inserting each pedal shaft into its corresponding socket. To do so, position the top flat part of the lever parallel to the floor (bring the 5th wheel near the floor by pressing it to facilitate this operation).

11. Verify the 5th wheel for proper operation before returning the bed to service.

**SWING ARM ASSEMBLY (X, FIG. 4.17)****NOTE**

Although the swing arm assembly is shown with its different components in the 5th wheel parts list drawing, it is sold completely assembled (P/N 80-0042) except for the caster.

**Required Tools:**

Phillips Screwdriver	1/8" Allen Key	1/2" Wrench	3/16" Allen Key
Medium Strength Threadlocker		OG2 Grease	

**Procedure:**

1. Raise the bed to the high position.
2. Unplug the power cord from the wall receptacle.
3. Bring the brake/steer pedal to horizontal position (neutral).
4. Remove the machine screws (**A**, fig. 4.16, page 47) located at the end of the right and left pedal shafts. Note that in prior versions, the FL17E is equipped with protective caps instead of machine screws. If it is the case with your bed, remove the protective cap and proceed with step 5, disregarding the note that follows.

**NOTE**

Before replacing the machine screws, apply medium strength threadlocker (blue) on their treads.

When reassembling, the machine screws must first be inserted and tightened **before** tightening the pressure screws mentioned in steps 5 and 6.

5. Using a 1/8" Allen key, remove the pressure screws (**G**) located on the right and left sockets (**H**) of the 5th wheel activation lever (**J**).

**NOTE**

Before replacing the pressure screws, apply medium strength threadlocker (blue) on their treads.

6. Using a 1/8" Allen key, remove the pressure screws (**B**, fig. 4.16, page 47) located on the head and foot locking levers (**E**, fig. 4.16, page 47).

**NOTE**

Before replacing the pressure screws, apply medium strength threadlocker (blue) on their treads.

7. Remove both pedals completely. Remove the two pedal sleeves (**C**, fig. 4.16, page 47). Keep the four nylon washers (**D**, fig. 4.16, page 47).

**NOTE**

Apply grease on the pedal shafts before replacing them.

8. Using a 1/2" wrench, remove the bolt/locknut (**N**) holding each 5th wheel mechanism support (**O**) to the retaining plates (**P**).

**NOTE**

When reassembling, tighten definitely the bolts/locknuts holding the supports to the retaining plates only after the pedal shafts are inserted into the lever sockets. Do not tighten too strongly, the supports could buckle.

9. Remove the complete 5th wheel mechanism from the retaining plates by doing the following:
  - Slide both 5th wheel mechanism supports (**O**) inside the retaining plate (**P**) towards the head of the bed and rotate them downwards through the orifice provided at the bottom of the retaining plates. The supports will then be partially disengaged from the plates.
  - Seize both supports and position them diagonally to completely disengage them from the retaining plates.

**NOTE**

Note the spring positions and the position of the two supports when removing them from the retaining plates, mark their position to help their assembly.

10. Remove the supports (**O**) from the 5th wheel mechanism. Keep the torsion springs (**Q**).
11. Using a 1/2" wrench, remove the bolts/shoulder spacers(4)/locknuts (**R**) holding the torsion levers (**S**) to the lower part of the two counter-levers (**M**).
12. Remove the two torsion levers (**S**) from both ends of the torque shaft (**T**) by first removing the two locknuts (**U**) using a 1/2" wrench, and then the two screws (**V**) using a 3/16" Allen key.

**NOTE**

Apply grease on the portion of the torsion levers that inserts into the nylon bushings (**W**) before replacing them.

When reassembling, screw down tightly the two screws (**V**) holding the torsion levers to the torque shaft before tightening the two locknuts (**U**).

13. Using a 1/2" wrench, remove the bolt/nut (**F**) holding the caster to the swing arms and remove the caster.
14. Reverse the above steps to install the replacement swing arm assembly. Read carefully the following note to properly reinstall the pedals.

**NOTE**

Be sure to position the pedal horizontally (neutral) when inserting its shaft into the sockets of the locking levers (**E**, figure 4.16, page 47) and the 5th wheel activation lever (**J**).

When inserting the pedal shaft into the sockets, make sure that the locking lever is vertically positioned and that the upper flat part of the 5th wheel activation lever is parallel to the floor (bring the 5th wheel near the floor by exerting a pressure on it to ease this operation).

15. Verify the 5th wheel mechanism for proper operation before returning the bed to service.

## 4.18 CASTER REPLACEMENT

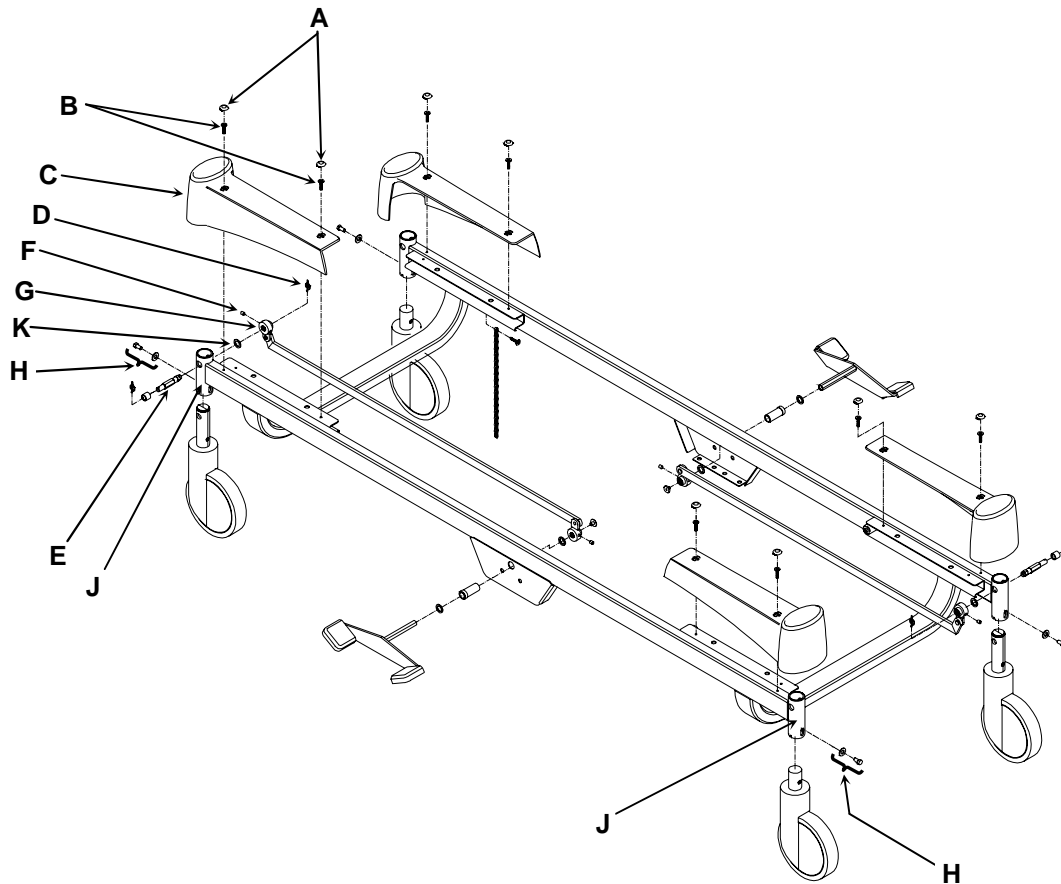


Figure 4.18

### Required Tools:

Phillips Screwdriver	1/2" Wrench	Long Nose Pliers	1/8" Allen Key
7/16" Wrench	Jack Stands (2)	Medium Strength Threadlocker	

### Procedure:

1. Raise the bed enough to place under the frame at the head or foot end of the bed (depending on the caster to be replaced) two jack stands adjusted to a height of 20" (see fig. 4.18A in Appendix D).
  2. Lower the bed until it rests on the jack stands and the caster lower part is at least 5" clear of the ground.
  3. Unplug the power cord from the wall receptacle.
  4. Manually remove the two pop-on screw covers (**A**) and, using a Phillips screwdriver, remove the two screws (**B**) holding the caster cover (**C**) to the base.
  5. If the caster to be replaced is part of the brake mechanism, proceed with step 9. If the caster to be replaced is **not** part of the brake mechanism, proceed with step 6 through step 8 and end the procedure.
  6. Support the caster while using a 1/2" wrench to remove the bolt/washer (**H**) holding the caster shaft to the mounting socket (**J**) and remove the caster.
  7. Reverse the above steps to install the replacement caster.
  8. Verify the bed mobility before returning the bed to service
- End of procedure

9. Using long nose pliers, remove the Rue ring (**D**) at the inner end of the locking axle (**E**).
10. Using a 1/8" Allen key, remove the pressure screw (**F**) located on the locking lever (**G**) and remove the locking lever from the locking axle. Keep the nylon washer (**K**).

**NOTE**

Before replacing the pressure screw, apply medium strength threadlocker (blue) on its treads.

11. Using a 1/2" wrench, remove the bolt/washer (**H**) holding the caster shaft to the mounting socket (**J**).

**NOTE**

Before replacing the bolt, apply medium strength threadlocker (blue) on its treads.

12. Support the caster while pulling out the locking axle (**E**). Note the nearly vertical position of the Rue ring hole to correctly replace the locking axle later on. Remove the caster.

**NOTE**

Ensure that the brake/steer pedal is in horizontal position when the locking axle is inserted into the new caster shaft orifice.

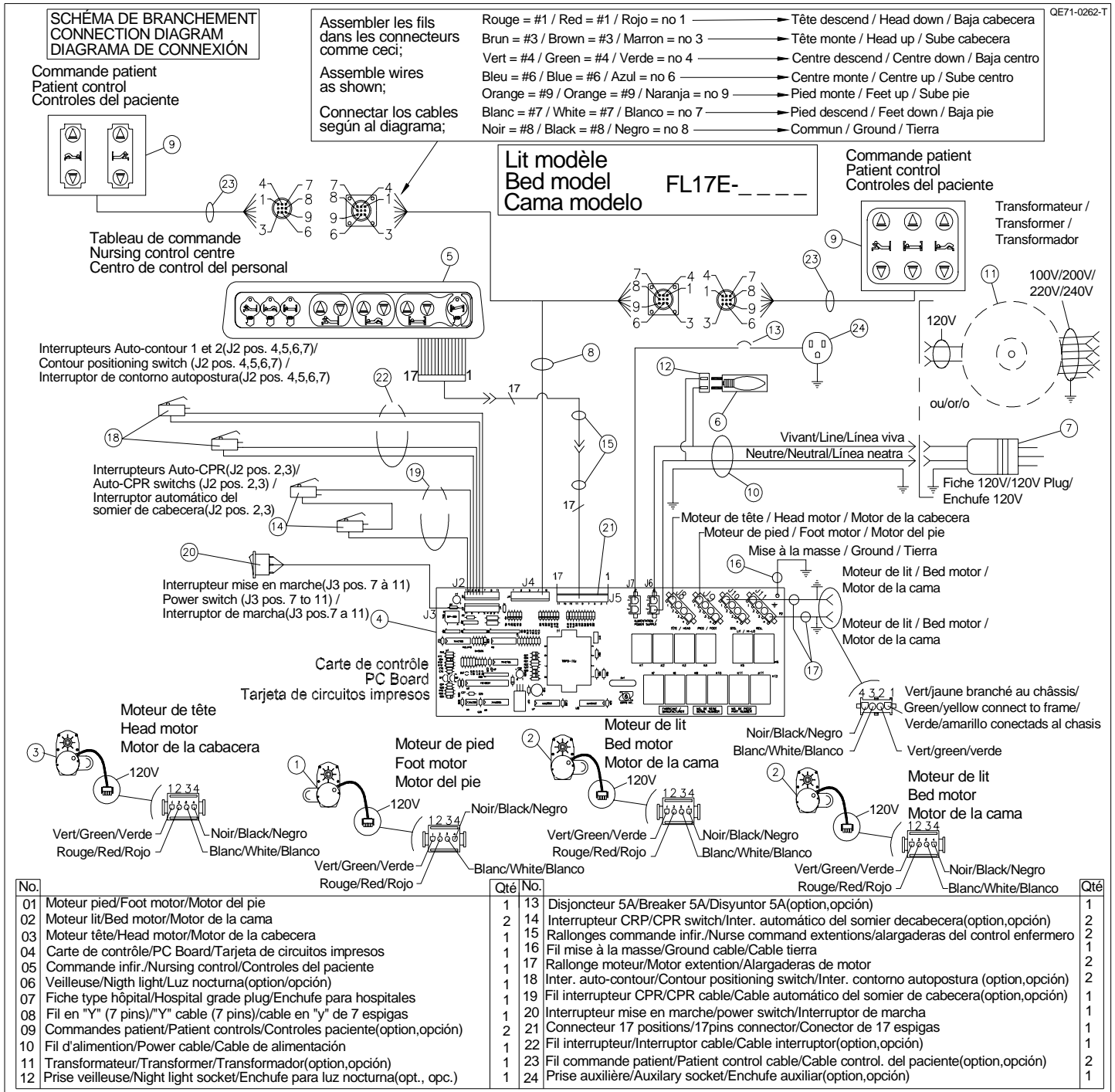
13. Reverse the above steps to install the replacement caster. Read the following note carefully before completing the installation of the replacement caster

**NOTE**

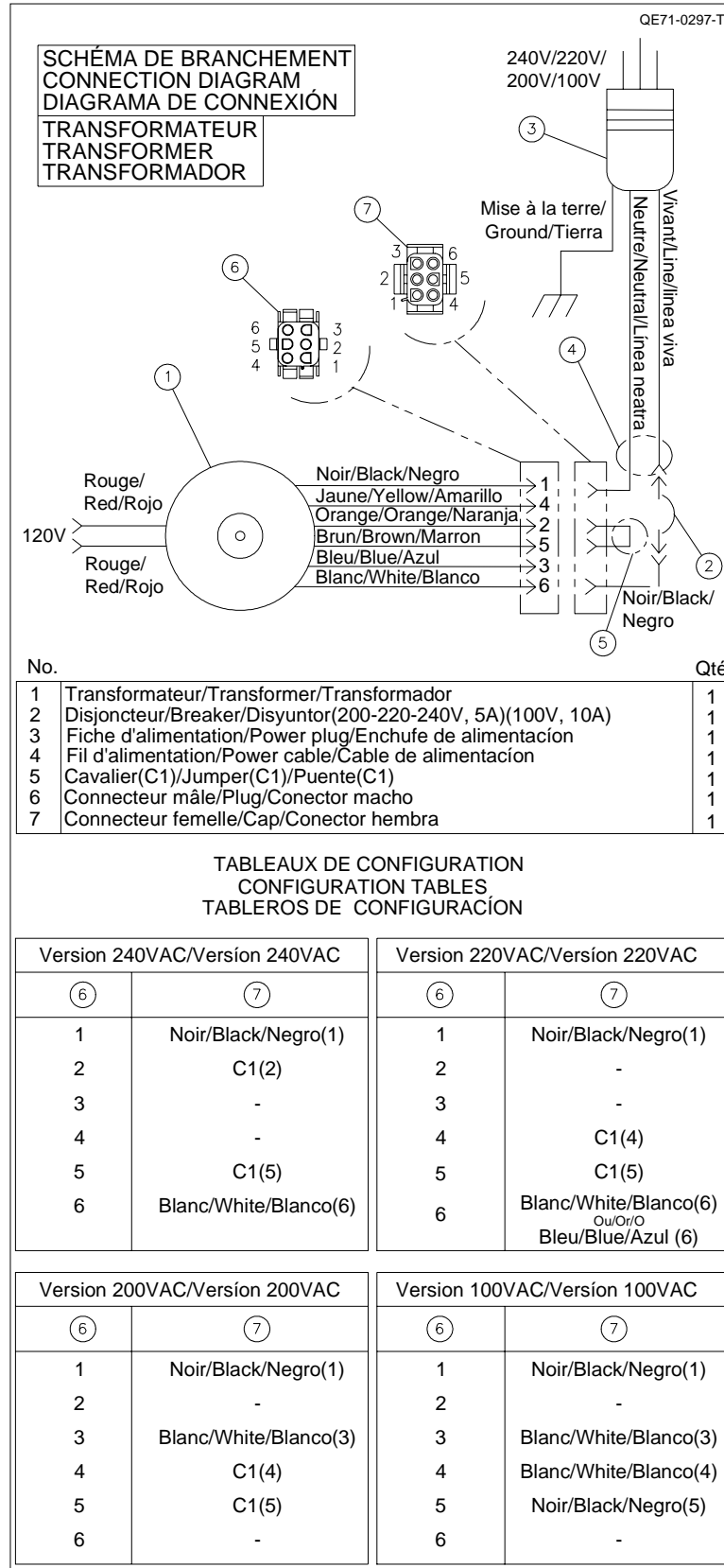
The shaft of a caster which is part of the brake mechanism must be oriented correctly, otherwise the caster will not lock when the brake pedal is activated.

- 13.1. Perform the following steps to correctly orient the caster shaft before finalizing the replacement caster installation:
  - Ensure the new caster shaft mechanism is in the neutral position (brake/steer pedal horizontal). To do so, insert the locking axle (**E**) in the new caster shaft orifice and rotate the locking axle using a 7/16" wrench to identify the three possible positions of the shaft mechanism: 5th wheel engaged, neutral, brake engaged. Set the mechanism to the neutral position (middle position). Once done, remove the locking axle from the caster shaft.
  - Insert the caster shaft into the mounting socket (**J**) and insert the locking axle (**E**) completely. Replace the locking lever (**G**) on the locking axle (make sure the pedal is in the neutral position before replacing the locking lever on the locking axle), but not completely so as to have enough room between the mounting socket (**J**) and the locking lever to insert a 7/16" wrench.
  - Using a 7/16" wrench, rotate the locking axle while observing the pedal movements created by the rotation of the axle, it will occupy three positions:
    - Green side of the pedal depressed: 5th wheel engaged.
    - Pedal in horizontal position: neutral position.
    - Red side of the pedal depressed: brake system engaged.
  - When the pedal red side is depressed, verify if the caster locks. If the caster does not lock, the shaft is incorrectly oriented.
  - Remove the locking lever (**G**) from the locking axle and the locking axle (**E**) while supporting the caster. Remove the caster and rotate its shaft of 180°. Replace the caster shaft into the mounting socket and replace the locking axle and locking lever as previously described. Rotate again the axle while observing the pedal movement created by the rotation of the axle.
  - This time, when the pedal red side depresses, the caster should lock. The caster shaft is now correctly oriented and the replacement caster installation can now be finalized. Do not forget to install the Rue ring (**D**).
14. Apply the brakes and ensure that the two casters (diagonally opposed) which are part of the brake system are locked before returning the bed to service.

Appendix A: Motor Connection Diagram



Appendix B: Toroidal Transformer Connection Diagram (FL17E International Series)



## Appendix C: Toroidal Transformer Replacement (FL17E International Series)

### Required Tools:

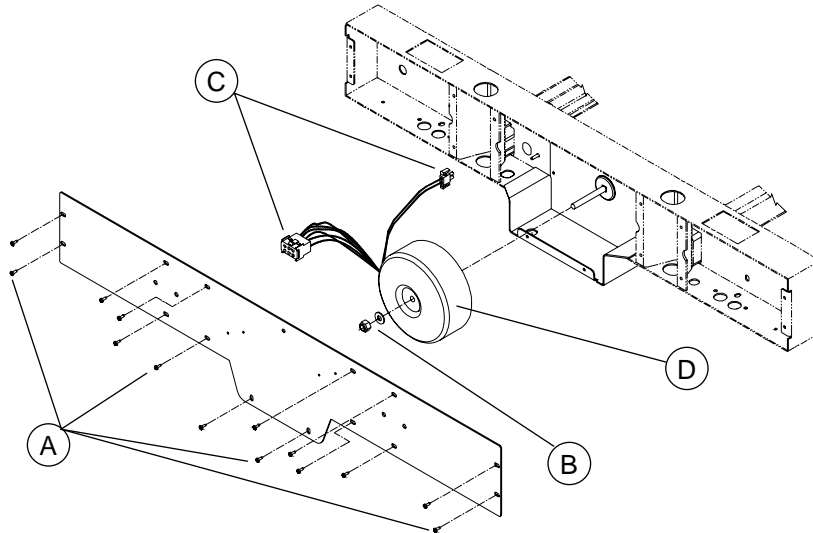
Phillips Screwdriver

Ratchet and 1/2" Socket

Cutting Pliers

Nylon Cable Tie (1)

### Replacement Procedure:



1. Raise the bed fully up and apply the brakes.
2. Raise the head section fully up.
3. Unplug the bed power cord.
4. Using a Phillips screwdriver, remove the fourteen screws (A) holding the head casing cover. Remove the cover.
5. Using cutting pliers, cut the cable tie holding together the cables.
6. Using a 1/2" socket and ratchet, remove the locknut and washer (B) holding the transformer to the head casing.

### NOTE

A light tightening is enough for the locknut.

7. Gently remove the transformer from its location.
8. Disconnect the two transformer cables (C) and remove the defective transformer (D).
9. Reverse the above steps to install the replacement transformer (P/N QDF14-1160).
10. Check the bed electric functions at the foot end and the siderail control panels before returning the bed to service.



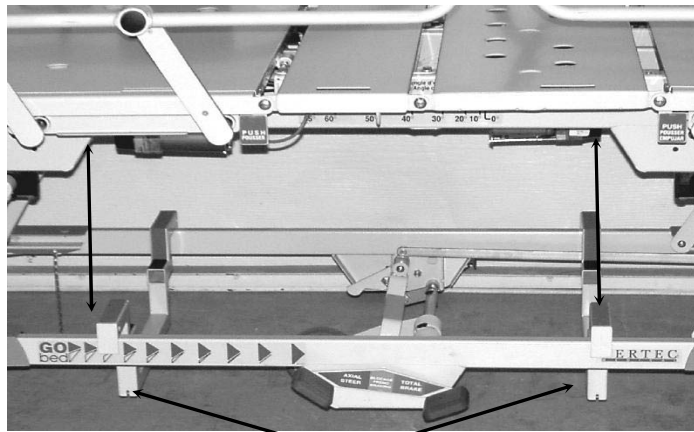
Appendix D: Bed Positions for Maintenance Purpose

Figure 4.1



KNEE GATCH AND FOOT SECTION FOLDED BACK TOWARDS HEAD END OF THE BED

Figure 4.12A



ALIGNMENT JIGS POSITIONED ON THE BED BASE FOR A HI-LO ACTUATOR REPLACEMENT



JACK STANDS POSITIONED UNDER THE HEAD END OF THE BED



JACK STANDS POSITIONED UNDER THE FOOT END OF THE BED

Figure 4.18A