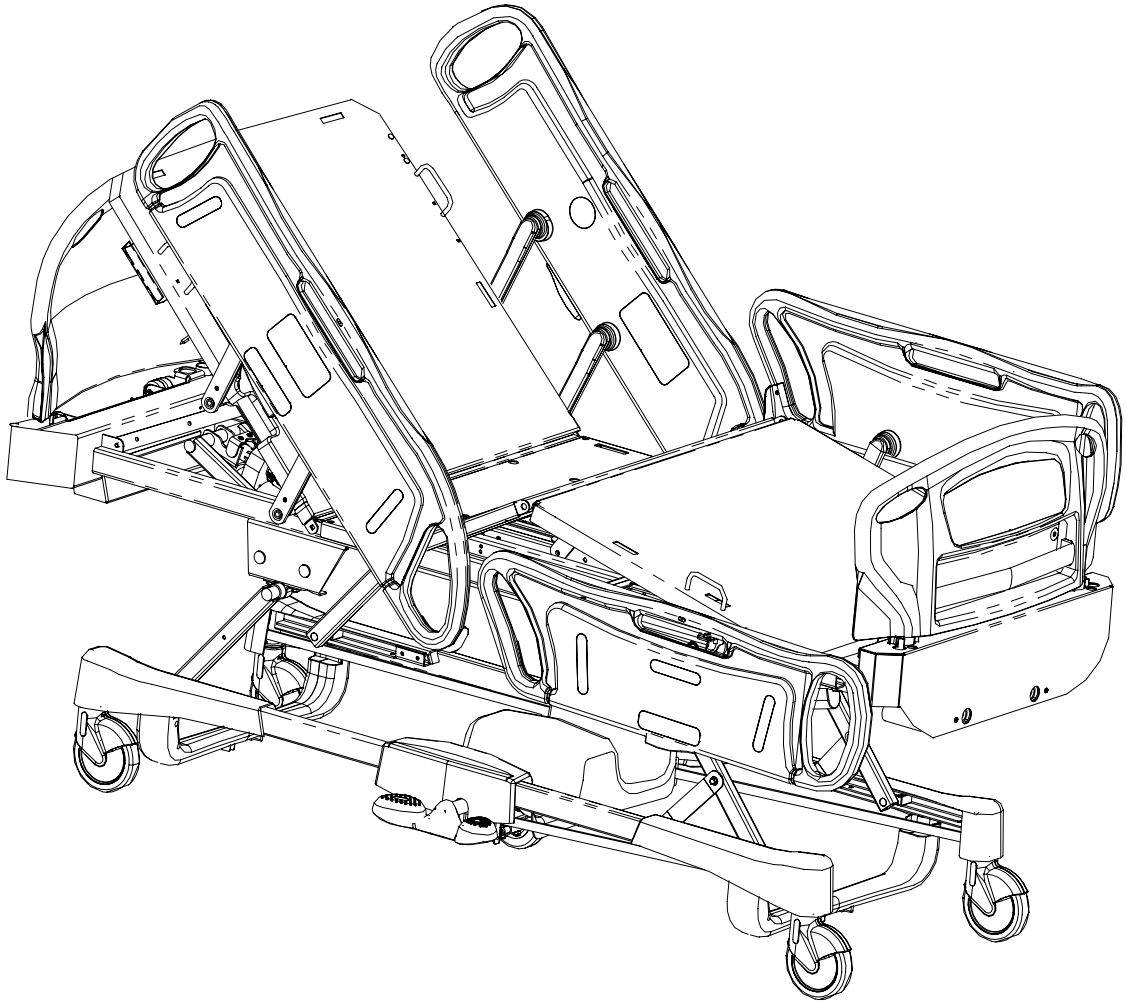
stryker®

MAINTENANCE MANUAL

ELECTRIC MED/SURG BED

Model FL26E



TECHNICAL ASSISTANCE AND PARTS

Canada: 1 888 233-6888
United Sates: 1 800 327-0770
Outside Canada and the United States: Contact your local representative

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1. INTRODUCTION

This manual is designed to assist you in the servicing of the Stryker's MA105 Med/Surg bed. Read it thoroughly before beginning any service on the bed. 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 bed and should be included if the bed is sold or transferred.

1.1 SPECIFICATIONS *

Safe Working Load	500 lb (227 kg)
Overall Length/Width - Siderails Up - Siderails Down	 93.75 x 42.9" (238 cm x 109 cm) 93.5 x 39.3" (237.5 cm x 99.8 cm)
Weight w/Boards	472 lb (214.1 kg)
Patient Sleep Surface	35 x 80" (89 x 203 cm) extendable to 82" (208 cm) and 84" (213 cm)
Recommended Mattress Size Mattress **Maximum** thickness	35 x 80" (89 x 203 cm); 35 x 82" (89 x 208 cm); 35 x 84" (89 x 213 cm) 6" (15.24 cm)
Min/Max Bed Height	14 to 29" (36 to 73.7 cm)
Fowler Angle	0 to 62°
Knee Gatch Angle - W/Auto Contour - W/o Auto Contour	 0 to 24° 0 to 32°
Trendelenburg/Reverse Trendelenburg	+14 to -14°
** Electrical Requirements - all electrical requirements meet CSA C22.2 N^{O} 601.1, UL 60601-1 and IEC 60601-2-38 specifications.	100V~, 50-60Hz, 7.5A - Two 250V, 10A Fast Acting Fuses 120V~, 50-60Hz, 4.0A (9.8A w/120V Optional Auxiliary Outlet) - Two 250V, 10A Fast Acting Fuses 200V~, 50-60Hz, 3.2A -Two 250V, 6.3A Slow Blow Fuses 220V~, 50-60Hz, 2.9A -Two 250V, 6.3A Slow Blow Fuses 240V~, 50-60Hz, 2.7A -Two 250V, 6.3A Slow Blow Fuses

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

**** The device has a 10% duty cycle.**

1.2 TECHNICAL SUPPORT

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

Stryker Canada
1 888 233-6888
45, Innovation Drive
Hamilton, Ontario, L9H 7L8
Canada

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

1.3 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.

1.4 STATIC DISCHARGE PRECAUTIONS

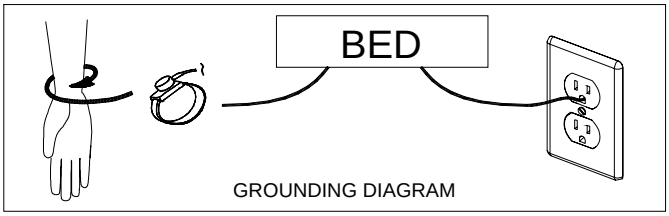
The electronic circuits of the bed are protected from static electricity damage only while the bed is assembled. It is extremely important that all service personnel always use adequate static protection when servicing the electronic components of the bed.

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



GROUNDING DIAGRAM

1. Unplug the bed power cord from the wall outlet.
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 control wrist strap on your wrist. Connect the clip at the other end of the wrist strap cord to a ground point on the bed.

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

TO OBTAIN SERVICE AND/OR PARTS

- **To Require Service**

For an on-site diagnosis of a malfunction by a Field Service representative from Stryker, contact the Technical Service department (see section 1.2) or your local representative.

- **To Order Parts**

Contact the Technical Service department (see section 1.2) or your local representative and provide the following information:

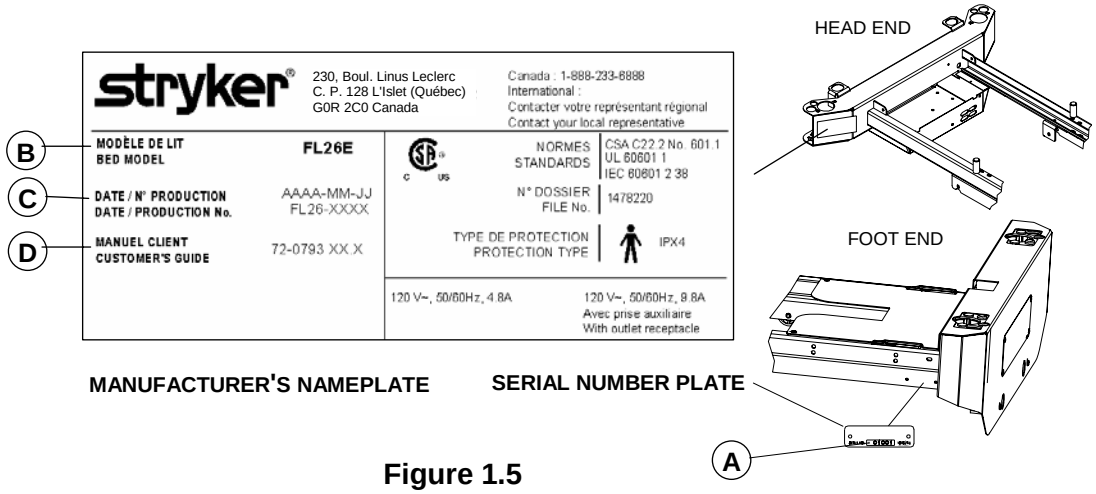


Figure 1.5

- Locate the serial number plate and the manufacturer's nameplate affixed respectively to the right side of the frame at the foot end of the bed, and on the right side of the head end casing.
- From the serial plate, write down the serial number (A).
- From the manufacturer's nameplate, write down the bed model (B), the production number (C), and the Customer's Guide number (D).
- Consult the parts lists and the drawings contained in the Parts List Manual included in the Customer's Guide to identify the defective part. Write down the name of the part and its part number, and the problem encountered while using the equipment.

NOTE

It is very important that you refer to the parts lists and drawings of the Parts List Manual specific to the bed needing to be repaired.

The Technical Service representative can help you identify the parts to be replaced. However, if an error occurs when ordering, the user remains responsible for the parts ordered.
Stryker will take back wrong parts ordered but will not assume shipping charges, and restocking fees will be charged to the user unless a Field 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) day 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 five (5) days of invoice.

1.6 SYMBOLS

Warning, consult accompanying documents

Fuse rating for beds with 100V~ and 120V~ electric systems

Fuse rating for beds with 200V~, 220V~ and 240V~ electric systems

Protective earth (ground)

~ Alternating Current

Type B Equipment

IPX4 Protection from liquid splash

2. PREVENTATIVE MAINTENANCE

2.1 BED CLEANING AND MATTRESS CARE

WARNING

Always unplug the bed power cord from the wall outlet when cleaning or servicing the bed.

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 wiped 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.

MATTRESS CARE

WARNING

Inspect the mattress after each use. Discontinue use if any cracks or rips, which may allow fluid to enter the mattress, are found in the mattress cover. 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 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 mattress 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 is 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 REQUIREMENTS

The only components of the bed needing periodic lubrication are the four actuator screws. They should be checked every year and lubricated every two years.

CAUTION

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

ACTUATOR SCREW LUBRICATION

Required Tools:

Phillips Screwdriver 1/4" Ratchet (w/6" extension) and 5/16" socket
OG2 Grease Brush Bungee Cord

Procedure:

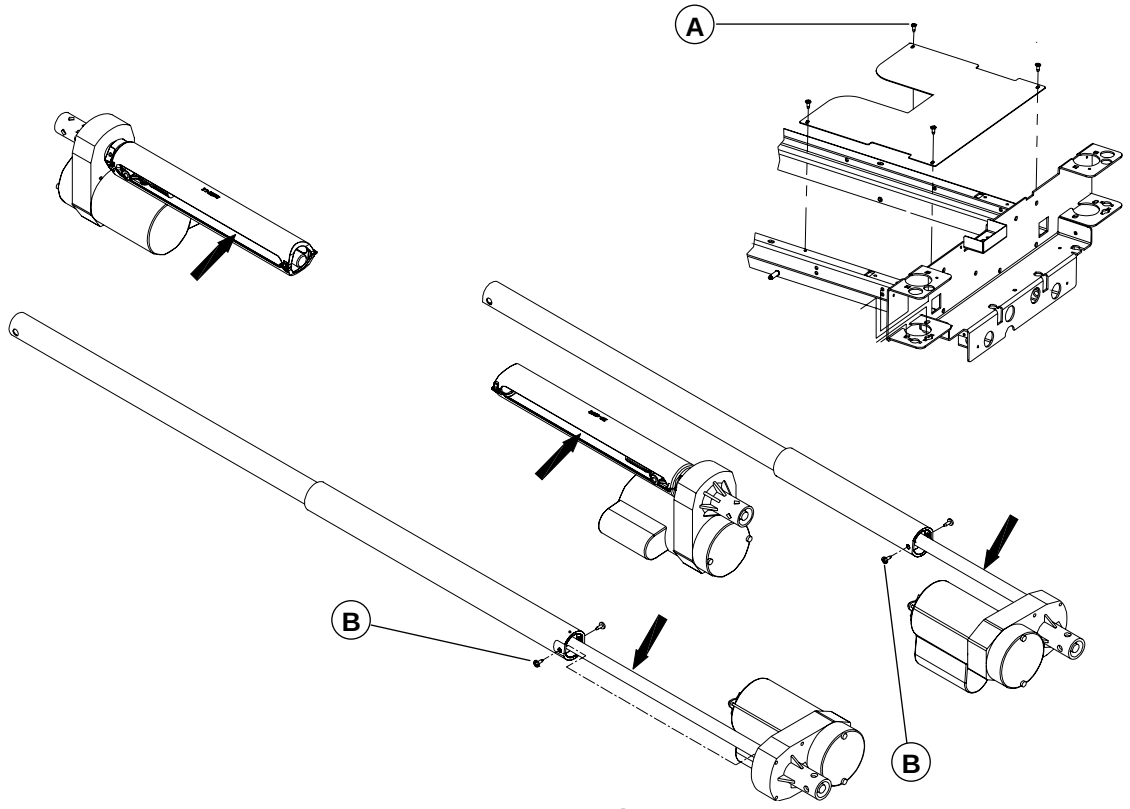


Figure 2.2

Head and Thigh Actuators

1. Fully raise the bed and apply the brakes.
2. Fully raise the head section and flatten the thigh section to expose maximum screw threads on both actuators. Lower the four siderails.
3. Unplug the power cord from the wall outlet.
4. Lift and fold back the foot section toward the head end of the bed. Secure its position using a bungee cord.
5. Using a Phillips screwdriver, remove the four screws (A) holding the cover plate to the frame and remove the plate. Remove the night light, if applicable.
6. Using a 1/4" ratchet (w/6" extension) and a 5/16" socket, remove the two screws (B) holding the dust tube of each actuator.

7. Using a brush, apply grease on the screw threads. Make sure the grease reaches the bottom of the threads.
8. Replace the dust tubes.
9. Using the electric controls, raise and lower several times the Fowler and Knee Gatch to spread grease evenly.
10. Replace the cover plate.

Hi-Lo Actuators

1. Lower the bed completely and apply the brakes. Fully raise the head section. Raise the head siderails and lower the foot siderails.
2. Unplug the power cord from the wall outlet.
3. Lift and fold back the foot section toward the head end of the bed. Secure its position using a bungee cord.
4. Using a brush, apply grease on the threads through the dust tube side openings of both Hi-Lo actuators. Make sure the grease reaches the bottom of the threads.
5. Using the electric controls, raise and lower the bed several times to spread the grease evenly.

2.3 PREVENTATIVE MAINTENANCE PROGRAM

WARNING
When servicing beds, use only identical replacement parts provided by Stryker.

ANNUAL CHECKLIST

- All fasteners secure.
- Inspect for excessive wear the oil-impregnated bronze shoulder spacers found at the bed hinge points. Replace as needed. **Do not** lubricate these spacers.
- Check the grease present on the actuator screws, lubricate if needed (see section2.2). The actuator screws need lubrication every two years.
- On both sides of the bed, depress fully down the side of the pedal identified with a red sticker and ensure that the brakes are applied and the bed immobilized. Toggle the pedal to neutral and ensure the brakes are released.
- On both sides of the bed, depress fully down the side of the pedal identified with a green sticker and ensure that the steer wheel is engaged. Toggle the pedal to neutral and ensure that the steer wheel disengages.
- Siderails move, latch and stow properly.
- All functions of the foot end control panel working properly, including LEDs.
- All siderail controls working properly.
  - Ensure that the optional nurse call works properly and that the alarm sounds in the nurse station.
- Verify the CPR emergency release (optional) using both CPR release handles: raise the Fowler fully up and, using the CPR handle, lower the Fowler gradually to flat position by pulling, holding and releasing the handle several times. Ensure the Knee Gatch (if raised) also starts flattening when the Fowler is completely down. Following the complete lowering of the Fowler, wait approximately 30 seconds - the time for the Fowler control motor to reset itself - and verify that the motor has indeed reset itself by raising the Fowler fully up using the Fowler up control.
- Verify the Fowler, Knee Gatch and Hi-lo movements to ensure that the limit switch integrated to the four electric actuators is operating properly.
- Auxiliary outlet (option available only with 120V beds) working properly.
- Night light (optional) working properly.
- No cracks in the boards, siderails, caster covers and 5th wheel hood (optional).
- Head end bumpers tightly secured to frame and working properly.
- No rips or cracks in mattress cover.
- Power cord not frayed.
- No cables worn or pinched.
- All electrical connections tight.
- All grounds secure to the frame.
- All casters roll properly. Check caster for cuts, wear, etc.
- Measure current leakage and grounding continuity of the bed and the optional auxiliary outlet. Check with our Technical Service department for the acceptable values.

RECOMMENDED SPARE PARTS

The following is a list of recommended on hand spare parts for the MA105 bed.

Description	Part Number	Parts List
• **Electric/Electronic Components**		
Motor Control Board	QDF23-0315	OL260003
Nurse Call Control Board (Optional)	QDF20-0126	OL260011
Micro Switch	1325P003	OL260013
Power Connector	23-0267	OL260003
Fuse - Fast Acting 10A, 250V for 100/120V Electric Systems	QDF8078	OL260003/05
Fuse - Slow Blow 6.3A, 250V for 200/220/240V Electric Systems	QDF8068	OL260006/07 /08
Power Cord with Straight N A Molded Plug	QDF8066	OL250053
Power Cord with 90° N A Molded Plug (Optional)	QDF8066-90D	OL250055
Speakerphone w/connector (Optional)	QDF26-0111	OL260010
Night Light (Optional)	QDF9539	OL250018
Auxiliary Power Outlet (Optional)	QDF8024	OL250029
5A Circuit Breaker (for Optional Auxiliary Power Outlet)	QDF9025	OL250029
Hi-Lo Actuator	80-6000	OL260003
Head Section Actuator	80-6001	OL260003
Thigh Section Actuator	80-6002	OL260003
Toroidal Transformer (International Series Bed)	QDF4-1160	OL260004
Control Board Stand Off Pins	QP23-0258	OL260003
Strain Relief Bushing	QDF9541	OL260003/04
• **Foot Board Components**		
Foot End Control Panel Membrane	QDF26-0015	L26-004
Head/Foot Board Leg Cap	QPC21-3855	L26-004
• **Siderail Components**		
Outer Right Ctrl Panel Membrane	QDF26-0016	OL260001/02
Outer Left Ctrl Panel Membrane	QDF26-0017	OL260001/02
Inner Right Ctrl Panel Membrane w/Nurse Call (optional)	QDF26-0020	OL260010
Inner Left Ctrl Panel Membrane w/Nurse Call (optional)	QDF26-0021	OL260010
Inner Right Ctrl Panel Membrane w/o Nurse Call	QDF26-0018	OL260009
Inner Left Ctrl Panel Membrane w/o Nurse Call	QDF26-0019	OL260009
Left Transfer Plate	26-0054	OL260001/02
Right Transfer Plate	26-0051	OL260001/02
Screw cover	QDF25-0025	OL260001
Sticker – Lift to release siderail	QDF21-3680	OL260001
• **Mattress Support Components**		

Head Section	26-0005P	L26-001
Foot Section	26-0007P	L26-001
Seat Section	26-0049P	L26-001
Thigh Section	25-0163P	L26-001
Adjustable Mattress Retainer	17-0211P	OL250022/23
Rubber Cap	QPCF1001	L25-008
CPR Pneumatic Cylinder	QDF5090	L25-019
CPR Right Handle Cable	QDF19-0815	L25-019
CPR Left Handle Cable	QDF19-0354	L25-019

- **Hi-Lo Mechanism Components**

Right "Stub-Acme" Nut	QP13-0677-05	L25-006
Nut Support	QPA25-0380	L25-006

- **Base Components**

6" Caster w/Locking Mechanism	R25-0388	OL250011/12
6" Caster w/o Locking Mechanism	R25-0493	OL250011
Directional 5th Wheel	RL5	OL250045
Right Caster Cover	QP25-0022	L25-004
Left Caster Cover	QP25-0039	L25-004
Brake/Steer Pedal	QP25-0518-11	L25-020

- **Miscellaneous**

OG2 Grease	M0027
White Spray Paint	DDCAP-BLP
Nylon Cable Tie	QDF9521
Shoulder spacer dia. 5/16"x0.210"	QDF17-0020

3. TROUBLESHOOTING

Please consult the following troubleshooting guide before calling the Technical Service department (see section 1.2).

3.1 TROUBLESHOOTING GUIDE

PROBLEM/FAILURE	WHAT TO CHECK
No power to bed	• Is the bed power switch at the head end of the bed turned on? • Is the power cord connected to the power connector and plugged into the wall outlet? • Is the power cord severed? Replace if needed. • Are the two fuses inside the power connector still operational (see page 34) • Verify power at wall outlet.
No bed up or down motion when: • the siderail command is used • the foot end command is used	• Is the total lockout activated (LED (padlock) on) ? If so, deactivate it. • Is the cable of the siderail control panel properly connected to the bed receptacle under the mattress support? • Check points of the “No power to bed” problem described above.
No Fowler up or down motion when: • the siderail command is used • the foot end command is used	• Is the Fowler lockout activated (LED (padlock) on) ? If so, deactivate it. • Is the total lockout activated (LED (padlock) on) ? If so, deactivate it. • Is the cable of the siderail control panel properly connected to the bed connector under the mattress support? • Check points of the “No power to bed” problem described above.
The Fowler does not **fully** raise	This situation happens when the CPR handle is used to partly lower the Fowler. The use of the CPR mechanism for this purpose creates a situation where the Fowler motor is out of sync with the actual position of the Fowler. To correct the situation: • Completely lower the Fowler using the CPR handle or the Fowler down control to enable the Fowler motor to reset itself. Refer to the "CPR Emergency Release" section of the Operations Manual for more information.

No Knee Gatch up or down motion when: • the siderail command is used • the foot end command is used	• Is the Knee Gatch lockout activated (LED (padlock) on) ? If so, deactivate it. • Is the total lockout activated (LED (padlock) on) ? If so, deactivate it. • Is the cable of the siderail control panel properly connected to the bed connector under the mattress support? • Check points of the “No power to bed” problem described above.
No *Auto Contour* motion	• Is the Knee Gatch or total lockout activated (LED (padlock) on) ? If so, deactivate it. • Check and replace if needed (see page 37) the two Auto Contour limit switches.
Improper operation of the CPR positioning: Knee Gatch does not lower and/or the Fowler actuator does not reset.	• Check and replace if needed (see pages 38) the two CPR limit switches.
Nurse call signal does not reach the nurse desk.	• Check points of the “No power to bed” problem described above. • Is the nurse call cable properly connected to the bed 37 pin connector located at the head end of the bed as well as in the nurse call wall outlet? • Check the wall outlet.

4. MAINTENANCE PROCEDURES

WARNING

Only field technicians from Stryker or service personnel trained by Stryker should perform the procedures detailed in this maintenance manual. Failure to observe this restriction can result in serious damage to material and/or severe injury to people.

Always unplug the bed power cord from the wall outlet when servicing or cleaning the bed.

To prevent injury when working under the bed with the bed in the high position, always place blocks under the Hi-Lo levers and apply the brakes.

NOTE

Throughout this maintenance manual, the words “right” and “left” refer to the right and left sides of a patient lying face up on the bed.

4.1 SIDERAIL MAINTENANCE PROCEDURES

HEAD END SIDERAIL ASSEMBLY REPLACEMENT

Required Tools:

1/2" Socket Wrench (w/6" Extension) Torque Wrench Cutting Pliers

Procedure:

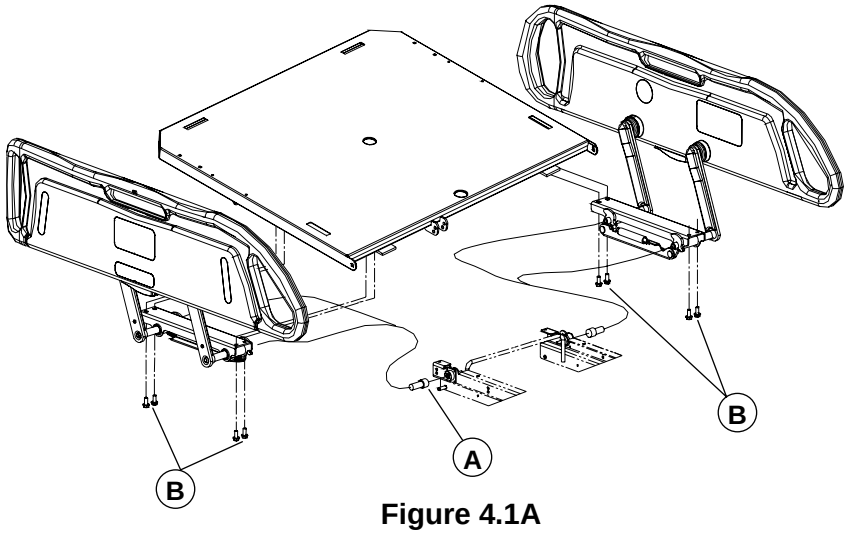


Figure 4.1A

1. Fully raise the bed and apply the brakes.
2. Fully raise the head section and raise the siderail needing repair.
3. Unplug the bed power cord from the wall receptacle.
4. Using cutting pliers, cut the two cable ties holding the siderails cables. Loosen the lock ring (A) and unplug the siderail control cable.
5. Using a 1/2" socket wrench with a 6" extension, remove the four thread-rolling bolts (B) holding the siderail assembly to the head section and remove the assembly. Support the assembly when removing the last bolts.

NOTE

Once removed, the thread-rolling bolts must be first screwed in manually before tightening them to a 130 lbf in (14.7 N m) torque using a torque wrench.

6. Reverse the above steps to install the new siderail assembly.
7. Test the siderail movement and all controls of both control panels, including the optional nurse call function, for proper operation before returning the bed to service.

FOOT END SIDERAIL ASSEMBLY REPLACEMENT

Required Tools:

1/2" Socket Wrench (w/6" Extension) Torque Wrench

Procedure:

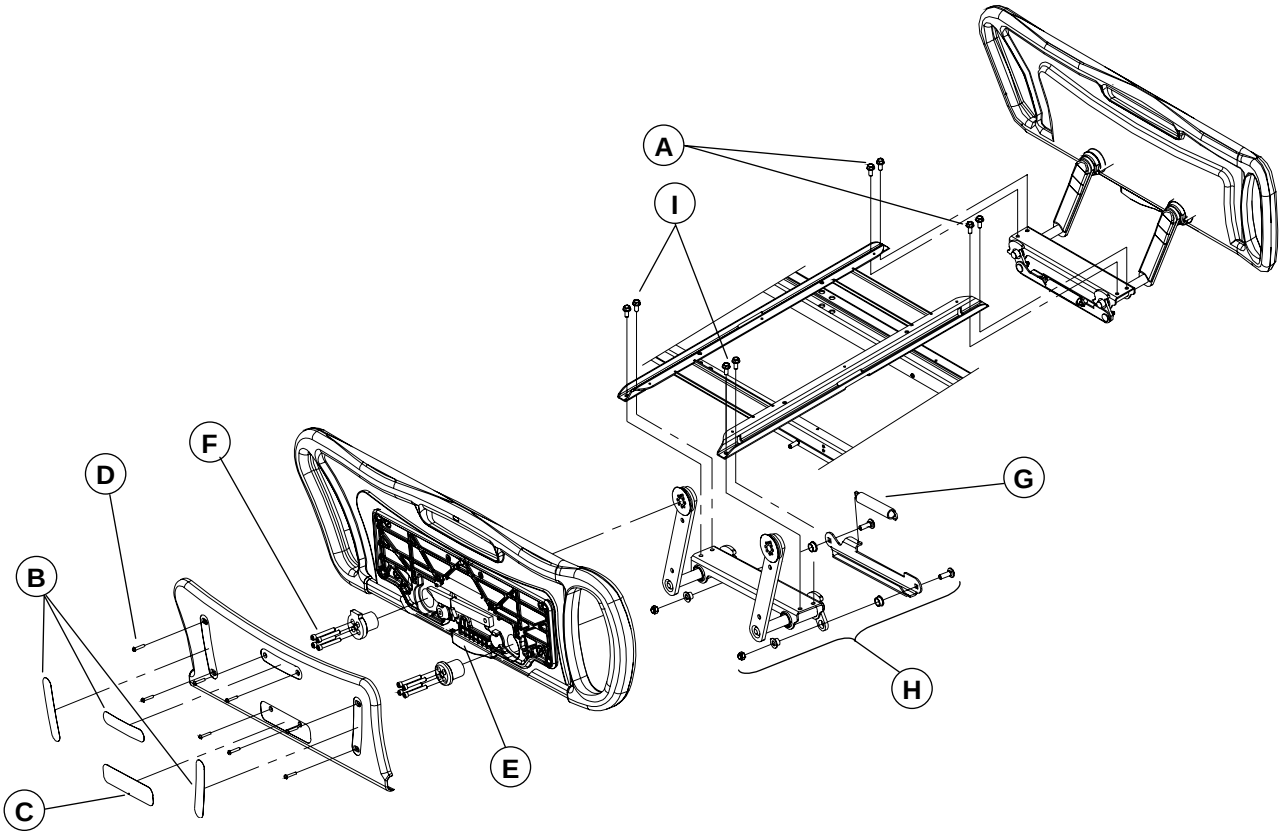


Figure 4.1B

1. Fully raise the bed and apply the brakes. Raise the siderail needing repair.
2. Fully raise the Knee Gatch and unplug the bed power cord from the wall receptacle.
3. Lift and fold the foot section back toward the head end of the bed.
4. Using a 1/2" socket wrench with a 6" extension, remove the four thread-rolling bolts (A) holding the siderail assembly to the support and remove the assembly. Support the siderail assembly while removing the last bolts.

NOTE

Once removed, the thread-rolling bolts must be first screwed in manually before tightening them to a 130 lbf in (14.7 N m) torque using a torque wrench.

5. Reverse the above steps to install the new siderail assembly.
6. Test the siderail for proper operation before returning the bed to service.

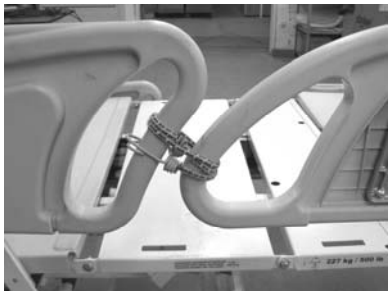
FOOT END RAIL REPLACEMENT

Required Tools:

Small Slotted Head Screwdriver	Phillips Screwdriver	3/16" Allen Key
Bungee Cord	Medium-Strength Thread Locker	

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.1B on page 18 for the illustration of this procedure reference points.



1. Fully raise the bed and apply the brakes. Raise the siderail needing repair. Secure the foot siderail to the adjacent head siderail (raise it too) using a bungee cord (see opposite illustration).
2. Unplug the bed power cord from the wall receptacle.
3. Using a small slotted head screwdriver, lift and remove the following self-sticking parts: the three screw covers (B) and the "Lift to release siderail" sticker (C) to expose the screws holding the siderail cover. Proceed gently when inserting the screwdriver under the stickers to avoid scratching the molded rail.

NOTE
Do not reuse the self-sticking parts removed since their self-adhesive coating considerably looses its efficiency once they are removed. We recommend that you have replacement stickers at hand (see Recommended Spare Parts on page 13).

4. Using a Phillips screwdriver, remove the eight screws (D) holding the cover to the siderail and remove the cover.

WARNING
The eight screws (D) used to hold the siderail cover cannot be used more than once because their Scotch-Grip coating is less efficient once they have been tightened and removed thereafter. They **must** be replaced with new identical screws.

5. Remove the yellow locking lever (E).
6. Using a 3/16" Allen key, remove the four Allen screws (F) holding each pommel to the siderail arms. Leave one loosened screw on each pommel until ready to remove both pommels.

NOTE
Apply medium-strength thread locker on the screw threads before replacing the screws.

7. While supporting the rail, remove the two last screws, the pommels, the bungee cord (if applicable) and finally the rail.

NOTE
Note the position of the pommel with the lock when the siderail is fully raised. The rail will not lock in high position if the pommel is positioned differently.

8. Reverse the above steps to install the new rail.
9. Test the siderail for proper operation before returning the bed to service.

HEAD END RAIL REPLACEMENT

Please contact the Technical Service (see section 1.2) for information regarding the replacement of a head end rail.

SIDERAIL MECHANISM TRANSFER PLATE REPLACEMENT

Required Tools:

1/2" Socket Wrench (w/6" Extension) Bungee Cord

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.1B on page 18 for the illustration of this procedure reference points.

1. Fully raise the bed and apply the brakes. Raise the siderail needing repair.
2. Remove the foot board and unplug the bed power cord from the wall receptacle.
3. Remove the spring (G). Support the rail using a bungee cord to prevent it from falling.
4. Using a 1/2" socket wrench with a 6" extension, remove the locknut/shoulder spacers/bolt (H) holding each end of the transfer plate to the mechanism and remove the plate.
5. Reverse the above steps to install the new transfer plate.
6. Test the siderail for proper operation before returning the bed to service.

FOOT END SIDERAIL MECHANISM REPLACEMENT

Required Tools:

Small Slotted Head screwdriver	Bungee Cord	Phillips Screwdriver
3/16" Allen Key	1/2" Socket Wrench	Torque Wrench
Medium-Strength Thread Locker		

Procedure:

1. Follow steps 1 to 7 of the foot end rail replacement procedure on page 19.
2. Using a 1/2" socket wrench, remove the four thread-rolling bolts (I, fig. 4.1B, page 18) holding the mechanism assembly to the support and remove the assembly.

NOTE
Once removed, the thread-rolling bolts must be first screwed in manually before tightening them to a 130 lbf in (14.7 N m) torque using a torque wrench.

3. Reverse the above steps to install the new mechanism assembly.
4. Test the siderail for proper operation before returning the bed to service.

HEAD END SIDERAIL MECHANISM REPLACEMENT

Please contact the Technical Service (see section 1.2) for information regarding the replacement of a head end siderail mechanism.

SIDERAIL OUTER CONTROL PANEL MEMBRANE REPLACEMENT

Required Tools:

Small Slotted Head Screwdriver Phillips Screwdriver

Procedure:

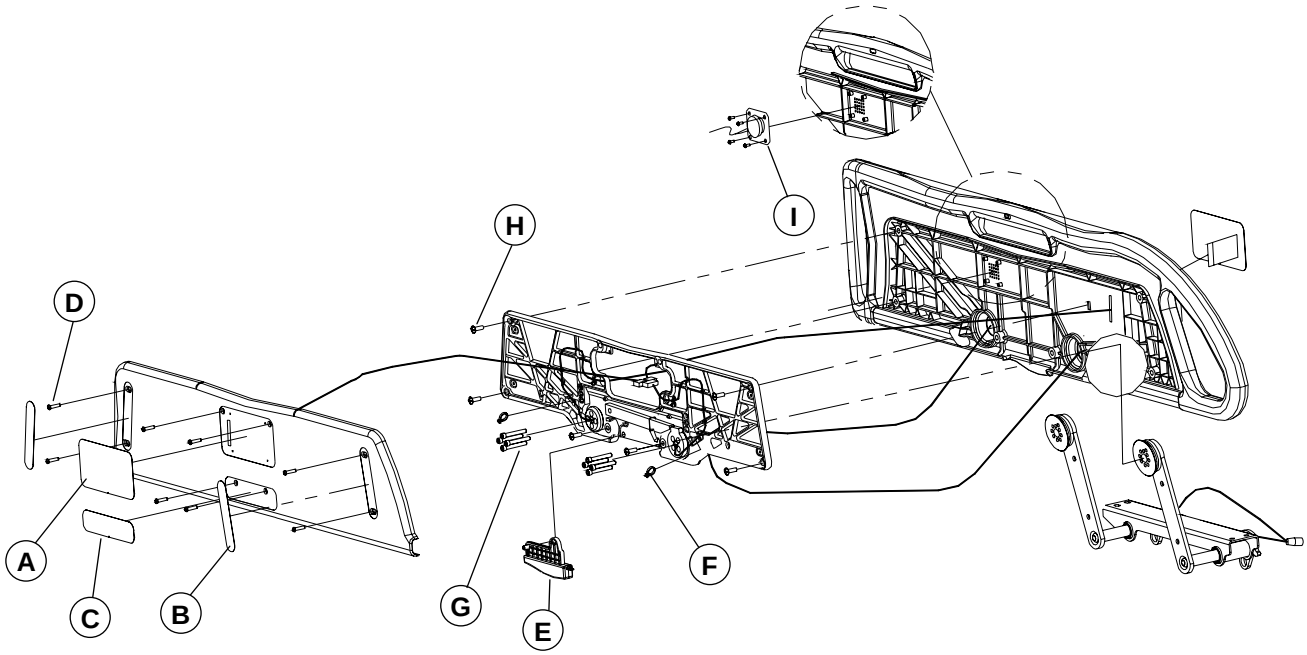


Figure 4.1C

1. Fully raise the bed and apply the brakes. Raise the siderail needing repair.
2. Unplug the bed power cord from the wall outlet.
3. Using a small slotted head screwdriver, lift and remove the following self-sticking parts: the outer membrane (A), the two screw covers (B) and the "Lift to release siderail" sticker (C) to expose the screws holding the siderail cover. Proceed gently when inserting the screwdriver under the stickers to avoid damaging the cover.

NOTE

Do not reuse the self-sticking parts removed since their self-adhesive coating considerably looses its efficiency once they are removed. We recommend that you have replacement stickers at hand (see Recommended Spare Parts on page 13).

4. Using a Phillips screwdriver, remove the eight screws (D) holding the cover to the siderail and remove the cover.

WARNING

The eight screws (D) used to hold the siderail cover cannot be used more than once because their Scotch-Grip coating is less efficient once they have been tightened and removed thereafter. They **must** be replaced with new identical screws.

5. Disconnect the defective membrane (A), connect and install the new membrane.
6. Test all controls of the control panel for proper operation before reassembling the siderail and returning the bed to service.

SIDERAIL INNER CONTROL PANEL/SPEAKERPHONE REPLACEMENT

Required Tools:

Small Slotted Head Screwdriver	Phillips Screwdriver	Side Cutters
Bungee Cords	3/16" Allen Key	Medium Strength Threadlocker

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.1C on page 21 for the illustration of this procedure reference points.

1. Follow steps 1 to 4 of the siderail outer control panel membrane replacement procedure described on page 21.
2. Disconnect the outer control panel membrane.

3. Secure the siderail to the adjacent siderail using a bungee cord (see opposite illustration).
4. Using side cutters, clip the lower cable tie (F) holding the bottom part of the two grey cables to the aluminum structure. This loose given to the cables will be necessary for steps to come.

NOTE
Make sure the two cable ties are inserted in the aluminum structure **before** attaching the structure.

5. Using a 3/16" Allen key, remove the four Allen screws (G) holding each pommel to the siderail arms. Leave one loosened screw on each pommel until ready to remove both pommels.

NOTE
Apply medium-strength thread locker on the screw threads before replacing the screws.

6. While supporting the rail, remove the two last screws and the bungee cord.

7. Lift the siderail, pass it over the siderail arms and lay it on the mattress support while gently pulling on the cables (see opposite illustration).
8. Using a Phillips screwdriver, remove the six screws (H) holding the aluminum structure to the siderail.
9. Grasp and lift the upper part of the aluminum structure lying on the mattress support until it may be secure temporarily to one of the mechanism arms using a bungee cord.

To replace the speakerphone, follow steps 10 and 11 and 15 and end the procedure. To replace the inner control panel membrane, follow steps 12 to 15, and end the procedure.

10. Using a Phillips screwdriver, remove the four screws (I) holding the speakerphone to the siderail.
11. Disconnect the speakerphone and install the new speakerphone.
12. Disconnect the inner membrane connector.
13. Using a small slotted head screwdriver, lift and remove the inner membrane. Proceed gently when inserting the screwdriver under the membrane to avoid scratching the plastic cover.
14. Connect and install the new membrane.
15. Test the nurse call and the siderail inner and outer controls for proper operation before reassembling the siderail and returning the bed to service.

4.2 FOOT BOARD MAINTENANCE PROCEDURES

FOOT END CONTROL MEMBRANE REPLACEMENT

Required Tool:

Small Slotted Head Screwdriver

Procedure:

1. Fully raise the bed and apply the brakes.
2. Unplug the bed power cord from the wall outlet.
3. Using a small slotted head screwdriver, lift and remove the self-sticking membrane. Proceed gently when inserting the screwdriver under the membrane to avoid scratching the molded board.
4. Pull gently on the membrane cable to free the membrane connector from the foot board opening.
5. Disconnect the membrane and connect the new membrane. Slide the membrane tail back in the foot board opening and stick the membrane on the foot board.

NOTE

Be careful not to stick the cable on the back of the membrane.

6. Test all foot board controls for proper operation before returning the bed to service.

4.3 MATTRESS SUPPORT MAINTENANCE PROCEDURES

FOOT SECTION REPLACEMENT

Required Tools:

1/2" Wrench Phillips Screwdriver Bungee Cord

Procedure:

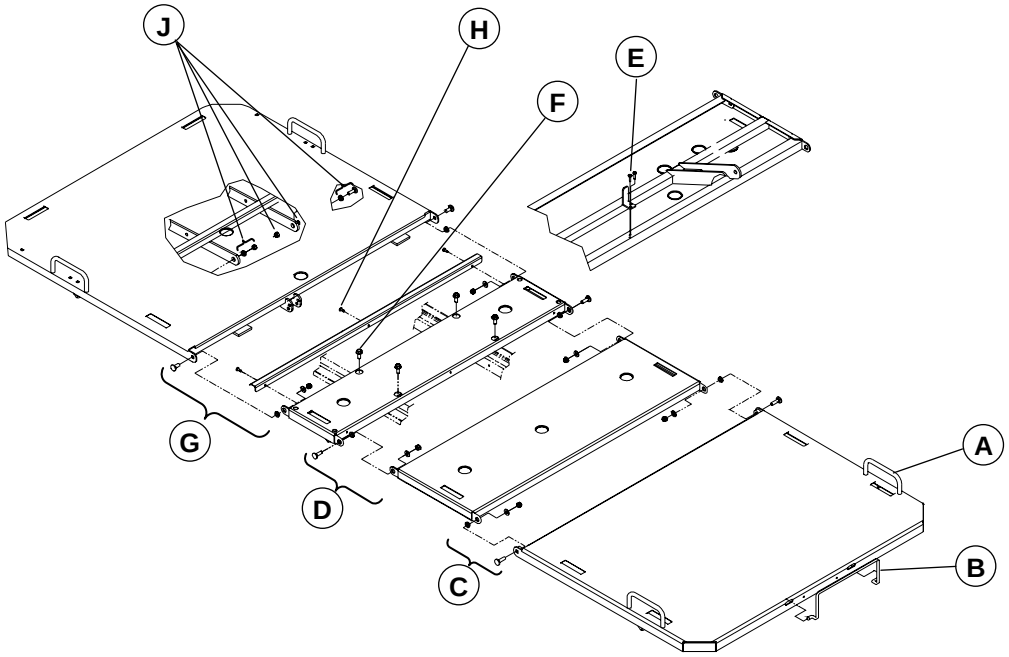


Figure 4.3A

1. Fully raise the bed and apply the brakes. Flatten all sections of the mattress support.
2. Unplug the bed power cord from the wall outlet.
3. Lower the siderails.
4. Lift and fold back the foot section toward the head end of the bed. Secure its position using a bungee cord.
5. Using a Phillips screwdriver, remove the two side mattress retainers (A) and the foot end mattress retainer (B) and install them on the new foot section. Note the position of the foot mattress retainer before removing it. Replace the foot section to horizontal position.
6. Using a 1/2" wrench, remove the two locknuts/washers/shoulder spacers/bolts (C) linking the foot section to the thigh section and remove the defective section.
7. Reverse the above steps to install the new foot section.

THIGH SECTION REPLACEMENT

Required Tools:

Long Nose Pliers 1/2" Wrench Phillips Screwdriver

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3A on page 24 for the illustration of this procedure reference points.

1. Fully raise the bed and apply the brakes. Flatten all sections of the mattress support.
2. Unplug the bed power cord from the wall outlet.
3. Lower the siderails.
4. Using long nose pliers, remove the rue ring cotter/washers/clevis pin (F, fig. 4.3B, page 27) linking the thigh section lever arms to the thigh actuator tube.
5. Using a 1/2" wrench, remove the four locknuts/washers/shoulder spacers/bolts (C, D) linking the thigh section to the foot and seat sections.
6. Remove the defective thigh section and lay it upside down on a workbench.
7. Using a Phillips screwdriver, remove the two screws (E) holding the micro switch activator to the thigh section. Install the activator on the new thigh section.
8. Reverse the above steps to install the new thigh section.
9. Test the Knee Gatch as well as the *Auto Contour* before returning the bed to service.

SEAT SECTION REPLACEMENT

Required Tools:

1/2" Socket Wrench (w/3" Extension) 1/2" Wrench Phillips Screwdriver

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3A on page 24 for the illustration of this procedure reference points.

1. Raise the bed fully up and apply the brakes. Flatten the mattress support.
2. Unplug the bed power cord from the wall outlet.
3. Lower the siderails.
4. Using a 1/2" wrench, remove the four locknuts/washers/shoulder spacers/bolts (D, G) linking the seat section to the thigh and head section.
5. Using a 1/2" socket wrench with a 3" extension, remove the four bolts/washers/locknuts (F) holding the seat section to the frame and remove the defective seat section.
6. Using a Phillips screwdriver, remove the three screws (H) holding the protective plate to the seat section. Replace the protective plate on the new seat section.
7. Reverse the above steps to install the new seat section.

HEAD SECTION REPLACEMENT

Required Tools:

Ratchet w/1/2" Long Socket 1/2" Wrenches (2) Side Cutters Torque Wrench

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3A on page 24 for the illustration of this procedure reference points.

WARNING
Under no circumstances should the CPR emergency release handles be activated during this procedure or serious injury to people or damage to equipment could occur.

1. Fully raise the bed and apply the brakes.
2. Fully raise the head section and remove the head board.
3. Unplug the bed power cord from the wall outlet and raise the head siderails.
4. Loosen the lock rings (A, fig. 4.1A, page 17) and unplug the siderail control cables.
5. Using a ratchet with a 1/2" long socket, remove the eight thread-rolling bolts (B, fig. 4.1A, page 17) holding the head siderail assemblies to the head section and remove the siderails. Support the assembly when removing the last bolts.

NOTE
Once removed, the thread-rolling bolts must first be screwed in manually before tightening them to a 130 lbf in (14.7 N m) torque using a torque wrench.

6. Using side cutters, remove the cable ties holding the cables on each side of the head section structure as well as the cable ties holding the CPR micro switch cables.
7. Using a 1/2" wrench, remove the nuts/shoulder spacers/bolts (J) holding the head section to the stabilizers. Lower the stabilizer.
8. Plug in the bed and lower the head section. Push slightly on it to ease its descent. Unplug then the bed power cord.
9. Using long nose pliers, remove the Rue ring cotter/washers/clevis pin (A, fig. 4.3B, page 27) holding the lower part of the head section lever to the head actuator tube.
10. Using two 1/2" wrenches, remove the bolt/shoulder spacers/nut (N, fig. 4.3H, page 38) holding the upper part of the head section lever to the head section.
11. Lay head section assembly upside down on a workbench.
12. Remove the two side mattress retainers and install them on the replacement head section.
13. Remove the CPR mechanism and install it on the replacement head section.
14. Reverse the above steps to install the new head section.
15. Test the CPR mechanism for proper operation before returning the bed to service.

FOWLER ACTUATOR REPLACEMENT

Required Tools:

Long Nose Pliers Phillips Screwdriver Pliers Side Cutters
Small Slotted Head Screwdriver

Procedure:

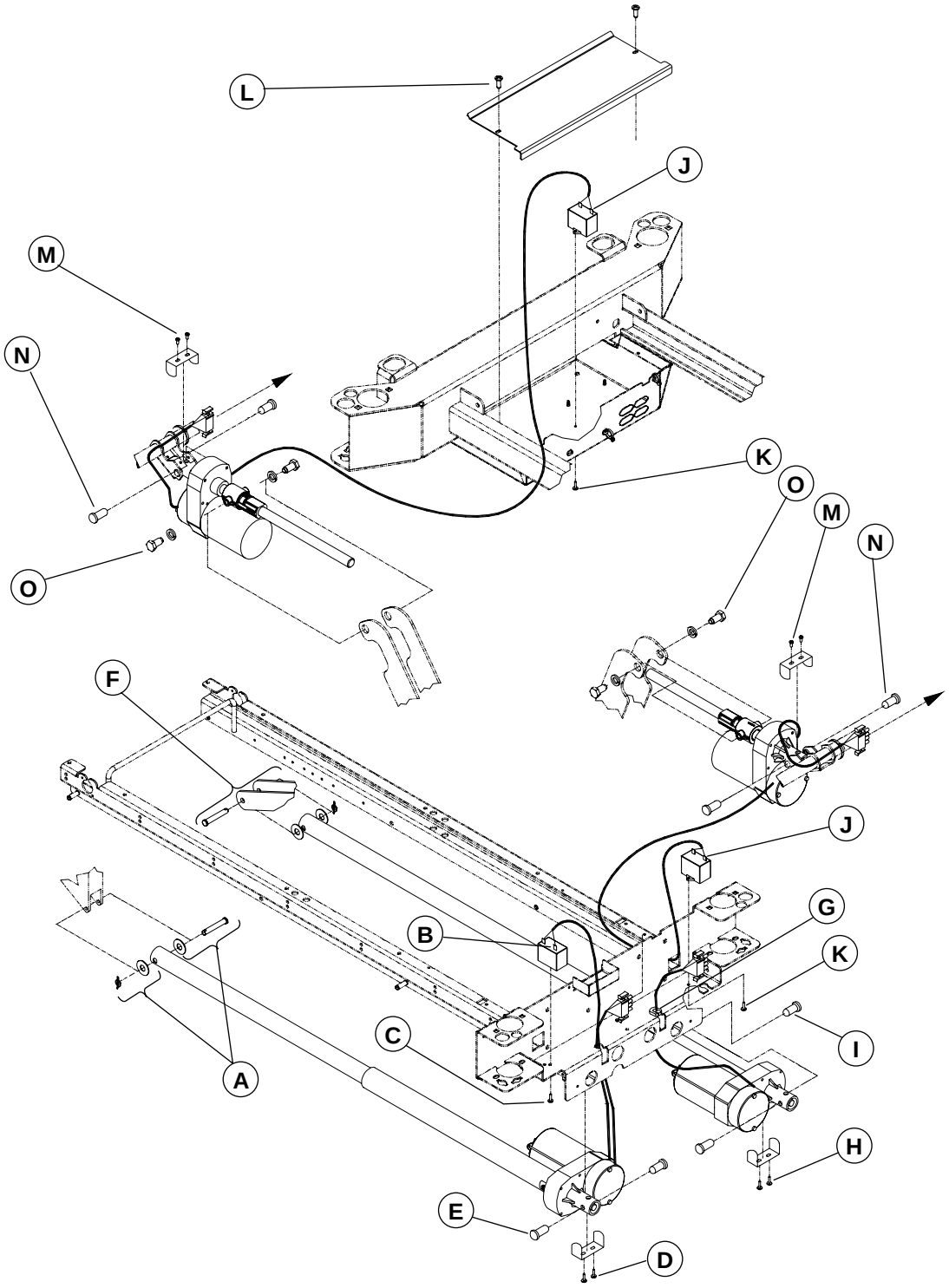


Figure 4.3B

1. Fully raise the bed and apply the brakes. Fully raise the Knee Gatch.
2. Unplug the bed power cord from the wall outlet.

3. Lower the siderails.
4. Lift and fold the foot section back toward the head end of the bed.
5. Remove the foot board.
6. Using long nose pliers, remove the Rue ring cotter/washers/clevis pin (A) linking the head actuator tube to the lower part of the head section lever.
7. Using a Phillips screwdriver, remove the six screws (A, fig. 4.3D, page 33) holding the cover to the foot casing. Grab both ends of the cover and lift up to remove it.
8. Properly ground yourself (see section 1.4).
9. Using side cutters, clip the cable tie holding the head actuator cable to the other cables.
10. Remove the actuator cable (connector J8) from the control board and pass the cable connector through the rear casing hole.
11. Remove from the capacitor the two wires (B) connected to it and remove, using a Phillips screwdriver, the screw (C) holding the capacitor to the foot casing. Dispose of the capacitor.
12. Using a Phillips screwdriver, remove the two screws (D) holding the retaining plate to the actuator support and remove the plate.
13. Remove the two pivot pins (E) holding the actuator to the support. To facilitate the removal of the pins, insert a small slotted head screwdriver into the opening at the end of the actuator and push out the pins.
14. Move the defective actuator toward the centre of the bed to remove it from its location.
15. Reverse the above steps to install the new actuator. Carefully read the following caution before hooking up the actuator tube to the head section lever arms.

CAUTION

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

16. To adjust the course of the replacement head actuator, proceed as follows:
    A. Make sure that the actuator cable is connected to the control board and connect the bed power cord.
    B. Grab the 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. 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 they are not aligned any more, repeat steps **B** and **C** until they are. Once the holes are 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 cotter to finalize the head actuator replacement, raise and lower completely the Fowler. Check that the actuator stops working as soon as the head section reaches the frame.

KNEE GATCH ACTUATOR REPLACEMENT

Required Tools:

Long Nose Pliers	Phillips Screwdriver	Pliers
Side Cutters	Strap	Small Slotted Head Screwdriver

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3B on page 27 for the illustration of this procedure reference points.

1. Fully raise the bed and apply the brakes. Flatten the mattress support.
2. Unplug the bed power cord from the wall outlet.
3. Lower the siderails.
4. Lift and fold the foot section back toward the head end of the bed. Secure its position using a strap.
5. Using long nose pliers, remove the rue ring cotter/washers/clevis pin (F) linking the actuator tube to the thigh section lever arms.
6. Using a Phillips screwdriver, remove the six screws (A, fig. 4.3D, page 33) holding the cover to the foot casing. Grab both ends of the cover and lift up to remove it.
7. Properly ground yourself (see section 1.4).
8. Using side cutters, clip the cable tie holding the thigh actuator cable to the other cables.
9. Remove the actuator cable (connector J9) from the control board.
10. Using pliers, squeeze the upper part of the strain-relief bushing (G) and lift up to remove it from its location.
11. Remove the cable from the bushing and pass the cable connector through the casing hole previously occupied by the bushing.
12. Using a Phillips screwdriver, remove the two screws (H) holding the retaining plate to the actuator support and remove the plate.
13. Remove the two pivot pins (I) holding the actuator to the support. To facilitate the removal of the pins, insert a small slotted head screwdriver into the opening at the end of the actuator and push out the pins.
14. Move the defective actuator toward the centre of the bed to remove it from its location.
15. Reverse the above steps to install the new actuator. Carefully read the following caution before hooking up the actuator tube to the thigh section lever arms.

CAUTION

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

19. To adjust the course of the replacement thigh actuator, proceed as follows:
    A. Make sure that the actuator cable is connected to the control board and connect the bed power cord.
    B. Grab the 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 they are not aligned any more, repeat steps **B** and **C** until they are. Once the holes are 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.

HI-LO ACTUATOR REPLACEMENT

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. The kit includes alignment jigs. To obtain the kit, contact our Technical Service department (see section 1.2) and order part number KR0113.

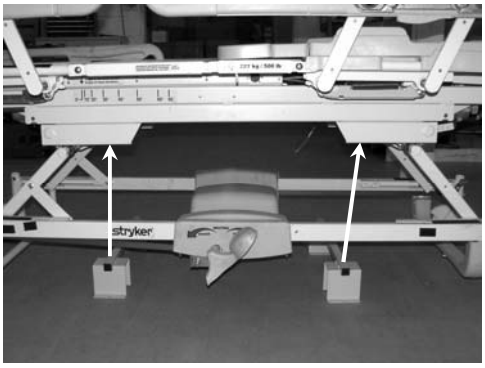
Required Tools:

Tool Kit (KR0113)	Side Cutters	5/16" Socket Wrench
Small Slotted Head Screwdriver	1/2" Wrench	

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3B on page 27 for the illustration of this procedure reference points.

1. Position the mattress support sections depending on the location of the Hi-Lo actuator to replace:
   At the foot of the bed: fully raise the thigh section, and lift and fold back the foot section toward the head end of the bed.
   At the head of the bed: fully raise the Fowler.



2. Position the alignment jigs on the floor right under the Hi-Lo levers and lower the bed until the levers come to rest on the jigs (see opposite illustration). Use a 3/8" socket wrench with the 1/2" socket provided in the kit to lower a defective Hi-Lo actuator until the lever rests on the jig.
3. Unplug the bed power cord from the wall outlet.
4. Disconnect the actuator cable and clip, using side cutters, the cable ties holding it to the frame.
5. Remove from the capacitor the two wires (J) connected to it and remove, using a Phillips screwdriver, the screw (K) holding in place the capacitor. Dispose of the capacitor.
   - The capacitor of the head Hi-Lo actuator is located in the head casing. To access it, remove the six screws (A, fig. 4.3D, page 33) holding the cover to the head casing
   - The capacitor of the foot Hi-Lo actuator is located in the foot casing. To access it, remove the six screws (A, Fig. 4.3C, page 32) holding the cover to the foot casing.
6. Using a 5/16" socket wrench, remove the two screws (M) holding the retaining plate to the actuator support.
7. Remove the two pivot pins (N) holding the actuator to the support. To facilitate the removal of the pins, insert a small slotted head screwdriver into the opening at the end of the actuator and push out the pins.
8. Using a 1/2" wrench, remove the two bolts/washers/shoulder spacers (O) holding the molded nut support to the Hi-Lo lever. Remove the molded nut support and keep it for the replacement Hi-Lo actuator that will have its own molded nut.

NOTE

Make sure that the support and the molded nut holes are aligned before screwing in the bolts. If resistance is felt, it means that the holes are not aligned.

9. Remove the defective actuator.
10. Reverse the above steps to install the new actuator. Carefully read the following caution before hooking up the actuator to the Hi-Lo lever.

CAUTION

The course of the new actuator must be adjusted prior to hooking it to the Hi-Lo lever. An improper adjustment can damage the Hi-Lo mechanism.

10. To adjust the new 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 lower limit has been preserved.

MOTOR CONTROL BOARD REPLACEMENT

Required Tools:

Phillips Screwdriver Long-Nose Pliers Side Cutters

3/8" Wrench

Procedure:

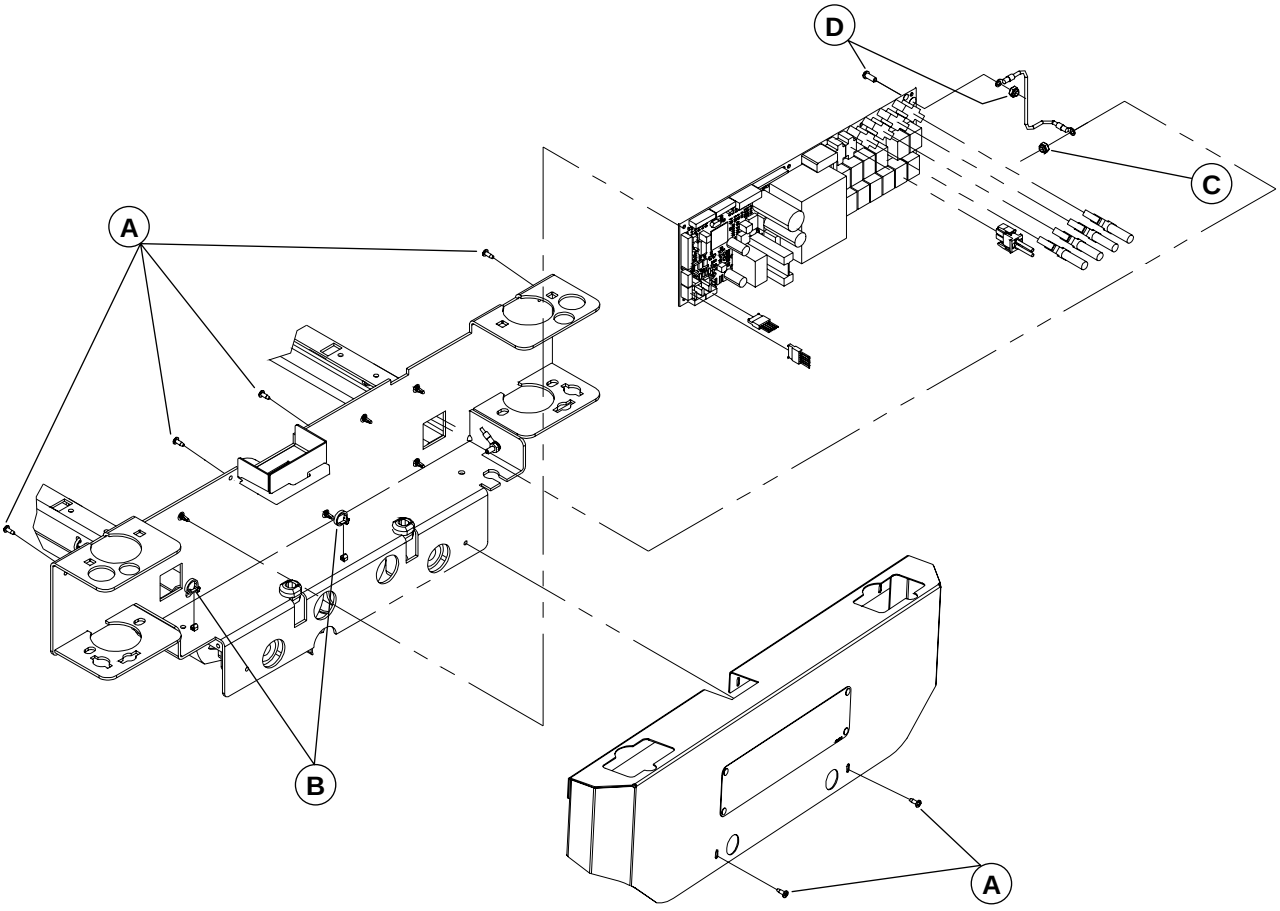


Figure 4.3C

1. Fully raise the bed and apply the brakes.
2. Unplug the bed power cord from the wall outlet.
3. Remove the foot board.
4. Using a Phillips screwdriver, remove the six screws (A) holding the cover to the foot casing. Grab both ends of the cover and lift up to remove it.
5. Properly ground yourself (see section 1.4).
6. Using side cutters, clip the cable ties (B) holding together the cables.

NOTE

Carefully note the position and the gathering of the cables before clipping the cable tie.

7. Remove all cables connected to the control board. Note their location so they will be connected properly to the new board. Refer to drawing OL260003 for the connecting position of the cables on the motor control board

NOTE

Connector J2 of the control board receives the following cable connectors:

- *Auto Contour* (on pins 4-7);
- CPR (on pins 8-9).

8. Using long-nose pliers, pinch the upper part of the stand-off pins one by one to disengage the card and gently lift the board up and out.
9. Using a 3/8" wrench and a Phillips screwdriver, remove the nut/screw (D) holding the ground cable to the board.
10. Reverse the above steps to install the new control board.
11. Test all the bed controls before returning the bed to service.

NURSE CALL CONTROL BOARD (OPTIONAL) REPLACEMENT

Required tool:

Phillips Screwdriver

Procedure:

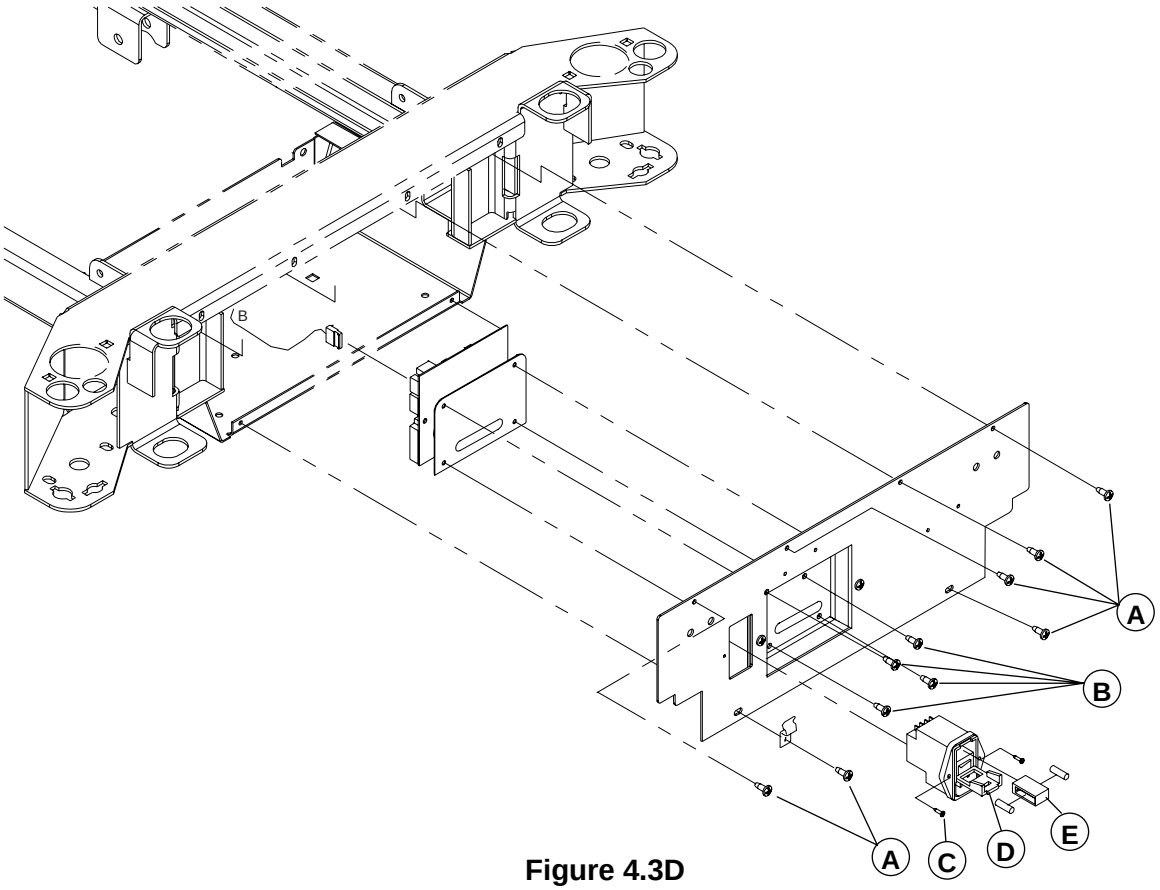
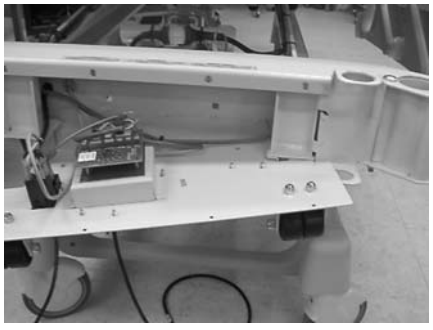


Figure 4.3D

1. Fully raise the bed and apply the brakes.



2. Unplug the bed power cord from the wall outlet.
3. Remove the power cord from the power connector.
4. Using a Phillips screwdriver, remove the six screws (A) holding the cover to the head casing.
5. Properly ground yourself (see section 1.4).
6. Once the screws are removed, pivot the cover and lay it flat on the bottom of the casing (see opposite illustration).
7. Remove all cables connected to the board. Note their location so they will be connected properly to the new board.

8. Rotate the cover to vertical position and, using a Phillips screwdriver, remove the four screws (B) holding the board to the head casing cover and remove the board.
9. Reverse the above steps to install the new board.
10. Test the nurse call for proper operation before returning the bed to service.

POWER CONNECTOR REPLACEMENT

Required tool:

Phillips Screwdriver

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3D on page 33 for the illustration of this procedure reference points.

1. Fully raise the bed and apply the brakes.
2. Unplug the bed power cord from the wall outlet.
3. Remove the power cord from the power connector.
4. Using a Phillips screwdriver, remove the six screws (A) holding the cover to the head casing.
5. Properly ground yourself (see section 1.4).
6. Once the screws removed, pivot the cover and lay it flat on the bottom of the casing (see illustration on bottom of previous page).
7. Remove all cables connected to the power connector. Note their location so they will be connected correctly to the new power connector. Refer to drawing OL260003 for the connecting position of the cables on the power connector.
8. Pivot the cover to vertical position and remove, using a Phillips screwdriver, the two screws (C) holding the power connector to the cover.
9. Press the connector clips and remove it from its location.
10. Reverse the above steps to install the new power connector.
11. Test that the bed is powered and that all controls operate properly before returning it to service.

POWER CONNECTOR FUSE REPLACEMENT

Required Tool

Small Slotted Head Screwdriver

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.3D on page 33 for the illustration of this procedure reference points.

1. Remove the power cord from the power connector.
2. Using a small slotted screwdriver, open and slide down the power connector door (D).
3. Still using the small screwdriver, remove the fuse holder (E).
4. Remove the defective fuse and replace it by a new one.

NOTE
Fuses used in the MA105 bed, powered by the 120V electrical system, are of the fast acting type and their rating is 250V, 10A. For beds powered by other electrical system, see section 1.1 “Specifications” for fuse ratings.

5. Replace the fuse holder in its housing and close the door.

NOTE
There is only one way to install the fuse holder. The characters "250V" must be apparent through the door small window. If replaced the wrong way, the bed will not be powered.

6. Test the power switch for proper operation before returning the bed to service.

TOROIDAL TRANSFORMER REPLACEMENT (INTERNATIONAL SERIES BEDS)

Required Tools:

Phillips Screwdriver 1/2" Socket Wrench

Procedure:

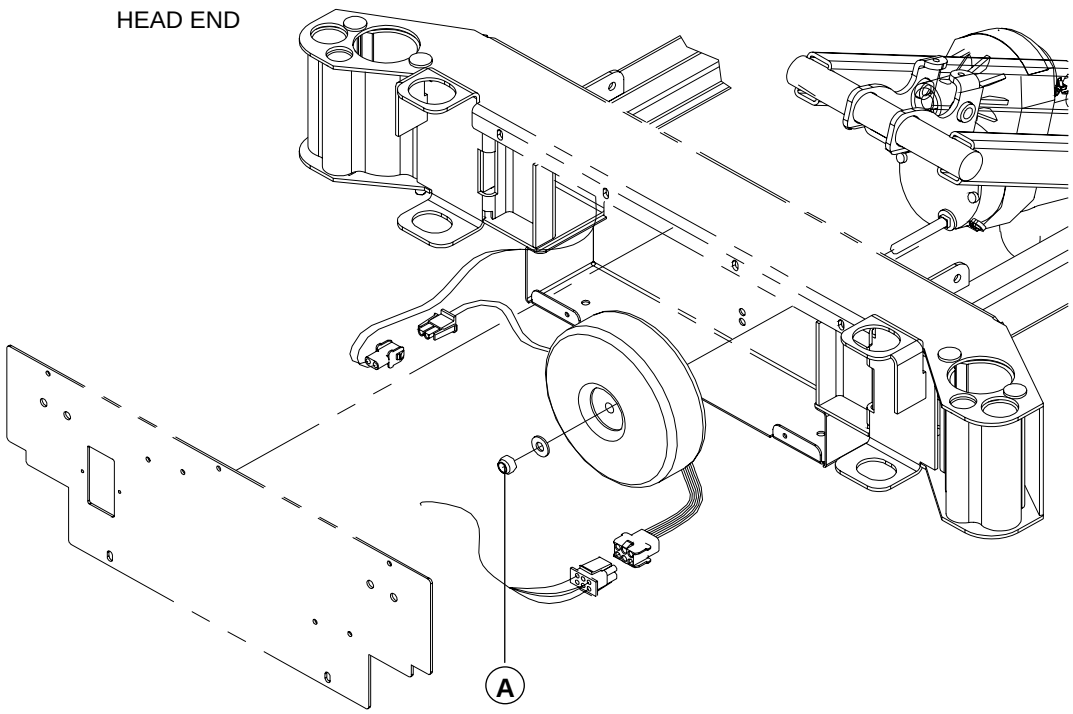


Figure 4.3K

1. Fully raise the bed and apply the brakes.
2. Fully raise the head section.
3. Unplug the bed power cord from the wall socket.
4. Using a Phillips screwdriver, remove the six screws (A, fig. 4.3D, page 33) holding the cover to the head casing. Rotate the cover and lay it flat on the bottom of the casing (see illustration on bottom of page 33).
5. Properly ground yourself (see section 1.4).
6. Using a 1/2" socket wrench, remove the nut/washer (A) holding the transformer to the casing. Disconnect the transformer cables and remove it.

NOTE

Do not tighten the nut too much when replacing the transformer.

7. Reverse the above steps to install the new transformer.
8. Test all the bed controls for proper operation before returning the bed to service.

AUTO CONTOUR MICRO SWITCH REPLACEMENT

Required Tools:

Phillips Screwdriver #1 Phillips screwdriver

Procedure:

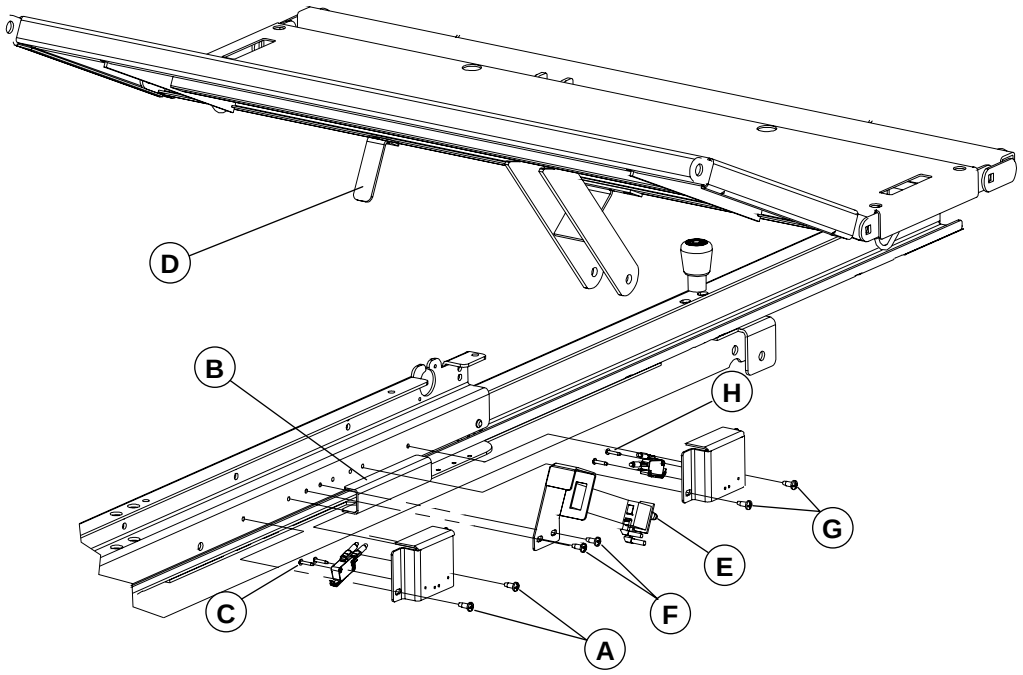


Figure 4.3G

1. Fully raise the bed and apply the brakes.
2. Raise the thigh section and fold the foot section back toward the head end of the bed.

1st micro switch: This switch tells the control board that the Knee Gatch has reached the preset angle for the *Auto Contour* position.

3. Remove the cable wires from the switch. Note their location so they will be connected correctly to the new switch.

4. Since the support has oblong holes to adjust its position, we will position the thigh section in such a way that the correct mounting adjustment will be easy to obtain. Using the Knee Gatch down control, slowly lower the thigh section until only a light contact remains between the activator (D), attached to the knee section, and the switch push button (E). The replacement procedure will start from this point (see opposite illustration).
5. Unplug the bed power cord from the wall outlet.
6. Using a Phillips screwdriver, remove the two screws (F) holding the support to the frame.

NOTE

Mount the support at the same position than the one mentioned at step 4.

7. Press the two switch clips to remove from the support.
8. Reverse the above steps to install the new micro switch.

2nd micro switch: When the Fowler is lowered while the bed in the *Auto Contour* position, this switch tells the control board to start lowering the Knee Gatch.

9. Using a Phillips screwdriver, remove the two screws (G) holding the support to the frame and remove the support.
10. Remove the cable wires from the switch. Note their location so they will be connected properly to the new switch.
11. Using a #1 Phillips screwdriver, remove the two screws (H) holding the micro switch to the support.
12. Reverse the above steps to install the new micro switch.
13. Test the *Auto Contour* positioning for proper operation before returning the bed to service.

CPR MICRO SWITCH REPLACEMENT

Required Tools:

#1 Phillips Screwdriver Phillips Screwdriver

Procedure:

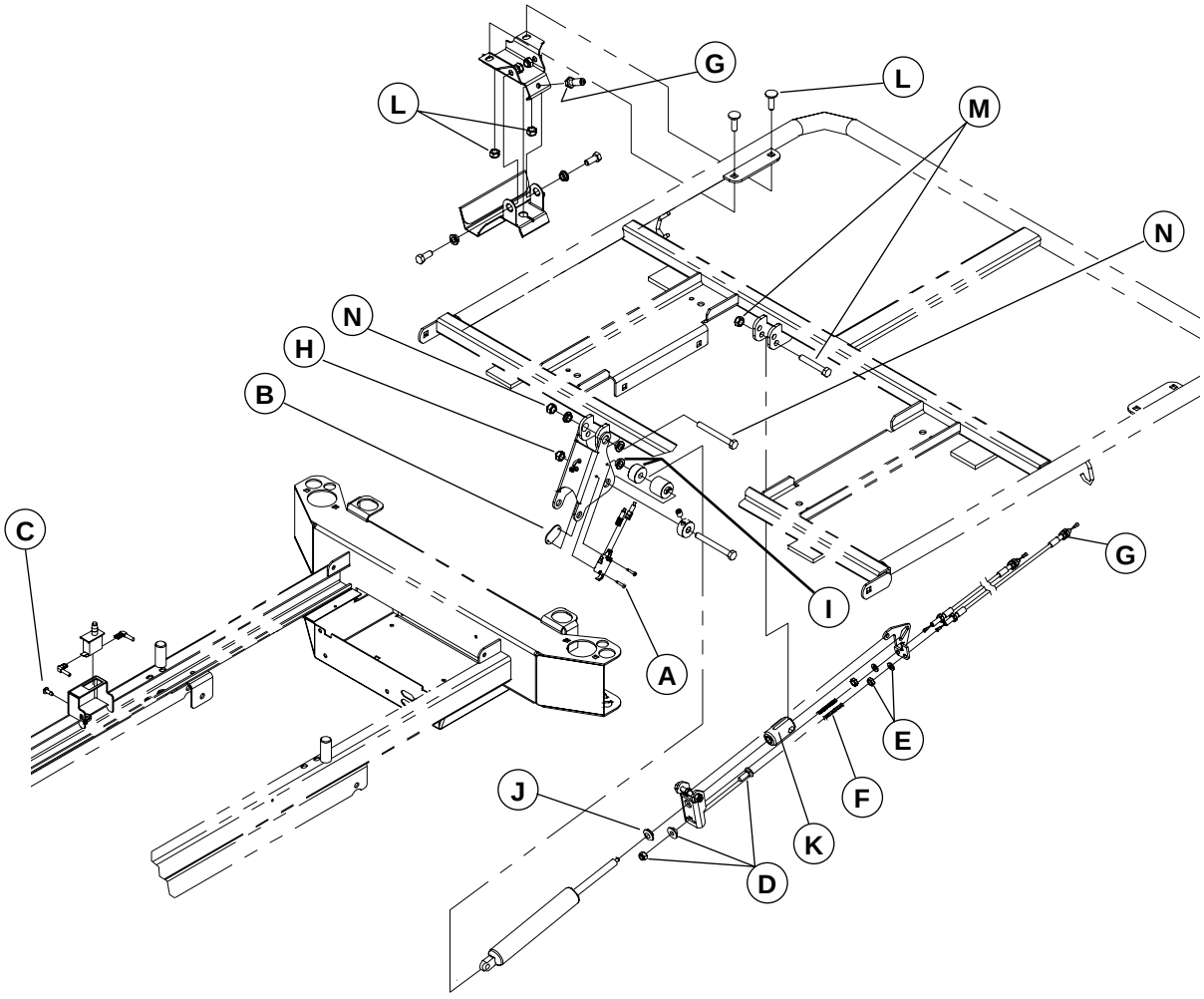


Figure 4.3H

1. Fully raise the bed and apply the brakes.
2. Raise the head siderails.
3. Raise the head section approximately 45°.
4. Unplug the bed power cord from the wall outlet.

- **Micro Switch Attached to the Head Section Lever**

This switch informs on the state of the Fowler actuator (engaged or disengaged) when the CPR emergency release is activated.

5. Using a #1 Phillips screwdriver, remove the two screws (A) holding the micro switch to the head section lever. Recuperate the mounting plate (B). Remove the defective micro switch.
6. Remove the cable wires from the micro switch. Note the location of the wires so they will be connected properly to the new micro switch.
7. Reverse the above steps to install the new micro switch.
8. Test the CPR positioning before returning the bed to service.

- **Micro Switch Attached to the Frame.**

This switch signals to the motor control board that the resetting of the Fowler actuator may begin because the Fowler is completely lowered, and that the lowering to flat of the Knee Gatch may also begin.

9. Using a Phillips screwdriver, remove the screw (C) holding the support to the frame.
10. Remove the cable wires from the micro switch. Note the location of the wires so they will be connected correctly to the new micro switch.
11. Press the switch clips to remove it from the support.
12. Reverse the above steps to install the new micro switch.
13. Test the CPR positioning before returning the bed to service.

CPR ACTIVATION CABLE REPLACEMENT

Required Tool:

7/16" Wrench

Procedure:

NOTE

Unless otherwise indicated, refer to figure 4.3H on page 38 for the illustration of this procedure reference points.

1. Fully raise the bed and apply the brakes.
2. Fully raise the head section and remove the head board.
3. Unplug the bed power cord from the wall outlet.
4. Using a 7/16" wrench, remove the nut/sleeve/bolt (D) holding both ends of the activation cable to the fixed lever.
5. Using a 7/16" wrench, remove the two nuts (E) holding the defective cable jacket to the mobile lever. Remove the cable from the lever and recuperate the spring (F). Try as much as possible not to move the other cable from its position.
6. Unscrew completely the two lock nuts (G) holding the other end of the defective cable to the CPR handle. Remove the cable.

NOTE

Make sure there is no free play at the CPR handle once the new cable is installed.

7. Reverse the above steps to install the new cable.
8. Test the CPR positioning before returning the bed to service.

CPR PNEUMATIC CYLINDER

Required Tools:

1/2" Wrenches (2) 11/16" Wrench

Procedure:

NOTE

Unless otherwise indicated, refer to figure 4.3H on page 38 for the illustration of this procedure reference points.

1. Fully raise the bed and apply the brakes. Fully raise the head section.
2. Unplug the bed power cord from the wall outlet.
3. Using two 1/2" wrenches, remove the nut (H) from the bolt holding the lower end of the pneumatic cylinder.
4. Partially remove the bolt until the lower end of the cylinder is free. Recuperate the shoulder spacer/sleeve (I). Disengage the lower end of the cylinder from the remaining sleeve.
5. Using an 11/16" wrench, loosen the lock nut (J) and unscrew the cylinder completely from the end fitting (K). Note the location of the lock nut before loosening it so the new cylinder will be properly screwed into the end fitting.
6. Reverse the above steps to install the new cylinder.
7. Test the CPR mechanism for proper operation before returning the bed to service.

4.4 BASE MAINTENANCE PROCEDURES

BRAKE/STEER PEDAL REPLACEMENT

Required Tools:

1/2" Socket Wrench Soft Hammer

Procedure:

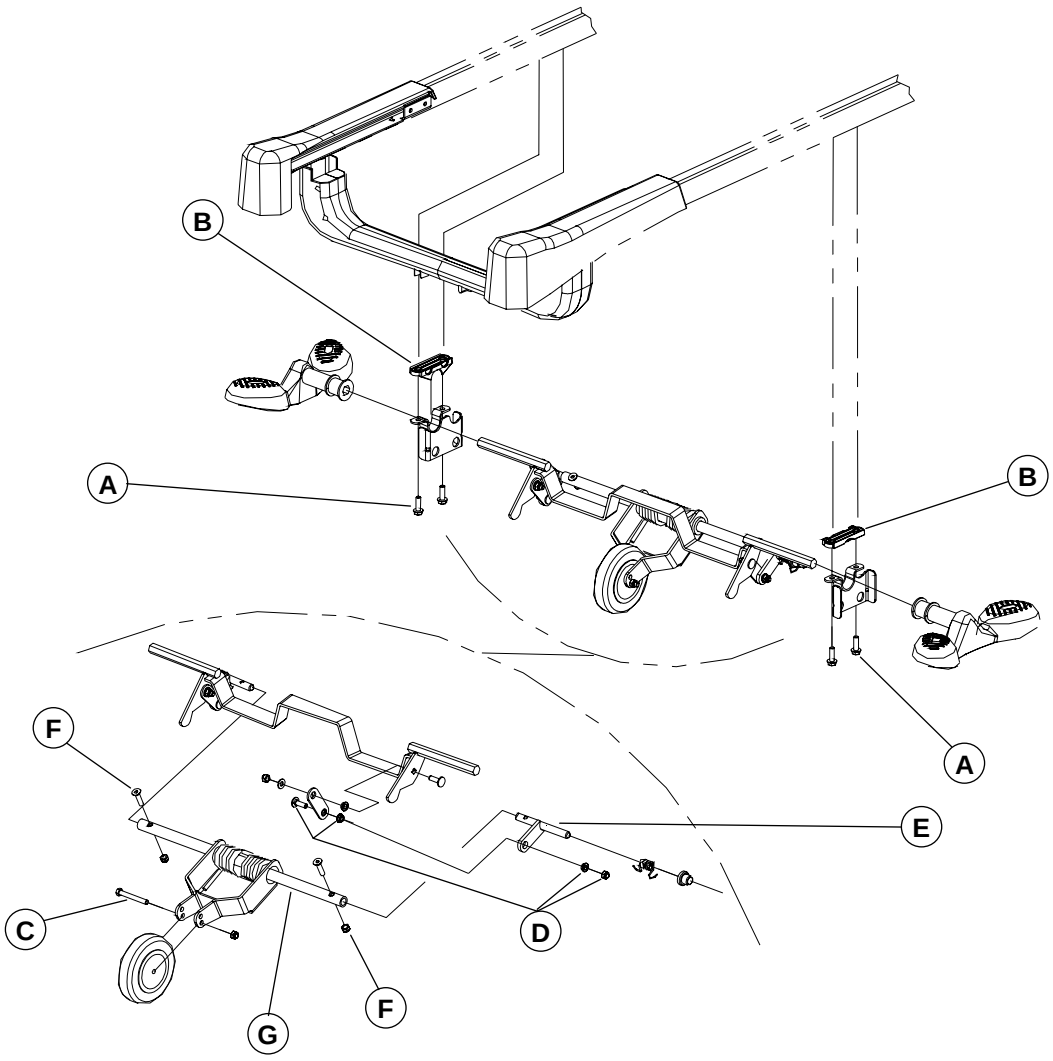


Figure 4.4A

1. Fully raise the bed.
2. Unplug the bed power cord from the wall outlet.
3. Remove the optional 5th wheel hood.

NOTE

Be sure to replace the hood properly by matching the hood and the base Velcro strips.

4. Position the brake/steer pedal to neutral.
5. Using a 1/2" socket wrench, remove the two bolts (A) holding the 5th wheel support on the side of the defective pedal and lay the support down. Recuperate the molded spacer (B).
6. Using a soft hammer, remove the pedal from the activation lever shaft.
7. Reverse the above steps to install the new pedal.

5th WHEEL CASTER REPLACEMENT

Required Tools:

1/2" Wrenches (2)

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.4A on page 40 for the illustration of this procedure reference points.

1. Fully raise the bed.
2. Unplug the bed power cord from the wall outlet.
3. Remove the optional 5th wheel hood.

NOTE
Be sure to replace the hood properly by matching the hood and the base Velcro strips.

4. Position the brake/steer pedal to neutral.
5. Using two 1/2" wrenches, remove the nut/bolt (C) holding the caster to the swing arm.
6. Reverse the above steps to install the new caster.

5th WHEEL ASSEMBLY REPLACEMENT

Required Tools:

1/2" Socket Wrench Soft Hammer

Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.4A on page 40 for the illustration of this procedure reference points.

1. Fully raise the bed.
2. Unplug the bed power cord from the wall outlet.
3. Remove the optional 5th wheel hood.

NOTE
Be sure to replace the hood properly by matching the hood and the base Velcro strips

4. Position the brake/steer pedal to neutral.
5. Using a 1/2" socket wrench, remove the two nuts/shoulder spacers/washers/bolts (C1, fig. 4.4B, page 43) holding the brake rods to the locking levers on both sides of the mechanism. If the optional four-wheel brake system is present on the bed, also remove the fasteners holding the two other brake rods to the locking levers.
6. Using a 1/2" socket wrench, remove the two bolts (A) holding each side of the 5th wheel mechanism to the base. Recuperate the molded spacers (B). Remove the assembly.
7. Using a soft hammer, remove the two brake/steer pedals from the activation lever shafts.
8. Recuperate the two locking levers (D, fig. 4.4B, page 43).
9. Reverse the above steps to install the new 5th wheel assembly.
10. Test the 5th wheel before returning the bed to service.

5th WHEEL SWING ARM ASSEMBLY REPLACEMENT

Required Tools:

1/2" Socket Wrench 1/2" wrenches (2) 3/16" Allen Key

Procedure:

NOTE

Unless otherwise indicated, refer to figure 4.4A on page 40 for the illustration of this procedure reference points.

1. Fully raise the bed.
2. Unplug the bed power cord from the wall outlet.
3. Remove the optional 5th wheel hood.

NOTE

Be sure to replace the hood properly by matching the hood and the base Velcro strips.

4. Position the brake/steer pedal to neutral.
5. Using a 1/2" socket wrench, remove the nut/shoulder spacer/washer/bolt (C1, fig. 4.4B, page 43) holding the brake rod to the locking lever on the right side of the 5th wheel mechanism. If the optional four-wheel brake system is present on the bed, also remove the fasteners holding the other brake rod to the locking lever.
6. Using a 1/2" socket wrench, remove the two bolts (A) holding the right 5th wheel support to the base. Lay the support down and recuperate the molded spacer (B).
7. Using two 1/2" wrenches, remove the nut/shoulder spacers/bolt (D) holding the right torsion lever (E) to the lower part of the right counter lever.
8. Using a 1/2" wrench and a 3/16" Allen key, remove the two nuts/Allen screws (F) holding the torsion levers (E) to both ends of the torque shaft (G).

NOTE

At reassembly, screw down the Allen screws before installing the nuts.

9. Disengage the swing arm assembly from the torsion levers and remove it.
10. Using two 1/2" wrenches, remove the nut/bolt (C) holding the caster to the swing arm and replace the caster on the new swing arm assembly.
11. Reverse the above steps to install the new swing arm assembly.
12. Test the 5th wheel before returning the bed to service.

BED CASTER REPLACEMENT

Required Tools:

Jack Stand Long Nose Pliers 1/2" Wrench

Procedure:

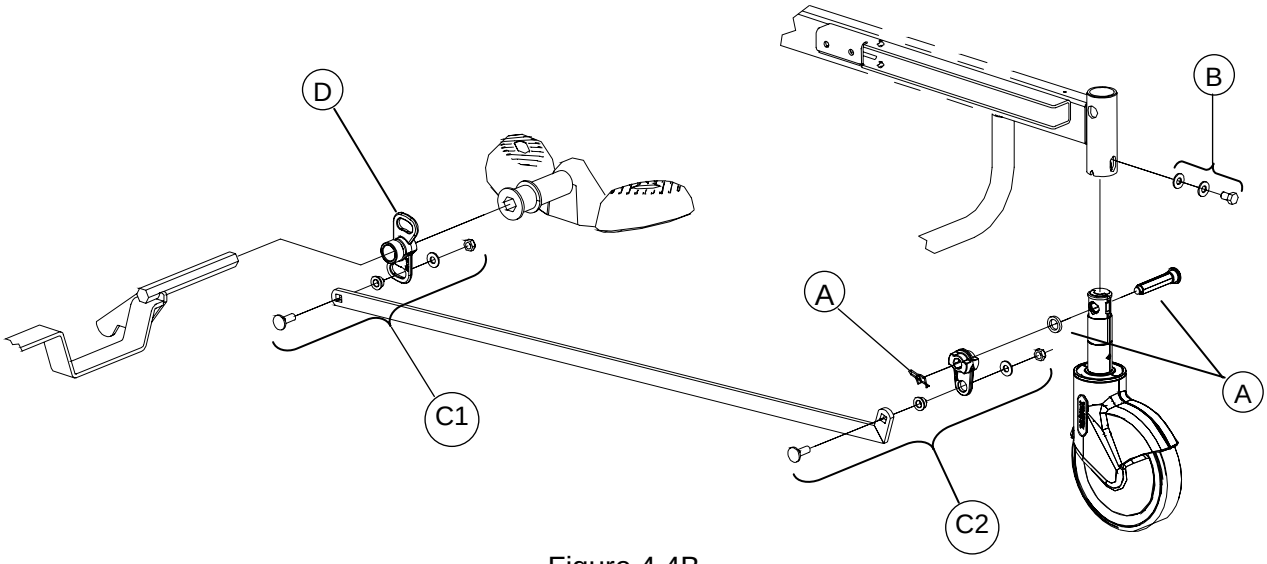
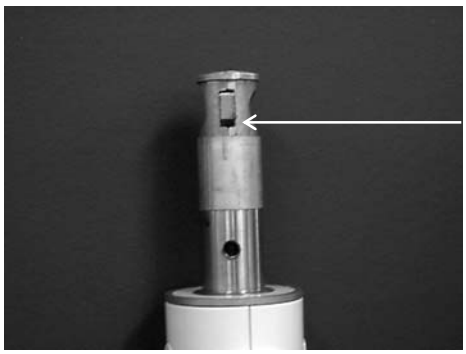


Figure 4.4B

1. Fully raise the bed.
2. Position the brake/steer to neutral.
3. Install a jack stand under the frame where the defective caster is.
4. Remove the wheel cover.
5. Lower the bed until the caster is six inches off the ground.
6. Unplug the bed power cord from the wall outlet.
7. If the caster is part of the braking mechanism, remove, using long-nose pliers, the rue ring cotter/washer/locking axle (A) linking the caster shaft to the locking lever and brake rod.



NOTE
The shaft of a caster that is part of the braking mechanism must be properly oriented before mounting it to the base. The opposite illustration shows the side of the shaft that should be facing the inside of the bed. It is the side showing the largest hole below the cam in the neutral position.

8. Using a 1/2" wrench, remove the bolt/washers (B) holding the caster to the base.

NOTE
Before tightening the bolt (B), make sure the shaft is completely inserted into the mounting socket.

9. Reverse the above steps to install the new caster.

BRAKE ROD REPLACEMENT

Required Tool:

1/2" Wrench

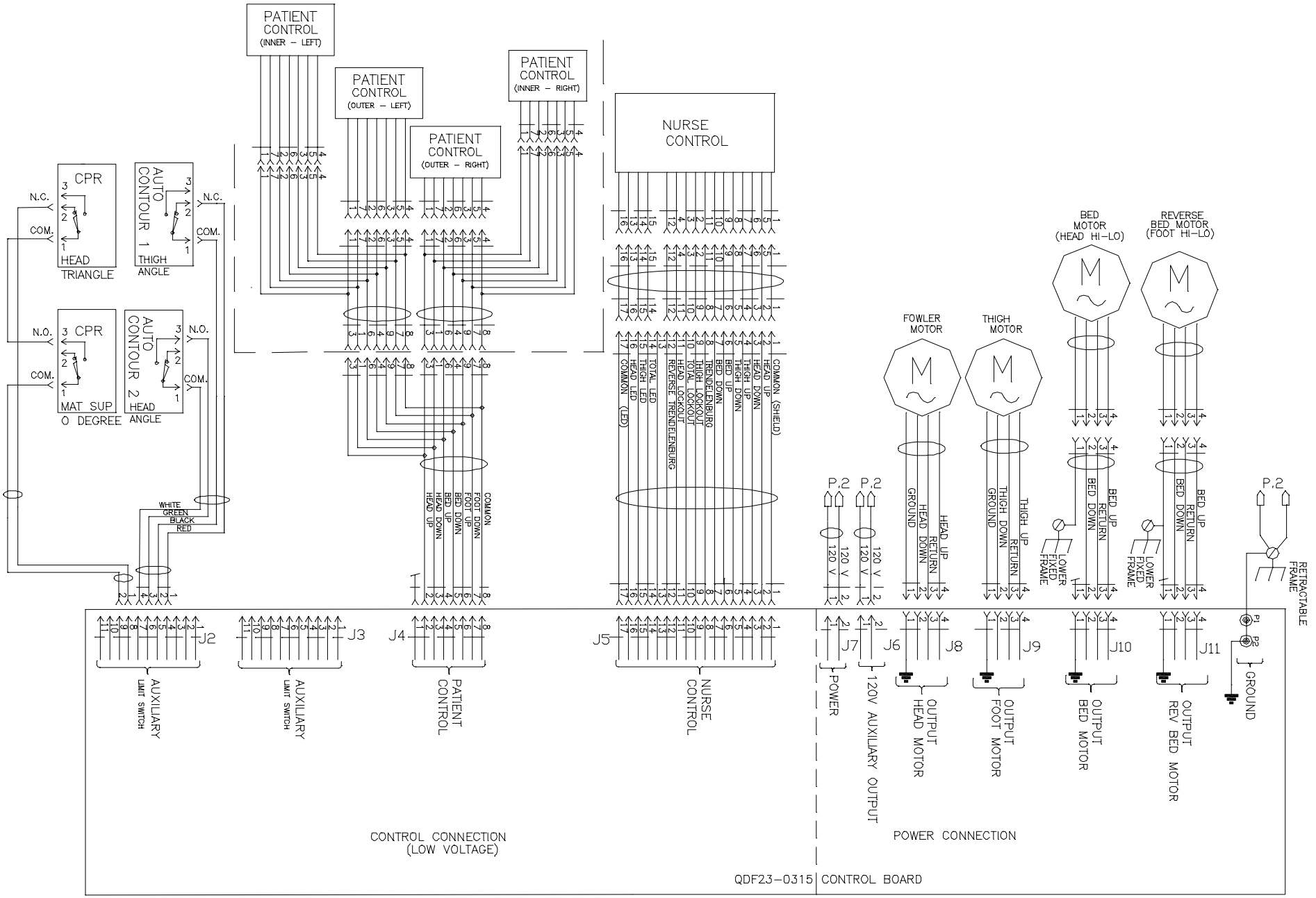
Procedure:

NOTE
Unless otherwise indicated, refer to figure 4.4B on page 43 for the illustration of this procedure reference points

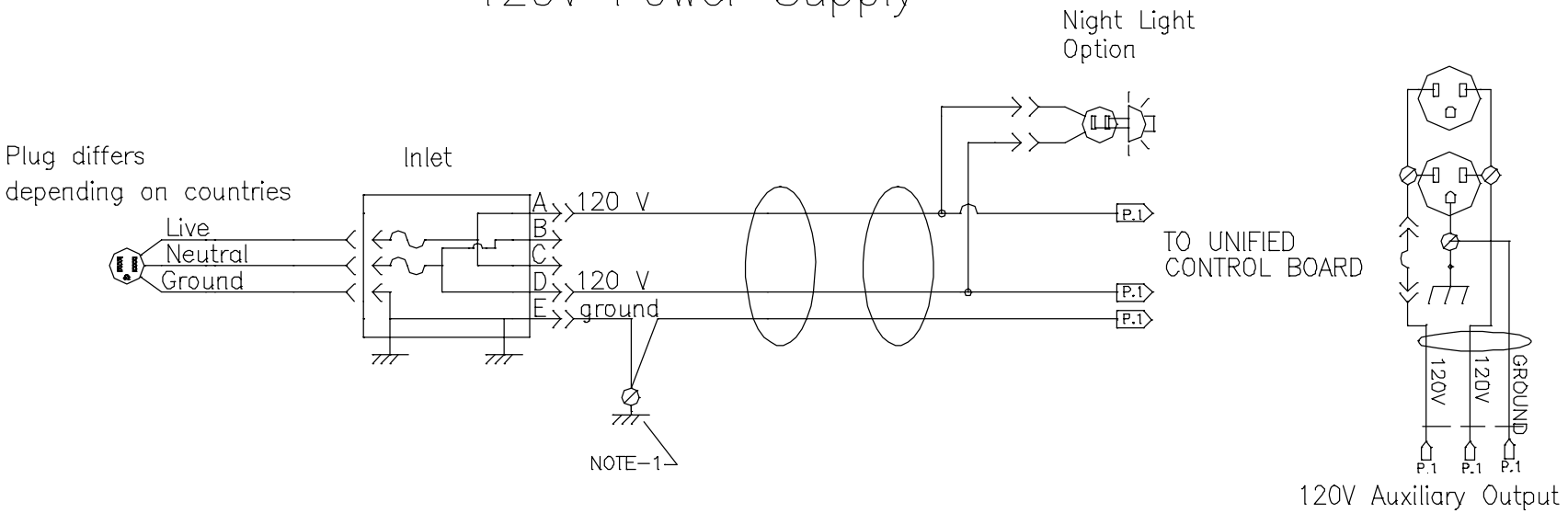
1. Fully raise the bed.
2. Remove the optional 5th wheel hood.

NOTE
Be sure to replace the hood properly by matching the hood and the base Velcro strips

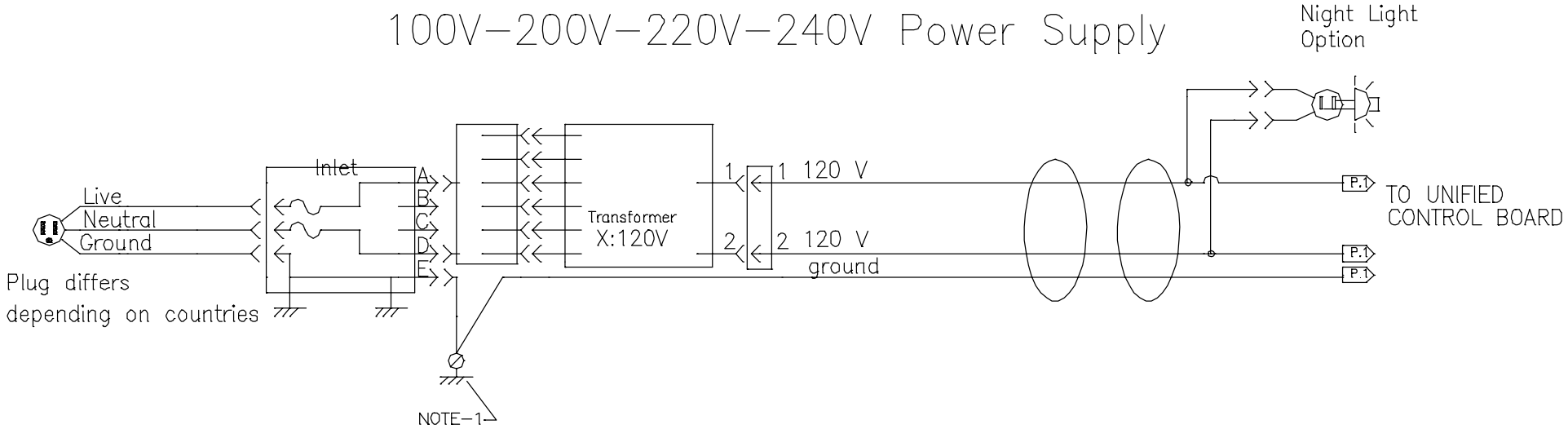
3. Using a 1/2" wrench, remove the nut/shoulder spacer/washer/bolt (C1,C2) holding each end of the brake rod.
4. Remove the defective rod.
5. Reverse the above steps to install the new brake rod.
6. Test the brakes before returning the bed to service.

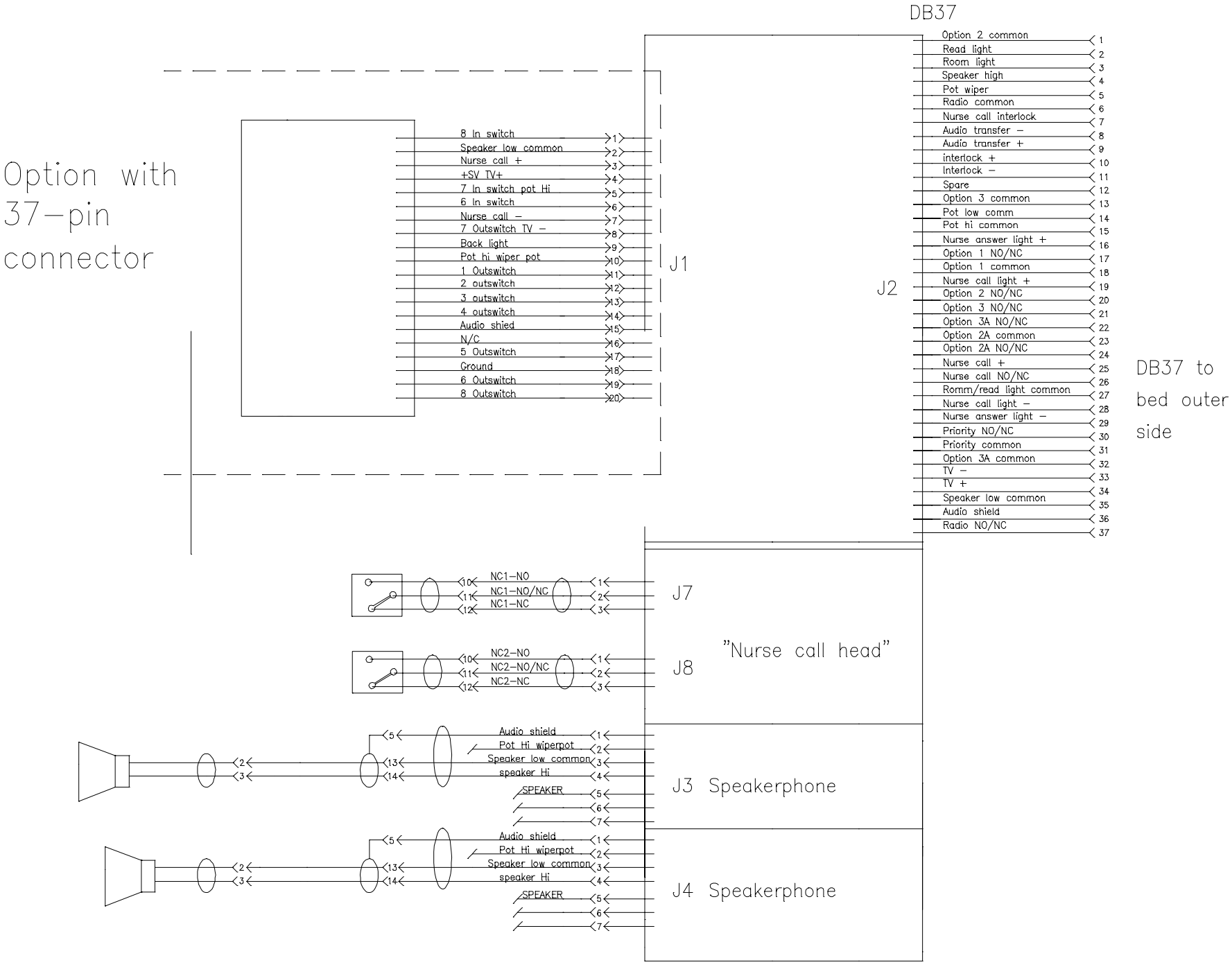

PATIENT CONTROL (INNER – LEFT)
PATIENT CONTROL (OUTER – LEFT)
PATIENT CONTROL (OUTER – RIGHT)
PATIENT CONTROL (INNER – RIGHT)
NURSE CONTROL
CPR
HEAD TRIANGLE
AUTO CONTOUR 1
THIGH ANGLE
CPR
MAT SUP 0 DEGREE
AUTO CONTOUR 2
HEAD ANGLE
N.C.
N.O.
COM.
WHITE
GREEN
BLACK
RED
COMMON (SHIELD)
HEAD UP
HEAD DOWN
THIGH UP
THIGH DOWN
BED UP
BED DOWN
TRENDELENBURG
THIGH LOCKOUT
TOTAL LOCKOUT
HEAD LOCKOUT
REVERSE TRENDELENBURG
TOTAL LED
THIGH LED
HEAD LED
COMMON (LED)
COMMON
FOOT DOWN
FOOT UP
BED DOWN
BED UP
HEAD DOWN
HEAD UP
FOWLER MOTOR
THIGH MOTOR
BED MOTOR (HEAD HI–LO)
REVERSE BED MOTOR (FOOT HI–LO)
HEAD UP
RETURN
HEAD DOWN
GROUND
THIGH UP
THIGH DOWN
BED UP
BED DOWN
LOWER FIXED FRAME
RETRACTABLE FRAME
120 V
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
P1
P2
AUXILIARY LIMIT SWITCH
PATIENT CONTROL
NURSE CONTROL
POWER
120V AUXILIARY OUTPUT
OUTPUT HEAD MOTOR
OUTPUT FOOT MOTOR
OUTPUT BED MOTOR
OUTPUT REV BED MOTOR
GROUND
CONTROL CONNECTION (LOW VOLTAGE)
POWER CONNECTION
QDF23–0315 CONTROL BOARD

120V Power Supply



100V-200V-220V-240V Power Supply




Option with 37–pin connector
DB37
Option 2 common
Read light
Room light
Speaker high
Pot wiper
Radio common
Nurse call interlock
Audio transfer –
Audio transfer +
interlock +
Interlock –
Spare
Option 3 common
Pot low comm
Pot hi common
Nurse answer light +
Option 1 NO/NC
Option 1 common
Nurse call light +
Option 2 NO/NC
Option 3 NO/NC
Option 3A NO/NC
Option 2A common
Option 2A NO/NC
Nurse call +
Nurse call NO/NC
Romm/read light common
Nurse call light –
Nurse answer light –
Priority NO/NC
Priority common
Option 3A common
TV –
TV +
Speaker low common
Audio shield
Radio NO/NC
J2
DB37 to bed outer side
8 In switch
Speaker low common
Nurse call +
+SV TV+
7 In switch pot Hi
6 In switch
Nurse call –
7 Outswitch TV –
Back light
Pot hi wiper pot
1 Outswitch
2 outswitch
3 outswitch
4 outswitch
Audio shied
N/C
5 Outswitch
Ground
6 Outswitch
8 Outswitch
J1
NC1–NO
NC1–NO/NC
NC1–NC
J7
NC2–NO
NC2–NO/NC
NC2–NC
J8
"Nurse call head"
Audio shield
Pot Hi wiperpot
Speaker low common
speaker Hi
SPEAKER
J3 Speakerphone
Audio shield
Pot Hi wiperpot
Speaker low common
speaker Hi
SPEAKER
J4 Speakerphone