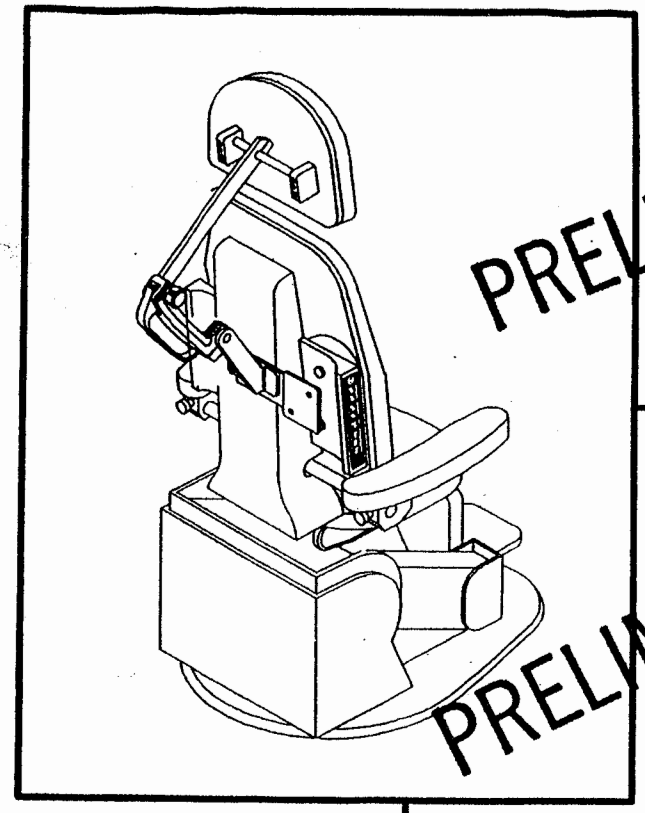
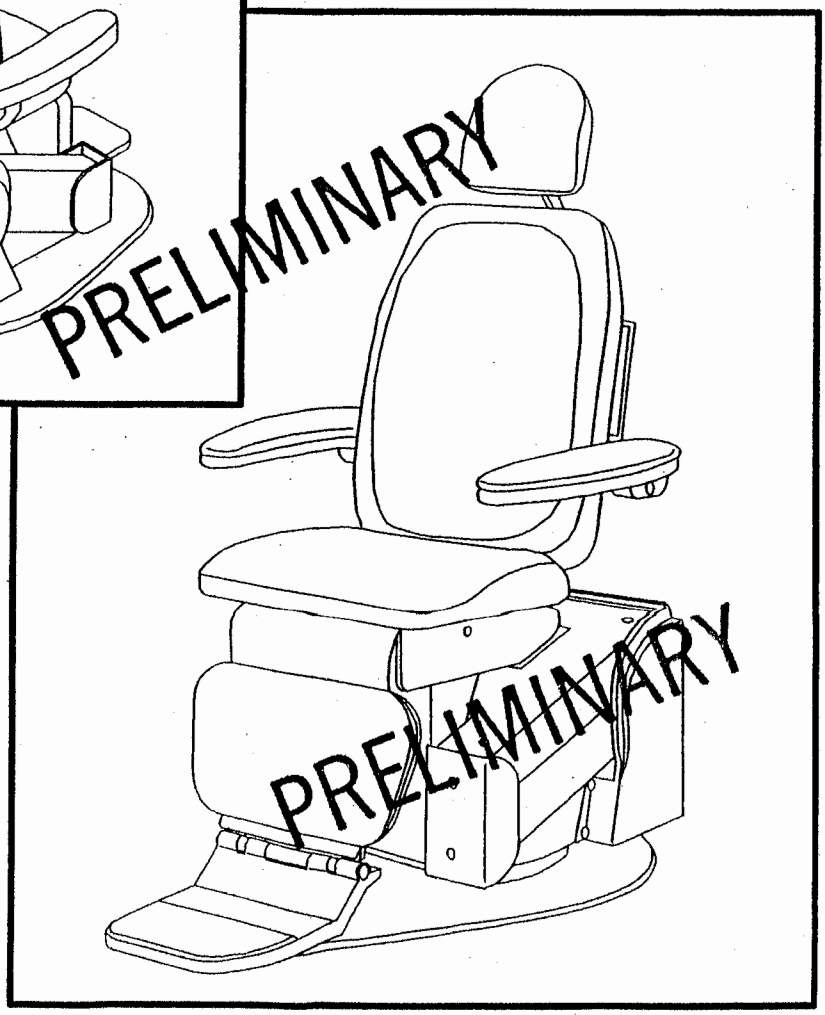
GLOBAL SURGICAL™ CORPORATION | SMR® DIAGNOSTICS

SMR MaxiChair® Select Examination Chair





Model 2700

110015018

SERVICE MANUAL - MAXICHAIR SELECT

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Precautions and Warnings

This symbol on the product is an attention symbol, alerting the user to to read the Owner's Manual for important installation or operating instructions, or important safety information, which should be read carefully.

This symbol on the product indicates a potential electrical shock hazard, and alerts the user to read the Owner's Manual for important safety information on how to avoid the hazard.

(1) This symbol appearing in the illustrations corresponds to the numbered step in the text.

WARNING: ***Disconnect all electrical power from the chair before attempting to service the internal components of the chair. There is a risk of electrical shock resulting in injury or death if the power is not disconnected.***

WARNING: ***Never adjust the Pressure Relief Value to the fully seated clockwise position. SEVERE DAMAGE to the hydraulic pump can result. The maximum adjustment is 3/4 turn from the fully seated clockwise position.***

WARNING: ***Failure to make sure Fuseholder is properly snapped back into the secure position can result in intermittent function of the chair.***

WARNING: ***Upon exiting the chair, if the occupant places his or her weight on ends of both of the Armrests at the same time and presses downward to raise themselves up, the Pivot Bracket attachment screw may break.***

CAUTION: ***The only time a jumper should be placed in JUMPER, CYCLE ENABLE position is when the limit switch flags are being adjusted or when the chair is being placed into cycle test.***

CAUTION: ***Do not overtighten the adjustment screw. Overtightening adjustment screw may cause pin in headrest assembly to break, removing all friction.***

CAUTION: ***Slight adjustments to the manifold can translate to major changes in the performance of the hydraulic system. Make small adjustments, check the performance, and make further adjustments as necessary.***

CAUTION: ***There have been cases where the 1/4" pin has also broken from the weight being applied to the front of both Armrests. These cases are rare but have prompted a design change to eliminate this situation.***

CAUTION: ***In the event that there is a burr on the Armrest Shaft or if the 5/16" pin is broken inside the Pivot Arm Bracket the shaft may not slide through the bracket and may have to be cut in order to remove it. Should this happen, use a hacksaw and cut through the shaft on both sides of the Pivot Arm Bracket and pull out from both sides.***

CAUTION: ***When installing a new Ribbon Cable Assembly, be sure not to allow the cable to become kinked or pinched by any of the cable clamps.***

CAUTION: ***Tap Lubricant (3-in-1 Oil or equivalent) is absolutely necessary in this procedure to prevent the tap from breaking off in the casting.***

NOTE: *There are two fuses located in each fuse holder. The fuse in the front or closest to the cover, is a spare fuse. The fuse that will need replacing is in the back of the clip.*

NOTE: *On some chairs, if the Pressure Relief Valve was adjusted too far clockwise, excessive pressure could be created exceeding the pump rating. This could result in hesitation or chatter in chair movement.*

NOTE: *The Hydraulic Pump does not activate during SEAT DOWN movement.*

NOTE: *If chatter is present in BackUp or Back Down movement, it may be related to the input valves being adjusted all the way flush. During all repair or adjustments to the chair with the back cover off, tthese valaves should be adjusted to flush.*

NOTE: *The MaxiChair Select Controller is Multitasking, which means a Seat Function can take place at the same time as a Back Function. If more than one function is being performed at a time, combine the conditions from the above chart to get the proper Status LED results.*

NOTE: *Chair will start to move.*

NOTE: *It is a good idea to mark the cables using a small piece of masking or other tape to ensure they get reconnected to the proper places on the new PC board.*

NOTE: *Do not completely remove the left side Ribbon Cable at this time.*

NOTE: *The Pivot Bracket on current production models has been made thicker and a 5/16" pin secured by a "E" clip on both ends has been installed. These newer Pivot Brackets and Pins are also available for replacement upgrades.*

NOTE: *Worn or cracked Mounting Clevis components could produce vibrations or even cause the chair to jerk unexpectedly during the operation of the hydraulic cylinder.*

NOTE: *Use care when installing the single screw on the front of the Manifold Assembly. There is a washer (Retaining Flange 107-037-223) included with the screw which is used because of the slotted hole on the front bracket.*

NOTE: *In order to remove the Emergency Stop Caliper Brake Assembly both the Ribbon Wire Connector and the Power Cord must be pressed through the Cord Grommet in the Brake Disk. The Ribbon Wire Connector can be manipulated by turning the connector along side of the ribbon cable and pressed downward through the grommet. The Power Cord Plug, however, will not fit through the grommet and must be removed from the Power Cord in order to complete this procedure. A Pin Extractor will be required to remove the Power Cord Plug from the the power cord.*

Chapter 1. General Service Information

1.1. Chair Specifications

The SMR® Maxi®Chair Select 2700 Examination Chair is designed to provide a comfortable, adjustable platform for conducting routine examinations. The chair is adjustable from an upright position, 90° above horizontal, to a slight decline (Trendelenberg position) of 10° below horizontal. The arms are fully articulated to move with the chair position. The manual headrest may be raised or lowered and moved forward or backward as well as locked into the position set. The arms swing up and out o the way and the footrest folds up for easy patient entry and exit from the chair. The chair is equipped with illuminated solid state controls located on both sides of the chair back for easy access. A Child Safety Disable Feature, disables the solid state controls when the chair is left unattended. The chair may be rotated manually and locked into position using an hydraulically actuated rotational lock. The control for the rotational lock is located on each of the control panels on both sides of the chair back. The chair is powered by a smooth, quiet, hydraulic motor driven by a microprocessor control board.

Table 1-1, below, lists the chair specifications and Figure 1-1 on the following page, shows the clearance requirements and maximum angles possible for the chair.

Table 1-1. Chair Specifications

ITEM	SPECIFICATIONS
Electrical Requirements: Input: Fuse: * w/optional Solarlite™ -**w/o optional Solarlite™	 115 VAC +/-10%, 60 Hz, 7.75 Amps * 115 VAC +/-10%, 60 Hz, 7.5 Amps ** (2 ea.) 5 x 20 MM, 250V, 10 Amp, Time Delay (2 ea.) 5 x 20 MM, 250V, 2 Amp, Time Delay
Shipping Weight	Approximately: 400 lbs. (182 KG)
Base Dimensions	35.5" x 26" (90.17 x 66.04 cm)
Overall Height	50.75" (128.90 cm)
Maximum Lift Capacity	400 + lbs. (182 + KG)
Range of Chair Back Angle Adjustment Maximum Upright Position Maximum Reclined Position/ Trendelenberg Position	 90° Above Horizontal 10° Below Horizontal
Chair Seat Angle (Fixed)	3° Tilted Back
Range of Seat Elevation Minimum Elevation Maximum Elevation	17" (43.18 cm) 19" (48.26 cm) LX 21" (53.34 cm) 36" (91.44 cm) 38" (96.52 cm)
Required Working Space for Chair Upright Position Reclined Position	 37.25" X 27.25" (94.61 cm X 69.21 cm.) 75" X 27.25" (190.5 cm X 69.21 cm.)
Environmental Factors: Storage, Transport and Operation Operating Temperatures Storage Temperatures Non-condensing Relative Humidity Operating Storage	 +50° F (10° C) to 90° F (32° C) -20° F (-28° C) to +150° F (65° C) 20% to 85% 20% to 85%

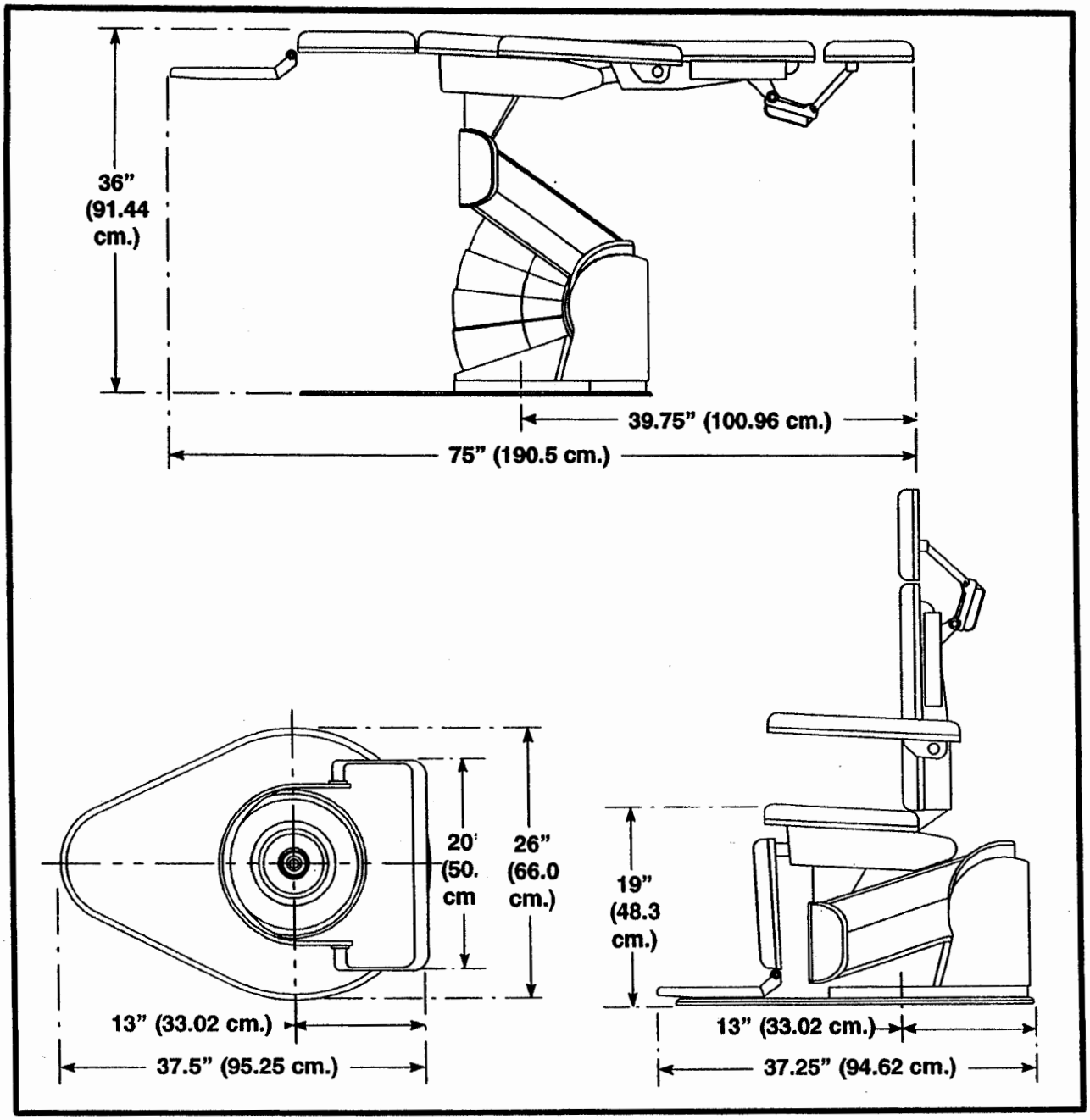

Figure 1-1. Overall Dimensions

1.2. Optional Equipment

Optional accessories for the SMR® MaxiChair Select S2700 Examination Chair include a footswitch to supplement the controls on the sides of the chair back. The SMR® SOLARLITE™ is available and can be installed on an ambidextrous bracket to accommodate left-handed or right-handed operators.

Chapter 2. Service and Warranty Information

2.1. Warranty Information

Global Surgical™ Corporation warranty information is printed on the back side of your invoice. Please refer to your invoice for specific terms and conditions which apply to the particular product you purchased. Should you experience any malfunction, you should contact the Global Surgical Technical Services Department for assistance.

2.1.1. Technical Services Department

If you have questions which are not covered in this manual, please call the Global Surgical Technical Services Department as listed below:

- From St. Louis, MO call: ..... 636-861-5243 or 636-861-5245
- From elsewhere in the U.S.A. call: 1-800-861-3610
- From Outside the U.S.A. either call: ..... 1-636-861-5243 or 1-636-861-5245
- FAX number 1-636-861-5284

The staffing hours for the Global Surgical Technical Services Department are Monday through Friday from 8:00 am to 5:00 pm Central Time.

2.1.2. Internet Access

The Global Surgical Technical Services Department can be reached during non-staffing hours by using the World Wide Web at: http://www.globalsurgical.com

The Global Surgical Technical Services web site has several FAQ's (frequently asked questions) about products and services.

The Global Surgical Technical Services Department can also be reached by email at the following address: techservices@globalsurgical.com

2.1.3. Service Information

In the event of any malfunction, you should immediately contact the Global Surgical Technical Services Department for assistance. A **Customer Identification Number** and **Customer Order Number** will be needed when contacting the Technical Services Department. These numbers are printed on your invoice. To save time, in the event service is needed, record these numbers in the spaces provided inside the front cover of this manual.

A **Return Authorization Number** must be obtained from the Global Surgical Technical Services Department prior to returning the product for repair. The following information must accompany all returned units:

1. Your Name, Address, and Telephone Number
2. The Return Authorization Number
3. A description of the problem
4. Proof of the date of shipment

Ship or otherwise return the product, with transportation and insurance costs prepaid to:

Global Surgical™ Corporation
3610 Tree Court Industrial Blvd.
St. Louis, Missouri 63122

Attention: Technical Services Department

2.1.4. User Comments

Global Surgical™ Corporation would appreciate any comments and suggestions you have concerning this product or this manual. Please send your comments to:

Global Surgical™ Corporation
Customer Services Department
3610 Tree Court Industrial Blvd.
St. Louis, Missouri 63122

The Global Surgical Customer Services Department can also be reached by email at the following address: global@globalsurgical.com

2.2. Manifold Adjustments

The SMR Model 2700 Maxichair Select Examination Chair is controlled by a hydraulic motor. The hydraulics in the chair are assembled and tested at the factory. Should the controls malfunction or not perform as expected, the following adjustments can be made.

WARNING: ***Disconnect all electrical power from the chair before attempting to service the internal components of the chair. There is a risk of electrical shock resulting in injury or death if the power is not disconnected.***

Tools Required:

- No. 1 Phillips Screwdriver
- Flat Blade Screwdriver

To make adjustments to the Hydraulic Manifold, proceed as follows:

5. Disconnect the electrical power from the chair.
6. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 2-1.
7. Remove the rear chair housing.

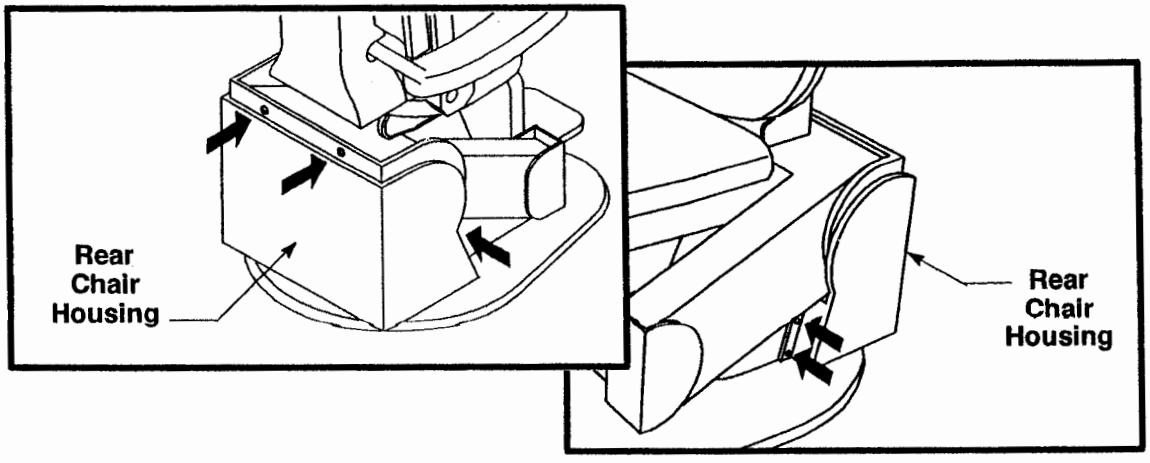

Figure 2-1. Removing the Rear Chair Housing

8. Using a flat blade screwdriver, make the following adjustments to the hydraulic manifold. Refer to Figure 2-2 and proceed as follows:

CAUTION: ***Slight adjustments to the manifold can translate to major changes in the performance of the hydraulic system. Make small adjustments, check the performance, and make further adjustments as necessary.***

Pressure Relief Valve: The Pressure Relief Valve controls the hydraulic pressure for the overall hydraulic system. To decrease system pressure, adjust this screw counterclockwise 1-1/2 turns from the fully seated position..

NOTE: *On some chairs, if the Pressure Relief Valve was adjusted too far clockwise, excessive pressure cou be created exceeding the pump rating. This could result in hesitation or chatter in chair movement.*

WARNING: ***Never adjust the Pressure Relief Value to the fully seated clockwise position. SEVERE DAMAGE to the hydraulic pump can result. The maximum adjustment is 1-1/2 turns from the fully seated clockwise position.***

Seat Down Adjustment: This adjustment controls the speed that the seat travels downward towards the floor. To increase the speed, adjust the screw counterclockwise. To decrease the speed, adjust the screw clockwise. 13-15 seconds

NOTE: *The Hydraulic Pump does not activate during SEAT DOWN movement.*

Seat Up Adjustment: This adjustment controls the speed that the seat travels upward toward the ceiling. To increase the speed, adjust the screw counterclockwise. To decrease the speed adjust the screw clockwise.

NOTE: *If chatter is present in BackUp or Back Down movement, it may be related to the input valves being adjusted all the way flush. During all repair or adjustments to the chair with the back cover off, tthese valaves should be adjusted to flush.*

Chair Back Down Adjustments: This adjustment screw regulates the speed at which the back of the chair moves towards the horizontal position. To increase the speed, adjust the screw counterclockwise. To decrease the speed, adjust the screw clockwise. Factory setting is 5 -7 seconds to go from preset pause at 75° to horizontal. *Reminder: Chair won't go to horizontal unless seat is 4"-5" raised from low point.*

Chair Back Up Adjustments: This adjustment screw regulates the speed at which the back of the chair moves towards the vertical position. To increase the speed, adjust the screw counterclockwise. To decrease the speed, adjust the screw clockwise. Factory setting is 5 -7 seconds to go from preset pause at 75° to horizontal. *Reminder: Chair won't go to horizontal unless seat is 4"-5" raised from low point.*

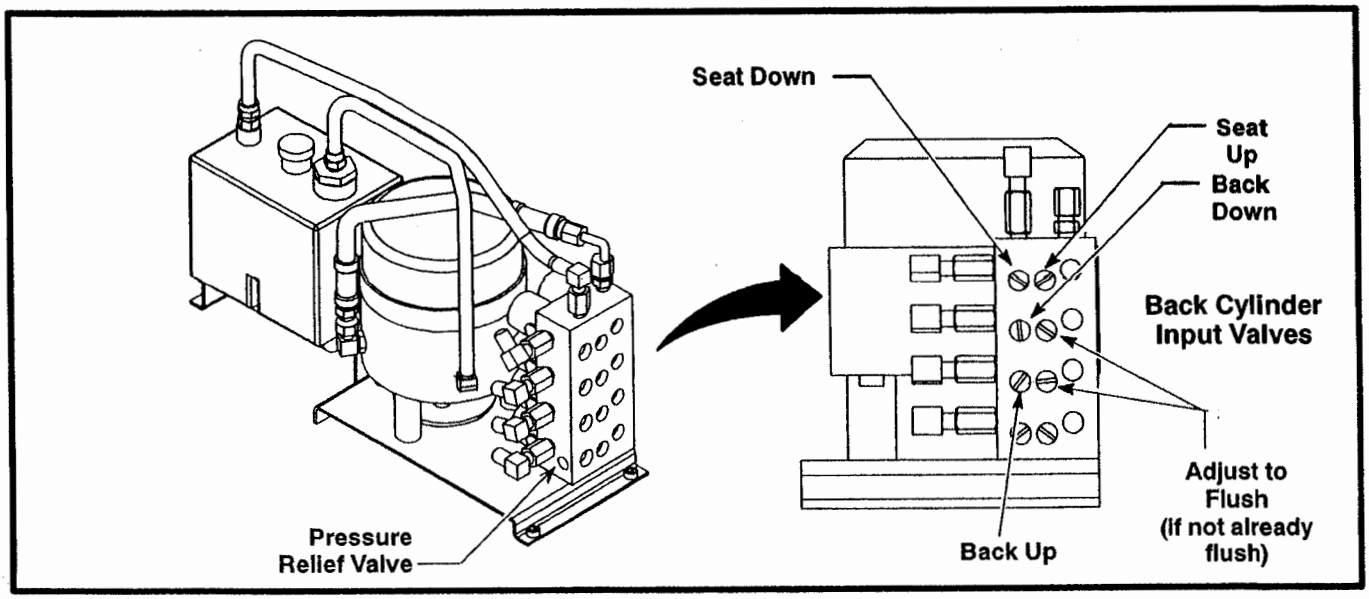

Figure 2-2. Manifold Adjustment Screw Locations

2.3. Fuse Replacement

The SMR Maxichair Model 2700 has four fuses located on the Maxi Selector Controller Box located inside the rear enclosure panels next to the Hydraulic Manifold.

The two top fuses control the electrical system for the chair and the two bottom fuses are for the AC receptacle located on the back of the chair.

WARNING: ***Disconnect all electrical power from the chair before attempting to service the internal components of the chair. There is a risk of electrical shock resulting in injury or death if the power is not disconnected.***

Refer to Figure 2-1 to remove the Rear Chair Housing.

To replace the fuses, refer to Figure 2-3 and proceed as follows:

NOTE: *There are two fuses located in each fuse holder. The fuse in the front or closest to the cover, is a spare fuse. The fuse that will need replacing is in the back of the clip.*

1. To open the fuse holder, press downward on the top. Grasp the cover and pull straight back. Remove the blown fuse from the Fuse Holder. Refer to Table 2-1 for fuse specifications.
2. Visually inspect and use the spare fuse. Place a new fuse in the spare clip in the Fuse Holder. Ensure Fuseholder snaps *up* into place.

WARNING: ***Failure to make sure Fuseholder is properly snapped back into the secure position can result in intermittent function of the chair.***

3. Replace the rear chair housing.
4. Reconnect the electrical power to the chair.

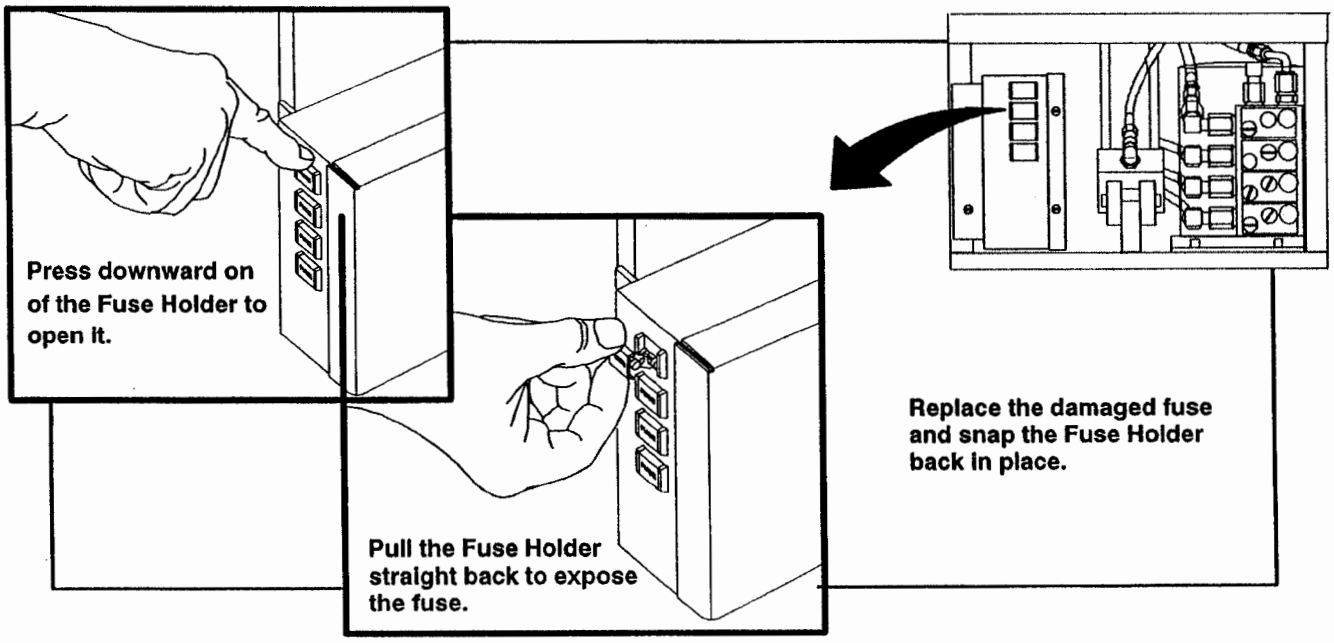

Figure 2-3. Replacing Fuses

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2.4. Maxi Select Controller Features

The Maxi Select Controller on the SMR 2700 Maxichair can be used to service and troubleshoot the chair's electrical system. Refer to Figure 2-4 and Table 2-1 to proceed.

1. Remove the cover to the Maxi Select Controller by using a Phillips screwdriver to remove the Phillips screws attaching it to the controller box.

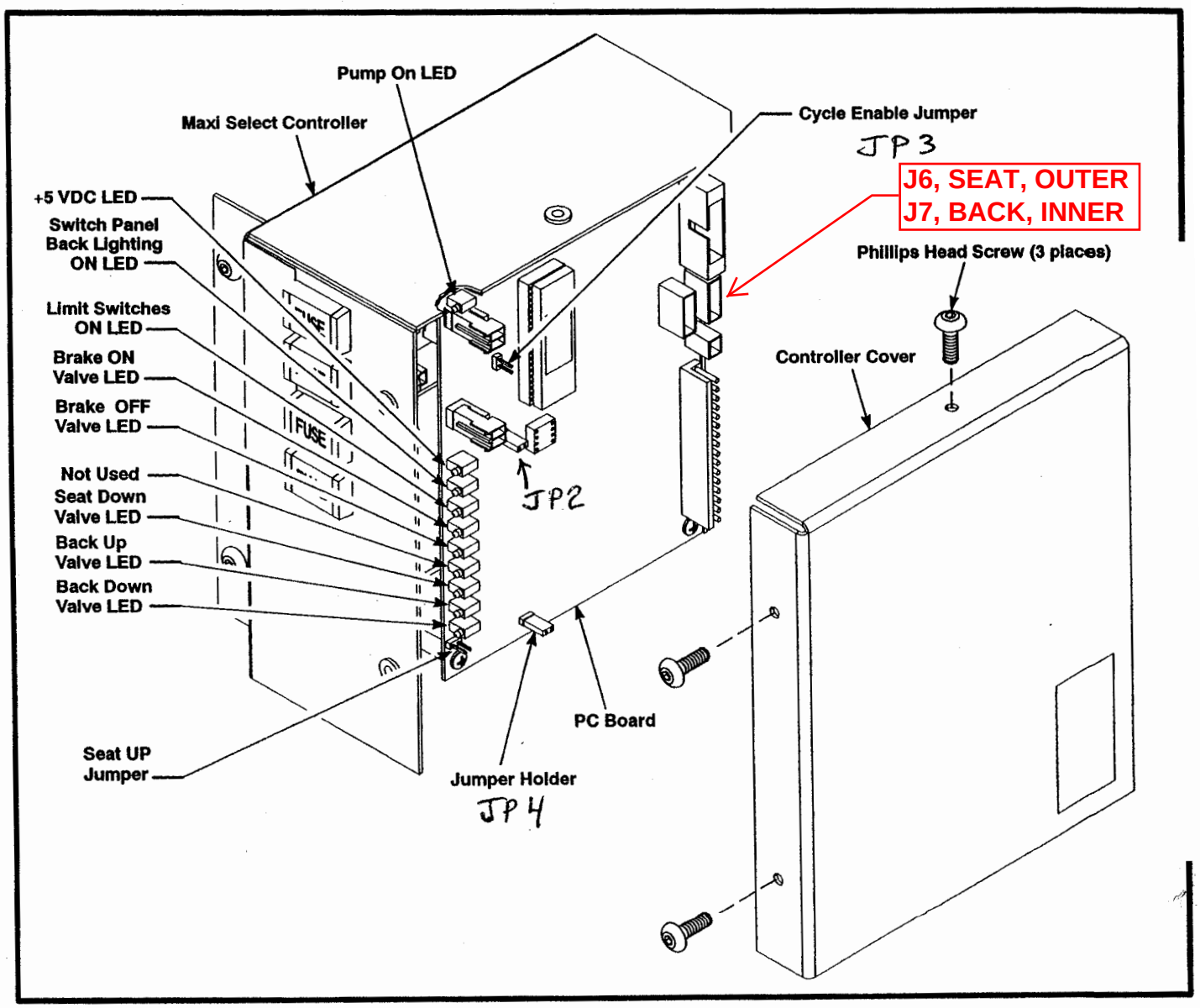


Figure 2-4. Maxi Select Controller Components

2.4.1. Status LED's

1. **Pump ON LED:** This LED is marked "PUMP" on the circuit board. This LED will illuminate any time a basic function of the chair requires hydraulic pressure. The following chart shows the functions that require hydraulic pressure.

	Brake ON	Brake OFF	Seat UP	Seat DOWN	Back UP	Back DOWN
Pump On		✓	✓		✓	✓

✓ = Hydraulic pressure required to operate functions.

2. **+5 VDC LED:** This LED is marked *VD* on the circuit board. It displays the status of the Power Supply resident on the circuit board. When **brightly lit**, the power supply is functioning within tolerance. If the LED appears **dim**, a voltage measurement should be performed. The voltage measurement can be taken between TP2 (ground) and TP3 (VD). The voltage reading should be between 4.80 VDC and 5.12 VDC.
3. **Switch Panel Back-Lighting:** This LED is marked *BACKLIGHT* on the circuit board. This LED and its companion LEDs on the switch panel display the status of the chair.

- **Child Safety Mode:** This LED and it's companions on the switch panel will FLASH in one (1) second intervals when this mode of operation is selected.
- **Cycle Test Mode:** This LED and it's companions will only be lit while the chair is preforming a selected function. Half way through a single cycle, the LEDs will flash OFF, ON and OFF. Once the LEDs go OFF the second time, the chair will not accept any more commands from the switch panel. If a switch is pressed while the chair is preforming a selected function, the cycle test will be halted.
- **Cycle Test Error Mode:** If the chair encounters and error during its cycle testing, the cycle test will stop and the LEDs will flash rapidly.

4. **Limit Switches ON LED:** This LED is marked *LIMITS ON* on the circuit board. This LED is lit when chair back or seat function tests are to be performed. To extend the life on the infrared LEDs on the limit switch boards, they are only turned ON as needed. They can be forced to stay ON by placing a jumper in the JUMPER, CYCLE ENABLE position.

CAUTION: ***The only time a jumper should be placed in JUMPER, CYCLE ENABLE position is when the limit switch flags are being adjusted or when the chair is being placed into cycle test.***

5. **Brake ON Valve LED:**This LED is marked *BRAKE ON* on the circuit board. This LED will only be lit when the user presses the BRAKE SWITCH on the membrane switch panel, on the side of the chair, with the brake in the OFF position. It will only light for one (1) second and then go out. This LED displays when the actual valve on the manifold is energized.

6. **Brake OFF Valve LED:** This LED is marked *BRAKE OFF* on the circuit board. This LED lights when the BRAKE SWITCH is depressed on the switch panel, with the brake in the ON position. It will only light for one and one-half (1 -1/2) seconds and then go out. This LED displays when the actual valve on the manifold is energized.

7. **Seat UP Valve LED:** This LED is marked *SEAT UP* on the circuit board. The LED with light when the SEAT UP switch is depressed and the SEAT LIMIT SWITCH is not set. If the Seat Down Limit Switch is set, the LED will not light, but the LIMITS ON LED will light.

8. **Seat DOWN Valve LED:** This LED is marked *SEAT DOWN* on the circuit board. The LED with light when the SEAT DOWN switch is depressed and the SEAT LIMIT SWITCH is not set. If the Seat Down Limit Switch is set, the LED will not light, but the LIMITS ON LED will light.

9. **Back UP Valve LED:** This LED is marked *BACK UP* on the circuit board. This LED will light when the BACK UP switch is depressed and the Back Up Limit Switch is not set. If the Back Up Limit Switch is set, the LED will not light, but the LIMITS ON LED will turn on.

10. **Back Down Valve LED:** This LED is marked *BACK DOWN* on the circuit board. This LED will light when the BACK DOWN switch is depressed and the Back Down Limit Switch is not set. If the Back Down Limit Switch is set, the LED will not light, but the LIMITS ON LED will turn on.

2.4.2. Maxi Select Controller Features and Functions

Table 2-1. Maxi Select Controller Functions

	Key Press and System Conditions	STATUS LEDs									
		PUMP	VDD	BACK LIGHT	Limits ON	Brake ON	Brake OFF	Seat UP	Seat DOWN	Back UP	Back DOWN
1	No Switches Pressed		✓	✓							
2	With BRAKE in the ON condition, Press and Release the BRAKE switch.	✓	✓	✓			✓				
3	With BRAKE in the OFF condition, Press and Release the BRAKE switch.		✓	✓		✓					
4	Seat in lower most position, Press and Hold the SEAT UP switch.	✓	✓	✓	✓			✓			
5	Seat in upper most position, Press and Hold the SEAT UP switch.		✓	✓	✓						
6	Seat in upper most position, Press and Hold the SEAT DOWN switch.		✓	✓	✓				✓		
7	Seat in lower most position, Press and Hold the SEAT DOWN switch.		✓	✓	✓						
8	Back in the fully vertical position, Press and hold the BACK DOWN switch.	✓	✓	✓	✓						✓
9	Back in the full Trendelenberg position, Press and Hold the BACK DOWN switch.		✓	✓	✓						
10	Back in the full Trendelenberg position, Press and Hold the BACK UP switch.	✓	✓	✓	✓					✓	
11	Cycle Jumper in, no switches pressed, and not in CYCLE TEST MODE.		✓	✓	✓						
12	Cycle Jumper in, CYCLE START switches pressed, but between cycles.		✓		✓						

✓ = Status LED is lit.
✓ = Status LED is momentarily lit.

NOTE: *The Maxi Select Controller is Multitasking, which means a Seat Function can take place at the same time as a Back Function. If more than one function is being performed at a time, combine the conditions from the above chart to get the proper Status LED results.*

9/5/02

MaxiSelect First time Set-up Process

VERSION 3.0 SOFTWARE

Caution: Until completing the steps below the chair has the potential to crash onto itself. Closely monitor the chairs position when the chair is in motion. Immediately unplug the chair if the back is close to making contact to the base.

1. Make sure chair is not plugged in.
2. Remove base cover.
3. Remove control board cover.
4. Move jumper (found on Control Board) from JP4 to JP3
5. Plug in chair.
6. Set back to 75°. (*90° is straight up and 0° is parallel to the floor.*)
7. With the back at 75° press and hold Side keypad memory button 1 until backlight blinks.
8. Set back to 0°.
9. With the back at 0° press and hold Side keypad memory button 2 until backlight blinks.
10. Set back to 55°. (See *Note* below)
11. Raise seat until 4 links are at 0°.
12. Press and hold Side keypad memory button 3 until backlight blinks.
13. Unplug chair.
14. Move jumper from JP3 to JP4
15. Power up chair.
16. Test all factory presets. (75°, 0° and crash)
17. Set user memory positions for 1,2 and 3.
18. Unplug chair (wait one minute)
19. Power up chair.
20. Test all memory positions and Presets.
21. Setup complete

Note: steps 10, 11, and 12 will set the crash position. However, if the current crash position will not allow you to move the chair into the new position, follow the steps below.

A. Unplug the chair.
B. Remove the Jumper from the "Jumper" JP2 on the control board.
C. Plug in the chair.
D. With power applied, reinstall the Jumper (from Step B) to its original position on JP2.
E. Return to step 10 above.

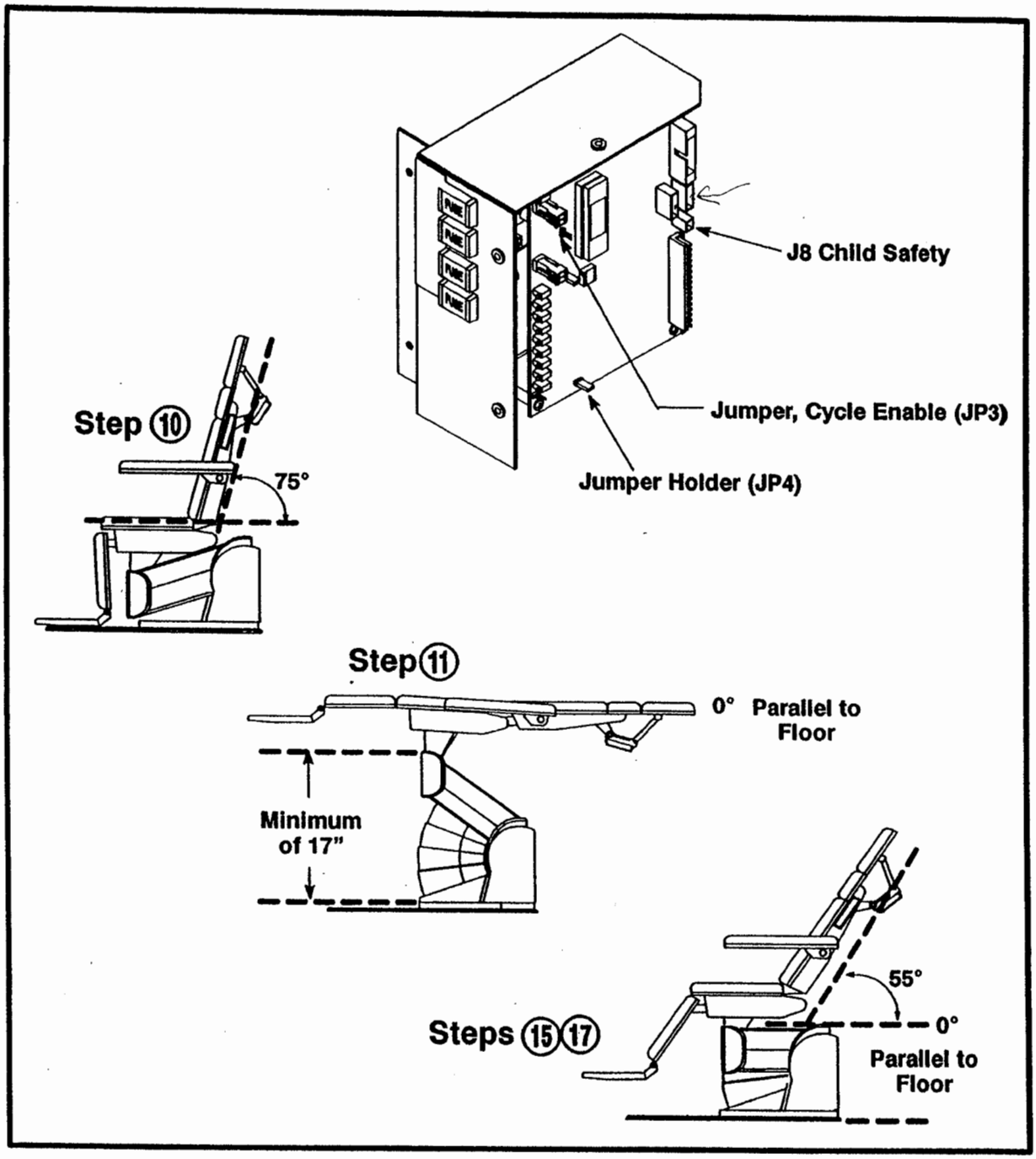


Figure 2-5. MaxiSelect Controller Set-up

2.5. Headrest Friction Adjustment

Occasionally the headrest may need to be tightened. The headrest mechanism relies on friction to maintain a secure position. To tighten this adjustment, refer to Figure 2-6 and proceed as follows.

1. Unlock the headrest and move it to the extreme upward and forward position. Leave the headrest unlocked.
2. Using a 3/16" inch hex wrench, loosen the setscrew on the bottom of the handle assembly.
3. Use a large flat-blade screwdriver, tighten the adjustment screw in the bottom of the handle for the desired friction.

CAUTION: Do not overtighten the adjustment screw. Overtightening adjustment screw may cause pin in headrest assembly to break, removing all friction.

4. Re-tighten the setscrew.

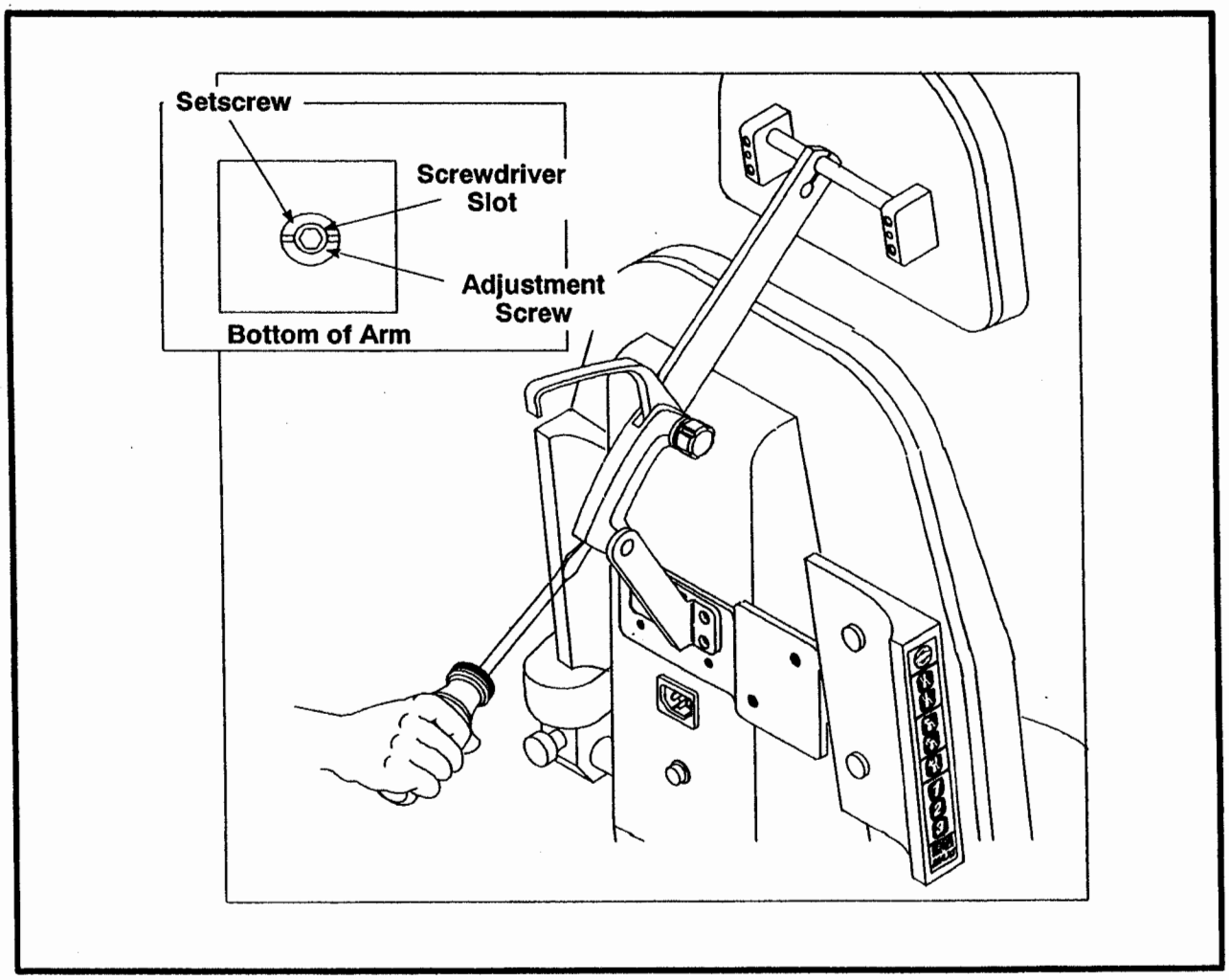


Figure 2-6. Manual Headrest Friction Adjustment

2.5.1. Headrest Positioning

To adjust the position of the Multi-Position Manual Headrest, refer to the Owner's Manual (Global Surgical part number: 110-015-017)

2.6. Lubrication

2.6.1. Removal and Installation of Covers

Tools Required:

- No. 1 Phillips Screwdriver
- Flat Blade Screwdriver

1. Disconnect the electrical power from the chair.
2. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 2-1.
3. Remove the rear chair housing.

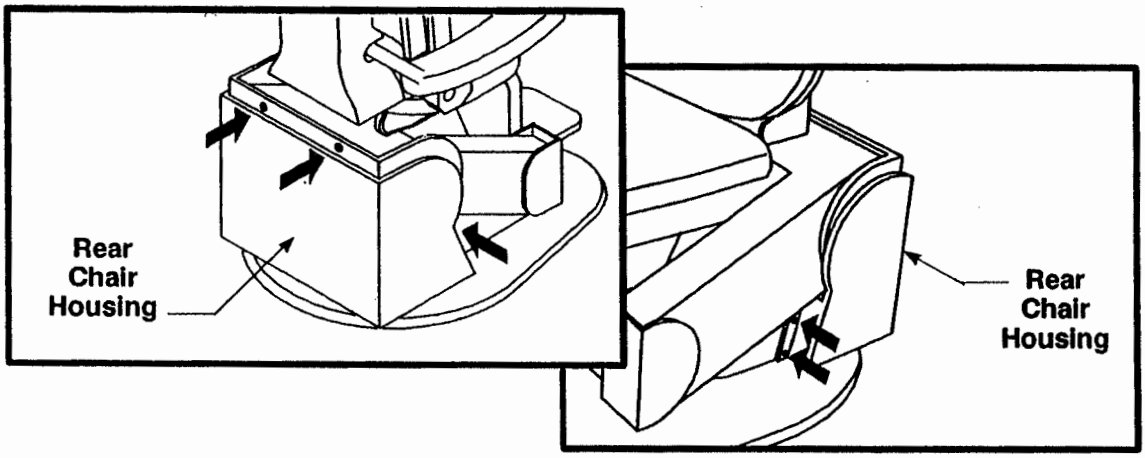


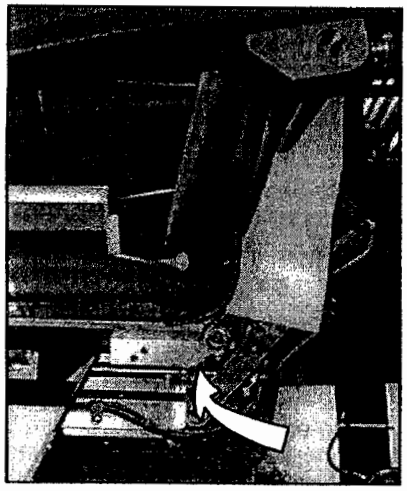
Figure 2-7. Removing the Rear Chair Housing

4. Remove the side panels
5. Disconnect and lower the Bellows exposing the chair structure.

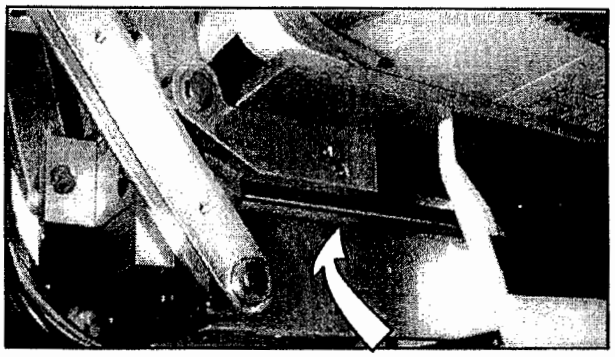
2.6.2. Lubrication of Back Up/Down Slide Shaft Assembly

To ensure that the S2700 Maxichair Select performs as expected, the Back Up/Down Slide Shaft Assemblies must be lubricated periodically.

6. Apply a very thin coating of Extreme Pressure Lube grease (Global Surgical part number:), supplied with the chair, to the Back Up/Down Slide Shaft Assembly on both sides of the chair. Refer to Figure 2-8 on Page 12 and follow the steps below.
7. Apply the grease as indicated by the arrows.
8. Using the Membrane Switches, cycle the chair through it's various operations to ensure the Slide Shaft Assemblies are moving smoothly.
9. Reattach the Bellows.
10. Replace the Side Panels and the Rear Chair Housing.

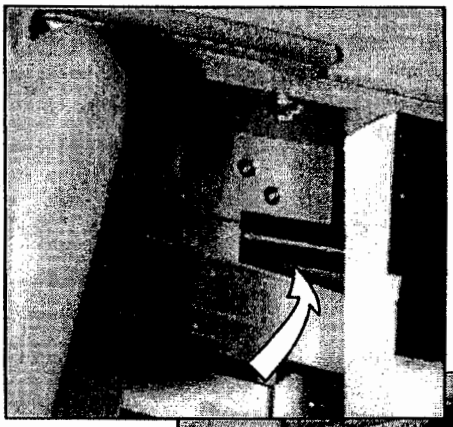


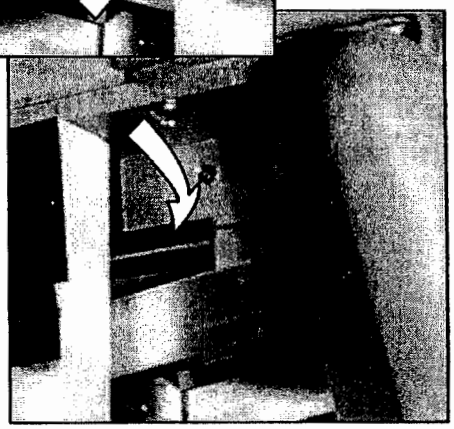
Chair Upright: Under Seat, Left Side-Back

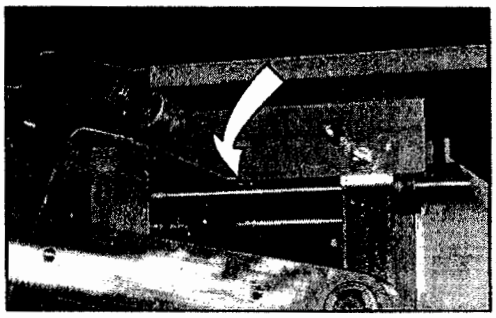


Chair Upright: Under Seat, Right Side-Back

Under Seat, Left Front







Chair Reclined: Under Seat, Right Side-Back

Under Seat, Right Front

Apply grease to Back Up/Down Shaft as indicated by arrows.

Figure 2-8. Lubricating the Back Up/Down Slide Shaft Assemblies

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Chapter 3. Component Removal and Replacement

3.1. Maxi Select Controller (102-001212) PC Board Replacement

The Maxi Select Controller (102-001212) on the SMR 2700 Maxi Chair Select can be used to service and troubleshoot the chair's electrical system. If adjustments to the chair's performance cannot be completed using the steps in the previous section, the Maxi Select Controller Printed Circuit Board may need to be replaced. Refer to Figure 2-4 and Table to proceed.

Tools Required:

- Hex Wrench
- No. 1 Phillips Screwdriver

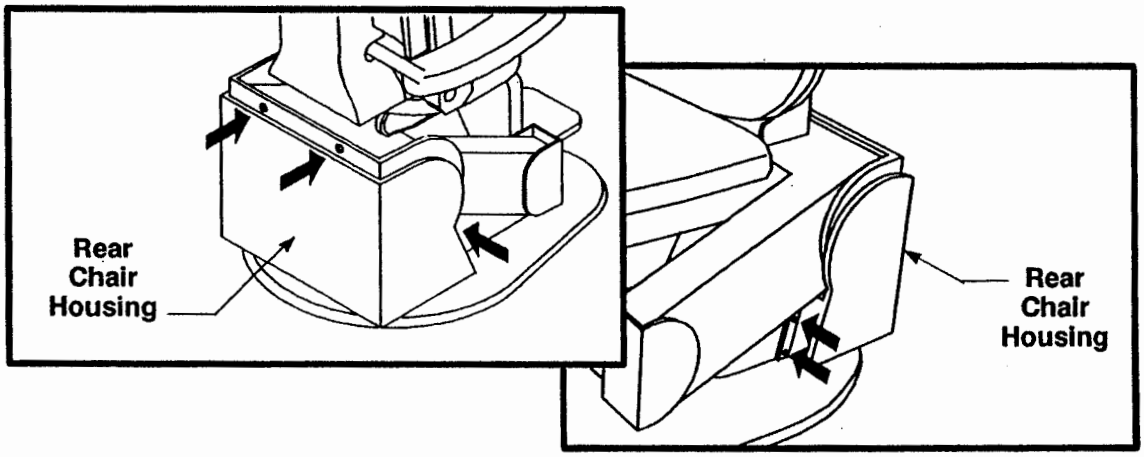

Figure 3-1. Removing the Rear Chair Housing

1. Disconnect the electrical power from the chair.
2. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 3-1.
3. Remove the rear chair housing.
4. Remove the cover to the Maxi Select Controller (102-001212) by using a No. 1 Phillips screwdriver to remove the 3 screws attaching it to the controller box. See Figure 3-2.
5. Disconnect and mark all cables attached to the PC Board.

   NOTE: *It is a good idea to mark the cables using a small piece of masking or other tape to ensure they get reconnected to the proper places on the new PC board.*

6. Using a No. 1 Phillips Screwdriver, remove the four screws attaching the PC board to the Controller.
7. Remove the PC board and set it aside. Mark the PC board as "old" or "Replaced: mm/dd/yyyy" to distinguish it from the new one. See Figure 3-2.
8. Install the new PC board.
9. Using a No. 1 Phillips Screwdriver, install the four screws attaching the PC board to the Controlle
10. Reconnect all the cables to the new PC Board.
11. Replace the cover using a No. 1 Phillips screwdriver and install the 3 screws.
12. Refer to Section 2.4.3. Maxi Select Controller (102-001212) Set-up Procedure.

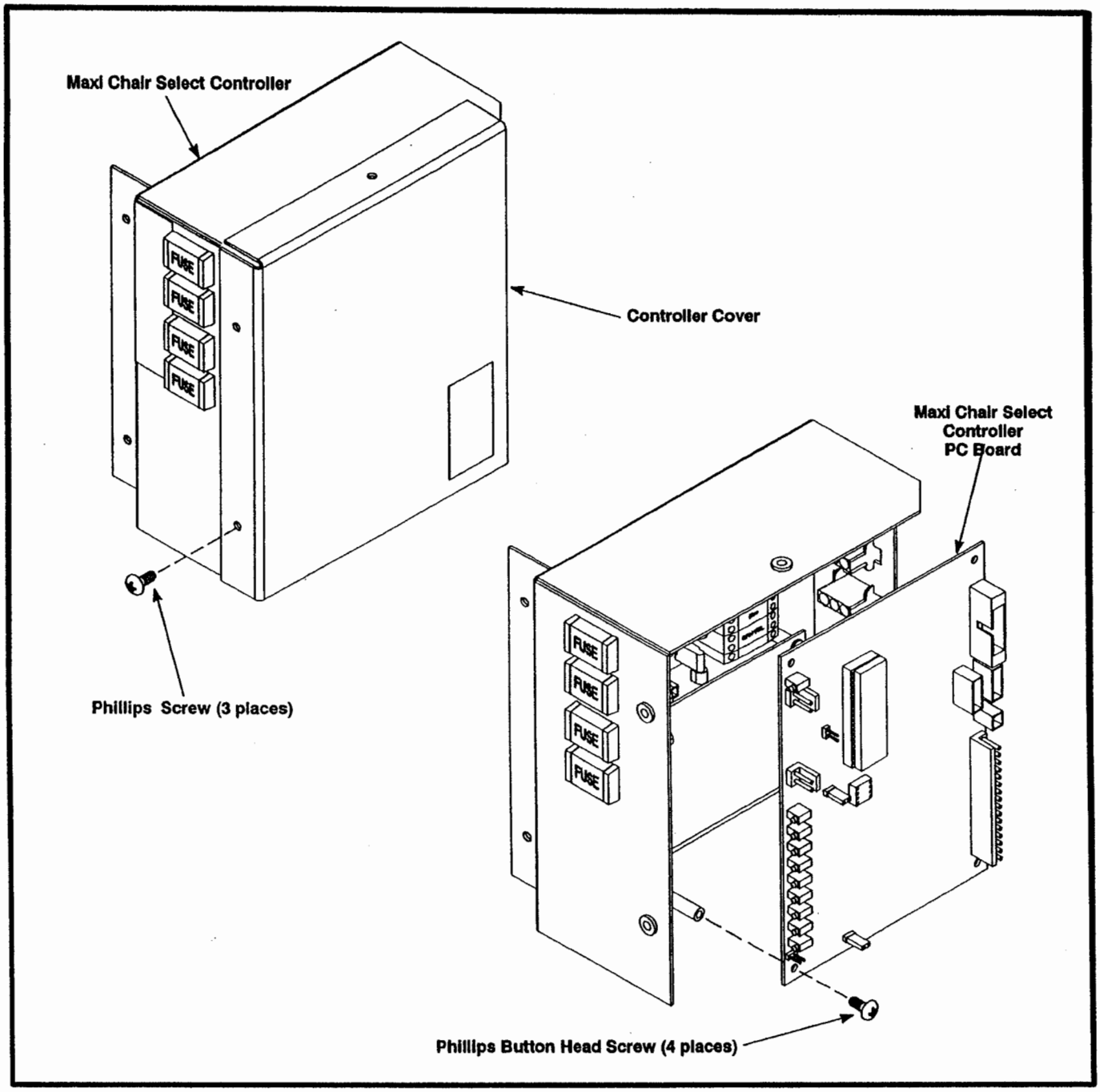

Figure 3-2. Replacing the PC Board

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3.2. Armrest Shaft Replacement

There are several conditions that warrant the Armrest Shaft be replaced on the SMR 2700 Maxi Chair Select.

3.2.1. Early Production Models

The Pivot Bracket on the Armrest Shaft may break and require replacement. These early shafts were connected to the Pivot Bracket with a threaded screw. Should the screw break inside the Pivot Bracket, it may become necessary to try and drill out the remaining screw pieces or cut through the Pivot Bracket itself.

WARNING: ***Upon exiting the chair, if the occupant places his or her weight on ends of both of the Armrests at the same time and presses downward to raise themselves up, the Pivot Bracket attachment screw may break.***

Retrofit Kits: A Retrofit Kit was made available by Global Surgical that repaired the broken Pivot Bracket bolts. The bolt was replaced by a 1/4" headed pin secured by an "E" clip.

CAUTION: ***There have been cases where the 1/4" pin has also broken from the weight being applied to the front of both Armrests. These cases are rare but have prompted a design change to eliminate this situation.***

3.2.2. Current Production Models

NOTE: *The Pivot Bracket on current production models has been made thicker and a 5/16" pin secured by a "E" clip on both ends has been installed. These newer Pivot Brackets and Pins are also available for replacement upgrades.*

WARNING: ***Upon exiting the chair, if the occupant places his or her weight on ends of both of the Armrests at the same time and presses downward to raise themselves up, the Pivot Bracket attachment pin may break.***

Should the Armrest Shaft and Pivot Bracket need replacing, refer to Figure 3-3 and proceed as follows.

Tools Required:

- Hex Wrench
- 2 Flat Blade Screwdrivers

Removal

1. Disconnect the electrical power from the chair.
2. Remove the four hex socket head screws attaching the Headrest and the optional SMR Solarlite™ to the back of the chair and set them aside.
3. Pry off the 4 plastic caps covering the screws on the back covering of the chair.
4. Remove the chair back and set it aside.
5. **Units prior to S/N 01261:** Remove the hex sockethead cap screw from the back of each of the Armrest Bracket to remove the Armrests and set them aside.
   Units S/N 01261 and later: Remove the Armrest Boards from each side and set them aside. Pull the Stop Pin out of the slot of each Armrest Mounting Block and slide them off the Pivot Arm.
6. Using the membrane switches on the chair sides, raise the chair to its full height position and recline the chair to the full horizontal position.
7. Using the 2 flat blade screwdrivers, remove the spring retaining clip on the shaft on each side of the chair supporting frame.

8. Use a flat blade screwdriver to remove the upper "E" clip securing the 5/16" pin to the Pivot Arm Bracket and push the pin downward and out the bottom side.
9. Use a flat blade screwdriver to remove the L/H "E" clip from the pin securing the Pivot Bracket to the Linkage Bar.
10. Set all "E" clips and retaining clips aside as they will be needed to replace the Armrest Shaft.
11. Slide the Armrest Shaft through the right side of the chair back support and remove it.

CAUTION: ***In the event that there is a burr on the Armrest Shaft or if the 5/16" pin is broken inside the Pivot Arm Bracket the shaft may not slide through the bracket and may have to be cut in order to remove it. Should this happen, use a hacksaw and cut through the shaft on both sides of the Pivot Arm Bracket and pull out from both sides.***

Installation

12. Apply a thin coat of lubricant to the new Armrest Shaft.
13. Slide the new shaft through the R/H bushing and through the chair back.
14. Place the new Pivot Arm Bracket on the shaft.
15. Line up the hole in the shaft with the hole in the Pivot Arm Bracket.
16. Slide an "E" clip on the pin and press into the bracket from the bottom side.
17. Replace the "E" clip to the top side of the pin securing Pivot Arm Bracket to the Armrest Shaft.
18. Slide the bottom pin of the Pivot Arm Bracket into the Linkage Bar and secure with an "E" clip.
19. Replace the Spring Clips on the Armrest Shaft on both sides of the chair frame.
20. Using the membrane switches on the chair sides, return the chair to the upright position.
21. Replace the Armrest Brackets on each end of the shaft and secure them with a Stop Pin.

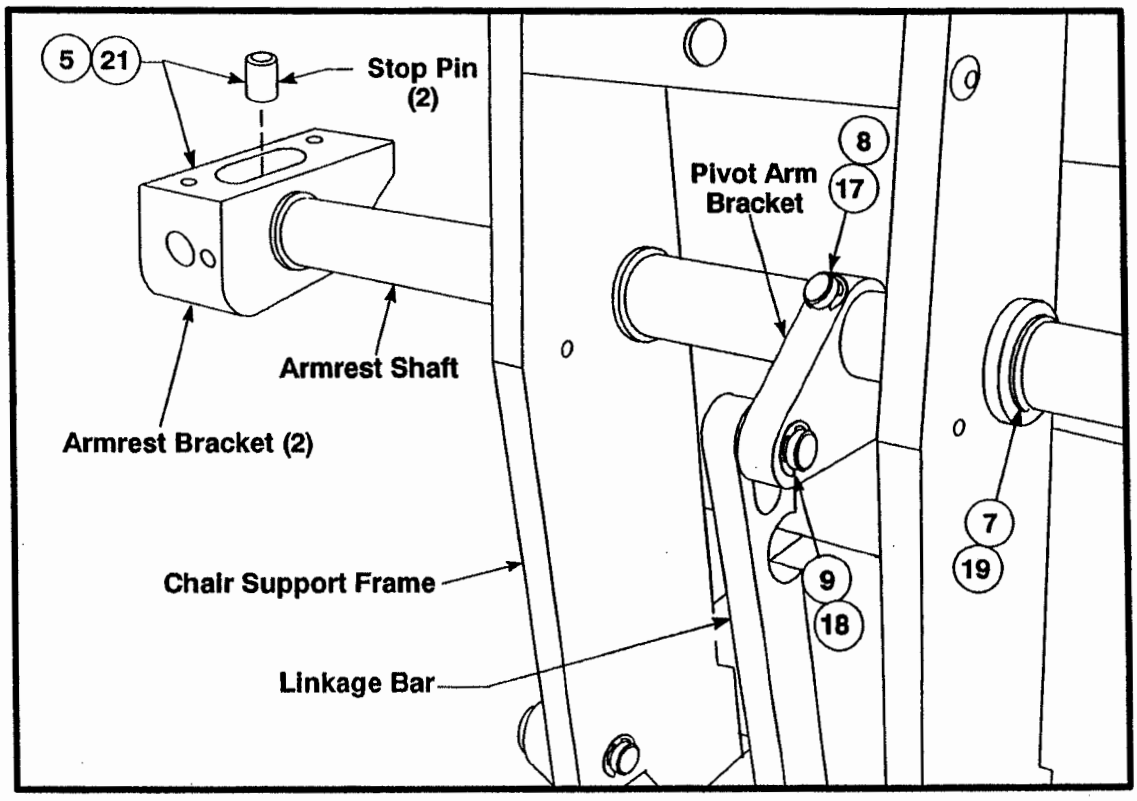
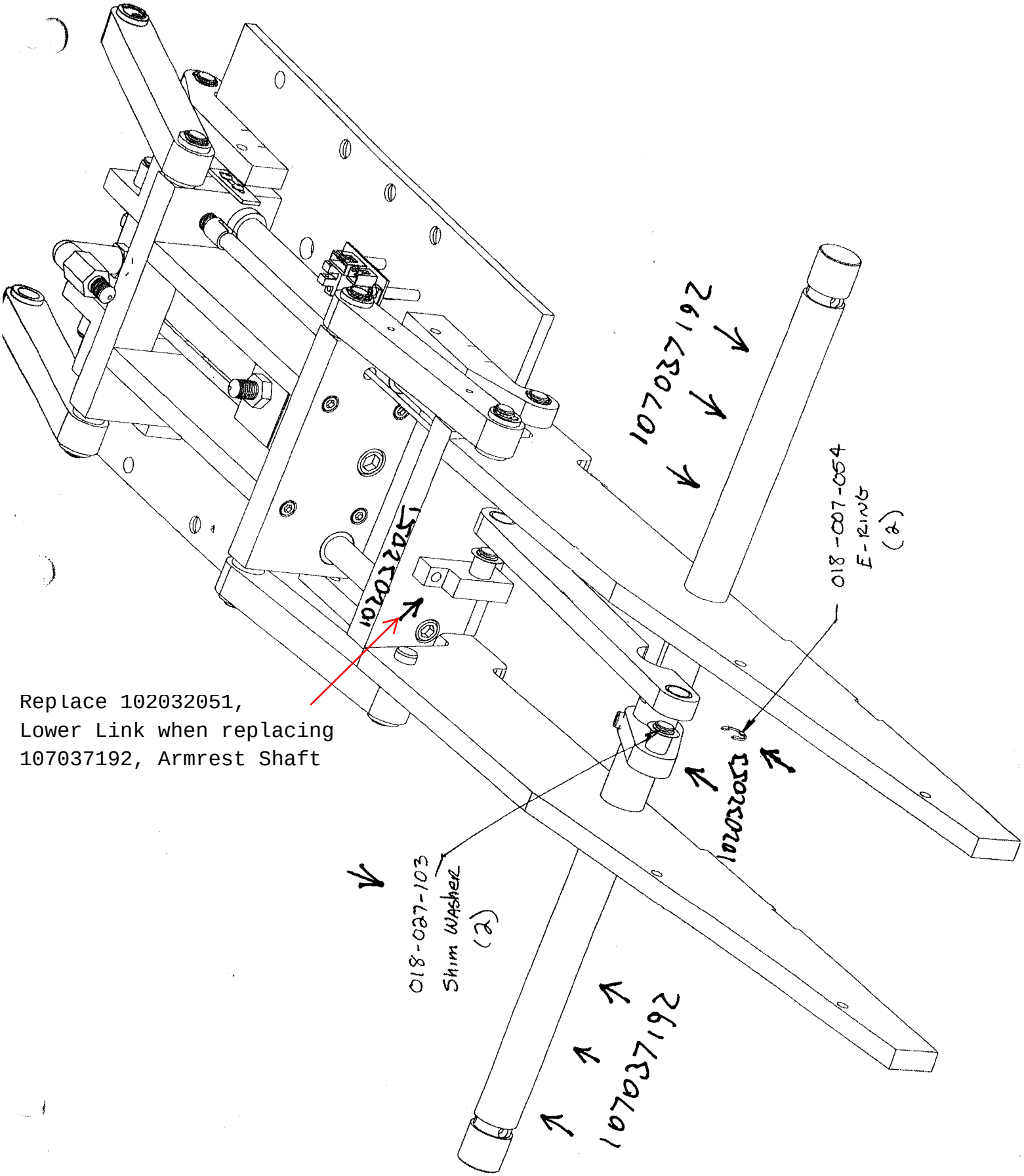


Figure 3-3. Replacement of the Armrest Shaft and Pivot Bracket



Replace 102032051,
Lower Link when replacing
107037192, Armrest Shaft

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3.3. Membrane Switch Replacement

The Membrane Switch panels located on either side of the S2700 Maxi Chair Select control the various functional operations of the chair as well as some of the diagnostics. The Membrane Switches are pressure activated. Should the switch fail to preform a desired function, they may need to be replaced. The Membrane Switches can be replaced as a unit with the Switch Bezel or can be replaced separately.

Tools Required:

- Hex Wrench
- No. 1 Phillips Screwdriver

Removal

1. Remove the four hex socket head screws attaching the Headrest and the optional Solarlite™ to the back of the chair and set them aside.
2. Pry off the 4 plastic caps covering the screws on the back covering of the chair.
3. Remove the four Phillips screws that secure the back cover to the chair.
4. Remove the chair back cover and set it aside.
5. Unplug the power cable and the fiber-optic cable from the back side of the membrane switch.
6. Using the No. 1 Phillips screwdriver, remove the 2 button head screws and remove the Membrane Switch Bezel from the chair.

Installation

a) Membrane Switch and Bezel

7. Secure the new Membrane Switch and Bezel to the chair side using a No .1 Phillips screwdriver replacing the 2 button head screws.
8. Reattach the Fiber Optic Cable to the appropriate socket.
9. Reattach the Power Supply Cable to the appropriate socket.
10. Reinstall the Chair Back with the 4 screws removed earlier.
11. Reinstall the the plastic caps covering the mounting screws.
12. Replace the Headrest and the optional Solarlite™ bracket using the 4 hex socket cap screws removed in Step 1. of the removal procedures.
13. Cycle the chair to ensure that it is operating smoothly. Make any adjustments necessary.

b) Membrane Switch Only

14. Remove the old Membrane Switch from the Bezel by peeling it off from the front of the Bezel.
15. Remove the backing strip from the adhesive pad on the new Membrane switch.
16. Attach the new Membrane Switch to the Bezel.
17. Secure the new Membrane Switch and Bezel to the chair side using a No .1 Phillips screwdriver replacing the 2 button head screws.
18. Reattach the Fiber Optic Cable to the appropriate socket.
19. Reattach the Power Supply Cable to the appropriate socket.
20. Reinstall the Chair Back with the 4 screws removed earlier.
21. Reinstall the the plastic caps covering the mounting screws.
22. Replace the Headrest and the optional SMR Solarlite™ bracket using the 4 hex socket cap screws removed in Step 1. of the removal procedures.
23. Cycle the chair to ensure that it is operating smoothly. Make any adjustments necessary.

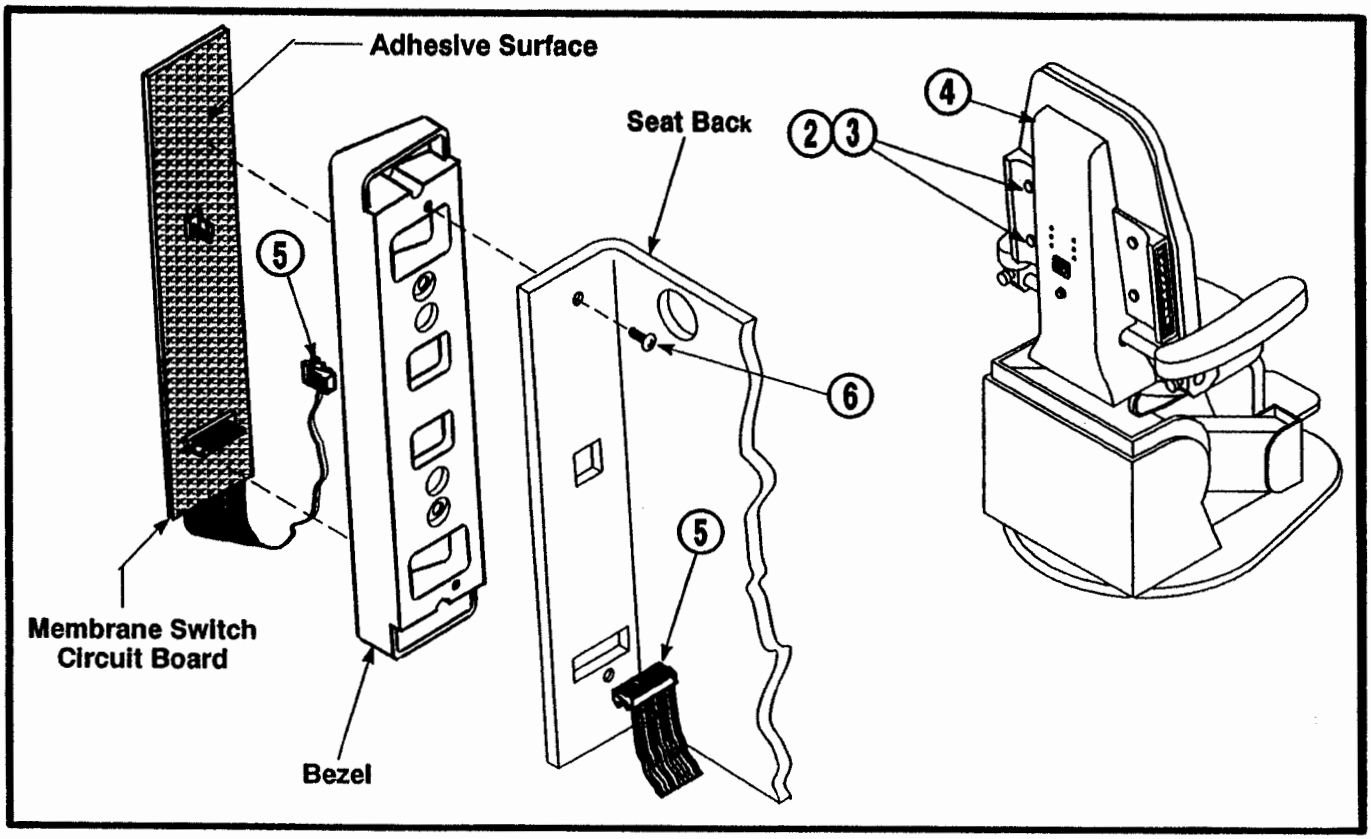


Figure 3-4. Replacing Membrane Switches

3.3.1. Replacing the Membrane Switch Ribbon Cable

The Membrane Switch panels located on either side of the S2700 Maxi Chair Select are connected to the Maxi Select Controller (102-001212) by two Ribbon Cables. The left side Ribbon Cable is the longest. It is connected to the left side Membrane Switch and travels down to the Maxi Select Controller (102-001212). The right side Ribbon Cable ajoins the left side cable with a cable connector inside the chair back. A third Ribbon Cable connects the footpedal connector to the left side cable with a cable connector in the lower framework of the chair next to the Maxi Select Controller (102-001212). The footpedal cable must be routed up through the Cord Grommet in the center of the Hydraulic Brake Disk before it can be connected to the ribbon cable.

1. **Testing for faulty Ribbon Cable:** Visually inspect and test the Membrane Switches on each side to ensure it is functioning properly. If membrane switches are selected, and are known to be functional, and the chair doesn't respond the cause could be a ribbon cable.
   - **a.** Remove electrical power from the S2700 Maxi Chair Select.
   - **b.** Start by disconnecting the right side Ribbon Cable from the left side Ribbon Cable.
   - **c.** Disconnect the Left Side Ribbon Cable from the Membrane Switch Connector on the chair back. Disconnect the Footswitch Ribbon Cable where it connects to the left side Ribbon Cable in the lower framework of the chair.

   NOTE: *Do not completely remove the left side Ribbon Cable at this time.*

   - **d.** Disconnect the left side Ribbon Cable from the Maxi Select Controller (102-001212).
   - **e.** Connect a new left side Ribbon Cable to the connector on the on the left side Membrane Switch and to the Maxi Select Controller (102-001212).

f. Reapply electrical power to the S2700 Maxi Chair Select.

g. Select each button on the left side Membrane Switch and verify that the selected operation is performed by the S2700 Maxi Chair Select.

h. Connect the right side cable to the left side cable. Select each button on the right side Membrane Switch and verify that the selected operation is performed by the S2700 Maxi Chair Select.

i. If both switches work properly, proceed to replacing left Ribbon Cable.

j. If neither switch works, leave the cable in the chair as the problem is not the cable. If available, replace the Maxi Chair Controller PC Board. See Section 3.1.

2. **Replacing Ribbon Cable:** Once it has beendetermined that the left side Ribbon Cableis faulty, it should be removed and replacedwith a new one. Refer to Figure 3-5 and proceed as follows.

a. Disconnect electrical power from the S2700 Maxi Chair Select.

b. Disconnect the right side Ribbon Cable from the connector on the left side Ribbon Cable.

c. Disconnect the left side Ribbon Cable from the Membrane Switch Panel on the chair back.

d. Using the photos on the right, remove the various cable clamps that attach the Ribbon Cable to the chair structure.

e. Disconnect the Footswitch Ribbon Cable from the connector near the Maxi Select Controller (102-001212).

f. Disconnect the cable from the Maxi Select Controller.

g. Repeat steps **b** through **f** to install a new Ribbon Cable.

h. Connect electrical power to the S2700 Maxi Chair Select and cycle the chair using both left nad right Membrane Switch panels and the Footswitch.

CAUTION: ***When istalling a new Ribbon Cable Assembly, be sure not to allow the cable to become kinked or pinched by any of the cable clamps.***

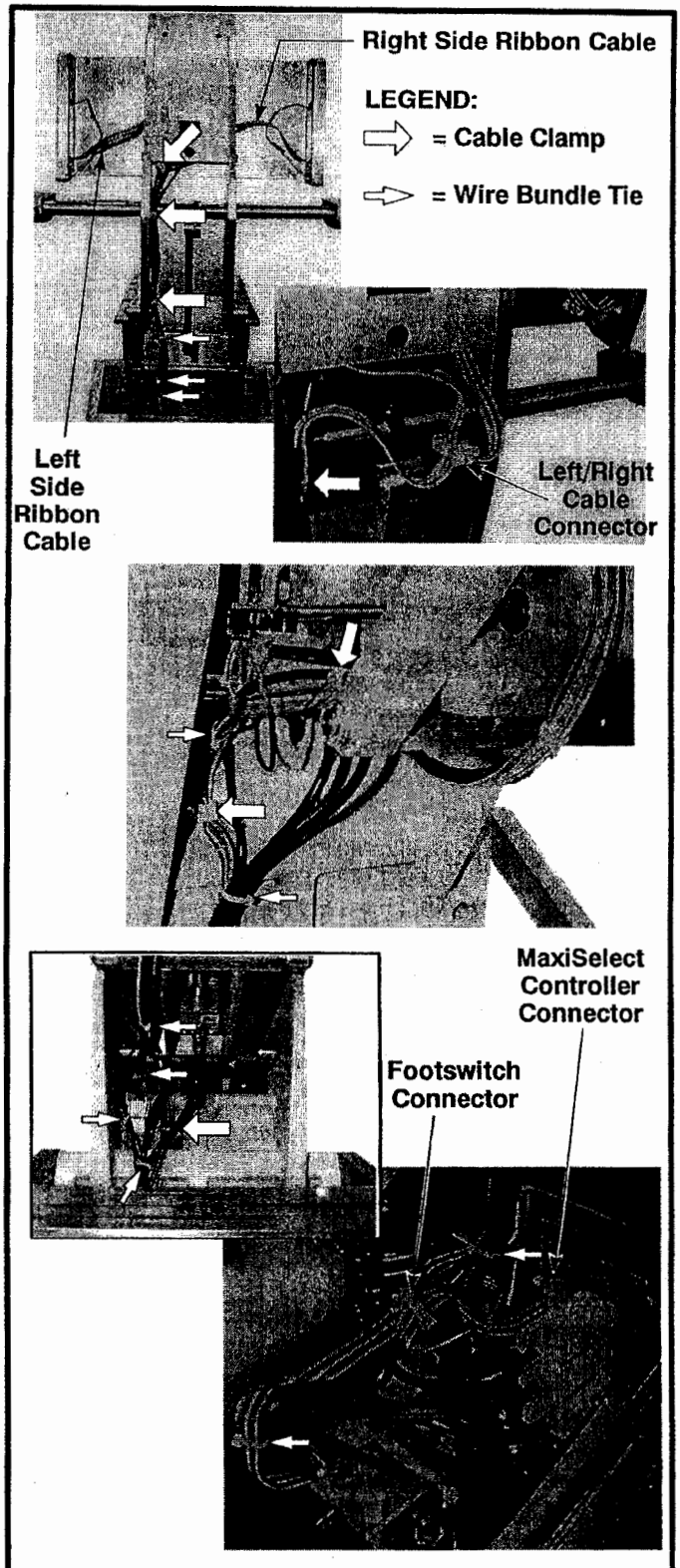


Figure 3-5. Replacing the Ribbon Cable

3.4. Lower Cylinder Replacement

Tools Required:

- 5/8" Open-end Wrench
- 3/8" Drive Ratchet
- No. 2 Phillips tip/Socket - 3/8" drive
- 1/4" Hex Wrench

The Lower Hydraulic Cylinder (102-032-031) is mounted between the chair base and the lower skeleton assembly. It's primary purpose is to raise and lower the chair. The operation of the Lower Hydraulic Cylinder should be quiet and smooth throughout its cycle. If the chair should vibrate or jerk suddenly during the travel from full upright to the lowest position or visa versa, this could signal a problem with the hydraulic cylinder.

The first step would be to check the Hydraulic Fluid Reservoir to ensure it is filled with the prescribed amount of hydraulic fluid. The Reservoir should be full when the seat is down. Next, check the hydraulic hose that supply fluid from the reservoir to the Lower Hydraulic Cylinder. If these visual checks are negative, it may suggest the Lower Hydraulic Cylinder needs replacing. To replace the hydraulic cylinder, proceed with the steps listed below and refer to Figure 3-6.

Removal

The step numbers in the below instructions will correspond with the bubble numbers in the referred illustrations.

1. Using the Membrane Switch on the sides of the chair, set the chair to its upright and lowest vertical position.
2. Disconnect the electrical power from the chair.
3. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 3-1.
4. Remove the rear chair housing.
5. Use the 5/8" open-end wrench and loosen the hydraulic line to the elbow connection on the lower end of the Lower Hydraulic Cylinder(102-032-031) assembly.
6. Wrap a shop towel around the fitting and remove the hydraulic line allowing the towel to catch any excess hydraulic fluid.
7. Remove one of the two 0.093 hairpin Cotter Pins on the clevis pin holding the upper portion of the hydraulic cylinder in the Mounting Clevis.
8. Slide the pin out of the Mounting Clevis and allow the hydraulic cylinder arm to fall free.
9. Visually inspect the two mounting clevis components for any sign of cracks or wear.

   NOTE: *Worn or cracked Mounting Clevis components could produce vibrations or even cause the chair to jerk unexpectedly during the operation of the hydraulic cylinder.*

10. Should the Mounting Clevis components appear to be broken or cracked, they should be replaced. Remove the four 3/8" X 16 X 1-1/4" button head socket cap screws from the top of the Main Link Tie Plate to remove the two Mounting Clevis components.
11. Replace the components as necessary. Reverse Step 10. to install new Mounting Clevis parts.
12. Remove one of the two 7/16" "E" Retaining Rings on the clevis pin holding the lower portion of the hydraulic cylinder to the Swivel Plate. Remove the Clevis Pin.
13. Remove the lower Hydraulic Cylinder.

Installation

1. Replace the Lower Hydraulic Cylinder assembly.
2. Replace the Clevis Pin on the lower portion of the hydraulic cylinder and secure with 7/16" "E" Retaining Ring.

3. Use the 5/8" open-end wrench and connect the hydraulic line to the elbow connection on the lower end of the Lower Hydraulic Cylinder assembly.
4. Reapply electrical power to the chair.
5. Using the Membrane Switch on the sides of the chair, slowly cycle the hydraulic cylinder until the shaft end reaches the Mounting Clevis.
6. Slide the clevis pin through the mounts and upper portion of the hydraulic cylinder and secure with the hairpin cotter pin.
7. Reinstall the rear chair housing.
8. Use the No. 1 Phillips screwdriver to install the six screws from the rear chair housing. Reinstall the protective plastic caps. Refer to Figure 3-1.
9. Reconnect the electrical power from the chair.
10. Cycle the chair to ensure that it is operating smoothly. Make any adjustments necessary.

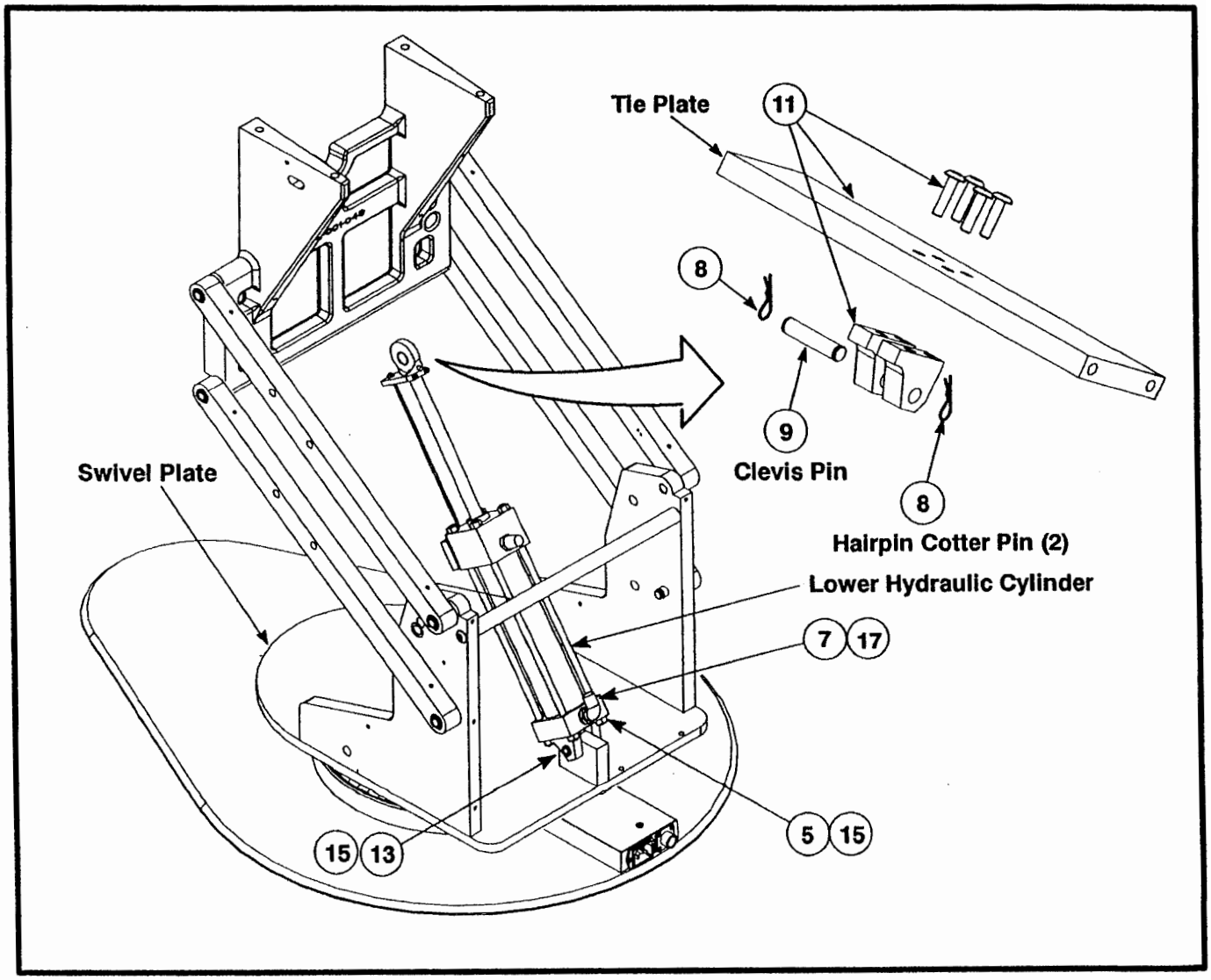
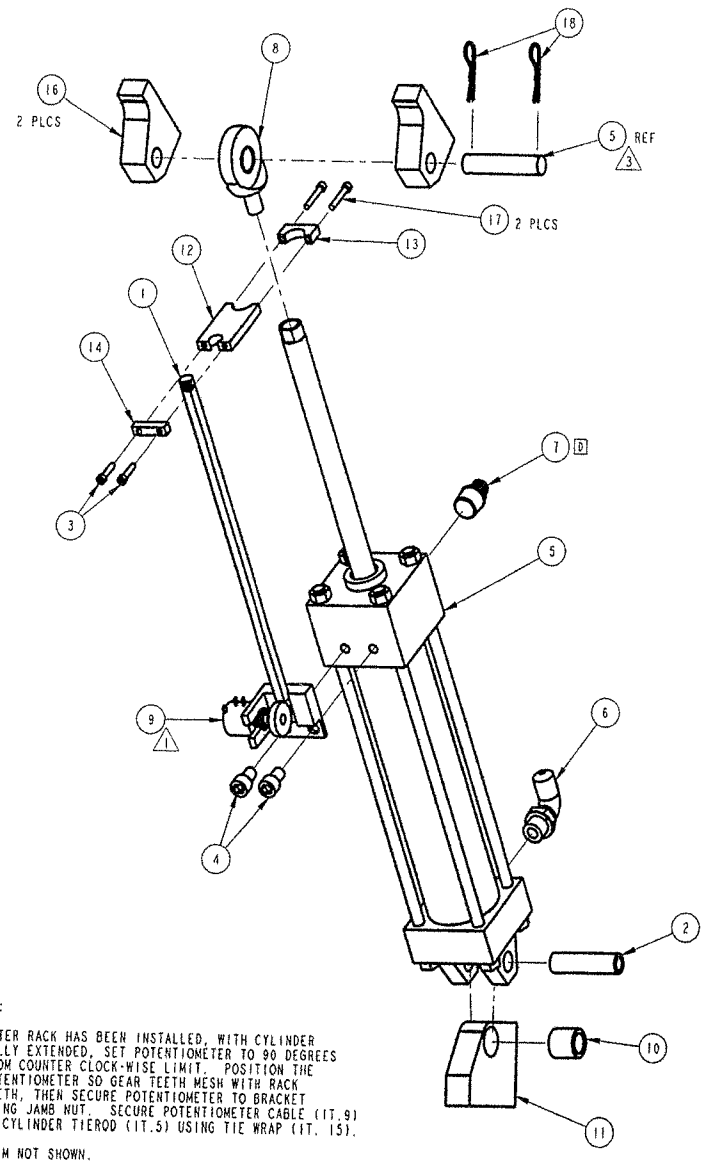
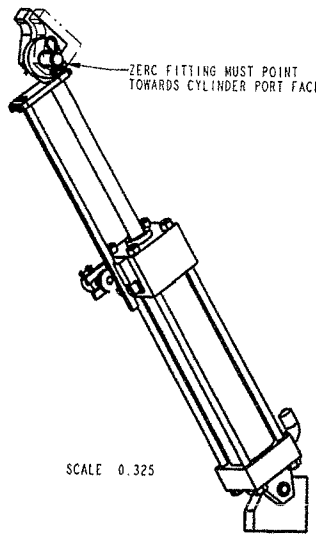


Figure 3-6. Replacing Lower Hydraulic Cylinder



PARTS LIST				
ITEM	QTY	PART NUMBER	DWG SZ	DESCRIPTION
1	1	123-006-173	B	PRECISION RACK - MODIFIED
2	1	018-020-104	SS	ROLL PIN, 1/2" X 2"
3	2	021-619-031	SS	6-32 X 5/8" SKT HD CAP SCW SS
4	2	021-619-105	SS	5/16-18 X 1/2" SKT HD CAP SCW SS
5	1	034-001-008	SS	LIFT CYLINDER, MAXI SELECT
6	1	034-003-032	SS	STRAIGHT ELBOW, THREADED
D 7	1	034-003-041	SS	1/4" TUBE x 3/8" NPT STRAIGHT ADAPTER
8	1	039-002-128	SS	SPHERICAL ROD EYE, B-D
9	1	102-032-074	B	ASSY, POTENTIOMETER BRACKET- BACK
10	1	107-003-910	B	BEARING, BRONZE
11	1	107-027-716	B	LIFT CYLINDER MTG BRACKET
12	1	107-027-771	B	SEAT RACK BRACKET - MACH
13	1	107-027-738	B	LIFT POT ROD CLAMP END - MACH
14	1	107-027-772	B	SEAT RACK CLAMP - MACH
⚠1 15	1	018-006-001	SS	TIE WRAP, 4" PANDUIT # PLTIM-1
16	2	107-027-719	B	LIFT CYL MOUNTING CLEVIS
17	2	021-619-033	SS	6-32 X 7/8" SKT HEAD CAP
18	2	018-020-105	SS	HAIRPIN COTTER PIN .093



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NOTES:

⚠1 AFTER RACK HAS BEEN INSTALLED, WITH CYLINDER FULLY EXTENDED, SET POTENTIOMETER TO 90 DEGREES FROM COUNTER CLOCK-WISE LIMIT. POSITION THE POTENTIOMETER SO GEAR TEETH MESH WITH RACK TEETH, THEN SECURE POTENTIOMETER TO BRACKET USING JAMB NUT. SECURE POTENTIOMETER CABLE (IT.9) TO CYLINDER TIEROD (IT.5) USING TIE WRAP (IT. 15).

2 ITEM NOT SHOWN.

3 USE CLEVIS PIN SUPPLIED WITH CYLINDER (IT. 5) AND COTTER PINS (IT.18) TO INSTALL MOUNTING CLEVIS (IT. 16)

REV.	DESCRIPTION, CHANGE ORDER NO. OR RELEASE NO.	DATE	DRAWN	APPROVED
D	IT. 7 WAS 034003037 PER ECO 201332	11-3-06	AJS	
C	IT. 3 WAS QTY 4, ADD HOLES, ADD IT. 15-18 PER ECI 201047	8-2-04	BTS	BTS
B	IT. 1 WAS 018010807, IT. 3 WAS 021619033, IT. 4 WAS 021619110, IT. 9 WAS 102006092, IT. 12 WAS 107027737, IT. 14 WAS 107027748 PER ECO 20074	10-8-01	MJK	CAS
A	RELEASED PER PROJECT 98-008	7-9-01	MJK	JSG

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/64 DECIMALS .XX ±.01 .XXX ±.005 ANGLES ±1°
CONCENTRICITY T.I.R. .010
BREAK SHARP EDGES
REMOVE ALL BURRS
SHARP CORNERS .015/.04 MAX.
ALL SURFACE FINISHES = 125

DO NOT SCALE THIS DRAWING

MATERIAL: SEE PARTS LIST

S 2700
END PRODUCTS

GLOBAL SURGICAL CORPORATION
3610 TREE COURT INDUSTRIAL BLVD.
ST. LOUIS, MO, U.S.A. 63122-6604
(314)967-3300

TITLE: ASSY, LIFT CYLINDER

SCALE 0.500 | SHEET 1 OF 1 | DWG SIZE C | DWG. NO. 102-032-031 | REV. D

3.4.1 UPPER CYLINDER REPLACEMENT

Tools Required:

- ½" Open-end Wrench
- 9/16" Open-end Wrench
- 5/8" Open-end Wrench
- 11/16" Open-end Wrench
- 3/8" Hex Wrench
- No. 2 Phillips head screw driver
- 5/32" Hex Wrench

Upper Cylinder (034-001-009) is mounted under the chair seat. It's only function is to operate the chair back, moving it from vertical to 10 degrees below horizontal.

Prior to replacement, check the Hydraulic Fluid Reservoir to ensure it is filled with the prescribed amount of fluid. The reservoir should be near full when the seat is down. Listen for the pump motor when using the membrane switches, to move the chairs' back. Check for any obvious leaks in any of the hydraulic lines to the cylinder. If visual inspection for hydraulic leaks is negative, replacement of the upper cylinder may be warranted. To replace the hydraulic cylinder, proceed with the steps listed below and refer to Figure 3-?.

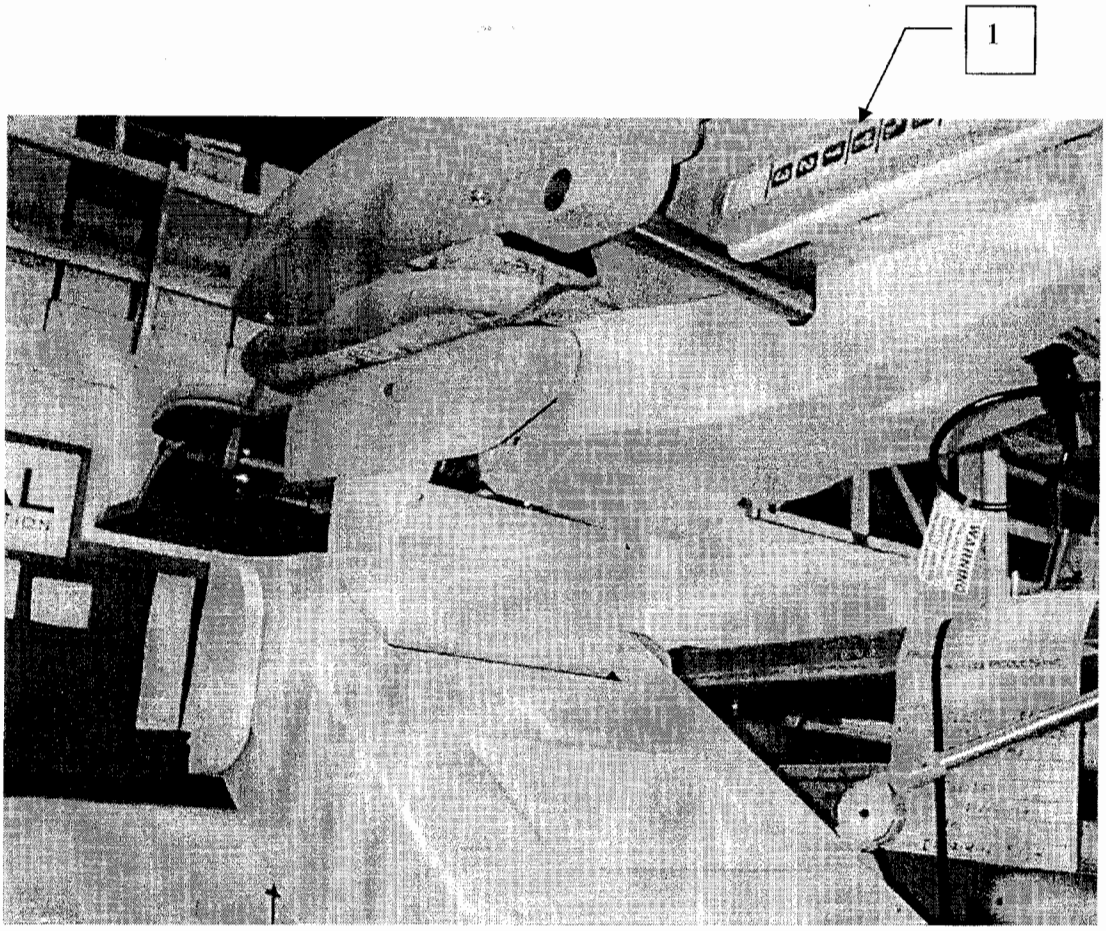
Removal

The step numbers in the below instructions will correspond with the bubble numbers in the referred illustrations.

1. Using the membrane switch on the sides of the chair, set the chair back horizontal and raise the chair to its most vertical height.
2. Disconnect the electrical power from the chair.
3. Remove the (4) protective plastic caps, and with No. 2 Phillips screwdriver, remove (4) screws and the front plastic chair housing.
4. Remove the (2) protective plastic caps, and with No. 2 Phillips screwdriver, remove (2) screws and the rear plastic chair housing.
5. Remove the (4) protective plastic caps, and with No. 2 Phillips screwdriver, remove (4) screws and the plastic upper rear chair housing.
6. Remove the (4) screws with No. 2 Phillips screwdriver, remove the plastic shroud.
7. Remove the (2) screws with No. 2 Phillips screwdriver, remove the (2) bolsters.
8. Remove the (4) screws with No. 2 Phillips screwdriver, remove the plastic shroud.
9. Remove (2) screws with No. 2 Phillips screwdriver, remove seat cushion.
10. Use the 11/16" open-end wrench, loosen the hydraulic fitting. Place rag below fitting to catch leaking fluid. Remove hydraulic line at upper cylinder.
11. Using the 5/8" open end wrench and supporting with ½" open-end wrench loosen the hydraulic fitting. Place rags and a cup under fitting to catch hydraulic fluid when disconnecting. Disconnect hydraulic line from upper cylinder.
12. Using 11/16 open end wrench, remove fitting from upper cylinder.
13. Using 3/8" hex wrench remove bolt from end of rod cylinder.
14. Using 5/32" hex wrench remove (4) socket head cap screws, supporting hydraulic cylinder from below.
15. Remove upper hydraulic cylinder.

Installation

To install hydraulic cylinder use Removal procedure in reverse order. Make certain all hydraulic fittings are tight and sealing. Operate the chair back and seat cylinders looking for leaks prior to replacing plastic covers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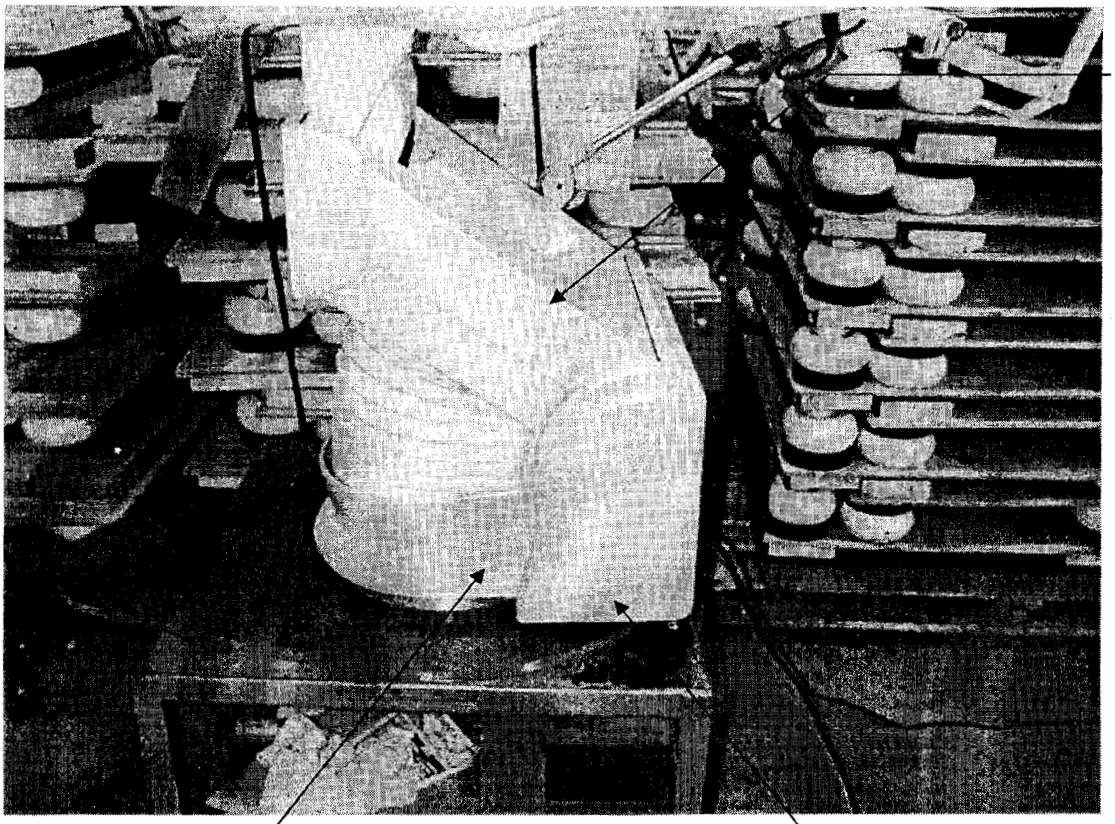
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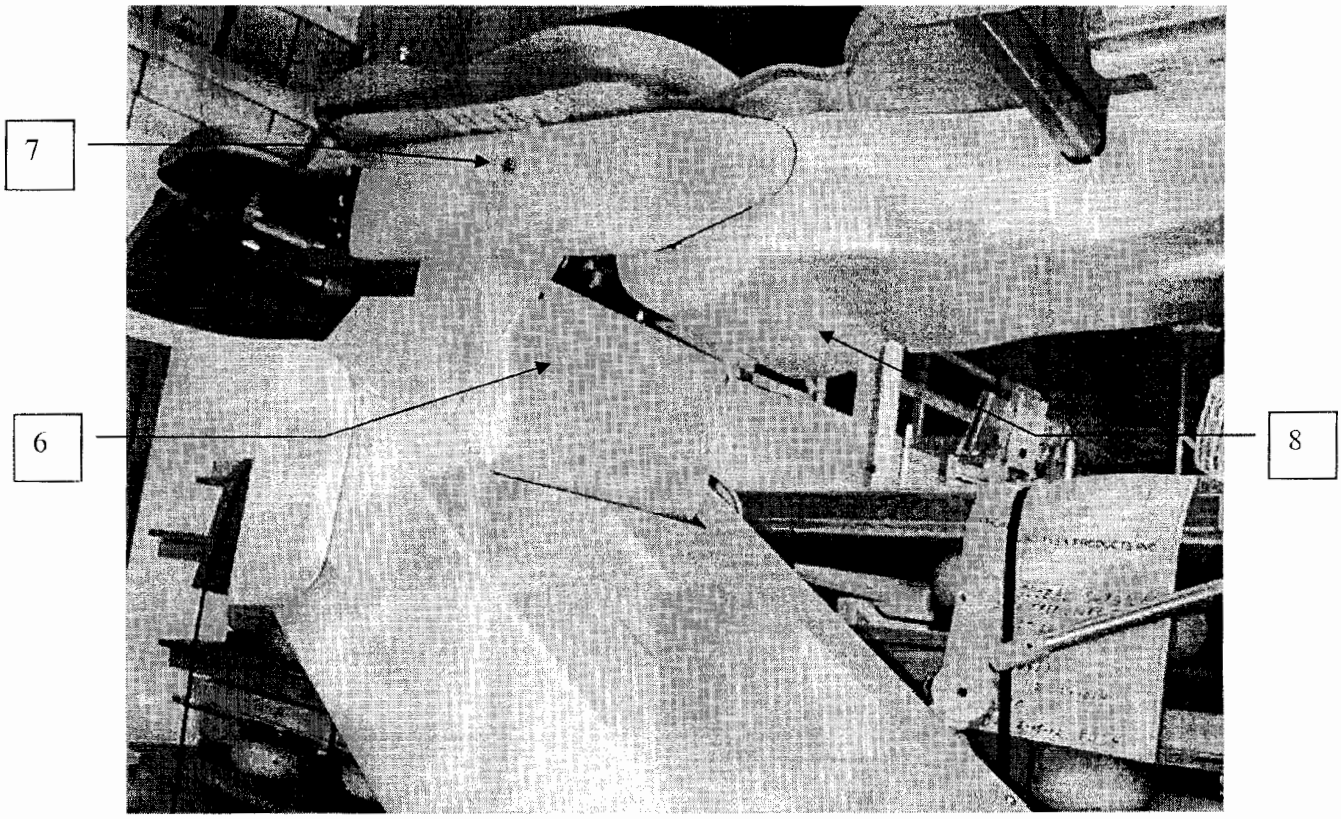
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6
8

3.5. Manifold Assembly Replacement

Tools Required:

- 5/8" Open-end Wrench
- 1/4" Hex Wrench

Removal

The step numbers in the below instructions will correspond with the bubble numbers in the referred illustrations.

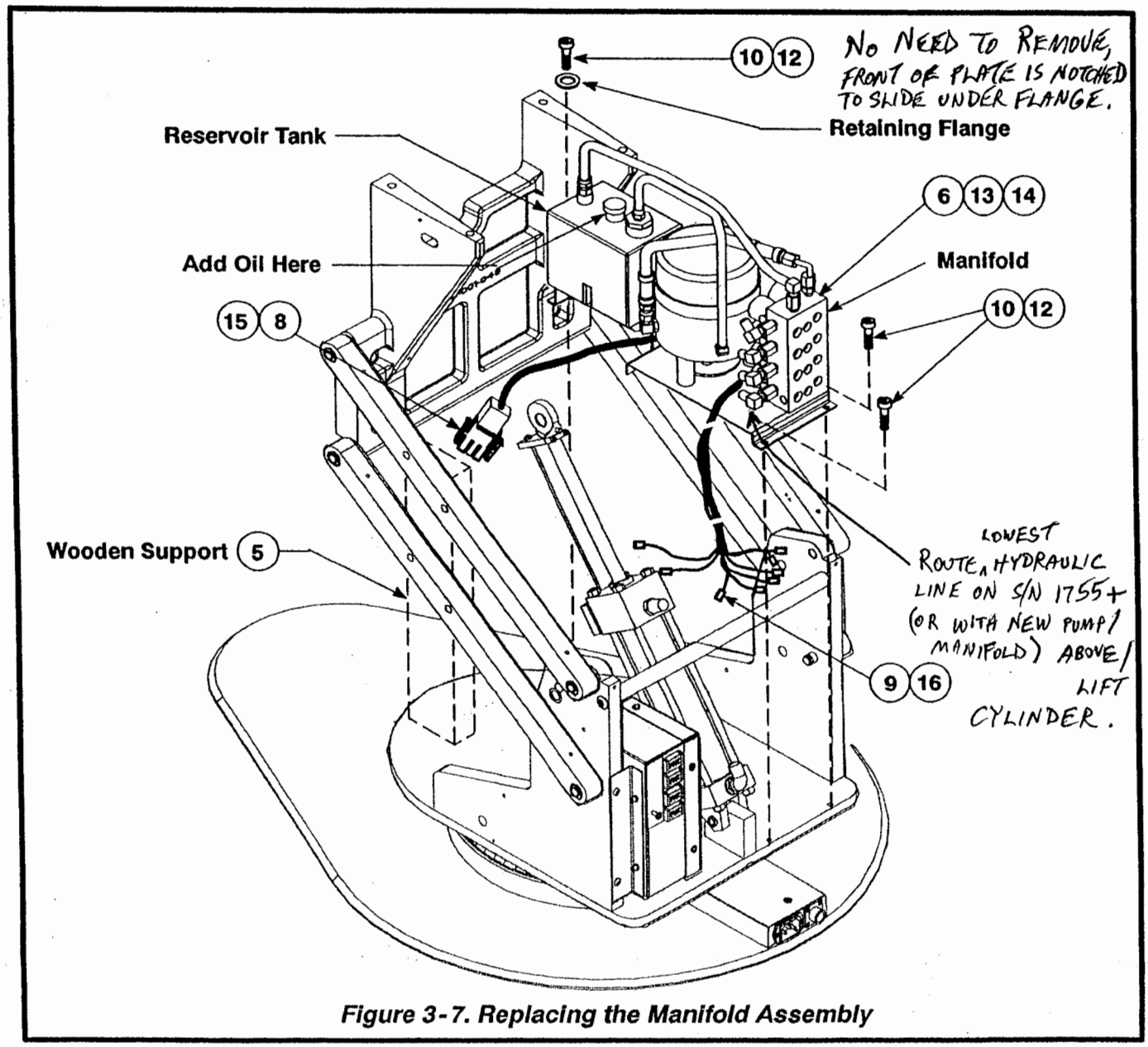


Figure 3-7. Replacing the Manifold Assembly

1. Using the Membrane Switch on the sides of the chair, set the chair to its lowest vertical position. This will allow the hydraulic fluid from the upper and lower cylinders to return to the reservoir.
2. Disconnect the electrical power from the chair.
3. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 3-1.
4. Remove the rear chair housing.
5. Support the front of the chair frame with a 2" X 4" wooden block to prevent the chair from falling to a lower height when the Manifold Assembly is disconnected.
6. Use the 5/8" open-end wrench and loosen the four hydraulic lines to the elbow connections on the left side of the Manifold Assembly. Mark the hydraulic lines so they can be reconnected in the same positions on the new manifold.
7. Wrap a shop towel around the fittings and remove the hydraulic lines allowing the towel to catch any excess hydraulic fluid.
8. Disconnect the Power Cable from the MaxiSelect Controller.
9. Disconnect eight electrical leads from the Manifold to the MaxiSelect Controller.
10. Using the 1/4" hex wrench, remove the ~~three~~ 2 1/4"-20 X1/2" socket head cap screws and lift the manifold and reservoir assembly away from chair and set it aside.

NOTE: *Use care when removing the single screw on the front of the Manifold Assembly. There is a washer (Retaining Flange 107-037-223) included with the screw which may fall off as the screw is removed.*

Installation

11. Place the new Manifold Assembly onto the chair base and line up the three holes on the bracket with the holes on the chair Swivel Plate Assembly.
12. Install the three 1/4"-20 X1/2" socket head cap screws and install the manifold and reservoir assembly to the chair Swivel Plate Assembly. Using the 1/4" hex wrench, tighten the socket head cap screws securely.

NOTE: *Use care when installing the single screw on the front of the Manifold Assembly. There is a washer (Retaining Flange 107-037-223) included with the screw which is used because of the slotted hole on the front bracket.*

13. Install the four hydraulic lines to the elbow connections on the left side of the Manifold Assembly. Tighten the nuts on the hydraulic lines by hand as tight as possible.
14. Use the 5/8" open-end wrench and securely tighten the hydraulics fittings to the Manifold Assembly.
15. Reconnect the Power Cable from the MaxiSelect Controller.
16. Reconnect eight electrical leads from the Manifold to the MaxiSelect Controller.
17. Reinstall the Chair Back with the 4 screws removed earlier.
18. Replace the Headrest and the optional SMR Solarlite™ bracket using the 4 hex socket cap screws removed in Step 1. of the removal procedures.
19. Cycle the chair to ensure that it is operating smoothly. Make any adjustments necessary.

3.6. Hydraulic Brake Replacement

Tools Required:

- 5/8" Open-end Wrench
- 3/8" Ratchet with 5/8" Socket
- 1/4" Hex Wrench
- Pin Extractor
- No. 1 Phillips Screwdriver

Should the SMR 2700 Maxi Chair Select fail to stop it's rotation when the brake is applied, it may be necessary to replace the Hydraulic Brake. Refer to Figure 3-8 and proceed as follows:

Removal

The step numbers in the below instructions will correspond with the bubble numbers in the referred illustrations.

1. Using the Membrane Switch on the sides of the chair, set the chair to its lowest vertical position.
2. Disconnect the electrical power from the chair.
3. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 3-1.
4. Remove the rear chair housing.
5. Use the 5/8" open-end wrench and remove the hydraulic line from the elbow connection on the brake assembly.
6. Remove the Power Cable Connector from the rear of the Maxi Chair Select Controller. The Power Cable Connector is the bottom of 3 similar plugs on the Maxi Chair Select Controller.
7. Remove the Ribbon Cable connector from the rear of the Maxi Chair Select Controller. The Ribbon Cable Connector is ***not*** pictured in Figure 3-8.
8. Use the 1/4" Hex Wrench to remove the eight 10-32 X 1/2" hex socket-head cap screws that attach the Brake Disk to the Swivel Hub.
9. Use the 5/8" open-end wrench and remove the two 3/8" X 6" bolts and two Brake Mounting Tubes and two 1/8" spacers that attach the Emergency Stop Caliper Brake Assembly to the Chair Swivel Plate.

Installation

1. Using the two 3/8" X 6" bolts and Brake Mounting tubes install the new Emergency Stop Caliper Brake Assembly to the Chair Swivel Plate.
2. Use the 5/8" open-end wrench and tighten the two 3/8" X 6" bolts securely.
3. Push the Ribbon Cable and the Power Cord through the grommet on the caliper brake. See Section 3.6.1. to reinstall the plug on the Power Cord.
4. Use the 1/4" Hex Wrench to install the eight 10-32 X 1/2" hex socket-head cap screws that attach the Brake Disk to the Swivel Hub.
5. Connect the Power Cable Connector and the Ribbon Cable to the Maxi Chair Select Controller.
6. Reinstall the chair housing components and chair back. See Steps 3. and 4. above.

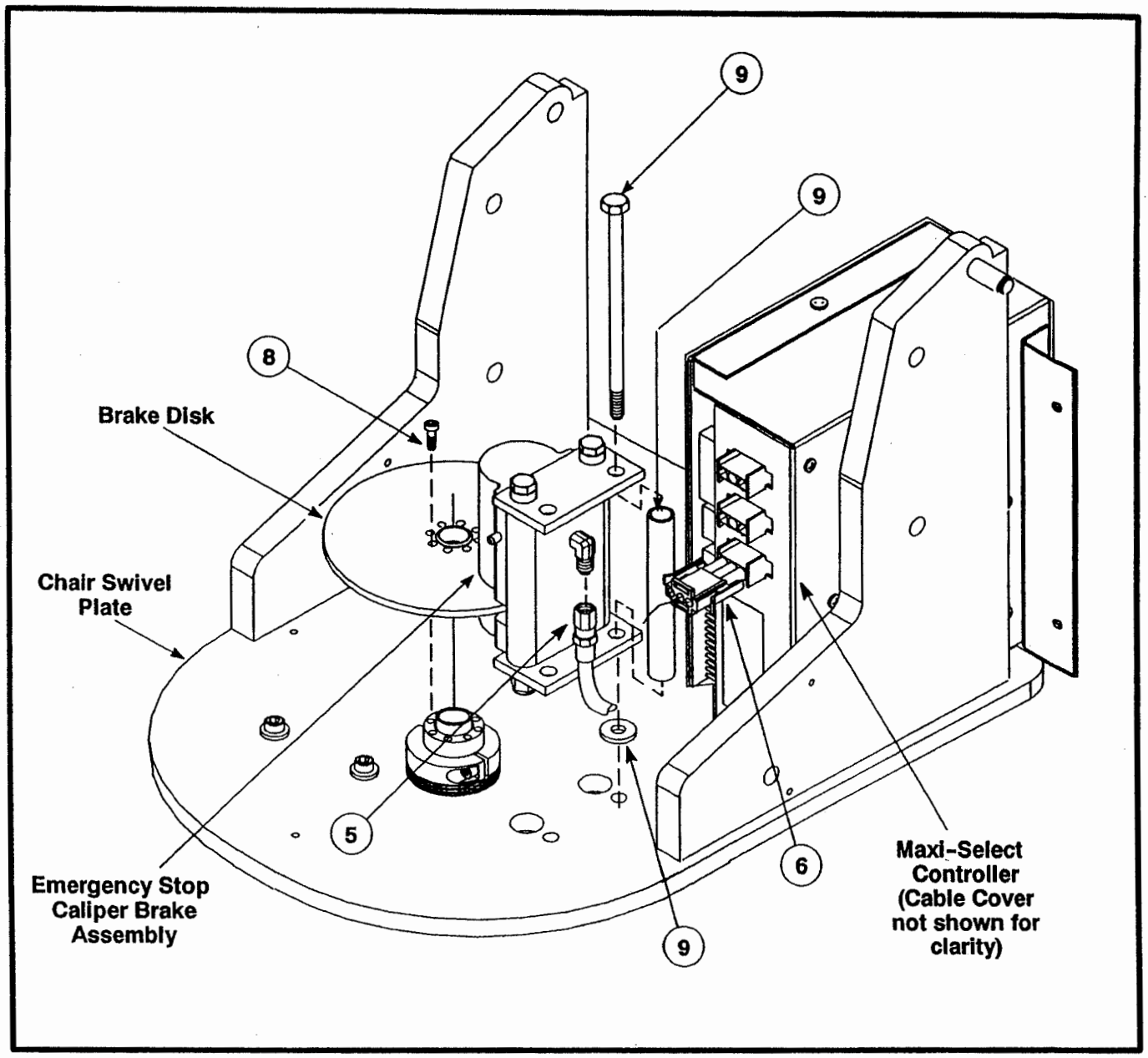


Figure 3-8. Replacing Hydraulic Brake

3.6.1. Removal/Replacement of Power Cord Cable

NOTE: *In order to remove the Emergency Stop Caliper Brake Assembly both the Ribbon Wire Connector and the Power Cord must be pressed through the Cord Grommet in the Brake Disk. The Ribbon Wire Connector can be manipulated by turning the connector along side of the ribbon cable and pressed downward through the grommet. The Power Cord Plug, however, will not fit through the grommet and must be removed from the Power Cord in order to complete this procedure. A Pin Extractor will be required to remove the Power Cord Plug from the the power cord.*

1. Using the Pin Extractor, insert it into each of the three sockets on the Power Cord Plug. Push the Pin Extractor in the open end of the plug until it presses against the tabs on each wire end. Press the sliding handle on the Pin Extractor to push the wire end out of the Power Cord Plug. See Figure 3-9.

2. Remove the Emergency Stop Caliper Brake Assembly and and set it aside.
3. Place the new Emergency Stop Caliper Brake Assembly on the Chair Swivel Plate and repeat **Steps 5 through 10 In *reverse* order.**
4. The Ribbon Cable and the Power Cord must be pushed back up through the Grommet in the Brake Disk.
5. Before reconnecting the Power Plug and The Ribbon Connector to the back of the Maxi Chair Controller, the plug must be reattached to the power cord.
6. Visually examine the Power Cord Plug. Look for a small, flat key running along the top of the plug. See Figure 3-10.

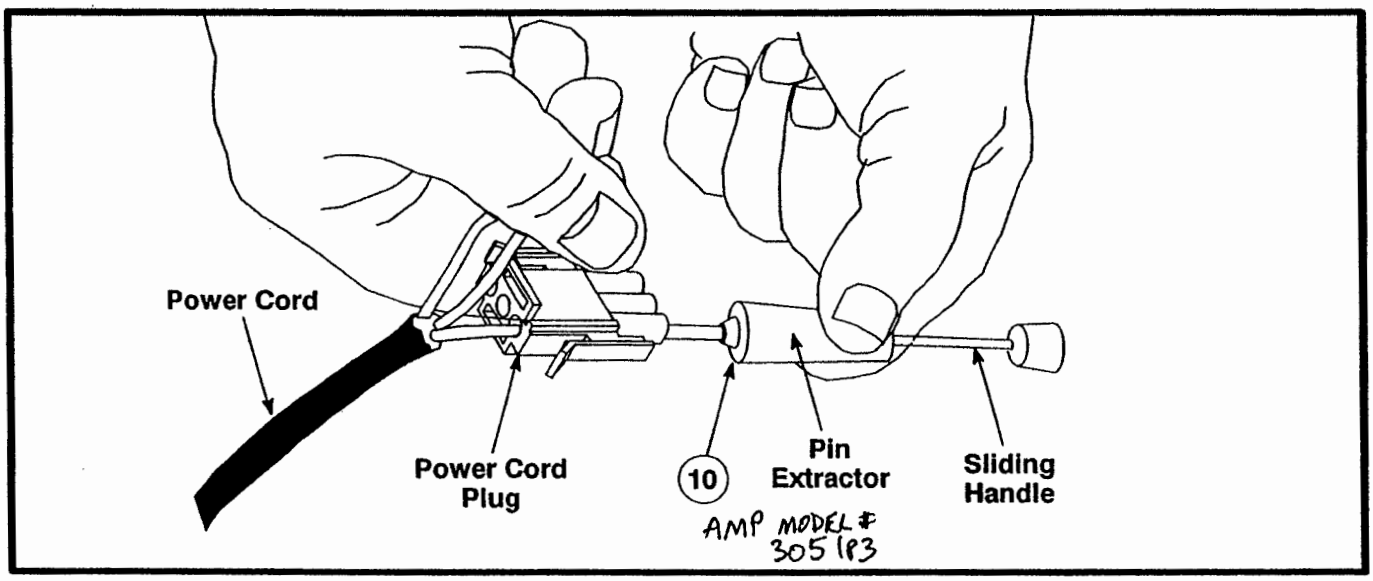


Figure 3-9. Removing the Power Cord Plug from the Power Cord

7. Using the key as a guide insert the three wires from the power cord into the plug. The ***green wire*** goes into the receptacle below the key. The ***brown wire*** goes into the center receptacle and the ***blue wire*** goes into the remaining receptacle. See Figure 3-11.
8. Connect the Ribbon Cable Connector and the Power Cord Plug to the receptacles on the rear of Maxi Chair Controller.
9. Apply electrical power to the chair and cycle test the chair to see if new Emergency Stop Caliper Brake operates per specifications.

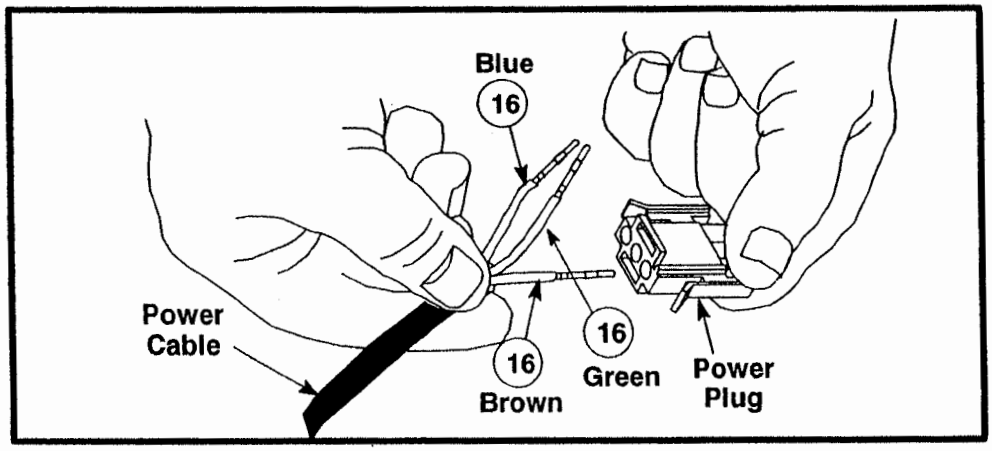


Figure 3-10. Power Cord Plug Keyway

M-F 8-5 PacificTime

AMP CPC Connectors

AMP's Circular Plastic Connectors

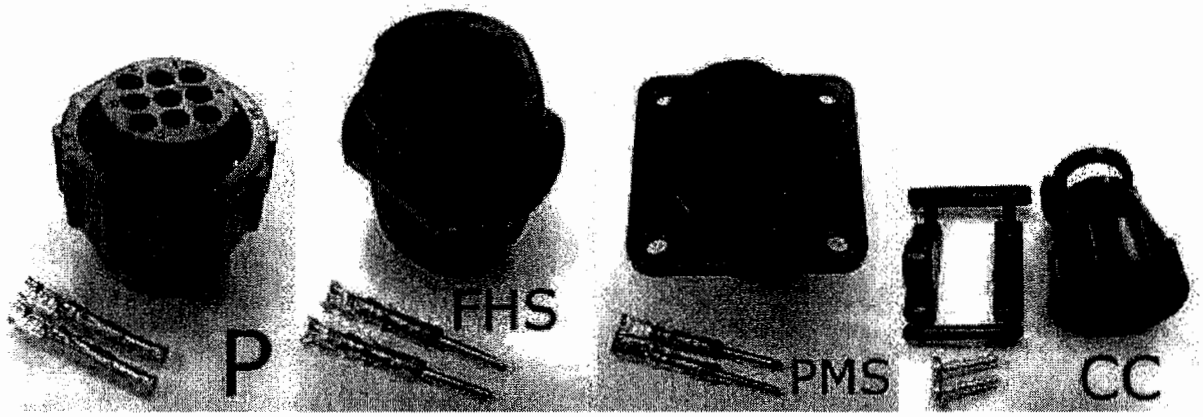
◆ AMP Connectors

◆ Pins

◆ Pin Extractor Tool

◆ Molex Connectors

AMP CPC CIRCULAR PLASTIC CONNECTORS



PIN EXTRACTION TOOL
To extract pins from CPC connectors
MO-305183 AMP#305183 1 ORDER $21.38

Heavy Duty connectors for many applications. Excellent Quality

P=Plug
FHS=Free Hanging Socket
PMS=Panel Mount Socket
CC=Cable Clamp-For Plug, Free Hanging Socket, and Panel Mount Socket
Pins are Included 22-18 AWG and are open barrel crimp type. (9 pin shown)

AMP CPC MALE/FEMALE/CABLE CLAMPS

Choose Quantity Of Each 4 Pin Type - Click Order - With 22/18 AWG

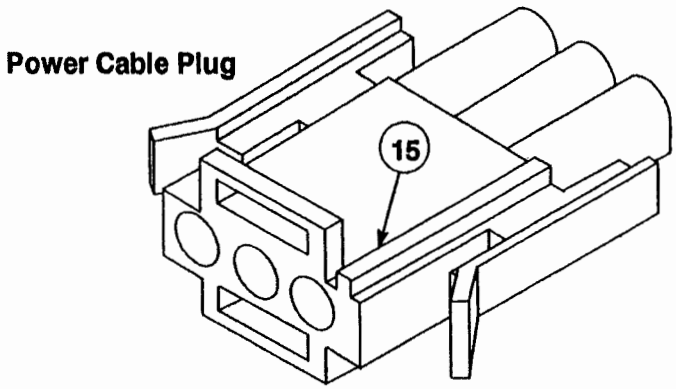


Figure 3-11. Rewiring Power Cable Plug

3.7. Installing the Maxi Select Controller (102-001-212) Cable Cover

A Protective Cover has been designed to fit over the Cable Connectors on the back side of the Maxi Select Controller (102-001-212). The purpose of the cover is to provide added protection to the cable connectors to prevent damage or accidental unplugging.

Tools Required:

- No. 1 Phillips Screwdriver

Refer to Figure 3-12 and proceed as follows to install the Protective. Cover

1. Disconnect Electrical Power to the S2700 Maxi Chair.
2. Remove the protective plastic caps, then use the No. 1 Phillips screwdriver to remove the six screws from the rear chair housing. Refer to Figure 3-1.
3. Remove the rear chair housing.
4. Remove the two No. 1 Phillips head screws from the side of controller opposite to where the Ribbon Cable Assemblies attach. See Figure 3-12.
5. Slide the Protective Cover carefully over the cables at the rear of the controller.
6. Install the Protective Cover, aligning it with the two holes on the side of the Controller, and attaching it with the two Phillips screws removed in Step 4.
7. Reinstall the chair housing components and chair back. See Steps 2. and 3. above.
8. Reconnect Electrical Power to the S2700 Maxi Chair.

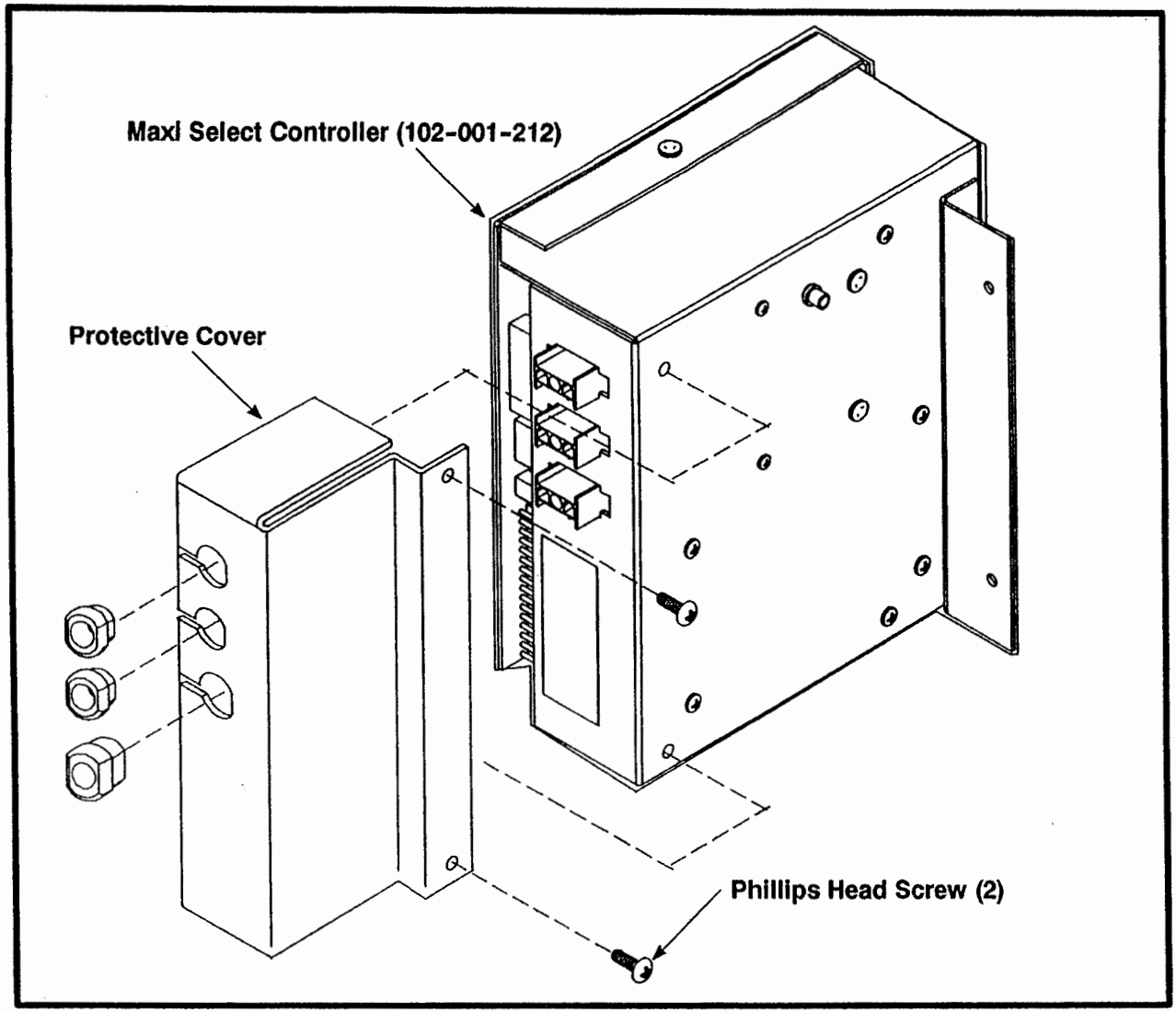


Figure 3-12. Installing Protective Cover on Maxi Select Controller (102-001212)

3.8. Calfrest Replacement

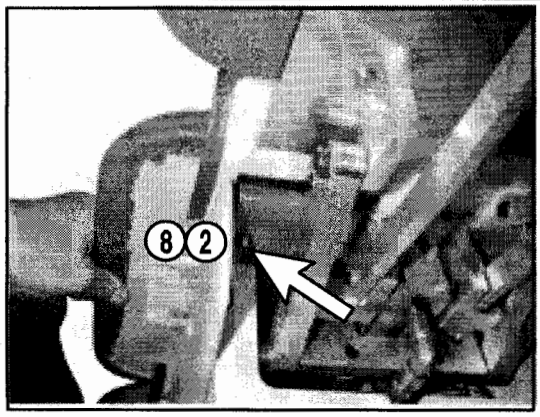
Should the Calfrest on the S2700 Maxi Chair Select Select become worn or damaged in such a way that it needs replacement, Refer to Figure 3-13 and follow the steps below.

Tools Required:

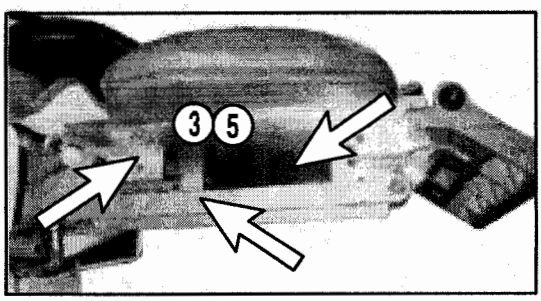
- No. 1 Phillips Screwdriver

Removal of Old Calfrest:

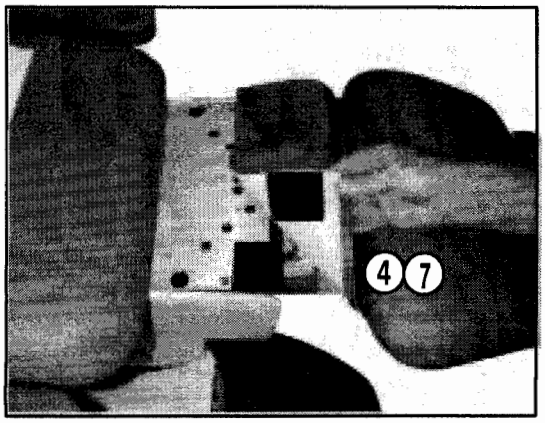
1. Using the Membrane Switches located on the side of S2700 Maxi Chair Select Select or the Footpedal, raise the chair at least 6" from floor and bring the chair to the maximum reclined position (Trendelenberg Position).
2. Using the No. 1 Phillips Screwdriver, remove the two screws beneath the Chair Seat to remove the Seat Cushion. See Figure 3-13.
3. Using the No. 1 Phillips Screwdriver, remove the three screws beneath the Calfrest to remove it from the chair assembly. See Figure 3-13.
4. Complete the removal by lifting upward on each side of the Calfrest Flap unlocking the Velcro patch on each side. See Figure 3-13.



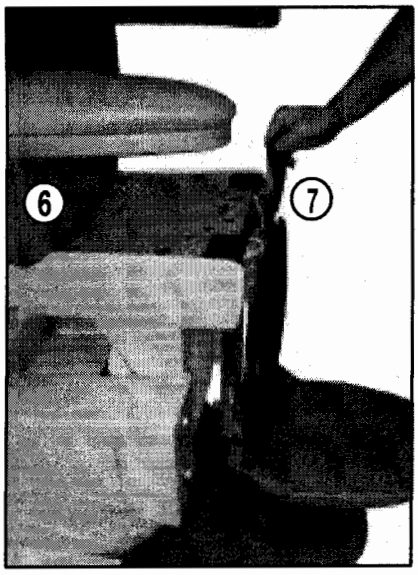
Removing Phillips–head Screws (only 1 of 2 shown) to remove Seat Cushion.



Removing 3 Phillips–head Screws to remove Calfrest.



Removing Calfrest by unlocking Velcro squares that secure it under Chair Cushion.



Securing new Calfrest by locking Velcro squares on flap with those on chair.
NOTE: Chair has been returned to FULL Upright Position.

Figure 3–13. Removal and Installation of Calfrest

Installation of New Calfrest:

5. Using the No. 1 Phillips Screwdriver, replace the three screws beneath the Calfrest to secure it to the chair assembly. See Figure 3–13.
6. Using the Membrane Switches located on the side of S2700 Maxi Chair Select Select or the Footpedal bring the chair to the full upright position.
7. Complete the installation pressing downward on the flaps on each side of the Calfrest Flap locking the Velcro patch on each side in place. See Figure 3–13.
8. Using Membrane Switches, bring chair to fully reclined position.
9. Using the No. 1 Phillips Screwdriver, replace the two screws beneath the Chair Seat to reinstall the Seat Cushion. See Figure 3–13.

3.9. Securing Side Panel

On SMR 2700 MaxiChair Select models prior to serial numbers 01125 and before, it may be necessary to add a screw to secure the side panel on the chairs.

Tools Required:

- 9/64" diameter Drill Bit
- 3/16" diameter Drill bit
- Portable Drill
- #8–32 Hand Tap and Handle
- Tapping Oil (3–in–1 Oil or equivalent)
- (2) #8–32 X 1" Phillips Pan Head Screw (Global p/n: 021–521–075)
- (2) #8 Snap Cover Bottom (Global p/n: 018–028–040)
- (2) #8 Snap Cover Cap (Global p/n: 018–028–041)

Should the Side Panel on the S2700 Maxi Chair Select Select (serial numbers 01125 and before) become loose, Refer to Figure 3–14 and follow the steps below.

Securing the Side Panel

1. Using the Membrane Switches, bring the chair back to its full upright position.
2. Hold the Side Panel "up" against the Seat Bottom and "forward" against the Calf Rest.
3. Using a portable drill, drill a 9/64" hole through the Side Panel and Chair Seat Support Casting approximately in the center of the Side Panel. See Figure 3–14.
4. Hold the Side Panel away from the chair and use the portable drill to enlarge the previous 9/64" hole to 3/16."
5. Using the #8–32 Tap and Handle, thread the hole in the Chair Seat Support Casting.

CAUTION: ***Tap Lubricant (3–in–1 Oil or equivalent) is absolutely necessary in this procedure to prevent the tap from breaking off in the casting.***

6. Use the standard tapping practice of alternating 1 to 1–1/2 turns forward then 1/2 turn backwards to avoid breaking the Hand Tap. Repeat this proceedure until the hole is threaded 5/8" deep.
7. Install the #8 Snap Cover Bottom using the #8–32 X 1" Phillips Pan Head Screw. Thread the screw into the previously drilled and tapped hole in the Chair Seat Support Casting.
8. Push the Snap Cover over the Snap Bottom.
9. Repeat this procedure for the other side of the chair.

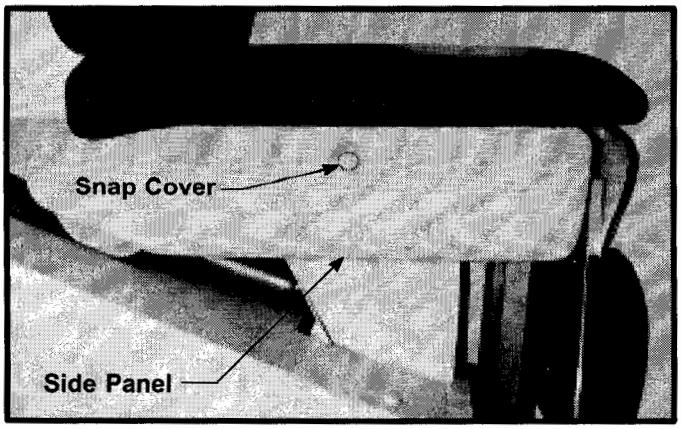


Figure 3–14. Securing Chair Side Panels

NOTES:
1. THESE ITEMS ARE NOT SHOWN.
2. INSERT SCREW (021-621-040) INTO LEFT VERTICAL SUPPORT (ITEM 37) TO SUPPORT MAIN LINK ASSEMBLIES, REMOVE AFTER INSTALLING HYDRAULIC SYSTEM
3. POSITION MAIN LINK TIE PLATE (ITEM 48) SO THE FOUR HOLES ARE CLOSEST TO THE UPPER EDGE.
4. ATTACH LIMIT SWITCH CABLE (ITEM 31) TO LIFT LIMIT BOARD (ITEM 36) J2 CONNECTOR AND CONTROLLER BOX (ITEM 30) SEAT 1 CONNECTOR.

ITEM	QTY	PART NUMBER	DWG SZ	DESCRIPTION
1	1	018-005-018	SS	CLAMP NUT, 2 PIECE 1-1/2-12 THD
2	2	018-005-019	SS	HOSE CLAMP W/VINYL COATING
3	8	018-007-054	SS	E STYLE RETAINING RING Ø7/16 ZINC PLTD
4	2	018-011-296	SS	THRUST WASHER
5	1	018-016-030	SS	SNAP GROMMET HEYCO #2140
6	2	018-020-105	SS	HAIRPIN COTTER PIN .093
7	2	018-027-102	SS	SPACER .875 OD x .406 ID x .125 THK
8	8	018-027-103	SS	SHIM WASHER 1/2 ID x 3/4 OD .010 THK
9	A/R	020-003-005	SS	LOCTITE #242 - BLUE
10	A/R	020-003-007	SS	LOCTITE #271 - RED
11	A/R	020-003-029	SS	HYDRAULIC SEALANT LOCTITE
12	A/R	020-008-003	SS	OIL-HYDRAULIC "ENLUBOL"
13	A/R	020-008-008	SS	LUBRICANT, CMD EXTREME
14	A/R	020-008-027	SS	ENLUBE GPEP 3 HIGH PRESSURE GREASE
15	2	021-515-149	SS	3/8-16 x 6" GRADE 5 BOLT ZINC PLATED
16	4	021-560-042		8-32 x 3/8 PAN HD PHIL INT WASHER ZINC
17	8	021-619-058		10-32 x 1/2 HEX SOC CAP SCW BL OX
18	2	021-619-064		10-32 x 1-1/4 SOC HD CAP SCW BL OX
19	10	021-619-080		1/4-20 x 1/2 SOC HD CAP SCW BL OX
E	20	8	021-624-017		4-40 x 1/4 BHHS CAP SCW BL OX
21	6	021-624-133		3/8-16 x 1-1/4 BHHS SOC BL OX
22	4	021-624-135		3/8-16 x 1-1/2 BHHS SCW BL OX
23	4	021-635-082		1/4-20 x 3/4 FHHS CAP SCW BL OX
24	6	021-635-131		3/8-16 x 1 FLAT HD CAP SCW BL OX
25	64	023-001-049		5/8" DIA BALL, GRADE 25 CHROME STEEL
26	1	023-005-003		THRUST BEARING, TORRINGTON
27	1	034-001-010	SS	EMERGENCY STOP CALIPER BRAKE
28	1	034-003-035	SS	MALE ELBOW 1/8-27 NPTF TO #4 JIC
29	1	039-004-036	A	BRAKE DISK 6.312 DIA W/HOLES
30	1	102-001-212	D	ASSY, CONTROLLER - MAXI SELECT
1 4	31	1	102-004-601	B	ASSY, LIMIT SWITCH , SEAT
32	1	102-004-604	B	ASSY, INTERCONNECT FOOT SWITCH
33	1	102-007-058	B	ASSY, CABLE - POWER ENTRY
34	1	102-025-026	C	ASSY, HYDRAULIC POWER PACK UNIT
1 5	35	1	102-025-028	B	ASSY, BRAKE HOSE
36	1	102-032-027	B	ASSY, LIFT LIMIT BOARD MOUNTING PLATE
37	1	102-032-028	B	ASSY, SWIVEL PLATE
38	1	102-032-029	B	ASSY, LEFT VERTICAL SUPPORT
39	1	102-032-030	B	ASSY, RIGHT VERTICAL SUPPORT
40	1	102-032-031	C	ASSY, LIFT CYLINDER
41	1	102-032-032	B	ASSY, UPPER MAIN LINK LEFT
42	1	102-032-033	B	ASSY, LOWER MAIN LINK LEFT
43	1	102-032-034	B	ASSY, UPPER MAIN LINK RIGHT
44	1	102-032-035	B	ASSY, LOWER MAIN LINK RIGHT
45	1	102-032-036	B	ASSY, FRONT MAIN 4 BAR PLATE
46	1	107-020-213	B	SWIVEL HUB - MACH
47	2	107-020-215	B	BRAKE MOUNTING TUBE
48	1	107-027-715	B	TOP BASE PLATE - MACH
1 3	49	1	107-027-718	B	MAIN LINK TIE PLATE - MACH
50	2	107-027-719	B	LIFT CYCLINDER MOUNTING CLEVIS - MACH
51	2	107-027-735	B	LIFT LIMIT FLAG - MACH
52	1	107-028-104	C	BASE HUB - MACH
53	1	107-028-107	C	POWER ENTRY MODULE - MACH
54	1	107-037-195	B	CORD GROMMET - MACH
55	1	107-037-223	B	RETAINING FLANGE, PUMP - MACH
56	1	113-003-673	B	BASE PLATE - PAINTED
E 1	57	1	007-014-019	SS	CONN, 3 POS. PLUG
E	58	1	018-015-001	SS	STRAIN RELIEF #1200
E	59	2	018-015-016	SS	STRAIN RELIEF #1150
E	60	1	018-015-020	SS	CORD RETAINING CLAMP
E	61	1	021-619-105	SS	5/16-18 x 1/2 SKT HEX SCREW BLK OX
E 1	62	1	102-025-027	B	ASSY, LIFT HOSE
E	63	1	107-022-123	C	GUARD, CONNECTOR ENCLOSURE - MACH

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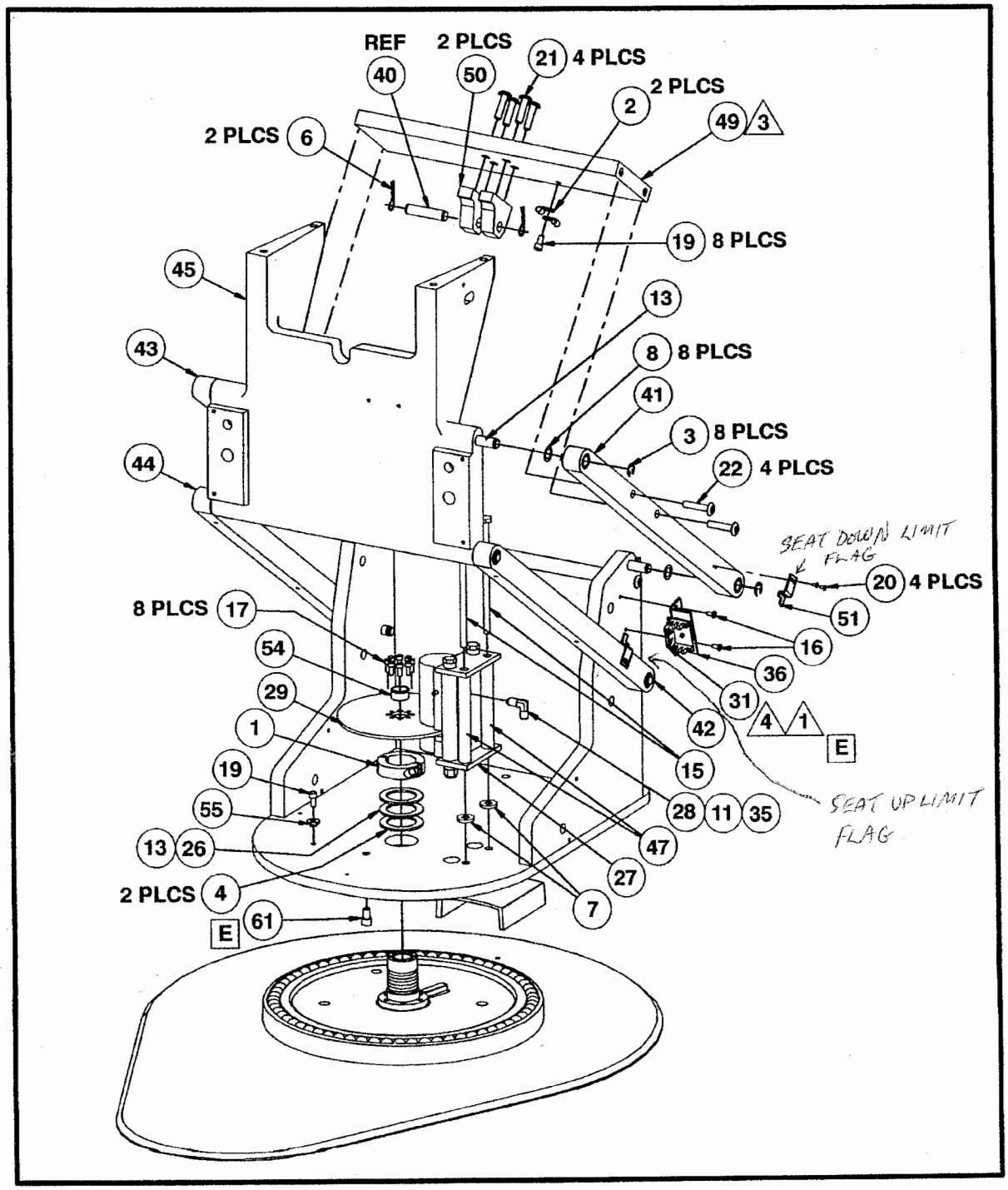
REF
40
2 PLCS
50
21 4 PLCS
2 PLCS
2
49 3
2 PLCS 6
19 8 PLCS
45
13
43
8 8 PLCS
41
3 8 PLCS
44
22 4 PLCS
SEAT DOWN LIMIT FLAG
20 4 PLCS
51
8 PLCS 17
54
16
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29
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SEAT UP LIMIT FLAG
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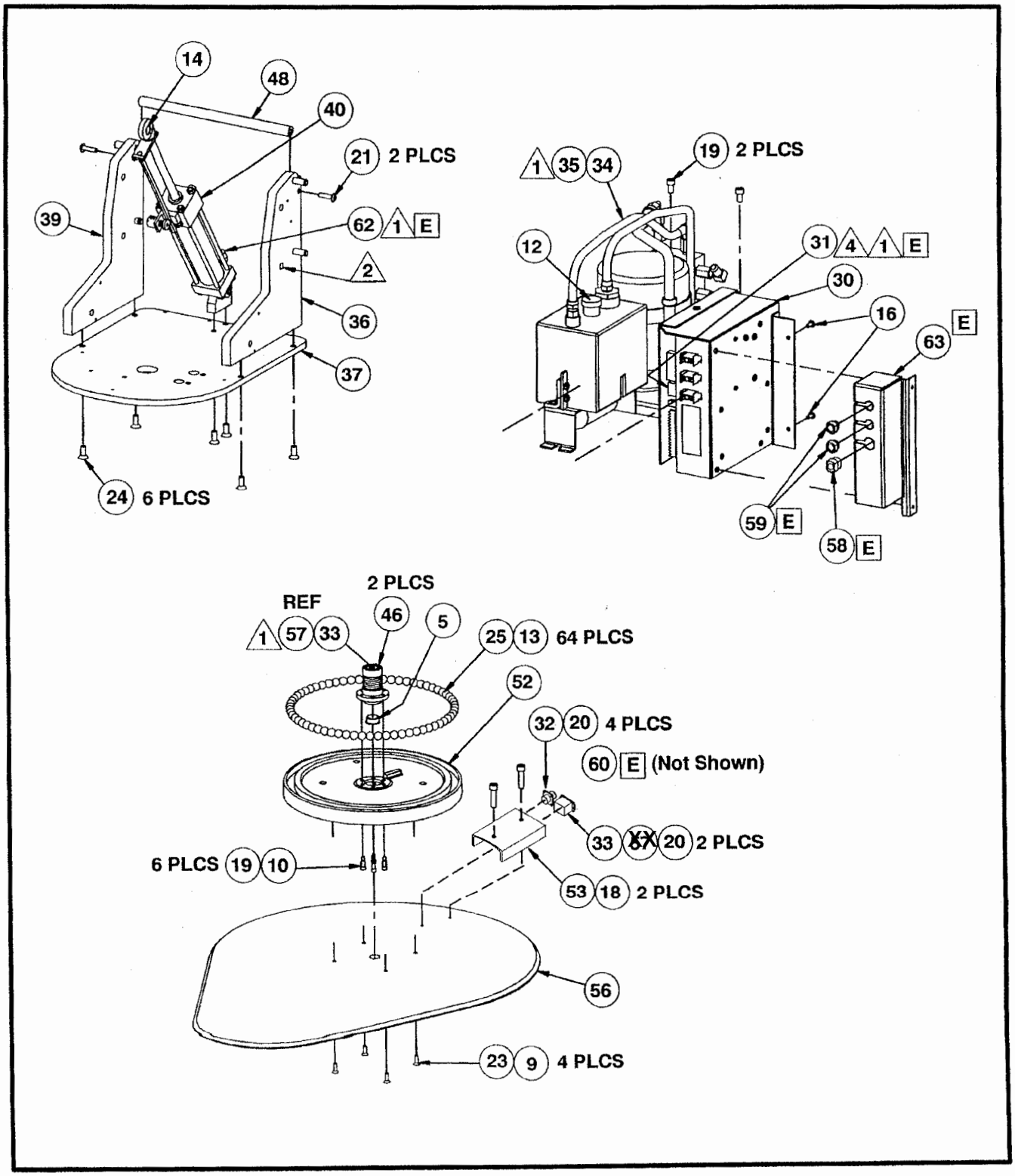

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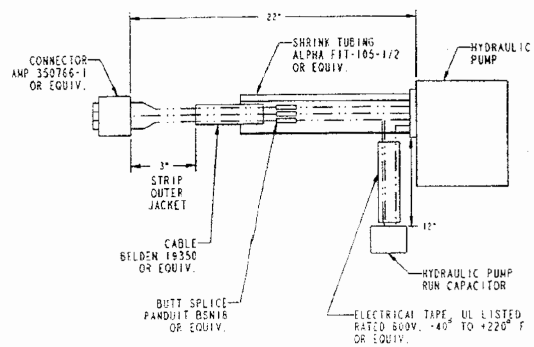
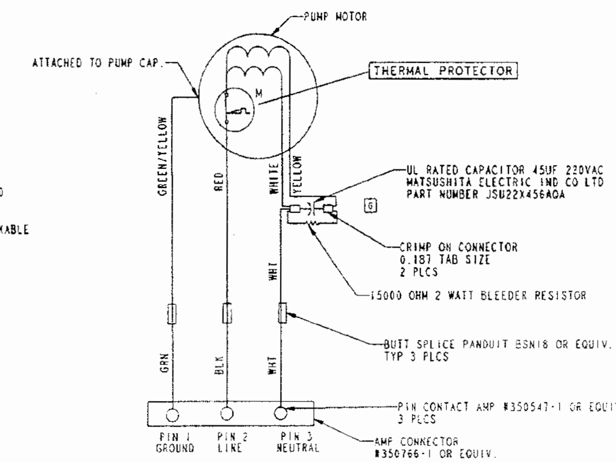
HYDRAULIC PUMP WIRING DETAIL
(SEE SCHEMATIC FOR WIRING DETAILS)

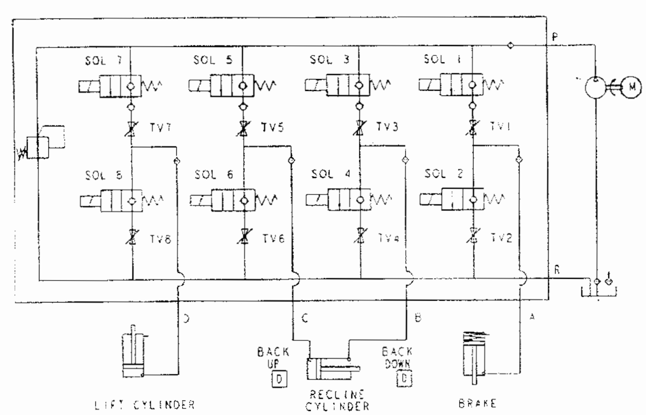


NOTES:

1. PUMP WIRE LENGTH TO BE 22" MEASURED FROM THE PUMP CAP.
2. WIRES ARE TO BE BUNDLED WITH SHRINKABLE TUBING PANDUIT HSTTP50-C 3/8" X 6" LONG OR EQUIV.

PUMP WIRING SCHEMATIC





HYDRAULIC CIRCUIT

G	REMOVED RUN TEE AND REVISED BASE PLATE AND CAPACITOR ON SHT. 1 & 2. REVISED PUMP WIRING & SCHEMATIC ON SHT. 3 PER ECO 286927	05-22-03	BTS
F	REVISED SOLENOID SCHEM. ... WAS 12" ... REVISED PLUG SEQUENCE, PER ECO ...	4-05-02	CAS
C	SEE SHEET 1 FOR CHANGE. ECO 280376	1-21-02	WJK
D	ADD: RUN TEE-SH. 1; SOLENOID MAN. WIRING DETAIL-SH. 2; HYDRAULIC PUMP WIRING DETAIL-SH. 3 ECO 280261	10-24-01	WJK
C	ADD: .50, .875, 3/8 PER ECO 280152	11-19-90	WJK
B	AMP 640428-2 WAS AMP 640426-2 PER ECO 280014	3-6-90	RED
A	RELEASE PER PROJECT 35-553	2-2-00	RED

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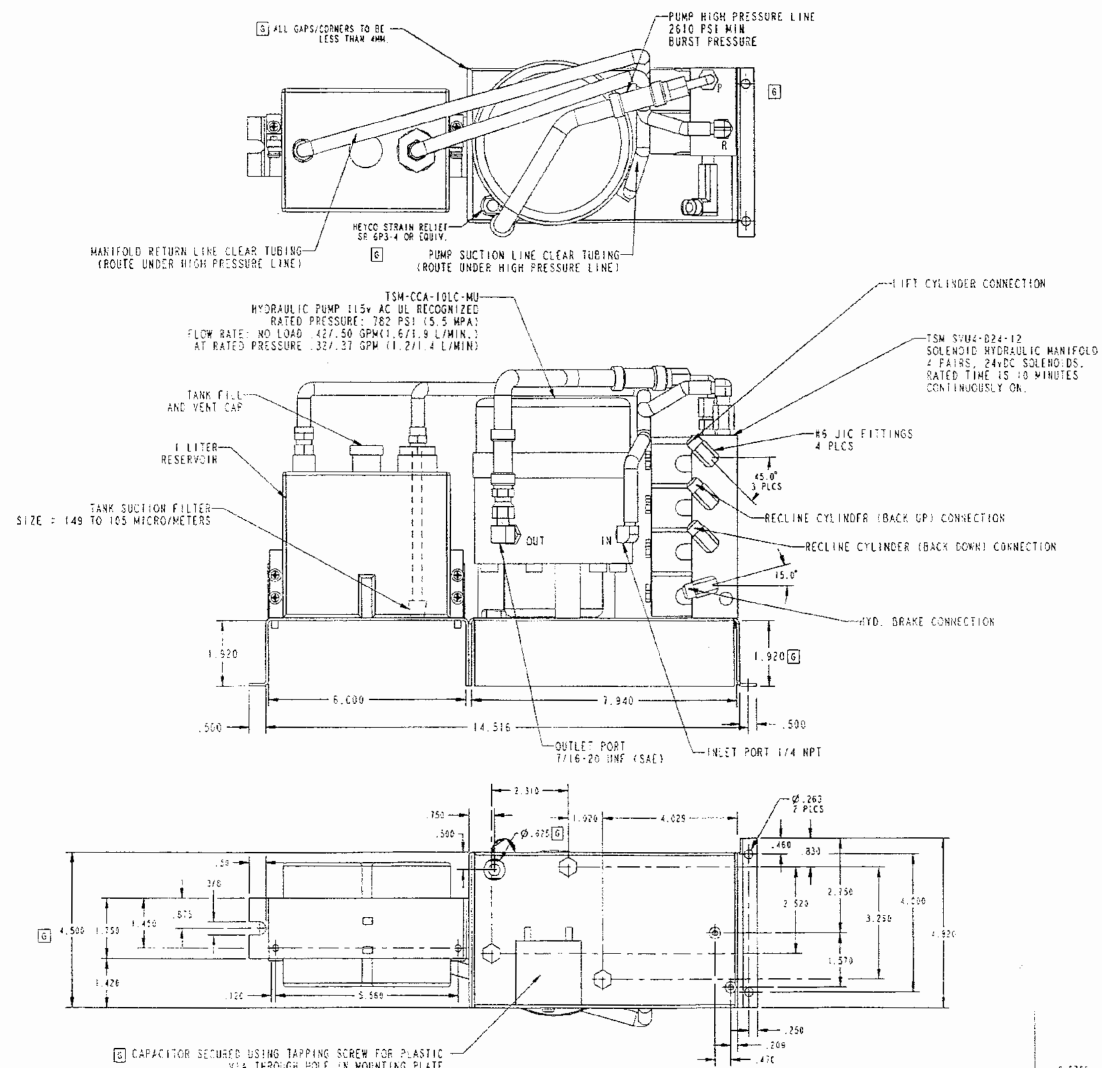
GLOBAL SURGICAL CORPORATION

115v HYDRAULIC POWER UNIT

SIZE D — DWG. NO. 102-025-026 — REV. G

SHEET 3 OF 3

S 2700



REV.	DESCRIPTION, CHANGE ORDER NO. OR RELEASE NO.	DATE	DRAWN	APPROVED
G	REMOVED RUN TEE AND REVISED BASE PLATE AND CAPACITOR ON SHT. 1 & 2. REVISED PUMP WIRING SCHEMATIC ON SHT. 3. PER ECO 200827	05-22-03	BTS	
F	REVISED SCHEMATICS ON SHT. 2 & 3 PER ECO 200812	4-09-02	CAS	CAS
E	TSM-CCA-10LC-MU WAS TSM CCA-10E CB PER ECO 200746	1-21-02	MJK	CAS
D	ADD: RUN TEE-SH. 1; SOLENOID MAN. WIRING DETAIL- SH. 2; HYDRAULIC PUMP WIRING DETAIL-SH. 3 ECO 200704	10-30-01	MJK	CAS
C	ADD: .50, .875, 3/8 PER ECO 200667	11-13-00	MJK	JSG
B	AMP 640426-2 WAS AMP 640428-2 PER ECO 200624	2-6-00	KEO	JSG
A	RELEASE PER PROJECT 58-008	3-2-00	KEO	JSG

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[illegible]

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/64 DECIMALS .XX ±.01 .XXX ±.005 ANGLES ±1/2°
CONCENTRICITY [illegible] .015
BREAK SHARP EDGES
REMOVE ALL BURRS
SHARP CORNERS R.015 MAX.
ALL SURFACE FINISHES = 125

DO NOT SCALE THIS DRAWING

DRAWN KEO DATE 2-17-00
APPROVED KJO DATE 3-2-00
MATERIAL

S 2700
CRS PRODUCTS

GLOBAL SURGICAL CORPORATION
[illegible]

TITLE 115v HYDRAULIC POWER UNIT

SCALE NONE | SHEET 1 OF 3 | SIZE D | DWG. NO. 102-025-026 | REV. G

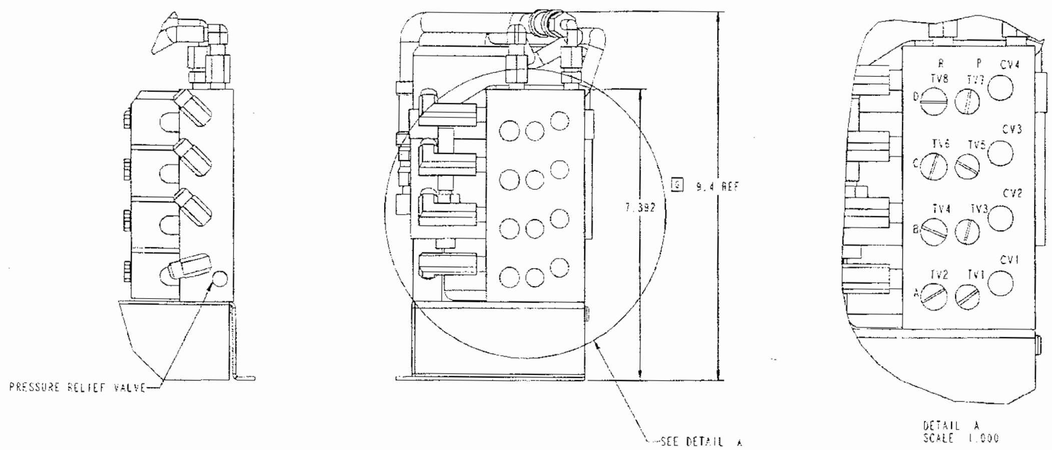
MANIFOLD ADJUSTMENTS:

PRESSURE RELIEF VALVE
1. TURN PRESSURE RELIEF VALVE CLOCKWISE UNTIL FULLY SEATED.
2. TURN PRESSURE RELIEF VALVE COUNTER CLOCKWISE 1-1/4 TURNS.

SEAT FUNCTION
1. TURN SEAT UP (TV7) AND SEAT DOWN (TV8) FLOW CONTROLS CLOCKWISE UNTIL FULLY SEATED.
2. TURN SEAT DOWN (TV8) FLOW CONTROL COUNTER CLOCKWISE 2-1/2 TURNS. THE GOAL HERE IS WITH 100 LBS PLACED IN THE SEAT OF THE CHAIR, IT WILL TRAVEL FROM THE FULLY UP POSITION TO THE FULLY DOWN POSITION IN 17 SECONDS.
3. TURN SEAT UP (TV7) FLOW CONTROL COUNTER CLOCKWISE 1 TURN. THE GOAL HERE IS WITH 100 LBS PLACED IN THE SEAT OF THE CHAIR, IT WILL TRAVEL FROM THE FULLY DOWN POSITION TO THE FULLY UP POSITION IN 17 SECONDS.

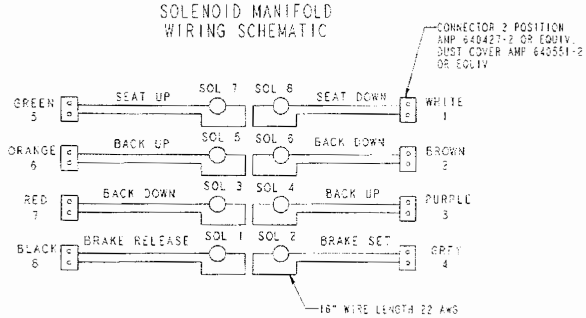
BACK FUNCTION
1. TURN BACK UP (TV5 & TV4) AND BACK DOWN (TV3 & TV6) FLOW CONTROLS CLOCKWISE UNTIL FULLY SEATED.
2. TURN BACK DOWN (TV3 & TV5) FLOW CONTROLS COUNTER CLOCKWISE 1/2 TURN. THE GOAL HERE IS THAT THE BACK OF THE CHAIR WILL TRAVEL FROM THE REST POSITION (75 DEGREE) TO THE FLAT (180 HORIZONTAL) POSITION IN 14 SECONDS.
3. TURN BACK UP (TV 5 & TV4) FLOW CONTROLS COUNTER CLOCKWISE 1/2 TURN. THE GOAL HERE IS THAT THE BACK OF THE CHAIR WILL TRAVEL FROM THE FLAT (180/HORIZONTAL) TO THE REST POSITION (75 DEGREE) POSITION IN 14 SECONDS.

BRAKE FUNCTION
1. NO ADJUSTMENTS ARE NEEDED TO TV2 & TV1.



DETAIL A
SCALE 1.000

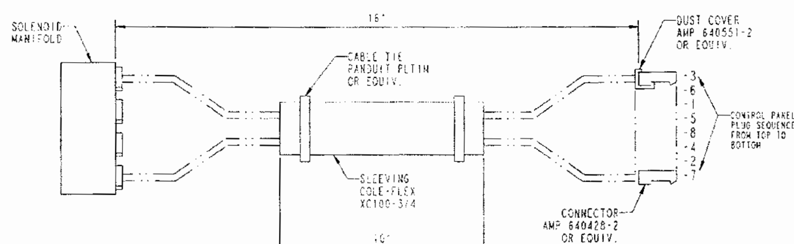
SOLENOID MANIFOLD WIRING SCHEMATIC



NOTES:

1. WIRES MUST EITHER BE COLOR CODED OR NUMBERED AS SHOWN.
2. ALL SOLENOID WIRES ARE TO BE BUNDLED TOGETHER, SHROWDED BY EXPANDABLE SELF FITTING 10" LONG SLEEVING-COLE FLEX #XC100-3/4 OR EQUIV.

SOLENOID MANIFOLD WIRING DETAIL (SEE SCHEMATIC FOR WIRING DETAILS)



REV.	DESCRIPTION, CHANGE ORDER NO. OR RELEASE NO.	DATE	DRAWN	APPROVED
G	REMOVED RUN TEE AND REVISED BASE PLATE AND CAPACITOR ON SHT. 1 & 3. REVISED PUMP WIRING SCHEMATIC ON SHT. 3. PER ECO 200927	05-22-03	BTS	
F	REVISE SOLENOID SCHM., 640427-2 WAS 640428, 10" WAS 12", REVISED PLUG SEQUENCE, PER ECO 200812	4-29-02	CAS	CAS
E	SEE SHEET 1 FOR CHANGE ECO 200746	1-21-02	MJK	CAS
D	ADD: RUN TEE-SH. 1; SOLENOID MAN WIRING DETAIL-SH. 2; HYDRAULIC PUMP WIRING DETAIL-SH. 3 ECO 200106	10-30-01	MJK	CAS
C	ADD: .50, .875, 3/8 PER ECO 200562	1-19-00	MJK	JSG
B	AMP 640428-2 WAS AMP 640426-2 PER ECO 200514.	3-8-00	KEO	JSG
A	RELEASE PER PROJECT 98-006	3-2-00	KEO	JSG

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DRAWN KEO DATE 2-17-00

APPROVED MJD DATE 3-2-00

GLOBAL SURGICAL CORPORATION

TITLE 115v HYDRAULIC POWER UNIT

SCALE NONE | SHEET 2 OF 3 | SIZE D | DWG. NO. 102-025-026 | REV. G

S 2700

Item Details

Product Category: Metalworking & Lubrication > Lubricants > Oils

Description
DTE 24 Premium Hydraulic Oil, 1 quart

Your Price: $4.01
Grainger Item#: 4ZF32
Unit of Measure: 1
Manufacturer: MOBIL OIL
Mfg. Model#: DTE 24
Catalog Page: 1816

Usually Ships : Today

Select Qty.

Add to Personal List >> ADD TO ORDER

Price shown may not reflect your price. *Log-in* above, or click here to register.

TECHNICAL SPEC

Container S
1 quart

Flash Point
395

Pour Point
-10

Viscosity (SUS @
165

SAE Grad
32

NOTES & RESTRICTIONS
MSDS Sheets Available
Modification & Service available contact your local branch.
See Catalog Page for application and/or safety information.

ALTERNATE PRODUCTS

Description
DTE 25 Premium Hydraulic Oil, 5 gallons

Your Price: $53.70
Grainger Item#: 4ZF34

Usually Ships : Today

Select Qty.

Add to Personal List >> ADD TO ORDER

Description
DTE Premium Circulating Oil Light, 5 gallons

Your Price: $57.55
Grainger Item#: 4ZF36

Usually Ships : Today

Select Qty.

FEATURED PRODUCTS:

Dielectric Oil

Manufacturer: ITW/RUSTLICK
Grainger Item#: 1C195
Usually Ships : 1-3 Days
Your Price: $380.00
Qty:
ADD TO ORDER

ENGINEERED LUBRICANTS

Grainger
314 343-0893
Cat. # 391
2000-2001
Page 1799
qt 4ZF32
gal 4ZP33

September 11, 1992

Cat # 392
Page 1923

Mr. Tom Stevens
Storz Instrument Co.
3365 Tree Court Industrial Boulevard
St. Louis, Missouri 63122-6694

Dear Tom:

The following manufacturers are capable of supplying satisfactory off-sets for ENLUBOL 1417-AW Hydraulic Oil.

1. Chevron AW Hydraulic Oil #32
2. Gulf Harmony 32-AW Hydraulic Oil
3. Mobil DTE-24 Hydraulic Oil
4. Shell Tellus 32-AW Hydraulic Oil
5. Texaco Rando Oil HD-32 Hydraulic Oil

There is a considerable amount of merit in your shipping cases of one gallon containers or five gallon pails of our ENLUBOL 1417-AW to central locations for distribution by your personnel.

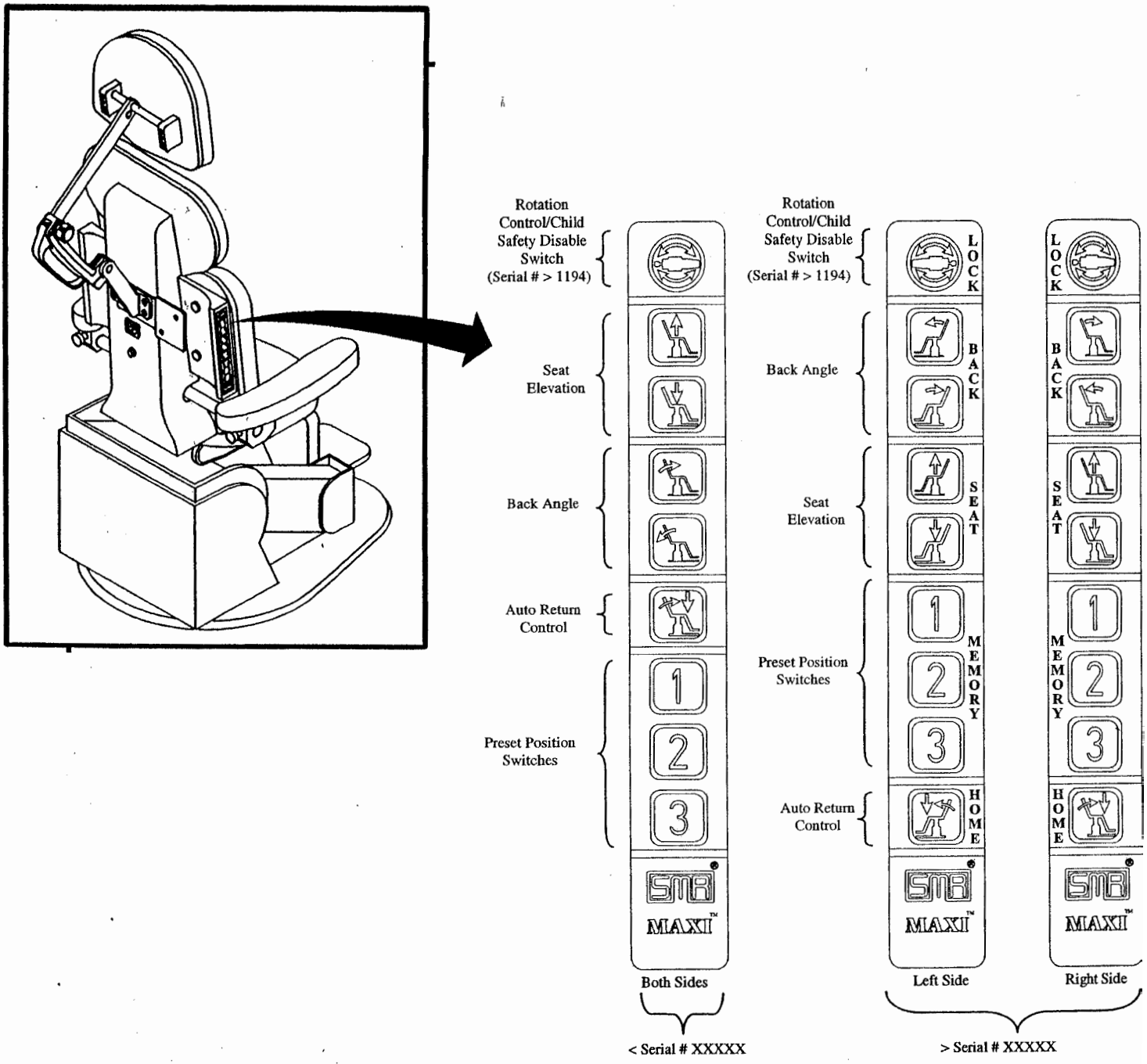
Tom, there is no problem in shipping either one gallon or five gallon containers via UPS. All packages are properly labeled and marked to meet D.O.T. specifications and labeling requirements.

If you have any questions or comments concerning this list of manufacturers, or my suggestions regarding our products in either one or five gallon containers, please call.

Yours truly,

Bob Lueg
Industrial Sales Representative

BL:jw



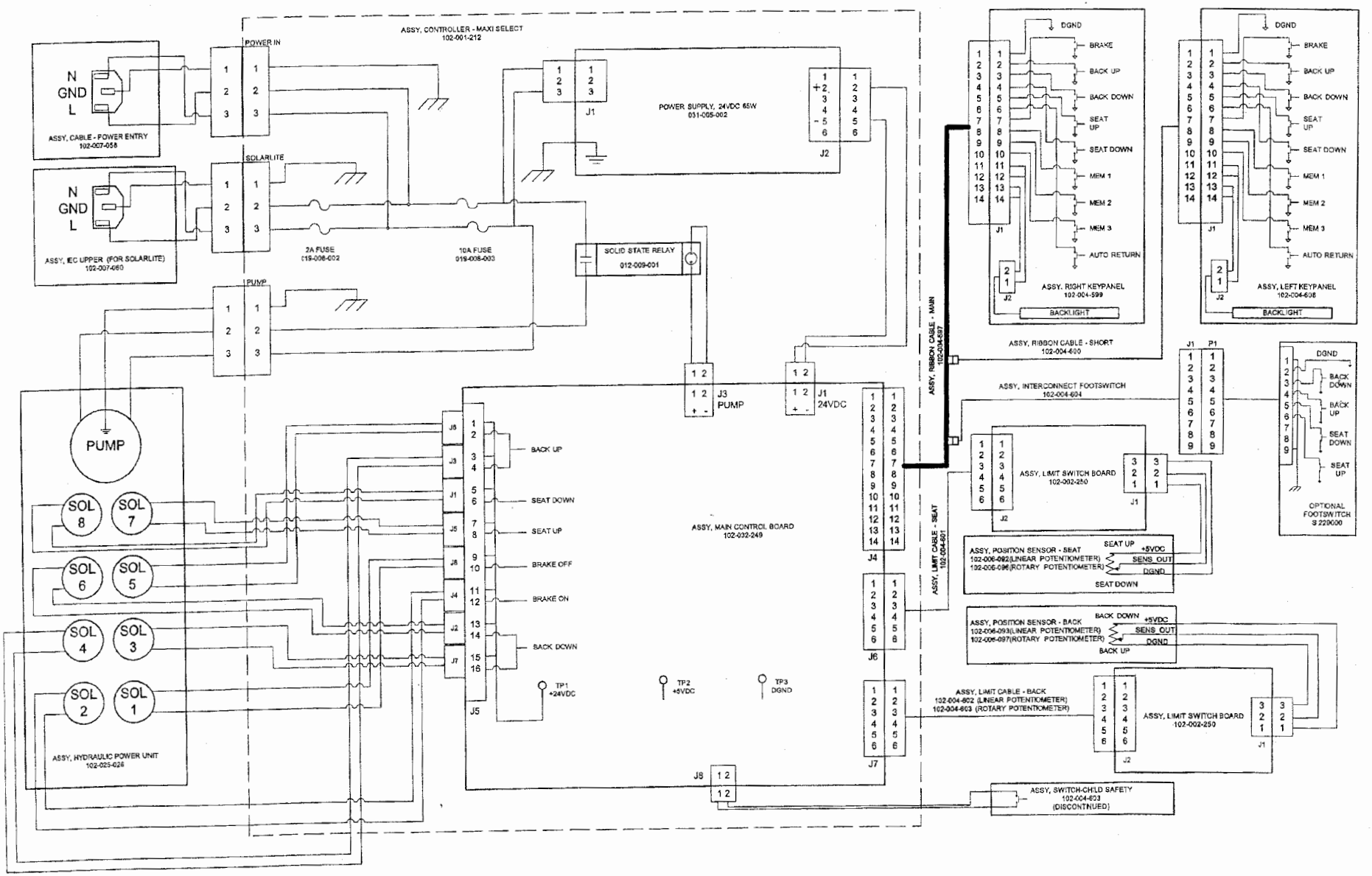
DWG 1.1

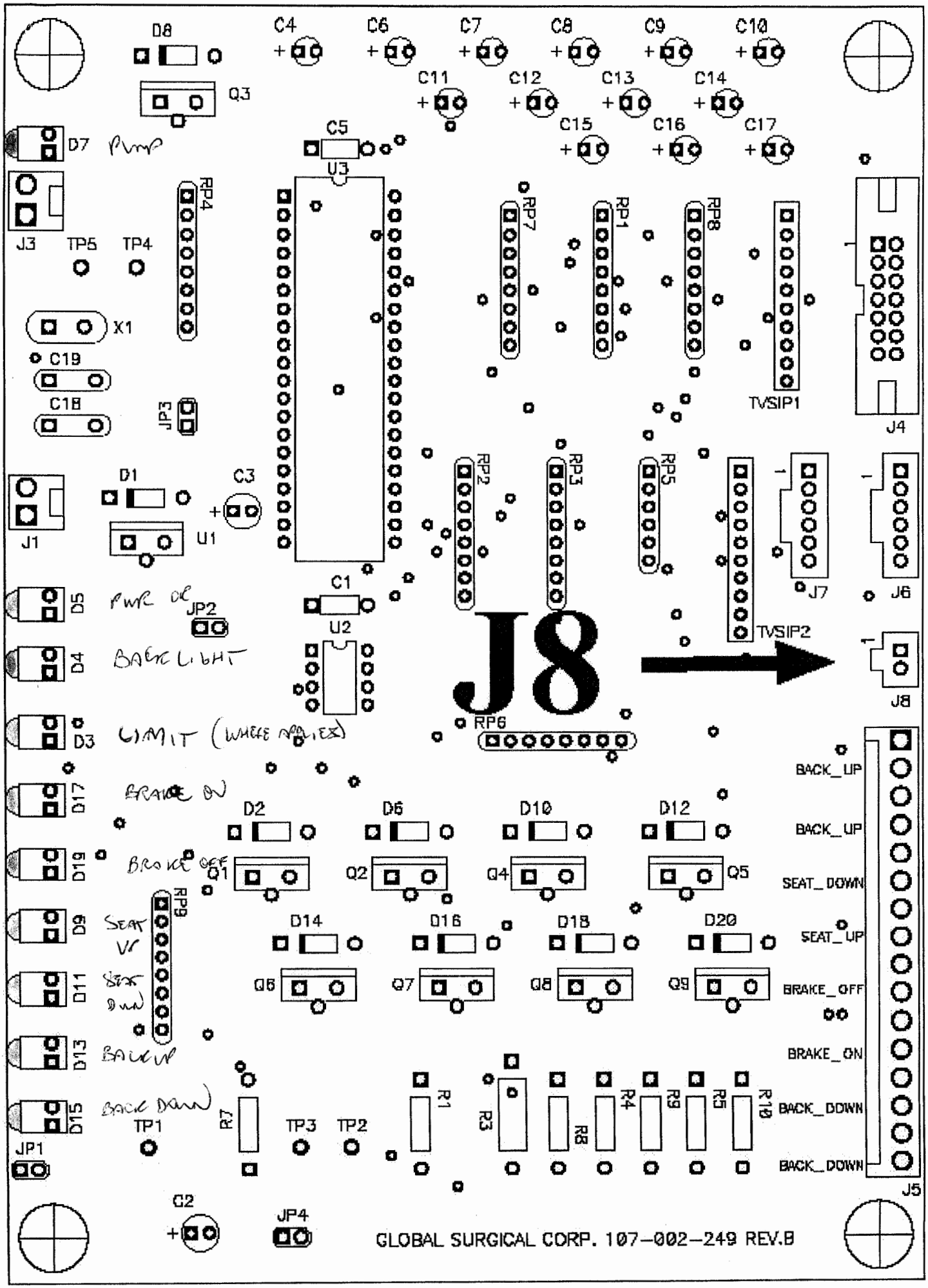
To Replace

Figure 4-1

on page 12 of Owners Manual

P/N 110-015-017


ASSY, CONTROLLER - MAXI SELECT
102-001-212
POWER IN
N
GND
L
ASSY, CABLE - POWER ENTRY
102-007-058
SOLARLITE
ASSY, IEC UPPER (FOR SOLARLITE)
102-007-060
2A FUSE
019-006-002
10A FUSE
019-006-003
PUMP
POWER SUPPLY, 24VDC 65W
031-005-002
J1
J2
SOLID STATE RELAY
012-009-001
J3
PUMP
J1
24VDC
ASSY, RIBBON CABLE - MAIN
102-004-597
ASSY, MAIN CONTROL BOARD
102-032-249
BACK UP
SEAT DOWN
SEAT UP
BRAKE OFF
BRAKE ON
BACK DOWN
TP1
+24VDC
TP2
+5VDC
TP3
DGND
J4
J6
J7
J8
J5
SOL 8
SOL 7
SOL 6
SOL 5
SOL 4
SOL 3
SOL 2
SOL 1
ASSY, HYDRAULIC POWER UNIT
102-025-026
DGND
BRAKE
BACK UP
BACK DOWN
SEAT UP
SEAT DOWN
MEM 1
MEM 2
MEM 3
AUTO RETURN
ASSY. RIGHT KEYPANEL
102-004-599
BACKLIGHT
ASSY, LEFT KEYPANEL
102-004-598
ASSY, RIBBON CABLE - SHORT
102-004-600
ASSY, INTERCONNECT FOOTSWITCH
102-004-604
P1
OPTIONAL
FOOTSWITCH
S 229000
ASSY, LIMIT SWITCH BOARD
102-002-250
ASSY, LIMIT CABLE - SEAT
102-004-601
ASSY, POSITION SENSOR - SEAT
102-006-092(LINEAR POTENTIOMETER)
102-006-096(ROTARY POTENTIOMETER)
+5VDC
SENS_OUT
DGND
ASSY, POSITION SENSOR - BACK
102-006-093(LINEAR POTENTIOMETER)
102-006-097(ROTARY POTENTIOMETER)
ASSY, LIMIT CABLE - BACK
102-004-602 (LINEAR POTENTIOMETER)
102-004-603 (ROTARY POTENTIOMETER)
ASSY, SWITCH-CHILD SAFETY
102-004-603
(DISCONTINUED)


D8
C4
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
Q3
C5
D7
PUMP
U3
RP4
J3
TP5
TP4
X1
C19
C18
JP3
RP7
RP1
RP8
TVSIP1
J4
D1
C3
J1
U1
RP2
RP3
RP5
J7
J6
D5
PWR OK
JP2
C1
U2
J8
D4
BACKLIGHT
TVSIP2
J8
D3
LIMIT (WHERE APPLIES)
RP6
D17
BRAKE ON
D2
D6
D10
D12
D19
BRAKE OFF
Q1
Q2
Q4
Q5
RP9
D9
SEAT UP
D14
D16
D18
D20
D11
SEAT DOWN
Q6
Q7
Q8
Q9
D13
BACK UP
D15
BACK DOWN
R7
R1
R3
R8
R4
R9
R5
R10
TP1
TP3
TP2
JP1
C2
JP4
BACK_UP
BACK_UP
SEAT_DOWN
SEAT_UP
BRAKE_OFF
BRAKE_ON
BACK_DOWN
BACK_DOWN
J5
GLOBAL SURGICAL CORP. 107-002-249 REV.B

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GLOBAL SURGICAL™ CORPORATION

Service Manual Revisions

Maxi Select Controler Software notes
Part # 109003229

Version 1.1 (Check Sum10A5) is a working version that will cycle test for 11 hours and has a child safety feature that is enable/disable via a N.O. Pushbutton switch on the chair back.

Version 2.0 (Check Sum 9D52) is a working version in the field. However, it will fail cycle test due to the *move* time setting in the cycle test mode. Also, this version has a Child safety mode that is enable/disable via the Brake button on the keypad. This eliminates the need for a Pushbutton Assy (P/N 102-004-603) on the back of the chair. ECO#200 659.

Version 2.1 (Check Sum 9DD9) is a working version. The *move* time settings, of Version 2.0, in the cycle test mode were changed to allow the chair to pass cycle test. The Cycle test would last about 11 hours. This version has a Child safety mode that is enable/disable via the Brake button on the keypad.

Version 2.2 (Check Sum 9DA5) is a working version. The Cycle test time, of Version 2.1, was changed to about 3 hours. This version has a Child safety mode that is enable/disable via the Brake button on the keypad.

Version 2.3 (Check Sum BB02) is a working version. The Cycle test, of Version 2.2, has been changed to test the rotary potentiometers when the chair is at the limits.

Version 3.0

Check Sum A9A2 the working version.

Check Sum 7E20 is not a working version.

Several Changes were made to the brake routine. Also 3 Service modes were added to the software. A problem was discovered in production with check sum 7E20. The problem was that the back @75 deg. was being changed after a brake function was made. The cause of the problem involved a temporary storage file address that was being used by two parts of the program at the same time. This problem has been corrected in version 3.0 CHECK SUM A9A2. The software has change from version 2.3 to 3.0 and will include the following changes.

1. The BRAKE button function will be changed. I will list the function before the change and the function after the change.

   1.1. Before the change, the BRAKE button used to toggle the brake off and on when pressed and released within 2-3 seconds. If the button were held longer than 3 seconds, the chair would go into Child Safety mode. The button would work only when the chair was not in a Memory Move function (i.e. MEMORY 1,2,3, or AUTO RETURN.) Also, the brake would not turn "off" if the seat were moving up (while SEAT UP was being held.) Finally, if the BRAKE button were pressed and held while the chair would move into a "crash position" the chair would continue to move past the "crash limit" and potentially damage itself.

   1.2. After the change, the BRAKE button will still toggle the brake off and on. However, if the brake is left "off" for 12 seconds the chair will turn it back "on" automatically. The button will work in any mode (i.e. MEMORY 1,2,3, or AUTO RETURN.) As before, if the button were held longer than 3 seconds the chair would go into Child Safety mode. Also, if the SEAT UP button is pressed and the chair is moving the seat up, the seat up movement will pause for 1 second while the brake is turned "off". The seat up function will not pause when the brake is put back "on" either automatically or manually. This pause is necessary because the hydraulic pump pressure can not push the seat up and turn off the brake at the same time. Finally, if the BRAKE button were pressed and held while the chair would move into a "crash position" the chair would not move past the "crash limit" and therefore prevent damaging itself.

2. Three new features are now included in the software. A control board self-test mode, a keypad test mode, and a limit board test mode. The details on the new modes are listed below.

   2.1. The control board self-test mode allows the board manufacture to perform a operational checkout of the board. The control chip on the board is used to control the test. When the board is connected to the test fixture, the control chip will put the board into a self-test mode. Each input and output will be tested as will the memory chip. If the board fails the test, the keypad back light will flash a code to the user to identify the potential problem. If the board is not supplying the proper voltage or if there is a major short circuit, the board will have no way to flash the code. If the board passes the test, the back light will cycle on for 1 second then turn off for 1/4th of a second and continue to cycle. At this point all LED's on the board should be checked to verify they turn on. The back light LED (D4) will be the only one flashing, all others should be on.

   2.2. The keypad test mode was designed to aid in troubleshooting the chair in the field. This mode is activated when the MEMORY 1 button is pressed as the power is applied to the chair. The test is performed manually. On a working chair, when no buttons on the keypad are pressed the back light will be off. The back light will turn on only when one button is pressed at a time. Each button pressed by itself will turn the light on until it is

released. If two or more buttons are pressed at a time the back light will be off. On a non-working chair, when buttons are pressed or if no buttons are pressed the back light may be off or on depending on the failure. If the light turns on when a button is pressed, then that buttons circuit is good. If the light does not turn on as a button is pressed, this does not necessarily pinpoint that button or its circuit is bad. This only indicates that the overall circuit has a failure. To exit the keypad test mode the power to the chair must be removed then reapplied without pressing the MEMORY 1 button.

2.3. The limit board test mode was designed to aid in troubleshooting the chair in the field. This mode is activated when both the MEMORY 1 & MEMORY 2 buttons are pressed as the power is applied to the chair. The test is self-running and the results are flashed through the back light on the keypad. There are 16 possible codes, not flashing being one. Table below shows the other flashing codes. Some are normal some indicate a failure. To exit the keypad test mode the power to the chair must be removed then reapplied without pressing the MEMORY 1 and MEMORY 2 buttons.

Limit Blocked				Number of keypad back light flashes
Back Down	Back Up	Seat Down	Seat Up	
0	0	0	0	0
1	0	0	0	1
0	1	0	0	2
1	1	0	0	3
0	0	1	0	4
1	0	1	0	5
0	1	1	0	6
1	1	1	0	7
0	0	0	1	8
1	0	0	1	9
0	1	0	1	10
1	1	0	1	11
0	0	1	1	12
1	0	1	1	13
0	1	1	1	14
1	1	1	1	15

Check Sum E26A.

The software has change from version 3.0 to 4.0 and includes changes to both the user mode and service mode.

The new program is reverse compatible. However chairs that had a child safety switch on the back of the chair will have to use the brake button to activate the child safe mode because the switch on the chair back will be unused by the circuit.

The most noticeable change for the user is in the Auto return and Memory positions. A tolerance has been added to prevent the soft stop @ 68 deg if the chair was already close to the 68 deg before the move. This is also true for all memory positions. This tolerance also accommodates the slight over travel of the chair when moving to either the Auto return or other memory positions, and prevents an initial jerking from occurring during memory moves that should result in movement of either the back or the seat, but not both.

Also the crash zone has been redefined to allow full motion of one direction (seat or back) and preventing only the down motion of the direction which would cause a crash. This is typically the case, however if the chair somehow gets too far into the crash zone then both the seat down and back down movements will be prevented. Also, if the chair were too far into the crash zone, and this position were set to a memory preset, the controller would set the memory to a position to the edge of the crash zone for both back and seat. This is 55 deg for the back and links horizontal for the seat.

Another noticeable change is in the back down movement into the crash position. If the seat is low (links below horizontal) and the back down button is held until the back reaches crash, the back down movement will stop and the seat will move up. The seat will continue to move up until the back down button is released or until the seat is higher than crash. When the seat is higher than crash the back will resume to move down.

Finally, the child safety mode timing has been adjusted. To enter child safety mode the brake button is pushed and held until the back light starts to blink (about 4 sec.) To exit child safety mode the brake button is pushed and held until the back light stops blinking (about 6 sec.)

POTENTIOMETER WIRES:

```
RED   = 5 VOLTS DC IN (6-PIN CONN:PIN 1, 3-PIN CONN: PIN 1)
BLACK = COMMON        (6 PIN CONN: PIN 6, 3-PIN CONN: PIN 3)
WHITE = DC VOLT OUT   (6-PIN CONN: PIN 5,  3-PIN CONN: PIN2)
```

METER (NEED ALLIGATOR CLIPS FOR SEAT DOWN MEASUREMENT)
SET TO VOLTS DC (V ---)
BLACK PROBE WIRE TO BLACK POT WIRE
RED PROBE WIRE TO WHITE POT WIRE

POTENTIOMETER VOLTAGE READINGS:

```
SEAT DOWN = 0.75 V (0.079-1.07) CW
SEAT UP   = 4.75 V (3.992-4.94) CCW
BACK UP   = 0.75 V (0.079-1.07) CCW
BACK DOWN = 4.75 V (3.922-4.94) CW
```

Service and Assembly

The **MAIN CONTROL BOARD SELF TEST** is not for field use. It allows the **board manufacturer** to perform a operational checkout of the board. The control chip on the board is used to control the test. When the **board is connected to the test fixture,** the control chip will put the board into a self-test mode. Each input and output will be tested as will the memory chip. If the board fails the test, the keypad back light will flash a code to the user to identify the potential problem. If the board is not supplying the proper voltage or if there is a major short circuit, the board will have no way to flash the code. If the board passes the test, the back light will cycle on for 1 second then turn off for 1/4th of a second and continue to cycle. At this point all LED's on the board should be checked to verify they turn on. The back light LED (D4) will be the only one flashing, all others should be on.

The **KEYPAD AND RIBBON CABLE TEST MODE** was designed to aid in troubleshooting the chair in the field.

This mode is activated when the **MEMORY 1 button is pressed as the power is applied to the chair**. The test is performed manually.

On a working chair, **when no buttons on the keypad are pressed the back light will be OFF**. The back light will **turn on only when one button is pressed at a time**. Each button pressed by itself will turn the light on until it is released. If two or more buttons are pressed at a time the back light will be off.

On a non-working chair, when buttons are pressed or if no buttons are pressed the back light may be off or on depending on the failure. If the light turns on when a button is pressed, then that button's circuit is good. If the light does not turn on as a button is pressed, this does not necessarily pinpoint that button or its circuit is bad. This only indicates that the overall circuit has a failure. To exit the keypad test mode the power to the chair must be removed then reapplied without pressing the MEMORY 1 button.

The **LIMIT BOARD TEST MODE** was designed to aid in troubleshooting the chair in the field.

This mode is activated when both the **MEMORY 1 & MEMORY 2 buttons are pressed as the power is applied to the chair.**

The test is self-running and the results are flashed through the back light on the keypad. There are 16 possible codes, not flashing being one. Table below shows the other flashing codes. Some are normal some indicate a failure. To exit the keypad test mode the power to the chair must be removed then reapplied without pressing the MEMORY 1 and MEMORY 2 buttons.

Limit Blocked				Number of keypad back light flashes
Back Down	Back Up	Seat Down	Seat Up	
0	0	0	0	0
1	0	0	0	1
0	1	0	0	2
1	1	0	0	3
0	0	1	0	4
1	0	1	0	5
0	1	1	0	6
1	1	1	0	7
0	0	0	1	8
1	0	0	1	9
0	1	0	1	10
1	1	0	1	11
0	0	1	1	12
1	0	1	1	13
0	1	1	1	14
1	1	1	1	15

The **EXPANDED TEST and SETUP MODE** was designed to aid in troubleshooting the chair in the field, and can also be used to Reset the Factory Presets for the Soft Stops and Anti-crash Positions, if a new PC Board, new software chip or new Position Sensors (potentiometer(s) have been installed. This mode **can be entered without taking any covers off**.. This mode is activated as follows:

Hold both the MEMORY 1 & MEMORY 3 buttons as the power is applied to the chair, UNTIL THE KEYPAD BACK LIGHT FLASHES ONCE AND STAYS ON, approximately 3 seconds, then release both buttons. The keypad back light will be on but all keys will be locked out from their normal functions.

Press MEMORY 2 AND RELEASE QUICKLY, (You don't have to depress the next buttons quickly, just don't hold any button very long.)
Press SEAT UP AND RELEASE QUICKLY,
Press MEMORY 3 AND RELEASE QUICKLY,
Press SEAT DOWN AND RELEASE QUICKLY.

The **keypad back light will turn off** to indicate in expanded test mode. If the keypad backlight is ON, repeat above procedure until back light turns OFF.

Each key will now perform a different test or function.

The **BRAKE** key will **cycle the brake off then on for a second**. After the test, the program returns to the point before the key was pressed.

The **SEAT UP** key will move the seat up and look for a change in the **Seat potentiometer**. If the Brake key is pressed this test will end. A **fail** will be indicated by a code of **2 flashes** of the key pad, endless until power removed. A fail indicates either a bad potentiometer, limit or flag board (on s/n's below 1875, or version 4.0 software), mechanical problem or hydraulic pump.

The **BACK DOWN** key will move the Back down and look for a change in the **Back potentiometer**. The seat must be at the upper limit to run this test. If the Brake key is pressed this test will end. A **fail** will be indicated by a code of **3 flashes** of the key pad endless until power removed. A fail indicates either a bad potentiometer, limit board or flag, mechanical problem or hydraulic pump.

The **BACK UP** key will move the Back up and look for a change in the **Back potentiometer**. The seat must be at the upper limit to run this test. If the Brake key is pressed this test will end. A **fail** will be indicated by a code of **4 flashes** of the key pad endless until power removed. A fail indicates either a bad potentiometer, limit board or flag(on s/n's below 1875, or version 4.0 software), mechanical problem or hydraulic pump.

The **SEAT DOWN** key will move the seat down and look for a change in the **Seat potentiometer**. The back must be at the upper limit to run this test. If the Brake key is pressed this test will end. A **fail** will be indicated by a code of **5 flashes** of the key pad endless until power removed. A fail indicates either a bad potentiometer, limit board or flag(on s/n's below 1875, or version 4.0 software), mechanical problem or hydraulic pump.

The **MEMORY 1** key, when pressed and held will **open the back solenoids without turning on the pump**. This allows moving the back manually.

The **MEMORY 2** key will set the back auto return position to the current back position. After this key is pressed the chair will be in user mode.

The **MEMORY 3** key will start a **cycle test** and automatically set the factory presets. The cycle test will run the Seat up, Back Down, Back up, Seat Down and Brake test in order then pause for a minute and then cycle again for 60 cycles. A pass code of 1 flash of the key pad endless until power removed. A fail will flash the same code as the failed component. 2 = seat up, 3 = back down, 4 = back up, and 5 = seat down.

The **AUTO RETURN** key will **set the factory presets automatically** and **cause the chair to move through its entire range of motions** . **Be sure there is room for the chair to lay flat and move up and down**. This is like running one cycle of the memory 3 test, however **if the test passes, the chair will go into normal user mode**. A fail will flash the same code as the failed component. 2 = SEAT UP, 3 = BACK DOWN, 4 = BACK UP, and 5 = SEAT DOWN.

Check Sum 866D

The S 2700 Maxi Chair Select firmware has changed from version 4.0 to 5.0. The new firmware eliminates the need for the limit switch circuit boards (2 per chair). Instead, the controller relies on feed back from the seat and back potentiometers for travel limits.

Other improvements were made to both the User mode and Service mode. The new version is reverse compatible with any existing chair. Therefore, the programmed IC or a replacement Control Circuit board with the new programmed IC **can be installed on any previous version chair**. However, chairs with a child safety switch on the back will have to use the brake button to activate the child safe mode because the switch on the chair back will not be monitored by the control board. On chairs with limit boards, the controller will read the position sensor information through the connection on the limit boards, but will ignore the actual limit sensors.

User Mode Improvements:
(Assume all user modes are the same as the last revision, unless changed is listed below)

The user can now program/recall up to 14 positions. This is an increase of 11 positions.

The user now has the option to disable/enable the soft stops. (back pause at flat and 68 deg.) The default on new chairs is enabled and can be changed in service mode.

The user now has the option to disable/enable the active crash prevent feature. (the seat will move up automatically if the back down button is pressed when the back is close to the base.) The default on new chairs is enabled and can be changed in service mode.

The user can now cancel a memory or auto return move by pressing Auto Return, Memory 1,2 or 3. As with previous versions; Back Up, Back Down, Seat Up, or Seat Down will also cancel a memory/auto return move.

The programmed IC now monitors the chair's positions and time of memory moves and auto return. If the chair senses an error during the move, the move is canceled. This will prevent the pump from trying to move the chair in a direction that is obstructed. This also ensures position sensors are functioning.

A degraded user mode is available (selected by holding Memory 1 & 2 at power up) to allow limited use of the chair in the event of a position sensor failure. This mode allows use of the chair until service can be made. While in this mode the chair ignores the position sensors. Therefore, auto return and memory positions are disabled. Furthermore, the user must be aware that while in this mode, the chair can drive to a limit and/or the back can crash into the base, causing damage to the chair..

Service Mode Improvements:
(Assume all service modes are the same as the last revision, unless changed is listed below)

DEGRADED USER MODE (ignores position sensors)
The limit board test mode was replaced with a **DEGRADED USER MODE**. This mode can be used to trouble shoot a chair malfunction, by ignoring the signal from the position sensors (potentiometers).

To activate this mode; **press and hold Memory 1 & 2 as power is applied to the chair and continue to hold for an additional 3 seconds.**

Seat Up, Seat Down, Back Up, and Back Down buttons will move the chair in the proper direction without using position sensors. . Therefore, auto return and memory positions are disabled. Furthermore, the user must be aware that while in this mode, the chair can drive to a limit and/or **the back can crash into the base, causing damage to the chair**. The user must release the button that is causing movement to prevent the crash.

The **ASSEMBLY LINE CYCLE MODE TEST** was changed to ignore the limit boards. The test still runs the same number of cycles and will still flash the same error codes as the previous revision.

The **AUTO FACTORY PRESETS mode** is still activated the same as the previous revision. However, the chair monitors the potentiometer value to find the travel limit rather than use the limit flags to identify the limit. The potentiometer must be 1/4th of a turn from its rotational limit when the chair is at its travel limit. If the potentiometer is not in tolerance, the chair will flash an error code as previous revision.

MANUAL FACTORY PRESET MODE
The Factory Preset Positions can also be set manually . First enter the service mode (Hold Memory 1 & 3 as power is applied until lights flash once and stay on. Then Press and release Memory 2, Press and release Seat Up, Press and release Memory 3, Press and release Seat Down, keypad back light should go OFF, see version 4.0 notes for elaboration).

Then press MEMORY 2. The Manual Factory Preset mode is now activated.

The chair can now be positioned using keypanel or footswitch. The Seat Lower Limit and Back Upper limit are both set at the same time. So use the individual function buttons to move the Back to its most upright position, i.e. 90 degrees, and move the Seat to its lowest position. Note: on earlier versions of the chair, the footrest may contact the base plate. That is okay, because the chair will seldom if ever be used in this combined position. Also, if you try to lower the seat without raising the Back first, it may not go all the way down. Once you have the Back raised and the Seat lowered, then press and release MEMORY 1.

Next, the Seat Upper limit and Back Lower Limit are set at the same time. So use the individual function buttons to ensure both are set to the desired position, first raising the Seat all the way up, then lowering the back to 10 degrees below horizontal. Then press and release MEMORY 2.

This completes the setting. Unplug chair. Wait 10 seconds, reapply power **without pressing any buttons for 3 seconds**. The chair should function normally. To test it, press and release Auto Return. The chair should returns to correct position (Seat all the way down, Back at about 68 degrees above horizontal), If not, i.e. it stops before it gets to correct position, try next Factory Preset Method. If chair went to correct position, proceed to test it by pressing and holding BACK DOWN button. While holding the BACK DOWN button, the back should move to 55 degrees above horizontal, pause, raise the seat approx. 5”, and continue to recline to horizontal, pause,

then continue to recline to -10 degrees. Press AUTO RETURN. Again, the chair should move to proper position. If it passes, re-install all covers, and the chair is ready to use.

DEFAULT FACTORY PRESET MODE

Follow directions above for getting into MANUAL FACTORY PRESET MODE (up to the point where you first hit MEMORY 2.

Then press and release MEMORY 3.

This will set ALL Factory Preset positions to a default value. This value is not 100% accurate because the potentiometer may be installed different from one chair to the next. Therefore, use this as a troubleshooting feature only.

Another option is available which allows the user to **disable/enable the soft stops** (i.e. when the Back is 68 degrees above horizontal and at horizontal) **and/or to allow a servicer to disable/enable the active crash prevention feature.**

To activate this mode; press and hold MEMORY 1 & 3 as power is applied to the chair and continue to hold until the keypad back light flashes once, then release. The keypad back light will stay on. Now press and release AUTO RETURN. The keypad back light will turn OFF.

> While in this mode press and release Memory 1 to display/change status of soft stops. The keypanel backlight is used to display the status of the feature. Backlight ON = disable soft stops, OFF = enable soft stops. Use the Seat Up button to disable and Seat Down to enable the soft stops.
>
> While in this mode press and release Memory 2 to display/change status of active crash prevent. The keypanel backlight is used to display the status of the feature. Backlight ON = disable, OFF = enable. Use the Seat Up button to disable and Seat Down to enable the active crash prevent.
>
> To exit this mode press and release the Memory 3 button at any step/time. After Memory 3 is pressed and released, the chair will return to normal user mode.

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Installation Instructions

S 2700 Controller IC Replacement

Parts List:

Part Number	Quantity	Description
111-019-003	1	Programmed IC, S 2700

5.0

Tools Required:

Phillips Screwdriver #1
Flat Blade Screwdriver

Purpose: The following procedure can be performed to replace the S 2700 chair's Controller IC.

Procedure:

1. Unplug the chair power cord.
2. Remove the following covers in the order listed (see Figure 1 for cover location);
   Rear Base Cover (107-006-222)
   Upper Main Link Cover (107-006-219)

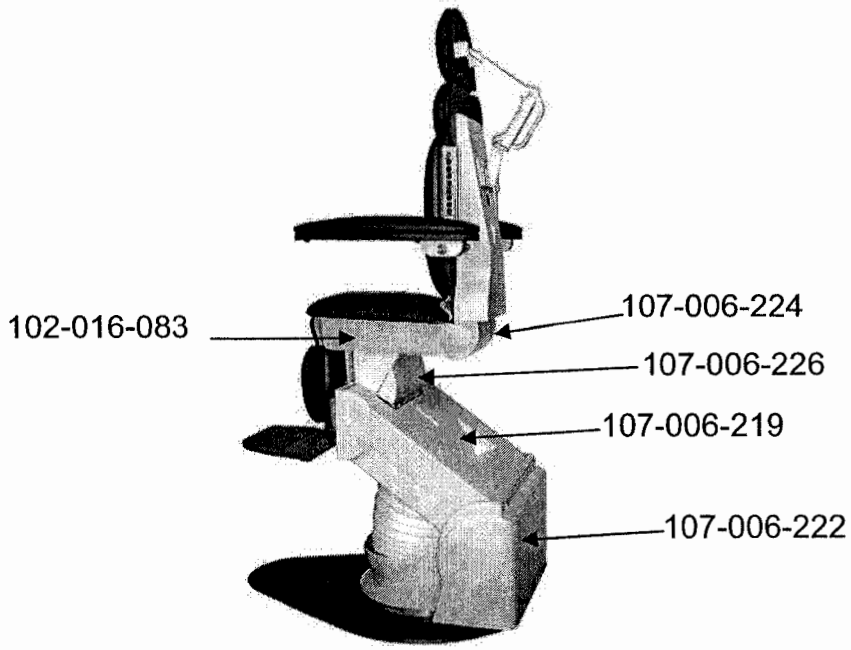

Figure 1

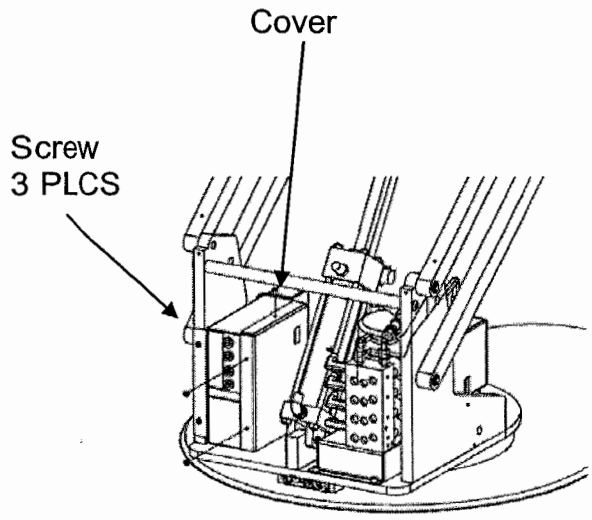

Figure 2

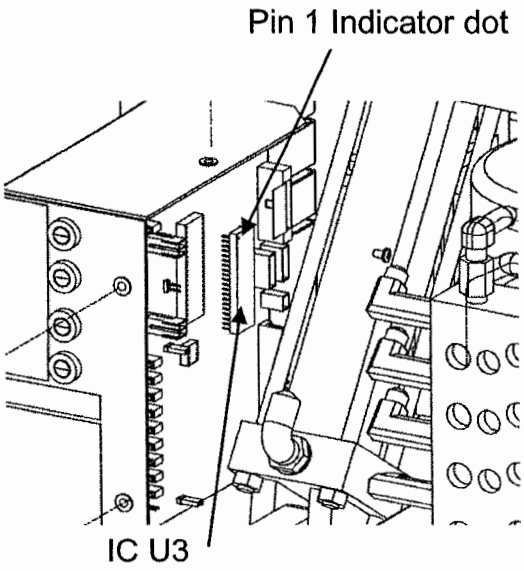

Figure 3

3. Remove three screws and cover from the Controller Assembly. (see Figure 2)
4. Replace IC U3 with supplied programmed IC (111-019-003). Ensure pin 1 of IC is in proper position and that IC is fully inserted into socket. (see Figure 3)
5. Perform "Auto Presets" using the following process. Before performing these steps ensure the chair has room to move to all its limits.
   a. Press and hold both memory keys "1" and "3" while power is applied (plug chair in).
   b. Continue holding both keys for 3 seconds then release keys "1" and "3".
   c. Press and release key "2"
   d. Press and release Seat Up key
   e. Press and release key "3"
   f. Press and release Seat down key.
   g. Press and release Auto Return key. The chair will now move to all limits, if an error is detected the keypad will keep flashing a given number of times depending on the failure. If chair passes the self test/calibration the keypad will flash once then stay on. Call Tech Support for assistance at (800) 861-3610 if an error is detected.
6. Disconnect the power cord from the chair and wait 30 seconds to reset the processor.
7. Apply power to the chair and test all functions. Verify cables are clear of all moving parts during this step.
8. Install all covers.
9. Procedure Complete.

Version 5.0

Check Sum 866D

The S 2700 Maxi Chair Select firmware has changed from version 4.0 to 5.0. The new firmware eliminates the need for the limit switch circuit boards (2 per chair). Instead, the controller relies on feed back from the seat and back potentiometers for travel limits. Other improvements were made to both the User mode and Service mode. The new version is reverse compatible with any existing chair. Therefore, the programmed IC or a replacement Control Circuit board with the new programmed IC can be installed on any previous version chair. However, chairs with a child safety switch on the back will have to use the brake button to activate the child safe mode because the switch on the chair back will not be monitored by the control board. On chairs with limit boards, the controller will read the position sensor information through the limit boards and ignore the limit sensors.

User Mode Improvements:
(Assume all user modes are the same as the last revision, unless changed is listed below)

The user can now program/recall up to 14 positions. This is an increase of 11 positions.

The user now has the option to disable/enable the soft stops. (back pause at flat and 68 deg.) The default on new chairs is enabled and can be changed in service mode.

The user now has the option to disable/enable the active crash prevent feature. (the seat will move up automatically if the back down button is pressed when the back is close to the base.) The default on new chairs is enabled and can be changed in service mode.

The user can now cancel a memory or auto return move by pressing Auto Return, Memory 1,2 or 3. As with previous versions; Back Up, Back Down, Seat Up, or Seat Down will also cancel a memory/auto return move.

The programmed IC now monitors the chairs positions and time of memory moves and auto return. If the chair senses an error during the move, the move is canceled. This will prevent the pump from trying to move the chair in a direction that is obstructed. This also ensures position sensors are functioning.

A degraded user mode is available (selected by holding Memory 1 & 2 at power up) to allow limited use of the chair in the event of a position sensor failure. This mode allows use of the chair until service can be made. While in this mode the chair ignores the position sensors. Therefore, auto return and memory positions are disabled. Furthermore, the user must be aware that while in this mode, the chair can drive to a limit and/or the back can crash into the base.

Service Mode Improvements:
(Assume all service modes are the same as the last revision, unless changed is listed below)

New option set up mode to allow enable/disable soft stops and/or active crash prevent. To activate this mode; press and hold Memory 1 & 3 as power is applied to the chair and continue to hold for an additional 3 seconds, release Memory 1 & 3, then press and release auto return.

> While in this mode press and release Memory 1 to display/change status of soft stops. The keypanel backlight is used to display the status of the feature. Backlight ON = disable soft stops, OFF = enable soft stops. Use the Seat Up button to disable and Seat Down to enable the soft stops.
>
> While in this mode press and release Memory 2 to display/change status of active crash prevent. The keypanel backlight is used to display the status of the feature. Backlight ON = disable, OFF = enable. Use the Seat Up button to disable and Seat Down to enable the active crash prevent.
>
> To exit this mode press and release the Memory 3 button at any step/time. After Memory 3 is pressed and released, the chair will return to normal user mode.

The limit board test mode was replaced with a degrade user mode. This mode can be used to trouble shoot a chair malfunction. Seat Up, Seat Down, Back Up, and Back Down buttons will move the chair in the direction without using position sensors. To activate this mode; press and hold Memory 1 & 2 as power is applied to the chair and continue to hold for an additional 3 seconds.

The assembly line cycle mode test was changed to ignore the limit boards. The test still runs the same number of cycles and will still flash the same error codes as the previous revision.

The Auto Factory Presets is still activated the same as the previous revision. However, the chair monitors the potentiometer value to find the travel limit rather than use the limit flags to identify the limit. The potentiometer must be $1/4^{th}$ of a turn from its rotational limit when the chair is at its travel limit. If the potentiometer is not in tolerance, the chair will flash an error code as previous revision.

The Factory Preset positions can also be set manually. First enter the service mode(2,Seat Up, 3 Seat Down). Then press Memory 2. The chair can now be positioned using keypanel or footswitch. The Seat Lower Limit and Back Upper limit are both set at the same time. So ensure both are set to the desired position then press Memory 1. The Seat Upper limit and Back Lower Limit are set at the same time. So ensure both are set to the desired position then press Memory 2. Memory 3 will set ALL Factory Preset positions to a default value. This value is not 100% accurate because the potentiometer may be installed different from one chair to the next. Therefore, use this as a troubleshooting feature only.

GLOBAL SURGICAL™ CORPORATION	Repair Instructions
	S 27000 Ribbon Cable Repair Kit Part # 124-003-083

Parts List:

Part Number	Quantity	Description
007-010-143	1	FEMAL 14 PIN FLAT CABLE CONNECTOR
007-010-146	1	MALE 14 PIN FLAT CABLE CONNECTOR
107-006-226	1	REAR COVER
018-028-040	4	SCREW COVER WASHER
018-028-041	4	SCREW COVER
021-560-042	4	8-32 X 3/8 PHILLIPS SCREW
018-006-001	4	4" TIE WRAP

Tools Required:

#1 Phillips Screwdriver
¼" Slotted Screwdriver
Scissors
Vise-Grip Locking Pliers

Purpose: The following procedure can be performed when the ribbon cable is damaged at the point shown in fig 1.

Ribbon Cable repair procedure

1. Use a slotted screwdriver to remove the 6 screw caps that cover the screws that secure the BASE REAR COVER to the base. (Fig 2)
2. Remove the 6 screws and the BASE REAR COVER.
3. Press the seat up button until the chair reaches the UP limit. If the seat up button will not lift the chair then perform the *Seat Up Jumper procedure* on the bottom of page 2.
4. Unplug the chair.
5. Remove the 4 screw covers and screws that secure the UPPER MAIN LINK COVER to the main link. (Fig 2)
6. Remove the UPPER MAIN LINK COVER.
7. Remove the 4 screw covers and screws that secure the 107-006-226 REAR COVER to the chair. (Fig 2)
8. Remove and discard the 107-006-226 REAR COVER. (This is to be replaced with the new cover provided.)
9. Using a pair of scissors, remove and discard the damaged section of ribbon cable by cutting the ribbon cable just above and below the damaged section. (Fig 3)

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Ribbon Cable repair procedure (continued)

10. Locate the top half of the ribbon cable cut in step 9, and crimp part number 007-010-143 to the end of that cable at the point where it has been cut. To crimp the connector to the cable, adjust the jaws of a pair of locking pliers so they are 3/8" apart when closed. Insert the ribbon cable into the connector so the brown wire is in the pin #1 location. Then place the jaws on the pin #14 side of the connector and close the pliers until they lock. Then use the pliers to crimp each side and the middle of the connector until the two parts of the connector are locked together. (Fig. 4)
11. Locate the bottom half of the ribbon cable cut in step 9, and crimp part number 007-010-146 to the end of that cable at the point where it has been cut. To crimp the connector to the cable, adjust the jaws of a pair of locking pliers so they are 1/2" apart when closed. Insert the ribbon cable into the connector so the brown wire is in the pin #1 location. Then place the jaws on the pin #14 side of the connector and close the pliers until they lock. Then use the pliers to crimp each side and the middle of the connector until the two parts of the connector are locked together. (Fig. 5)
12. Insert the connector installed in step 10 into the connector installed in step 11 so they are fully seated together.
13. Position the ribbon cable so the new splice is away from the point in Fig. 1. You will have to take some slack from the control box end of the cable.
14. Install the new 107-006-226 REAR COVER using the 4 screws removed in step 7.
15. Plug the chair in.
16. Press Seat Down then Seat Up on key panel so chair travels from limit to limit and ensure the cables are not pinched or stretched during the chairs travel. If necessary, re-route the cable bundle to prevent contact with the chair.
17. Repeat step 15 until the chair can travel from limit to limit with out pinching or binding the cables.
18. Install tie wraps to the cable assembly as needed.
19. Install the UPPER MAIN LINK COVER and screws removed in steps 5 & 6.
20. Install the BASE REAR COVER and screws removed in steps 1 & 2.
21. Install all screw covers that were removed during the procedure.
22. Test all chair functions.

Seat Up Jumper procedure

1. Remove the 3 screws and the Control Box Cover from the control box. (Fig 6)
2. **Warning**: The chair will move up after this step, keep all people and obstacles away from moving parts. Move the jumper from JP4 "HOLDER" to JP1 "SEATUP" on Control Board. (Fig 7)
3. After the chair reaches the limit move the jumper from JP1 "SEATUP" to JP4 "HOLDER" on Control Board. (Fig 6)
4. Install Cover and Screws removed in step 1 of **Seat Up Jumper Procedure.**
5. Resume Ribbon Cable repair procedure from step 4 on page 1.

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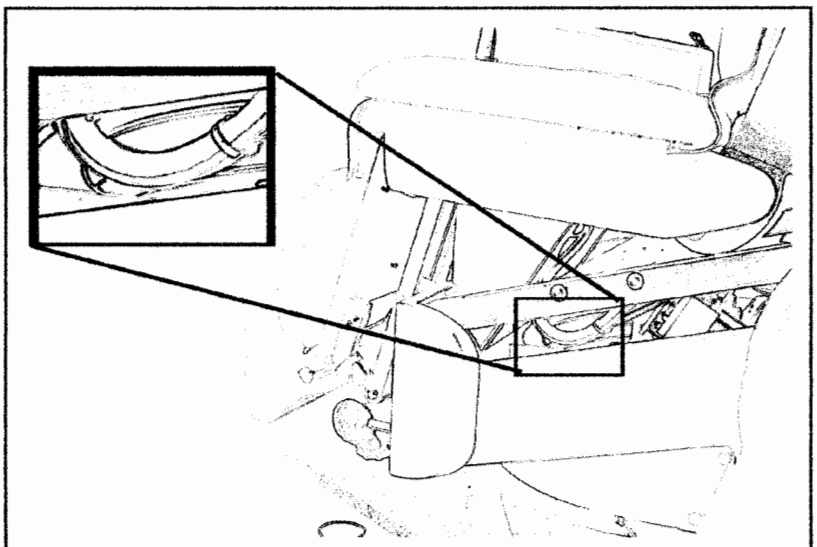

Figure 1. Pinch Point

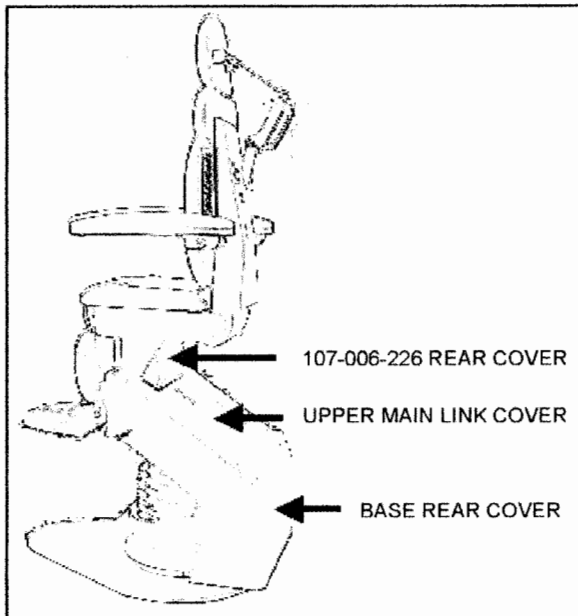

Figure 2. Covers

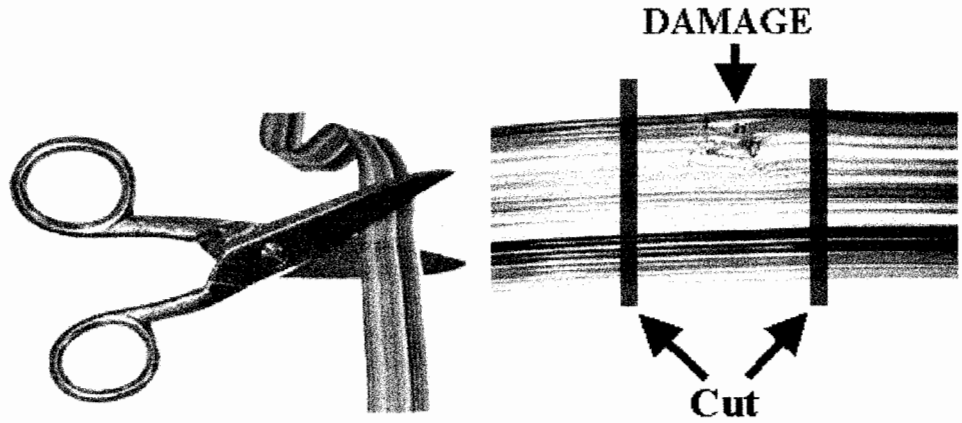

Figure 3. Cut Cable

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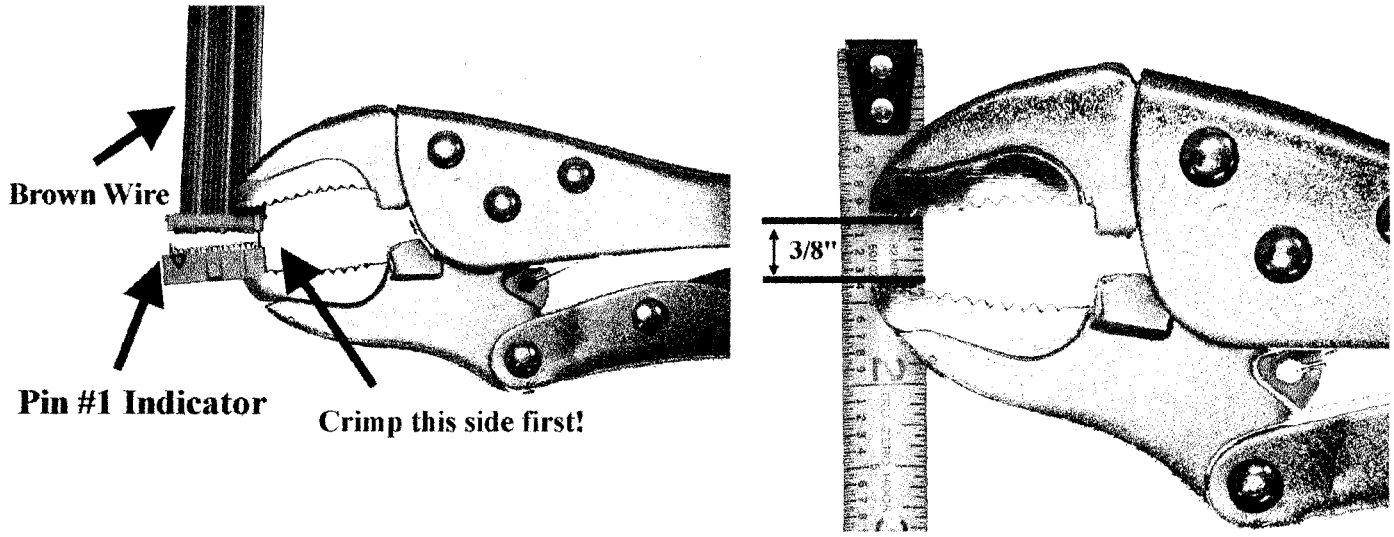

Figure 4. Part Number 007-010-143 Installation.

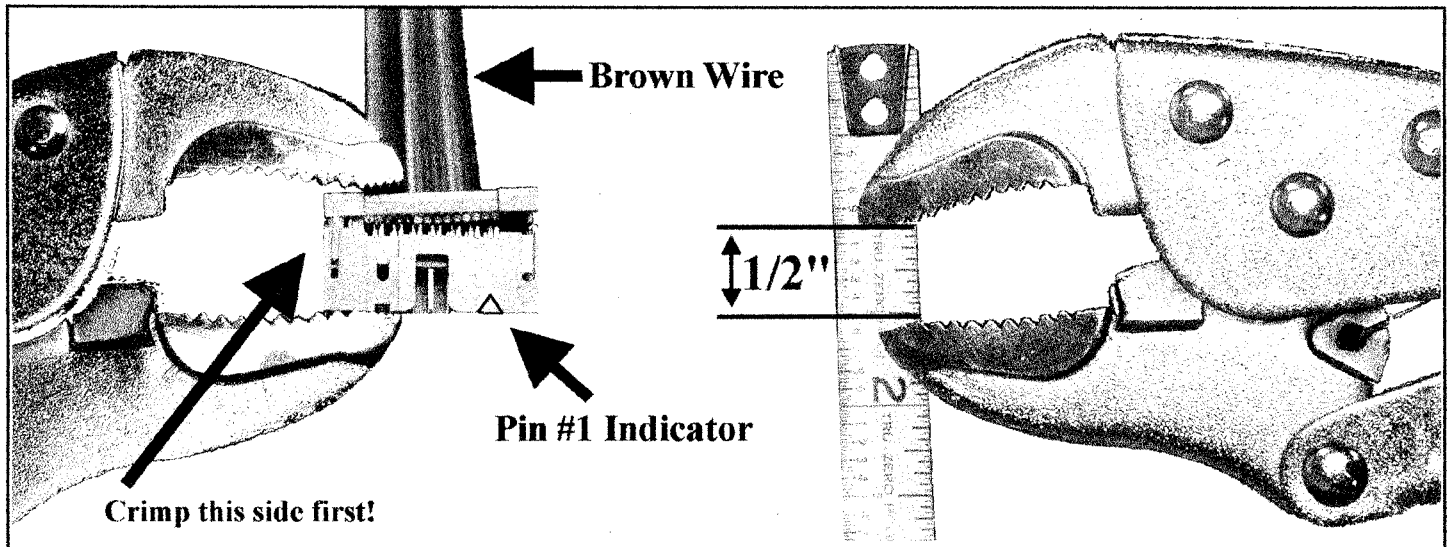

Figure 5. Part Number 007-010-146 Installation.

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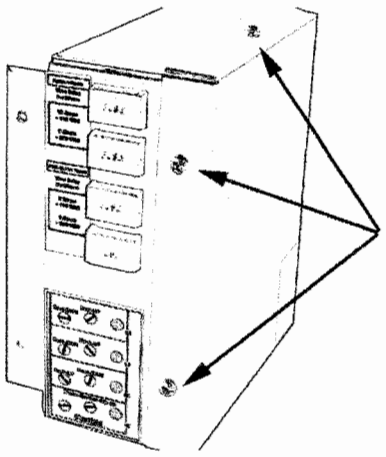

Figure 6. Control Box Cover

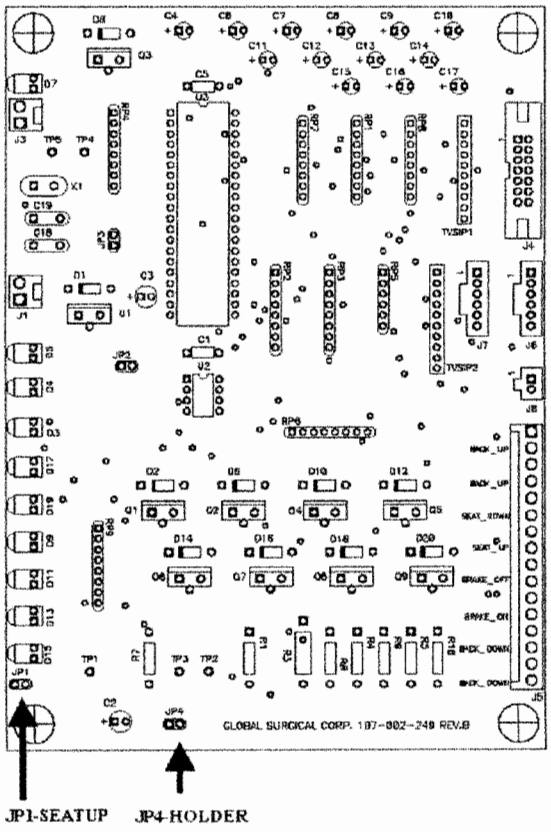

Figure 7. Jumper Location

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Installation Instructions

S 2700 LINEAR POTENTIOMETER UPGRADE KIT

Parts List:

Part Number	Quantity	Description
018-002-147	3	SPACER - ROUND, 1/8 ID X 1/4 OD
018-006-002	6	TIE WRAP - 8" # PLT 2I
021-035-022	3	4-40 X 5/8 FHHS CAP SCREW, SS
021-619-024	3	4-40 X 1 HEX SKT. CAP SCREW, BLACK OXIDE
021-619-031	4	6-32 X 5/8 SKT HEAD CAP SCREW, BLACK OXIDE
021-624-017	4	4-40 X 1/4 BHHS CAP SCREW, BLACK OXIDE
102-004-606	1	ASSY, LIMIT SWITCH, BACK (CABLE)
102-032-075	1	ASSY, POTENTIOMETER BRKT, BACK
107-027-772	2	SEAT RACK CLAMP - MACH
107-027-792	1	BACK DOWN LIMIT FLAG - MACH
107-027-793	1	BACK UP LIMIT FLAG - MACH
107-027-794	2	BACK RACK BRACKET - MACH
123-006-177	1	PRECISION RACK - MODIFIED

Tools Required:

and Held Drill
1/8" Drill Bit
1/16" Hex Wrench
3/32" Hex Wrench
7/64" Hex Wrench
7/32" Hex Wrench
Diagonal Cutters
Phillips Screwdriver #1
Flat Blade Screwdriver
5/16" Nut Driver
1/4" Open-End Wrench
5/16" Open-End Wrench
1/2" Open-End Wrench

Purpose: The following procedure can be performed to replace the S 2700 chair's back linear potentiometer with a rotary style potentiometer.

Procedure:

1. Assemble rack assembly as shown in Figure 1.

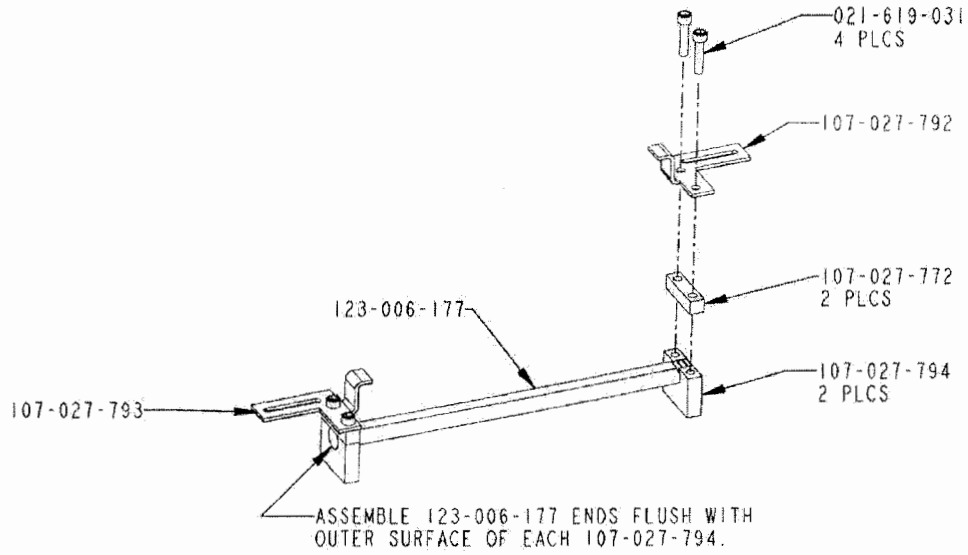

Figure 1

2. Position the Back and Seat to their "UP" limits.
3. Remove the following covers in the order listed (see Figure 2 for cover location);
   - Rear Base Cover (107-006-222)
   - Upper Main Link Cover (107-006-219)
   - Aft Cover (107-006-226)
   - Left Side Bolster (102-016-083)
   - Right Side Bolster (not shown)
   - Lower Back Cover (107-006-224)

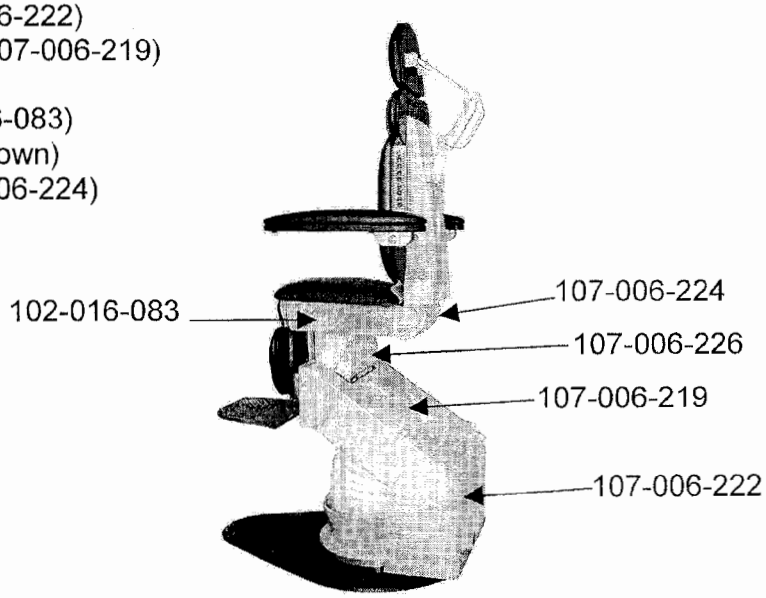

Figure 2

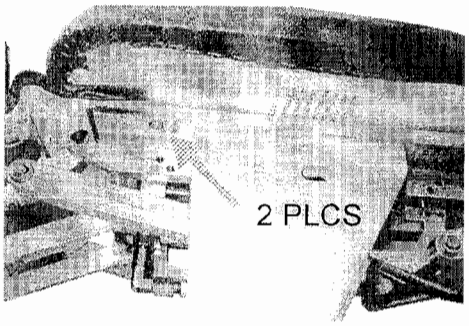

Figure 3

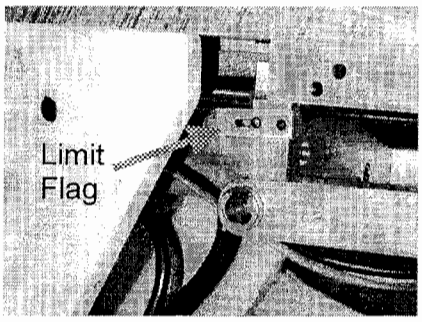

Figure 4

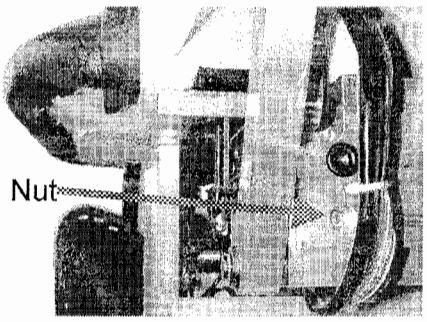

Figure 5

4. Remove the Seat Cushion by removing the two screws. (see Figure 3)
5. Remove the Back Down Limit Flag and Screws. (see Figure 4)
6. Remove outer Seat Linear Potentiometer Nut. (see Figure 5)

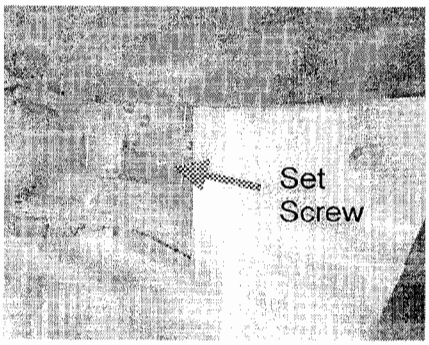

Figure 6

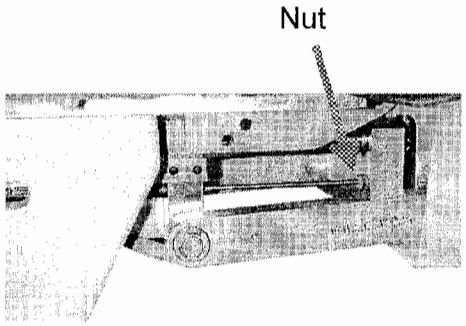

Figure 7

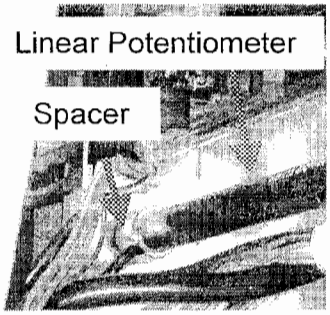

Figure 8

7. Position the back as needed to remove the Seat Linear Potentiometer Set Screw. (see Figure 6)
8. Remove the inner Seat Linear Potentiometer Nut (see Figure 7) then remove the Linear Potentiometer and spacer from the chair. (see Figure 8)
9. Position the back to its down limit.

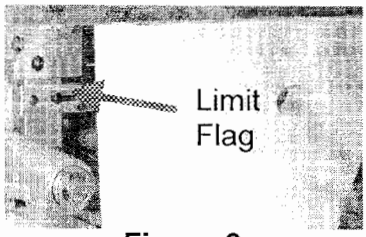

Figure 9

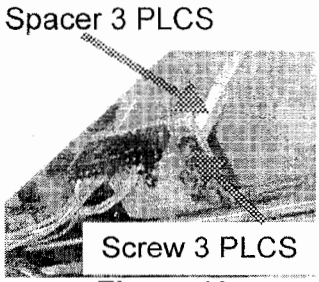

Figure 10

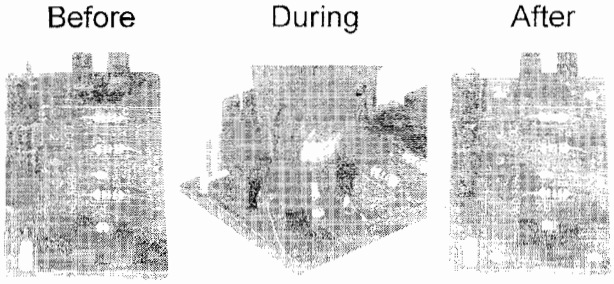

Figure 11

10. Remove the Back Up Limit Flag and Screws. (see Figure 9)
11. Remove the Limit Switch Board by removing three screws and spacers. (see Figure10)
12. Remove the Cables from J1 and J2 on the Limit Switch Board.
13. Use diagonal cutters to remove the photo interrupter spacer tabs (if present) on the Limit Switch Board. (see Figure11)

Figure 12

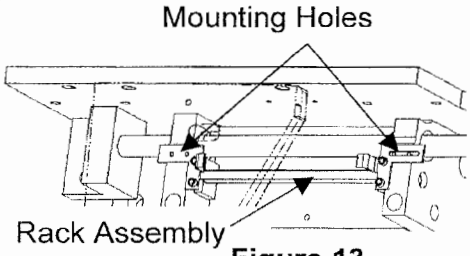

Figure 13

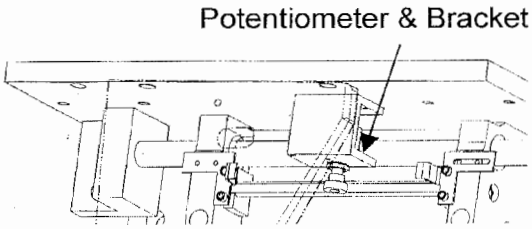

Figure 14

14. Using drill and 1/8" bit, remove all threads from the three Limit Switch Board mounting holes in the seat plate. (see Figure 12)
15. Position the Back to its Up limit. The chair must remain in this position through step 21.
16. Install Rack Assembly securing it using four button head screws (021-624-017) in limit flag mounting holes. (see Figure 13)
17. Ensure the Rotary Potentiometer is loosely in place in its Bracket. The Potentiometer should be loose enough to slide within the bracket.
18. Secure the Rotary Potentiometer and Bracket Assembly to the chair using three flat head screws (021-035-022). (see Figure 14)
19. Rotate the Potentiometer Fully Counter Clock Wise.
20. Rotate the Potentiometer 1/8 turn Clock Wise.
21. Position Potentiometer so its Gear mates to the Rack. Tighten Nut to lock in position.
22. Connect the Rotary Potentiometer cable to J1 on Limit Board and new cable (102-004-606) to J2 of limit board.

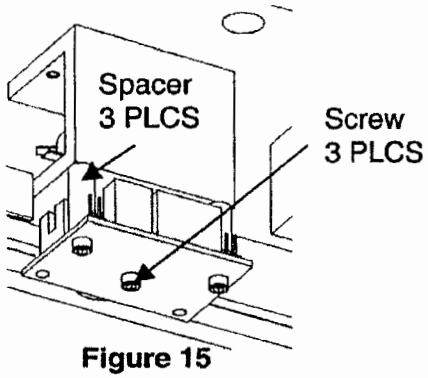

Figure 15

23. Place a 1" Hex screw (021-619-024) into the center hole of the Limit Board then place the spacer (018-002-147) over the screw. Secure screw to the center hole on the Potentiometer Bracket. Ensure Potentiometer cable is positioned out of the path of moving parts. (see Figure 15)
24. Install remaining screws using spacers between Limit Board and Bracket.
25. Route new cable (102-004-606) along cable bundle as you remove the original cable. Remove and replace wire ties as required. Cable must be installed so it will neither be pinched nor stretched.
26. Disconnect the power cord from the chair.
27. Remove three screws and cover from the Controller Assembly.
28. Disconnect original cable from J7 then install new cable to J7 on Control board.
29. Move jumper from Control board JP4 "Holder" to JP3 "Cycle".
30. Apply power to the chair. Check alignment of the Rack Assembly limit flags to the Limit Board while moving the back from limit to limit. Each flag should move into the path of the photo interrupter without making contact. The pump should turn off at each limit. Also, verify cables are clear of all moving parts during this step.
31. Position the back to 68° (0° is parallel to the floor) then press and hold "1" Key on either switch panel until the panel's green back light flashes.
32. Position the back to 0° then press and hold "2" Key until the back light flashes.
33. Position the back to 55° then position the seat so the Upper Main Link (cover 107-006-219 was fasted to this) is parallel to the floor then press and hold "3" Key until the back light flashes.
34. Disconnect the power cord from the chair.
35. Move jumper from Control board JP3 "Cycle" to JP4 "Holder".
36. Apply power to the chair and test all functions.
37. Install seat cushion and all covers.
38. Procedure Complete.

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Installation Instructions

S 2700 HYDRAULIC PUMP CAPACITOR UPGRADE KIT

Parts List:

Quantity	Description	Part Number
2	Electrical connectors	018-003-118
2	Tie Wrap, 4"	018-006-001
2	Flat Tie Holder	018-006-038
1	Strain Relief – Heyco	018-015-001
4	Screw #8 x ½" Thread Former	021-531-170
1	Assy, Capacitor W/ Housing	102-009-177
1	Kit Installation Instructions	108-009-031

Tools Required:

Crimping Tool for Quick Disconnect Flags (Molex 19285-0060 or equivalent)
Wire Strippers
3/16" Hex Wrench
Diagonal Cutters
#2 Phillips Screwdriver with 8" blade
Flat Blade Screwdriver

Purpose: The following procedure describes how to replace the S 2700 Maxi Select Chair's Hydraulic Pump Electrolytic Capacitor with the Film Capacitor provided in kit Part Number 124-003-088.

Summary: The new capacitor has the same capacitance and voltage rating, however, its duty cycle is longer. This kit contains all parts required to complete the installation (see Parts List table). Tools required are listed above.

Procedure:

1. Unplug the chair power cord.
2. Remove the following covers in the order listed. To access the screws, use a flat blade screwdriver to remove the screw caps. (see Figure 1 for cover location);
   Rear Base Cover (107-006-222)
   Front Nose Enclosure (107-006-215)
   Upper Main Link Cover (107-006-219)

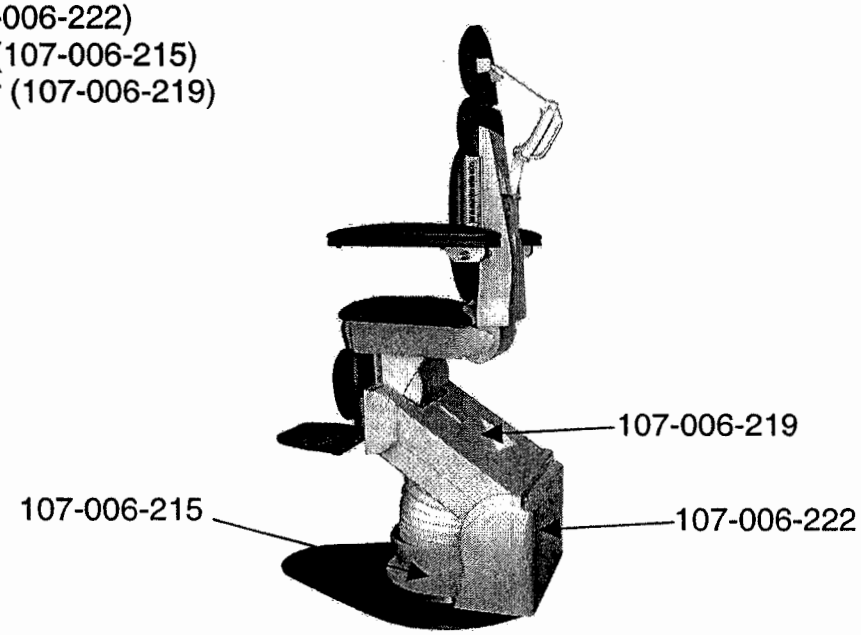

Figure 1

3. Using 3/16" hex wrench, remove and save the two mounting screws securing the pump bracket. (see Figure 2)

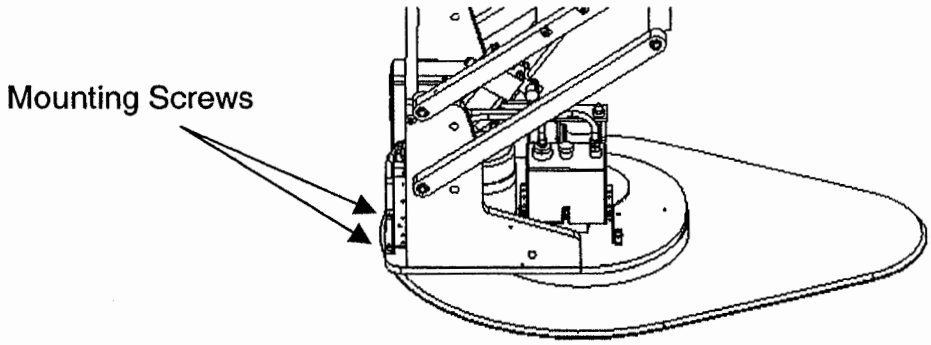

Figure 2

4. Using #2 phillips screwdriver with 8" blade, remove and save the two screws securing the hydraulic reservoir. (see Figure 3)
5. Using diagonal cutters, remove and discard the zip tie securing the electrolytic capacitor. (see Figure 3 for capacitor lactation)
6. Using a flat blade screwdriver, remove and discard capacitor bracket and protective cap found on the capacitor.
7. Using diagonal cutters, cut the capacitor wires as close as possible to the connectors, then discard the capacitor.
8. Clean up capacitor oil as needed.
9. Secure reservoir using two screws removed in step 4.

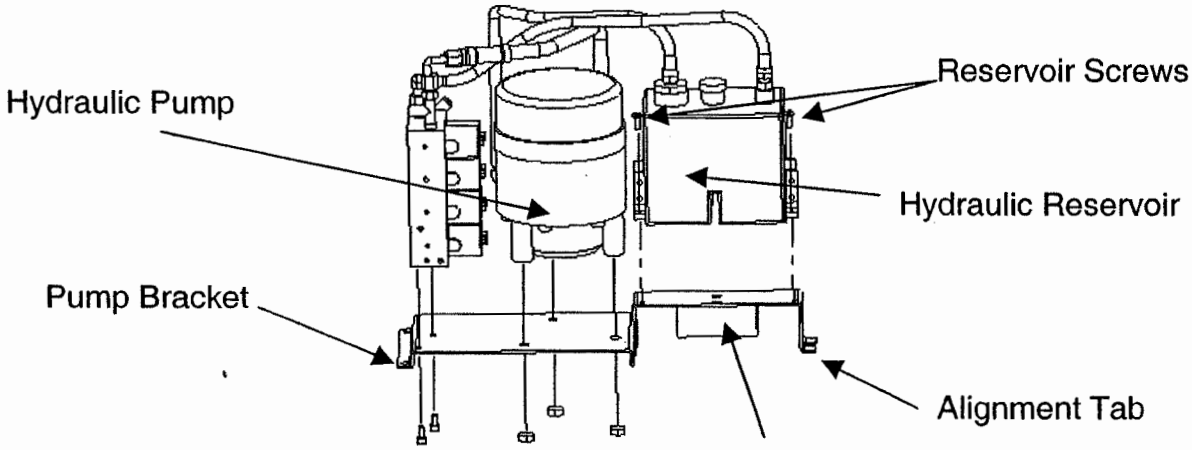

Figure 3

10. Strip .3"+/-.05" insulation from the end of all three capacitor wires (18AWG.)
11. Place both white wires into one connector then crimp connector in place.
12. Place yellow wire into the remaining connector then crimp in place.
13. First place wires through housing, then connect capacitor wires to the capacitor as illustrated. The capacitor is non-polarized, therefore wiring is not critical. (see Figure 4)
14. Place Heyco strain relief over wires then push into housing. (see Figure 5)
15. Install housing cover and flat tie holders, secure using 4 screws. Ensure all three capacitor wires are within the housing and are not pinched. (see Figure 5)

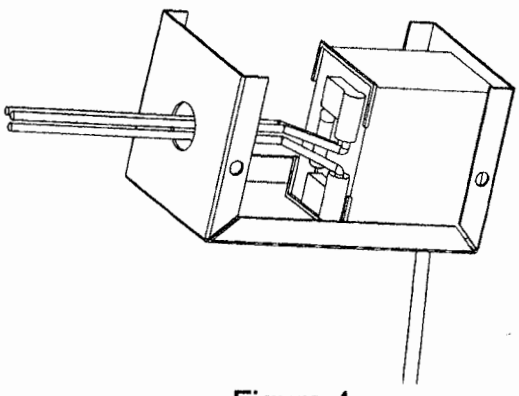

Figure 4

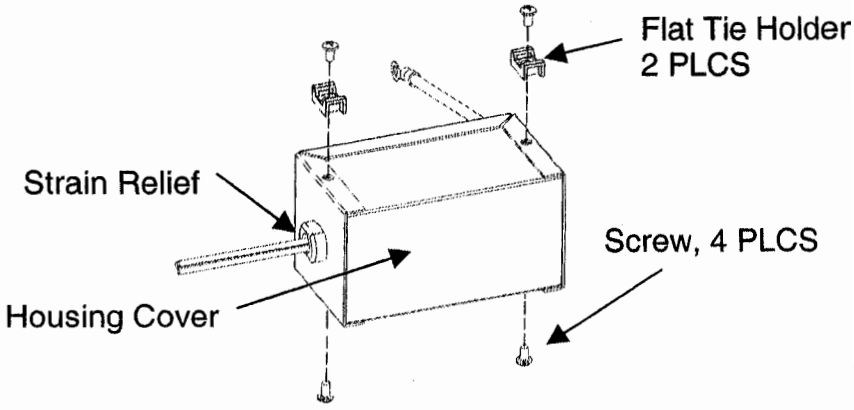

Figure 5

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Installation Instructions

Hydraulic Cylinder Leak Repair Kit Installation Instructions

Instructions for Installing the Leak Repair Kit for the S 2700 Series Maxi Select Chairs

The following instructions explain the procedure to install Global Surgical™ Part Number 124-003-093 to replace or repair leaking hydraulic cylinders in the Maxi Select Chairs.

Tools and Equipment Needed:

1. Hex Allen Wrenches (3/16" and 3/8")
2. Phillips Head Screwdriver (#1 & #2)
3. Flat Head Screwdriver
4. Wrenches (1/2", 9/16", 5/8", 11/16" and 3/4")
5. Crowfoot Wrench (11/16"), 3/8" Square Drive Extension and 3/8" Square Drive Ratchet - *Crowfoot Wrench available through Global Surgical™ Technical Services Department*

NOTE: For clarity, most parts of chair have been removed from figures.

Procedure:

1. Fully lift and recline the Maxi Select Chair to the Trendelenburg position. Disconnect power to the chair.
2. Carefully remove all plastic covers from the chair by using a flat head screwdriver to pry off the plastic caps and a #2 Phillips head screwdriver to remove the screws. Once the covers are removed, use the #1 Phillips head screwdriver to remove the four (4) screws connecting the upholstered seat to the metal seat plate.
3. Enter the Service Mode for the chair by carefully completing the following steps:
   - **a.)** Hold the "Memory 1" *and* the "Memory 3" simultaneously buttons while applying power to the chair, until the keypad backlight flashes once and stays on, approximately 3 seconds. Release both buttons.
   - **b.)** Press "Memory 2" and release quickly.
   - **c.)** Press "Seat Up" and release quickly.
   - **d.)** Press "Memory 3" and release quickly.
   - **e.)** Press "Seat Down" and release quickly. The keypad backlight will turn off to indicate the chair is in Service Mode. If the keypad backlight is on, repeat the above procedure until the backlight turns off.
   - **f.)** Hold the "Memory 1" key while manually moving the back of the chair to remove as much hydraulic fluid from the recline cylinder as possible.
   - **g.)** Once the chair back moves freely, disconnect power to the chair.
4. Remove the red plastic breather cap, marked "OIL" (see Fig. 1), from the reservoir and thread it into the top of the plastic cross fitting (provided).
5. Thread the plastic fitting into the reservoir such that it is oriented at an angle between the two hydraulic lines, as shown in Fig. 1. Do not cross-thread or over-tighten the fitting in the reservoir.

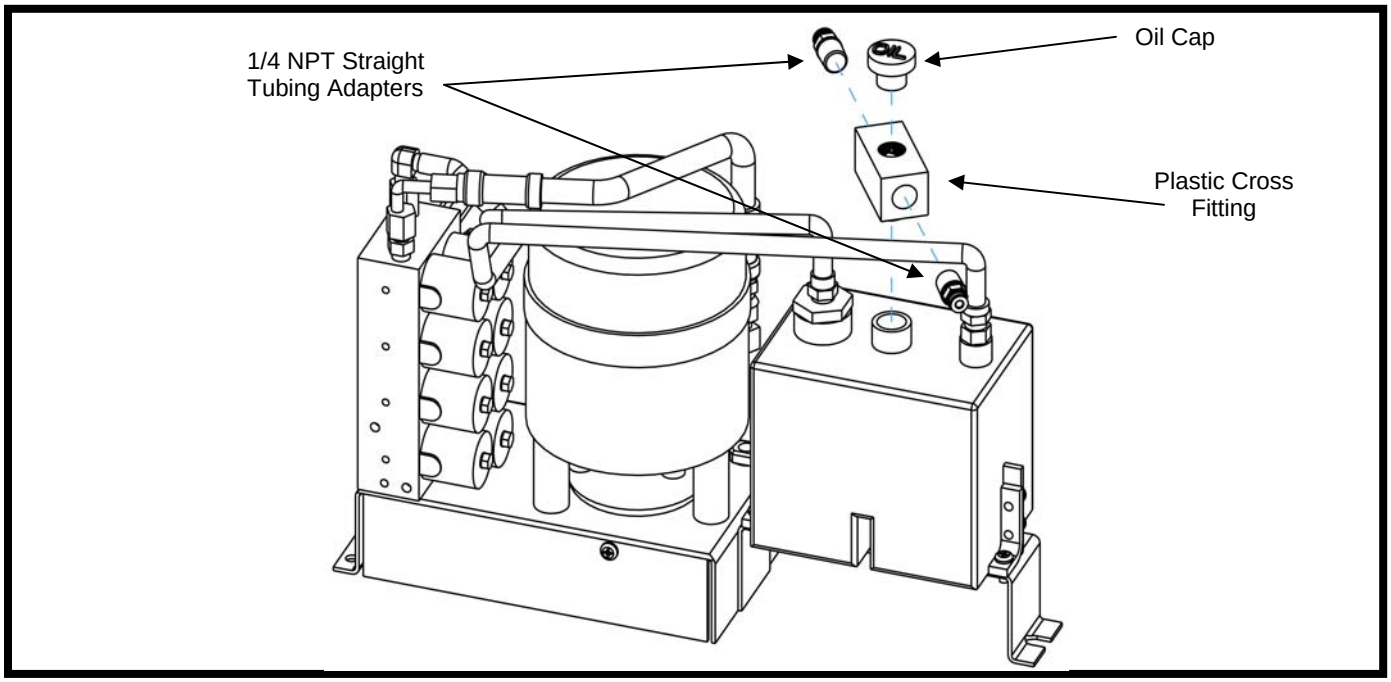


Figure 1. Installation of Fittings for Hydraulic Reservoir

6. Thread in the two (2) 1/4 NPT straight tubing adapters using a 9/16" (14 mm) wrench. If the recline cylinder does not need to be replaced, insert the 1/4 NPT nylon plug (provided) into the plastic cross fitting. Ensure that the small tubing adapter (or nylon plug) is nearest the outside edge of the chair.

NOTE: Only the correct adapters will thread into the sides of the plastic fitting.

7. Remove the sintered bronze muffler in the back of the lift cylinder (Fig. 2) using an 11/16" (18 mm) wrench. Using the 3/4" (19 mm) wrench, install the 3/8 NPT straight tubing adapter into the back of the lift cylinder. If not replacing the recline cylinder, proceed to step 17.

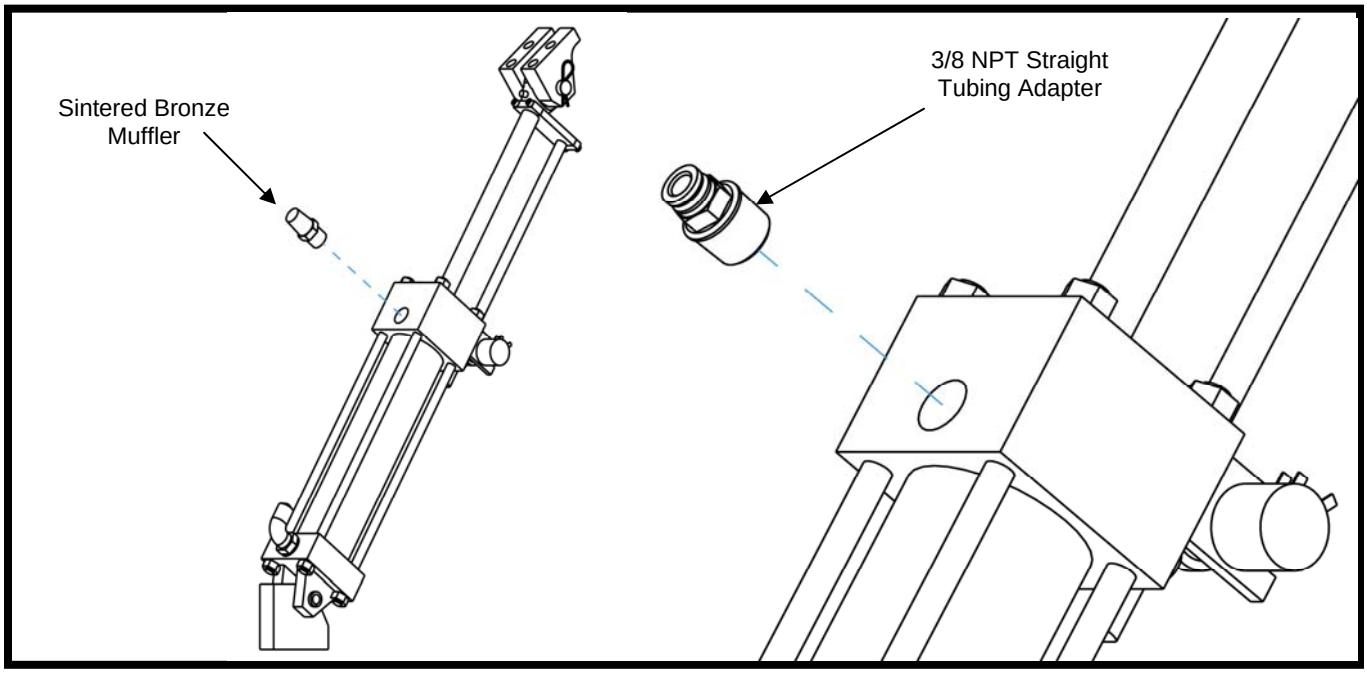


Figure 2. Replacement of Fitting on Lift Cylinder

8. Disconnect and remove the recline cylinder by first using the 3/8" (9.5 mm) Hex Allen Wrench to remove the 7/16" machine screw from the cylinder piston. This screw is located in the recline slide assembly plate under the seat of the chair near the back, as illustrated in Fig. 3.

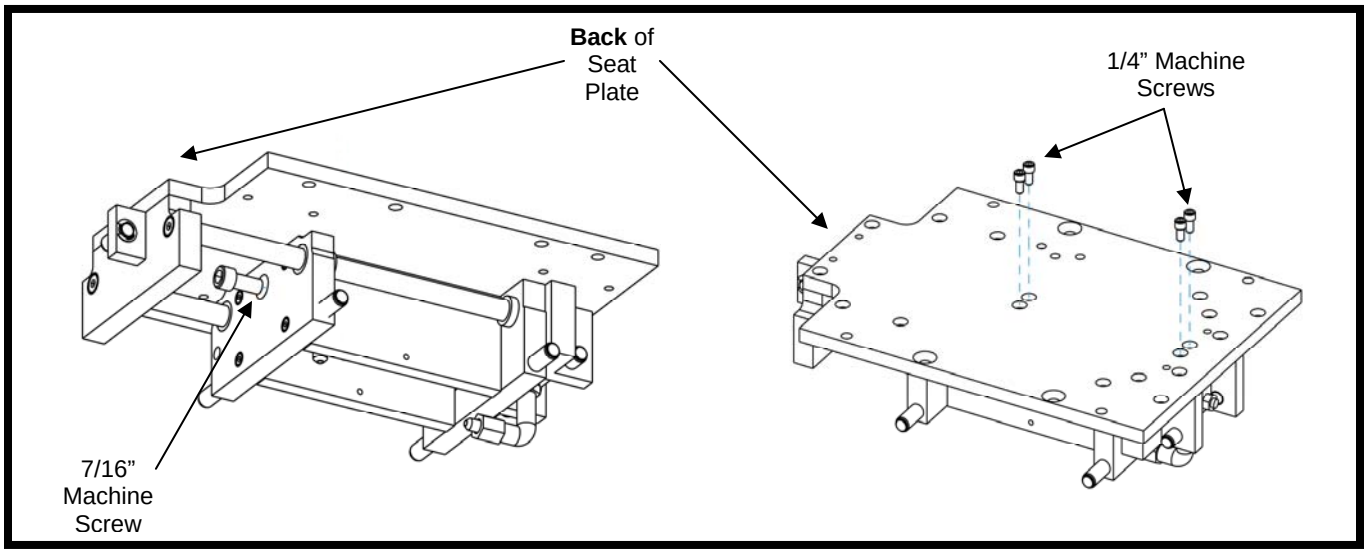


Figure 3. Removing the Recline Cylinder

9. Disconnect the two (2) hydraulic hoses using a 1/2" (12.5 mm) and a 5/8" (16 mm) wrench. The 1/2" wrench will be used to loosen the hose while the 5/8" wrench keeps the hose from spinning. The hoses will contain some fluid. Be careful not to allow fluid to drip anywhere within the chair. Remove the hydraulic fitting from the recline cylinder that is nearest the back of the chair.

10. Using a 3/16" (4.5 mm) Hex Allen Wrench remove the four (4) 1/4" machine screws from the top of the seat (see Fig. 3) to allow the recline cylinder to be removed from the front of the chair. Use the 90° elbow hydraulic fitting assembly as a handle to remove the recline cylinder from the chair. Once the recline cylinder has been removed, disconnect the hydraulic fitting assembly at the front of the recline cylinder. Do not discard, this fitting assembly will be used on the new recline cylinder.

11. Before re-installing the front hydraulic fitting assembly, replace the rubber O-Ring with a provided O-Ring, and thread the hydraulic fitting assembly into the new recline cylinder.

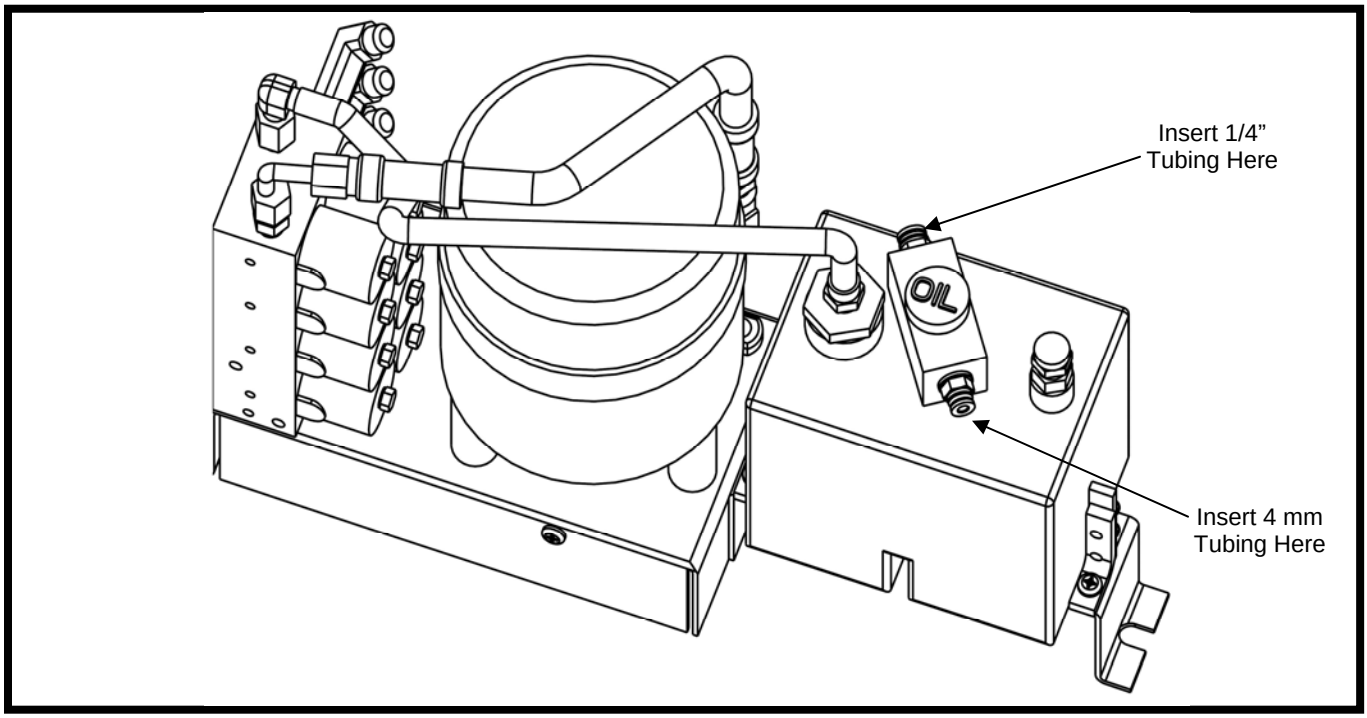


Figure 4. Installation of the Plastic Tubing to the Hydraulic Reservoir

12. Install the new recline cylinder by mounting the cylinder to the seat plate using the four (4) 1/4" machine screws removed in step 10 using the 3/16" (4.5 mm) Hex Allen Wrench. Do not tighten the machine screws completely until step 13 has been completed.

13. Connect the cylinder piston to the recline slide assembly plate using the 7/16" machine screw removed in step 8. Use the 3/8" (9.5 mm) Hex Allen Wrench to tighten the machine screw. Once the 7/16" machine screw is tightened and the cylinder piston is aligned, fully tighten the four (4) 1/4" machine screws installed in step 12.

14. Install the 45° fitting into the rear of the new hydraulic cylinder with the end pointing toward the front of the chair, and slightly to the patient left side, which will direct the hydraulic hose toward the cable and hose bundle at the front of the chair. Use the optional 11/16" (18 mm) Crowfoot wrench, Extension and Ratchet to tighten the fitting while using a 9/16" (14 mm) wrench to correctly orient the fitting. If not using the Crowfoot wrench, use the 11/16" (18 mm) wrench.

15. Install the free ends of the hydraulic hoses onto the new recline cylinder using the 1/2" (12.5 mm) and 5/8" (16 mm) wrenches. If not done at the factory, install the 10-32 straight tubing adapter into the small threaded hole in the new recline cylinder.

16. Install one end of the 4mm plastic tubing into the 10-32 straight tubing adapter in the recline cylinder and the other end into the smaller straight tubing adapter in the plastic fitting (Fig. 4). Push the tubing into each adapter until the tubing cannot be pushed in any further.

17. Install one end of the 1/4" plastic tubing into the 3/8 NPT straight tubing adapter in the lift cylinder and the other end into the larger straight tubing adapter in the plastic fitting (Fig. 4). Push the tubing into each adapter until the tubing cannot be pushed in any further.

18. Rubber O-Rings are provided in case the lift cylinder fitting is leaking. If it is determined the fitting must be removed to replace the O-Ring, ***brace the chair in the highest position or lower completely so that hydraulic fluid does not flow from the cylinder when the fitting is removed.***

19. Restore power to the chair and cycle through the positions to be sure that all air is out of the system. This air will flow out of the red plastic breather cap. The chair may not initially cycle smoothly due to air in the lines, but once the air is removed, the chair will cycle as normal.

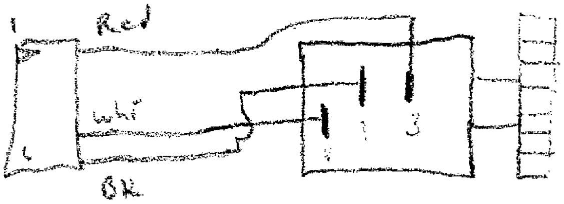
20. Replace the upholstered seat and all plastic covers.

2700 Chair Limits

Pot Max CW = 0Ω - 3
10Ω - 1

Back Down = CW
Back Up = CCW

Back

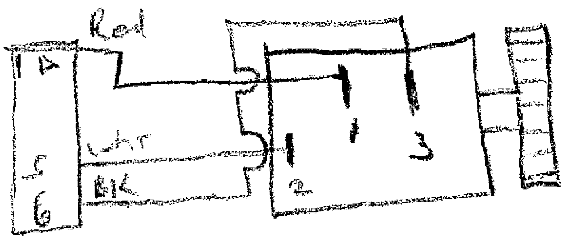


UP Limit — 0.079-1.07 VDC

Down Limit — 3.922-4.94 VDC

Seat Down = CW
Seat Up = CCW

Seat



Seat Up Limit — 3.922-4.94 VDC

Seat Down Limit — 0.079-1.07 VDC

Auto Set: 1 & 3 Pwr up chair Hold 5 sec, 2, Seat ↑, 3, Seat ↓, Auto return (After chair moves 1 cyc Remove pow and power No Keys)

Manual Set: 1 & 3 Power up chair Hold 5 sec, 2, Seat ↑, 3, Seat ↓, 2

Move Seat to Low Limit & Back to Up Limit Press/Release 1

Move Seat to Up Limit Back to Low Limit Press/Release 2

Remove Power To Chair. Apply Power No Keys Pressed