Summit Dental Systems

Installation
Operation
Maintenance
Troubleshooting

Version Dec/17

9000PB / Palm Beach

Congratulations!

All of us at Summit Dental Systems want you to know that your Palm Beach Chair has been built with the finest materials available.

The assembly and testing was completed by technicians devoted to making SDS products perform to all prescribed specifications.

Our five year limited warranty is just one of the ways we express our confidence that you will be completely satisfied with your purchase.

We appreciate your support and look forward to meeting your future professional needs through our expanding product line.

Cesar Coral

President

Table of Contents

Important Information

Technical Specifications

Power Inlet:	115VAC, 60 Hz or 220 VAC, 50 Hz
Fuse:	115V – 12Amp MDA Time Delay 220V/230V – 8Amp MDL Time Delay Inlet
PC Board:	115VAC or 220 VAC Outlet 15VDC
Motor Pump:	115 VAC, 60 Hz or 220 VAC, 50 Hz A duty cycle operation ON/OFF 1/13
Hydraulic Piston Base:	Working pressure 25 Kg/cm2
Hydraulic Piston Back:	Working pressure 15 Kg/cm2

Unpacking the Chair

Pay careful attention when unpacking the chair and its accessories. Damage caused by mishandling the equipment during unpacking or installation is not covered under warranty.

New Owner

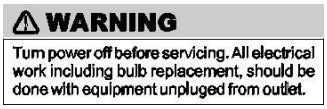
Please read, sign and submit the warranty registration form that is located at the end of this manual. Failure to return this form may void the warranty.

Serial Number

The product label can be located by raising the base of the chair all the way up and looking underneath the Lower Elevation Cover.

Warning

Turn power off before servicing. To complete power off the chair you must unplug the equipment from the power source. All electrical work replacement should be done with equipment unplugged from outlet.



* Equipment intended to be used as a TREATMENT/DIAGNOSTIC DENTAL LUMINAIRE.

Medical Electrical Equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this manual.

Portable and mobile RF communications equipment can affect Medical Electrical Equipment.

The use of Accessories, transducers, and cables other than those specified by the manufacturer, may result in increased Emissions or decreased Immunity of the Chairs.

Warning

Should it be necessary to add fluid to the hydraulic system? Use only DEXRON-III/MERCON MULTIPURPOSE ATF fluid.

NOTE: Waste or used oil should be sent to a designated site for safe professional disposal.

When placing the chair in its final position, check to insure the protective vinyl strip is properly in place on the base plate riser.

This chair is in the reverse Trendelenberg position, necessary for some emergency situations, when the chair back is in the full down position. The Palm Beach Chair should not be used adjacent to or stacked with other

equipment and that if adjacent or stacked use is necessary, the Palm Beach Chair should be observed to verify normal operation in the configuration in which it will be used.

Classifications

a. According to the type of protection against electric shock: CLASS I.
b. According to the mode of operation: CONTINUOUS DUTY.
c. According to the degree of protection against electric shock: NO APPLIED PARTS.
d. According to the degree of protection against ingress of water: ORDINARY (IPX0) PROTECTION.
e. According to the degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide: - EQUIPMENT NOT SUITABLE FOR USE IN THE PRESENCE OF A FLAMABLE ANAESTHETIC MIXTURE WITH AIR OR WITH OXIGEN OR NITROUS OXIDE.

Guidance and manufacturer's declaration – electromagnetic emissions		
The Palm Beach Chair is intended for use in the electromagnetic environment specified below. The customer or the user of the Palm Beach Chair should assure that it is used in such an environment.		
EMISSION TEST	COMPLIANCE	ELECTROMAGNETIC ENVIRONMENT GUIDANCE
RF Emissions CISPR 11	Group 1	The Palm Beach Chair uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class B	The Palm Beach Chair is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage Fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The Palm Beach Chair is intended for use in the electromagnetic environment specified below. The customer or the user of the Palm Beach Chair should assure that it is used in such an environment.			
IMMUNITY TEST	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	ELECTROMAGNETIC ENVIRONMENT GUIDANCE
Electrostatic Discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (> 95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (> 95% dip in U_T) for 5 sec	< 5% U_T (> 95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (> 95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Palm Beach Chair requires continued operation during power mains interruptions, it is recommended that the Palm Beach Chair be powered from an uninterrupted power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: U_T is the a.c. mains voltage prior to application of that test level.			

Guidance and manufacturer's declaration – electromagnetic immunity			
The Biscayne E.L. Chair is intended for use in the electromagnetic environment specified below. The customer or the user of the Biscayne E.L. Chair should assure that it is used in such an environment.			
IMMUNITY TEST	**IEC 60601 TEST LEVEL**	**COMPLIANCE LEVEL**	**ELECTROMAGNETIC ENVIRONMENT GUIDANCE**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the Biscayne E.L. Chair, including cables, than the recommended separation distance calculated from equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2 \sqrt{P}$ $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2,5 GHz
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters as determined by an electromagnetic site survey[a] should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol 

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and peoples.

Fields strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateurs radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To access the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Biscayne E.L. Chair is used exceeds the applicable RF compliance level above, the Biscayne E.L. Chair should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Biscayne E.L. Chair.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distance between portable and mobile RF communications equipment and the Palm Beach Chair

The Palm Beach Chair is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Palm Beach Chair can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Palm Beach Chair as recommended below, according to the maximum output power of the communications equipment.

	SEPARATION DISTANCE ACCORDING TO FREQUENCY OF TRANSMITTER m		
RATED MAXIMUM OUTPUT POWER OF TRANSMITTER W	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2.3 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Sample Cautionary Labels

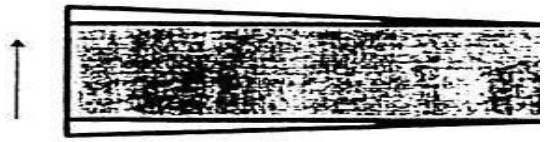
CAUTION! 350LBS (159Kg)!
1.Two (2) or more persons should be involved in removing the chair from the pallet and setting it gently on the ground.
2. Handle only from the steel base. Do not lift on the plastics as they may crack!

ATTENTION!

Do not lift or handle the chair from the Seat Complement as damage to the Base Piston and Limit Switches may occur!

TO REMOVE SEAT CUSHION

Handle from both ends and gently pull straight up.



INSTALLATION TIPS
1. When placing the chair in its final position, two or more people should handle it from the steel base only.
2. Do not handle the chair by any plastic part as it may crack. Plastics damaged in this manner are not cover under warranty.

ATTENTION!

PROTECTIVE EARTH GROUND LABEL

CE-MARK	MANUFACTURER AND DATE OF MANUFACTURE	SERIAL NUMBER	TYPE B APPLIED PART
			

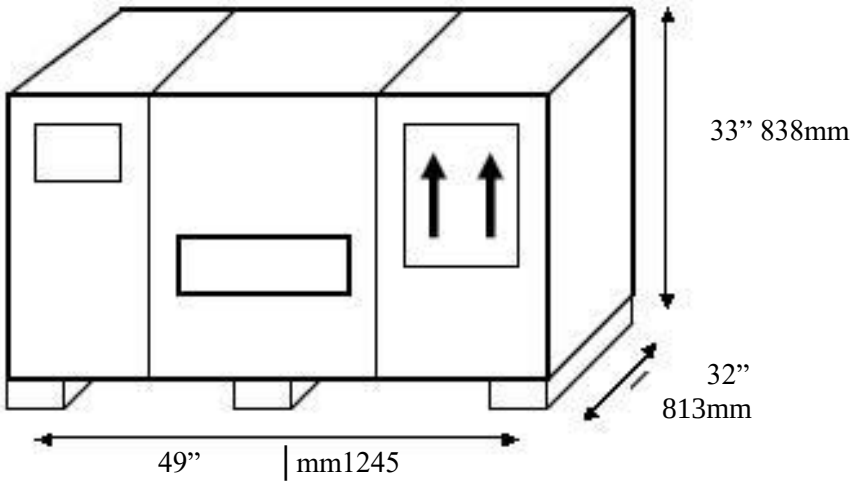
EUROPEAN AUTHORIZED REPRESENTATIVE	ATTENTION.	ELECTRICALAND ELECTRONIC EQUIPMENT.
EC REP MT Promedt Consulting GmbH Altenhofstrasse 80 D-66386 St. Ingbert, Germany Phone: +49 (0)6894-581020 Fax: +49 (0)6894-581021	 Attention, consult accompanying operation instructions.	 Symbol for marking of electrical and electronic equipment.

Questions?

Read this manual carefully. If you have any questions, please call Summit Dental Systems Technical Service at 1-800.275.3368 (USA) or (954) 730-3636 (outside USA).

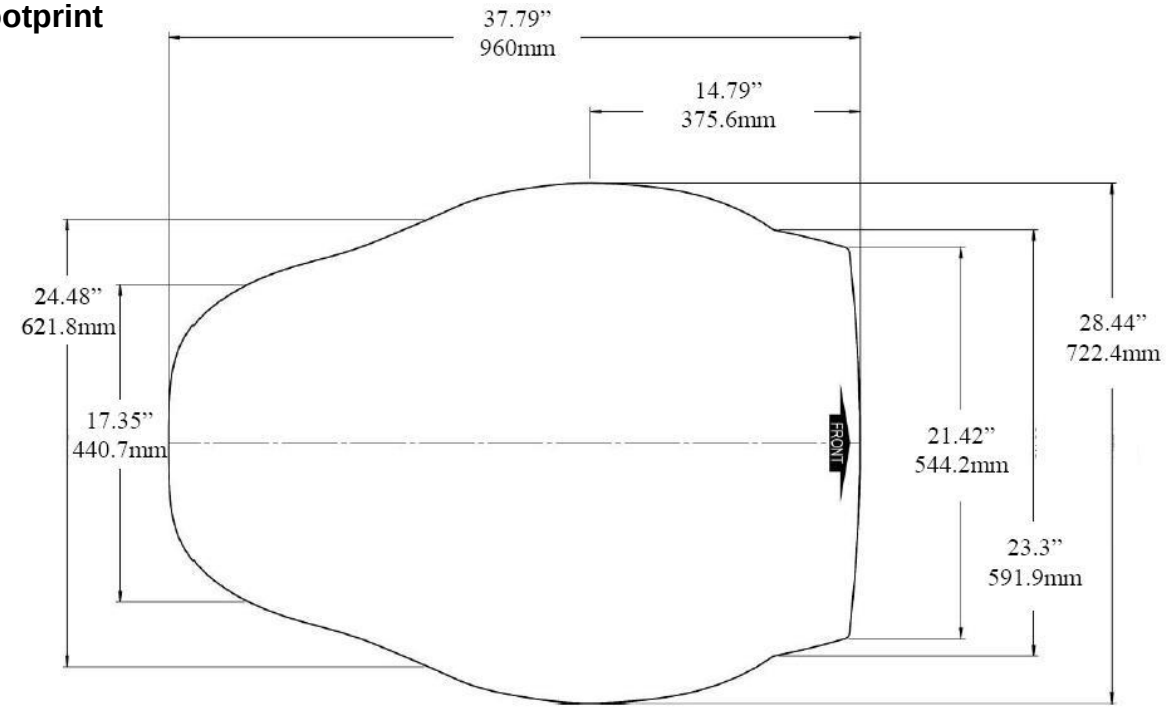
Weight & Dimensions

Shipping Information

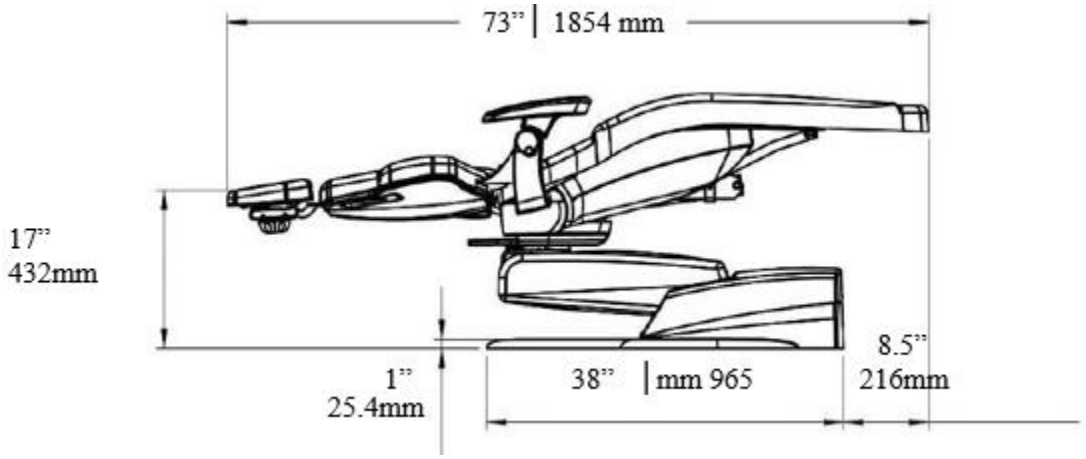


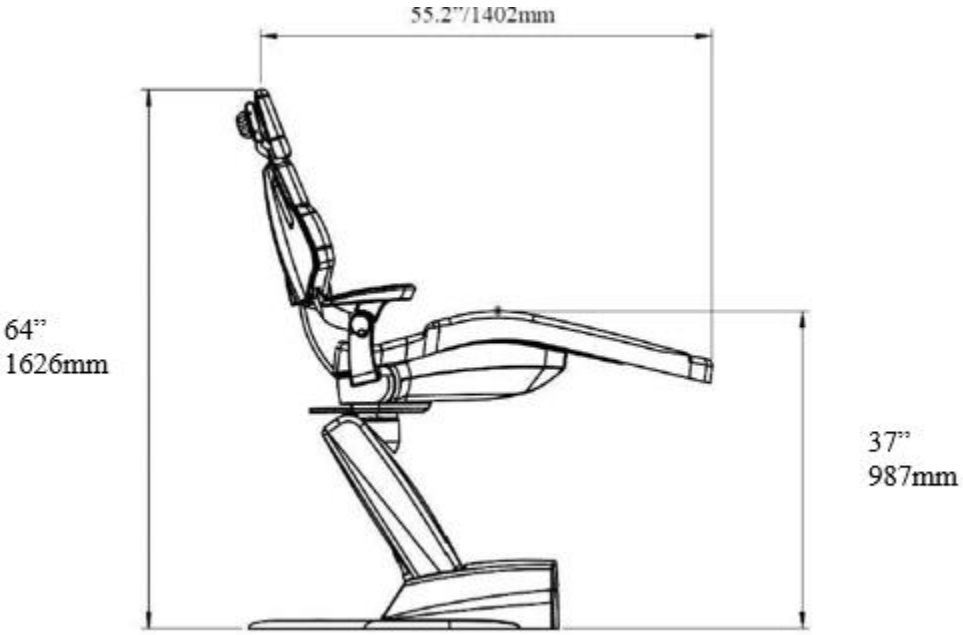
Palm Beach Chair
477 Lb | 216 Kg

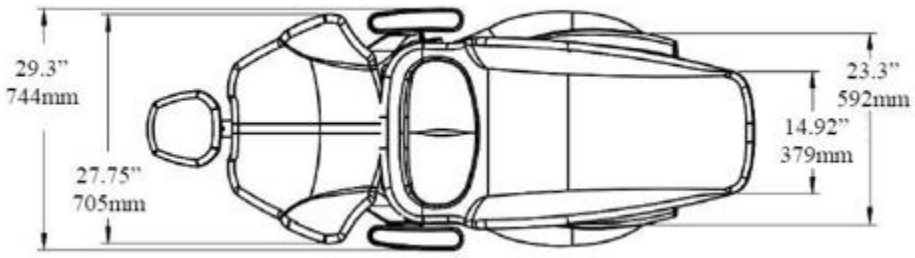
Footprint



General Dimension







Operator's Instructions

Headrest Operation – Knob Type

Refer to Figure 1a & 2

1. The height of the headrest is adjusted by pulling upward or pushing downward on the headrest. When the desired position is obtained, the headrest will remain in place until repositioning is required.

2. Articulation of the headrest is adjusted by turning the knob clockwise (1) located behind the headrest. When headrest is in the desired position, tighten the knob by turning is counter clockwise.

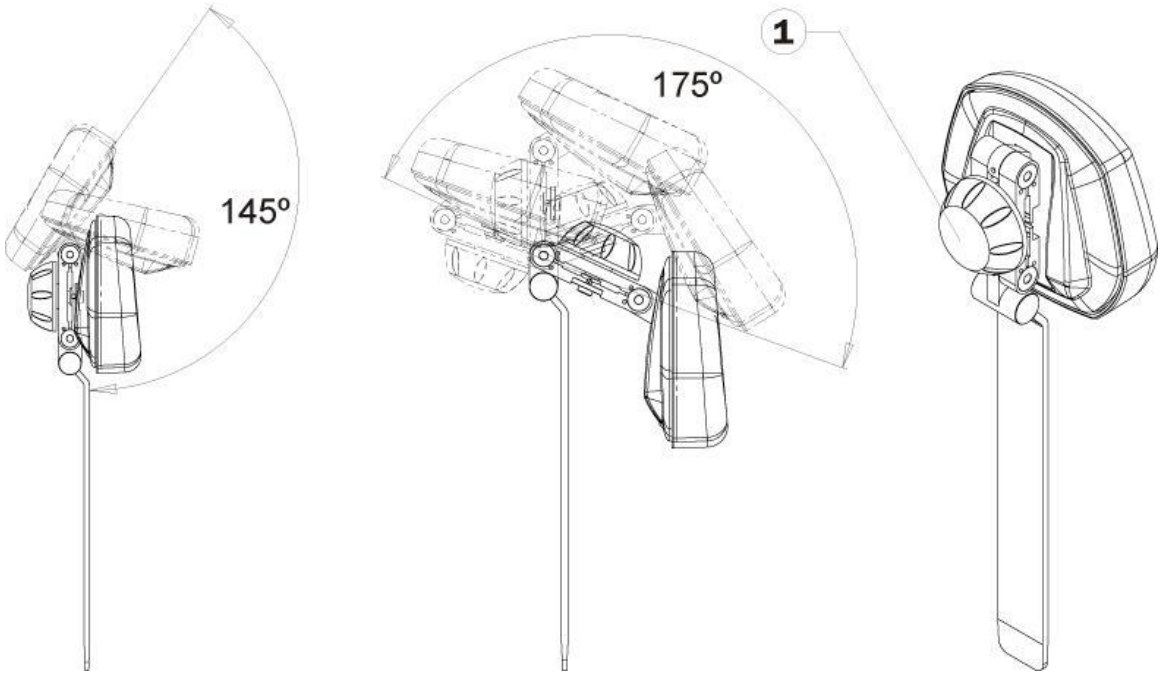


Figure 1a

Headrest Operation – Pinch Type

Refer to Figure 1b & 2

1. Press the top of pinch button to rotate the pillow only
2. Press the bottom of pinch button to rotate the base only
3. Press the middle of pinch button to rotate the base and pillow at same time
4. Release the pinch button to lock the position

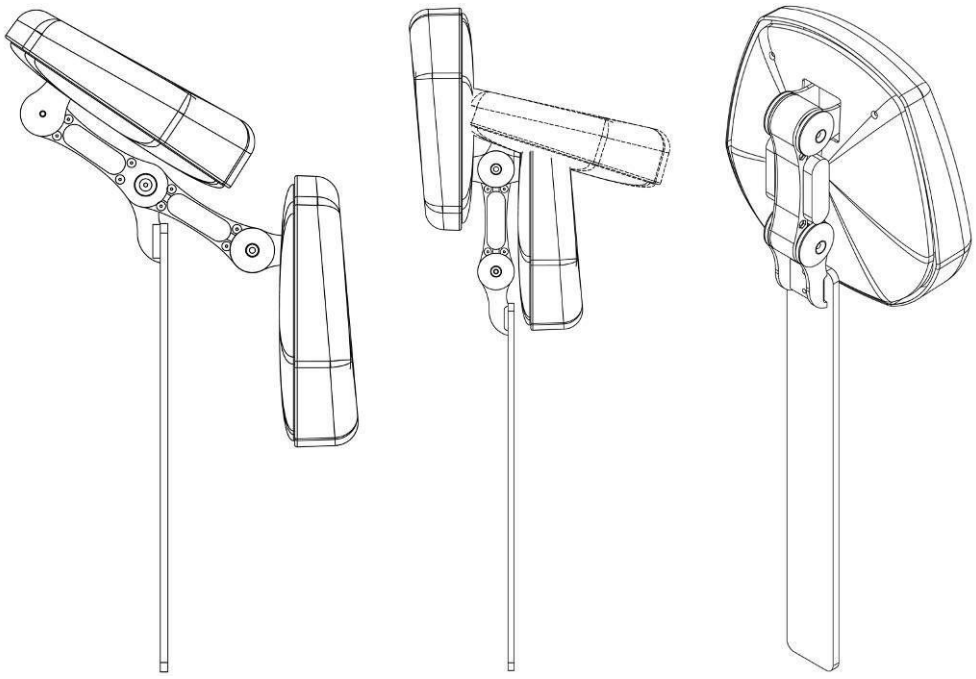


Figure 1b

To regulate the height of the support headrest, move upward or downward (A friction brake will hold the Headrest assembly securely in place).

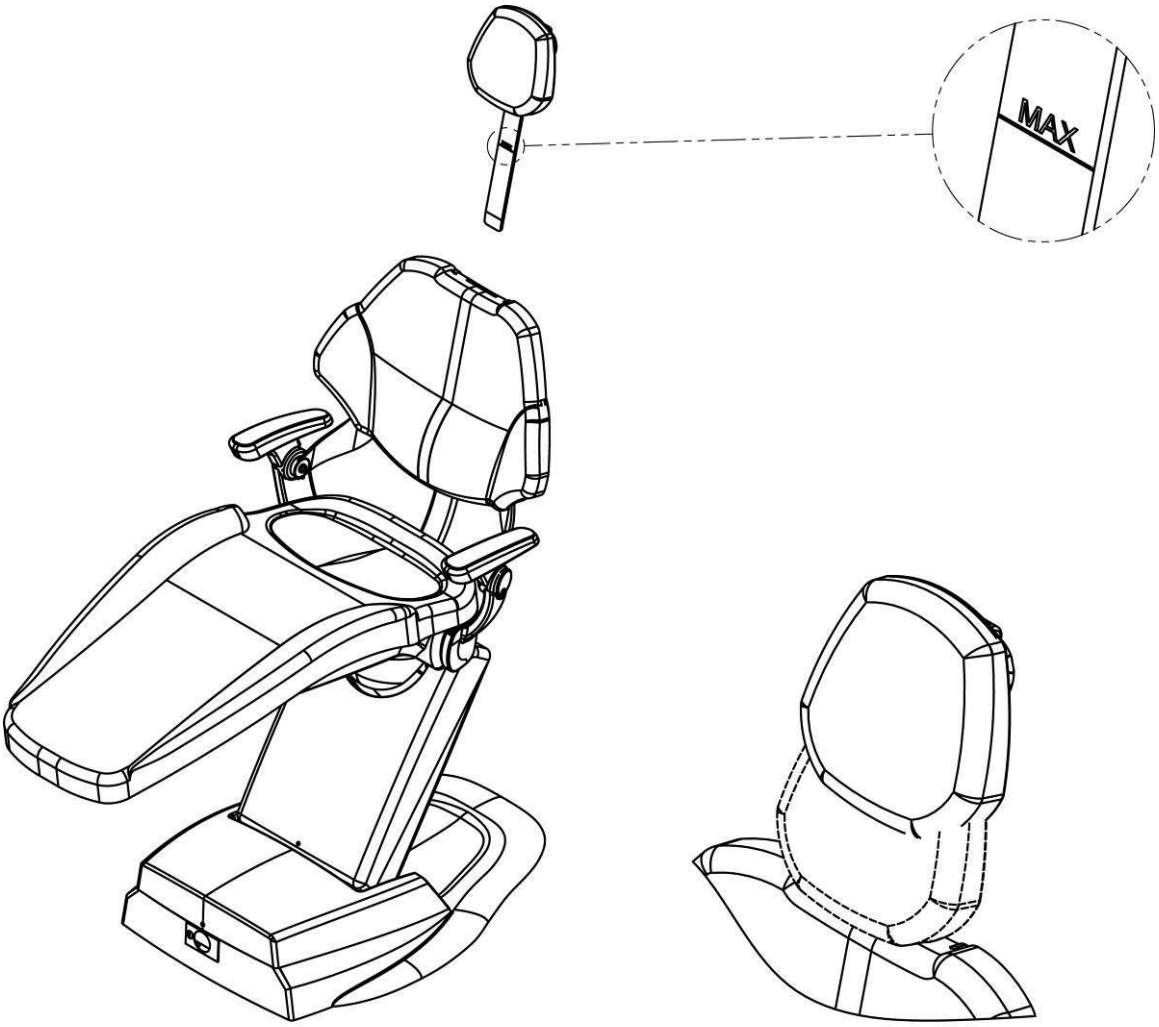


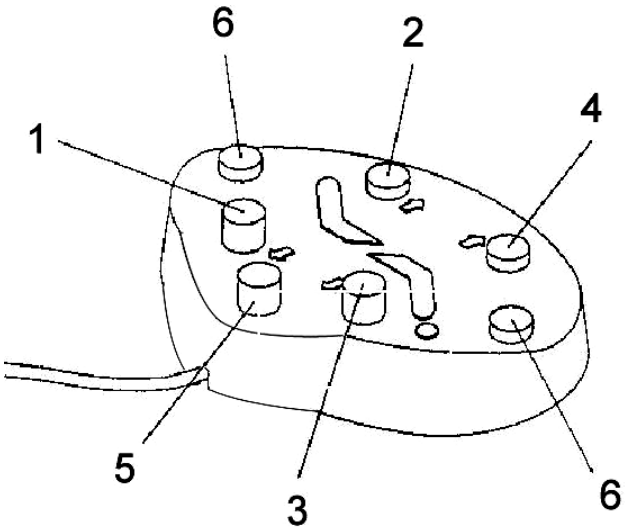
Figure 2

Foot Control & Membrane Control Pad

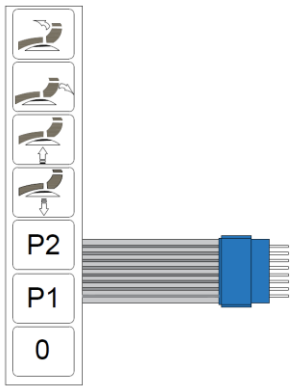
Refer to Figure 3 & 4

1. Base Up – depress foot control button and hold until desired position is reached.
2. Base Down – depress foot control button and hold until desired position is reached.
3. Back Up – depress foot control button and hold until desired position is reached.
4. Back Down – depress foot control button and hold until desired position is reached.
5. Automatic Return – depress and release the button once and the base down and back up movements will continue until the exit position is reached.
6. Pre-position (P1 and P2) – depress and release the button once and the base up and back down movements will continue until pre-position is reached.

NOTE: To interrupt the Automatic Return or the Pre-Position, press any manual-positioning button on the foot control or membrane control pad (1, 2, 3, or 4). To resume Automatic Return or Pre-position, repress the Automatic Return or Pre-position buttons.



Foot Control
Figure 3



Membrane Control Pad
Figure 4

Electronic Pre-positioning

Refer to Figure 5 & 6

Your Palm Beach Dental Chair is equipped with automatic electronic pre-positioning. This feature is designed to provide the operator with the convenience of pre-positioning the patient at the touch of a button. You can preset the base and backrest positions with one easy action. Your chair will arrive with factory set pre-positioning. This is so that it can be checked for all quality control aspects prior to packaging and shipping. To find what pre-positioning the factory has set, simply depress and release the Pre-position Buttons located to the right or left of the foot control and at the bottom half on the membrane control pad.

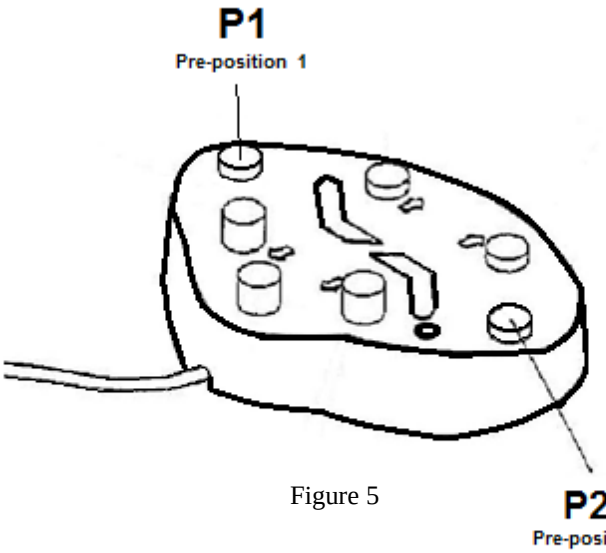


Figure 5

Pre-Position Buttons (P1 & P2)

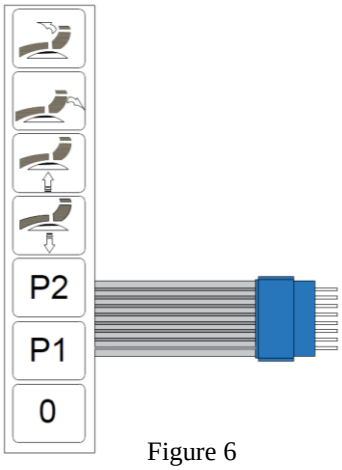


Figure 6

To set your personalized entry position, proceed as follows:

1. Using the foot control or membrane control pad (located on the back of the backrest assembly), position the backrest and base of the chair in the desired position.
2. BEFORE DEC-2008 ** Depress and hold the “P1”, located on the right side of the foot control or on the membrane control pad, for 3 seconds. Releasing the Pre-position Memory Button and the new base and backrest positions to be stored in memory.
3. AFTER DEC-2008 ** Depress and hold the “P1”, located on the right side of the foot control or on the membrane control pad, push and hold until the chair beeps. Releasing the Pre-position Memory Button and the new base and backrest positions to be stored in memory.
4. Do the same with “P2”.

You can return the chair to your personalized position at any time by simply depressing and releasing the Pre-position Buttons. The personalized entry position may be reprogrammed as often as needed.

Should you want to interrupt the automatic movements of your Palm Beach Dental Chair, press any manual function (Buttons 1-4) on the foot control or the membrane control pad? To resume the function, press the appropriate automatic function button.

Cleaning and Disinfection

Equipment surfaces and upholstery discoloration, cracking, sloughing and drying from the use of surface disinfectants is probably the most discussed area of equipment problems today. The very nature of equipment surfaces and upholstery materials is contrary to the application of harsh chemicals.

Barrier Technique
The first choice in the protection of dental equipment should be the use of disposable barrier products. The repeat use of disinfectant on equipment surfaces without the constant removal of the solution residue will eventually cause some damage to equipment surfaces.

Chemical Disinfecting
Because there are hundreds of cleaners, conditioners and disinfectants available, it is impossible for manufacturers to test them all. The manufacturer of the cleaner or disinfectant to be used should be contacted for them to state whether or not the disinfectant will damage equipment surfaces including upholstery.

A solution of mild non-ionic detergent and water is recommended for routine surface cleaning. Never use abrasives.

Unacceptable Disinfectants
The following chemicals may damage equipment and upholstery:

- Alcohol based solutions Acetone
- Bleach Phenol
- Foam spray products

The Summit Dental Systems warranty does not cover damage to equipment and upholstery caused by cleaning and disinfectant solutions.

Installation Instructions

Backrest Assembly

Refer to Figure 7

- Slide backrest support (01) into the backrest frame (02).
- Insert the pin (03) through the backrest frame (02) and the backrest support (01).
- Apply the C-Clip to the open end of the pin (03) to lock into place.

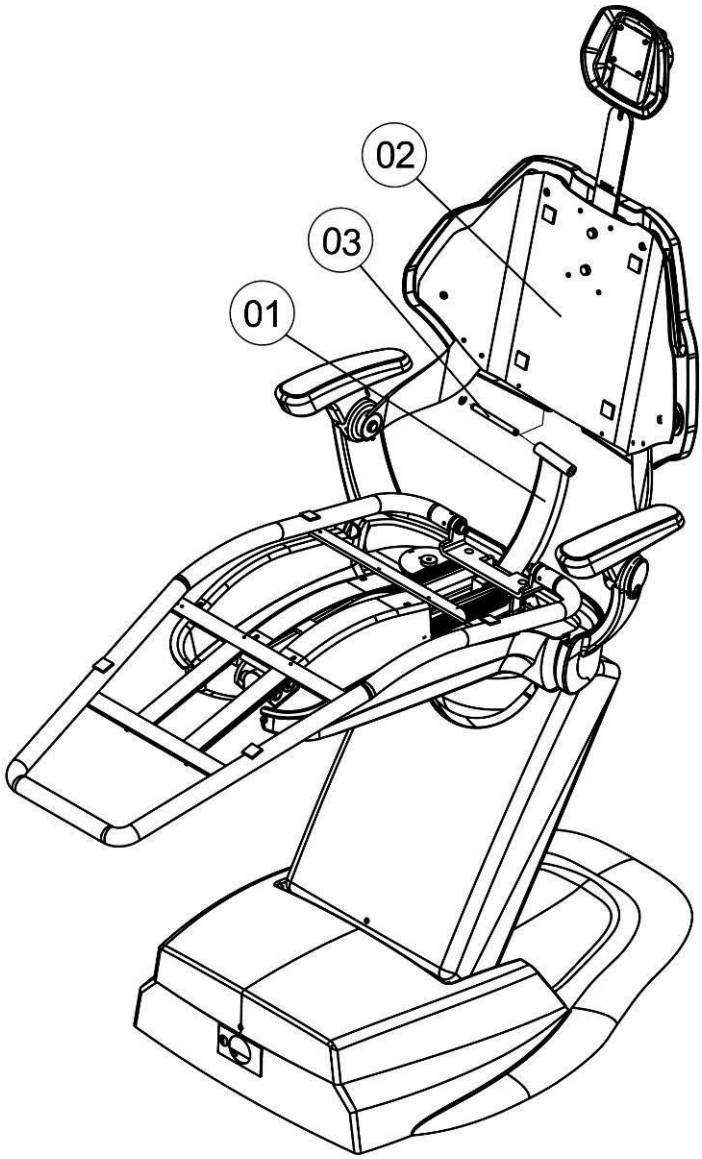


Figure 7

Post Mount Installation

Refer to Figure 8a and 8b

1. Align the four Mounting Screws of the post mount with the corresponding holes of the seat pan.

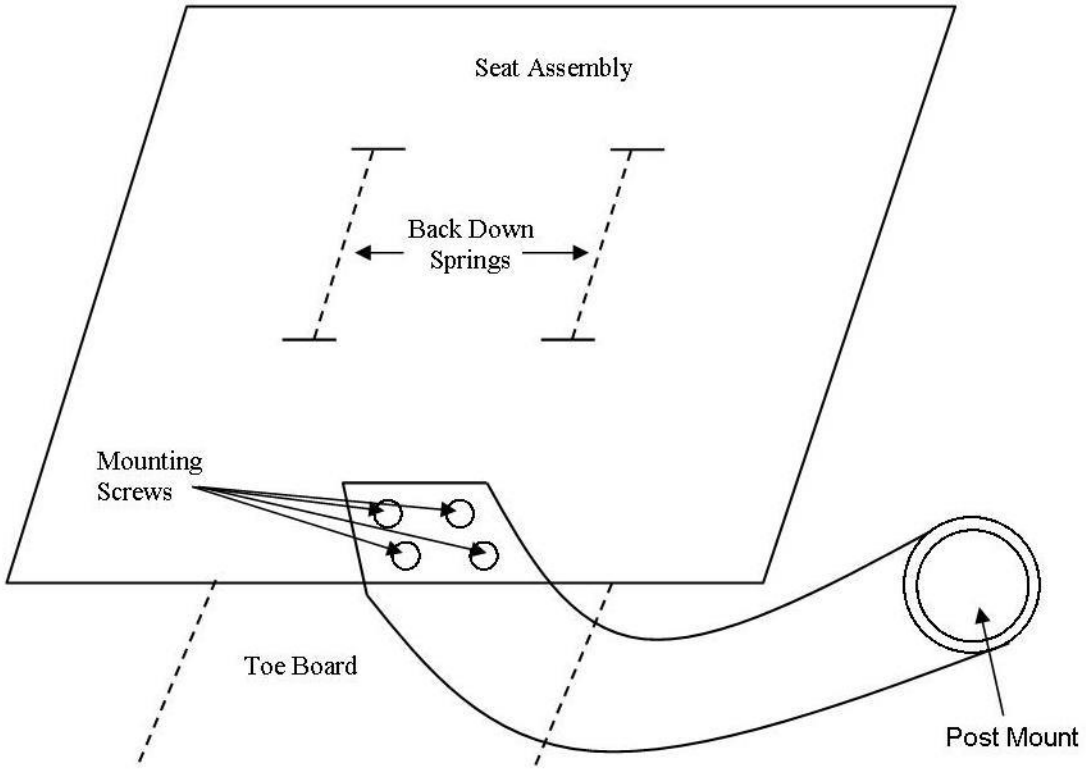


Figure 8a

Left Handed Installation:

For left handed installation of the post mount, it is necessary to move the mount and leveling screws to the corresponding holes on the right side of the seat assembly. Turn the post mount bracket over (180°) and install using the mounting bolts. Remove the post mount adapter and reinstall on top of the post mount bracket. The post mount adapter must be turned over 180°. The post-set crews will face the toe board.

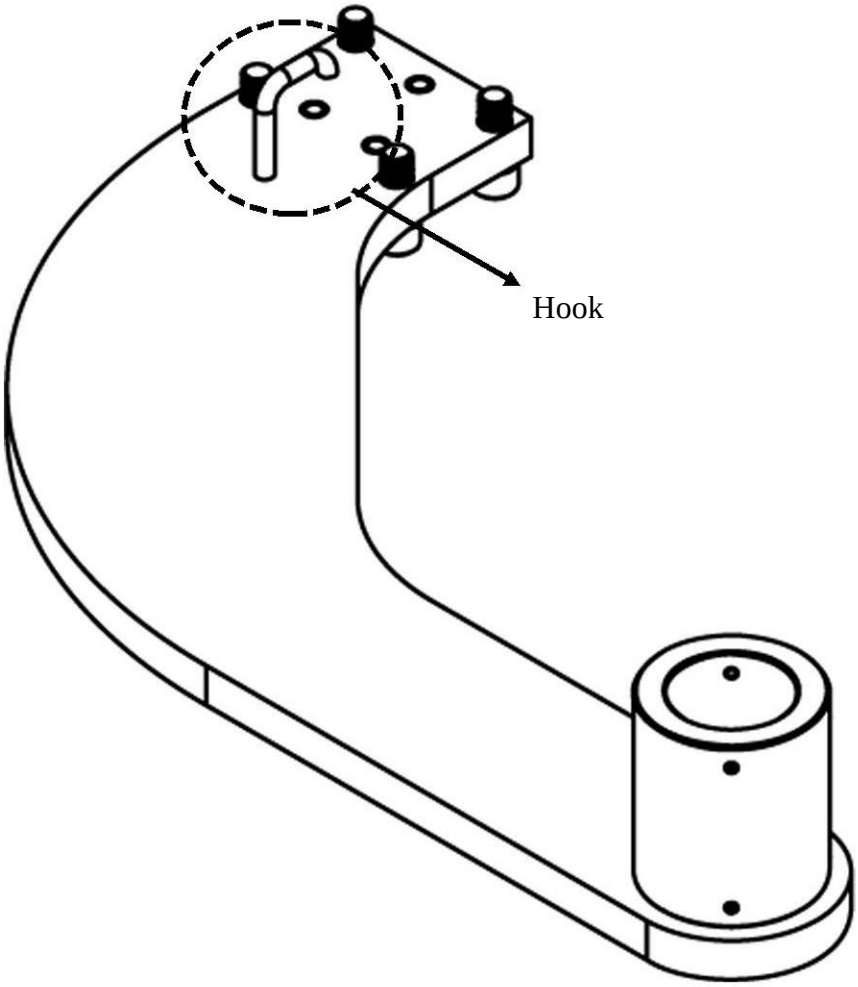


Figure 8b

One Person Installation:

1. Hook on upper plate of chair.
2. Will stay in place for easy one person installation of bolts.

Backrest Cushion Installation

Refer to Figure 9

Both the backrest cushion and backrest frame are equipped with corresponding Velcro strips.

1. Position the backrest frame (2) in the full back down position.

2. Align corresponding Velcro strips located on the backrest cushion (1) and backrest frame (2) and push down to securely fasten the backrest cushion.

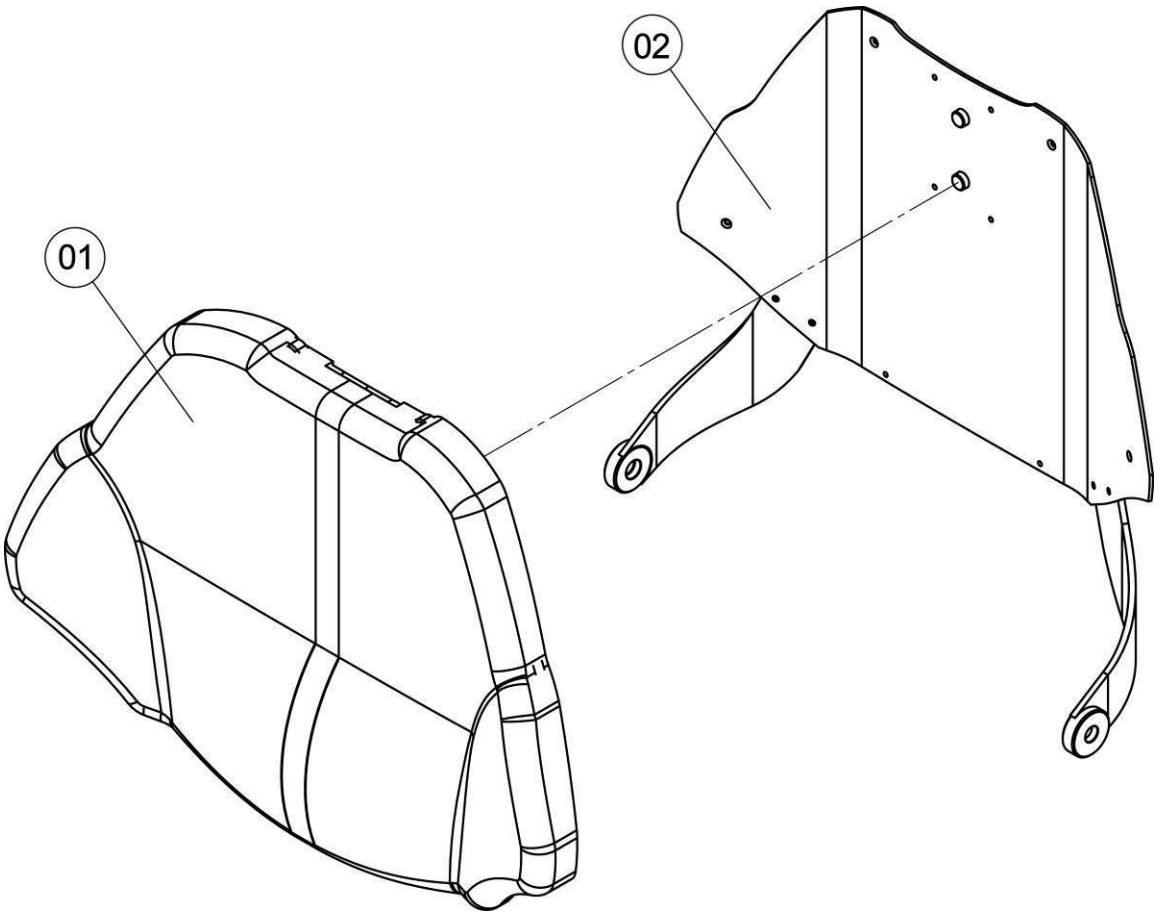


Figure 9

Seat Cushion Installation

Refer to Figure 10

Both the seat cushion and seat frame are equipped with corresponding Velcro strips.

1. Align corresponding screws to location on the seat cushion (1) and seat frame (2) and tight screws to securely fasten the seat cushion.

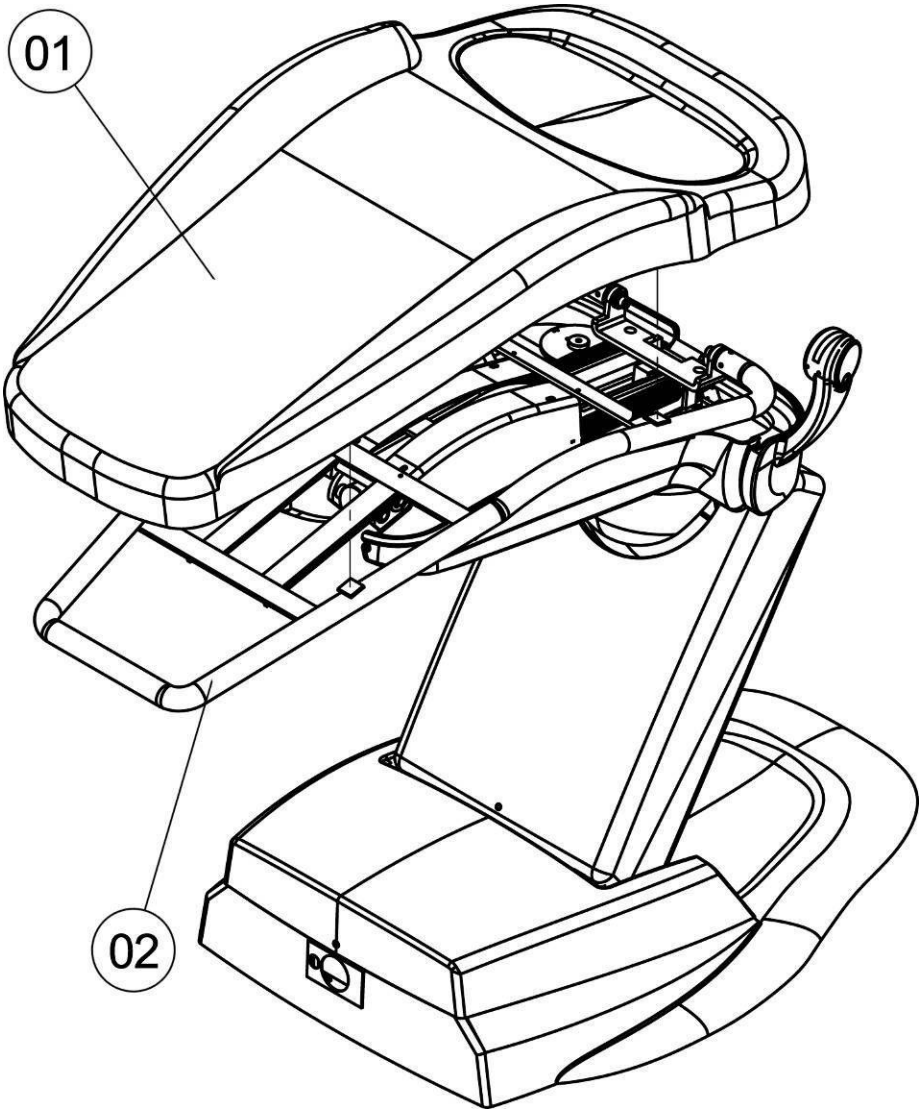


Figure 10

Solenoid Manifold Assembly

Refer to Figure 12

NOTE: When servicing the hydraulic block of the solenoid manifold assembly, the base and back must be in their full down position to prevent unwanted down movements and ensure there is the least amount of hydraulic fluid in either piston.

To service a solenoid valve:

1. Use a 9/16” wrench to remove the retaining nut (1).
2. Remove the solenoid coil (2) from the valve assembly.
3. Using a flat head screwdriver, remove the poppet sleeve (3)
4. The valve assembly is now ready to be serviced as required.

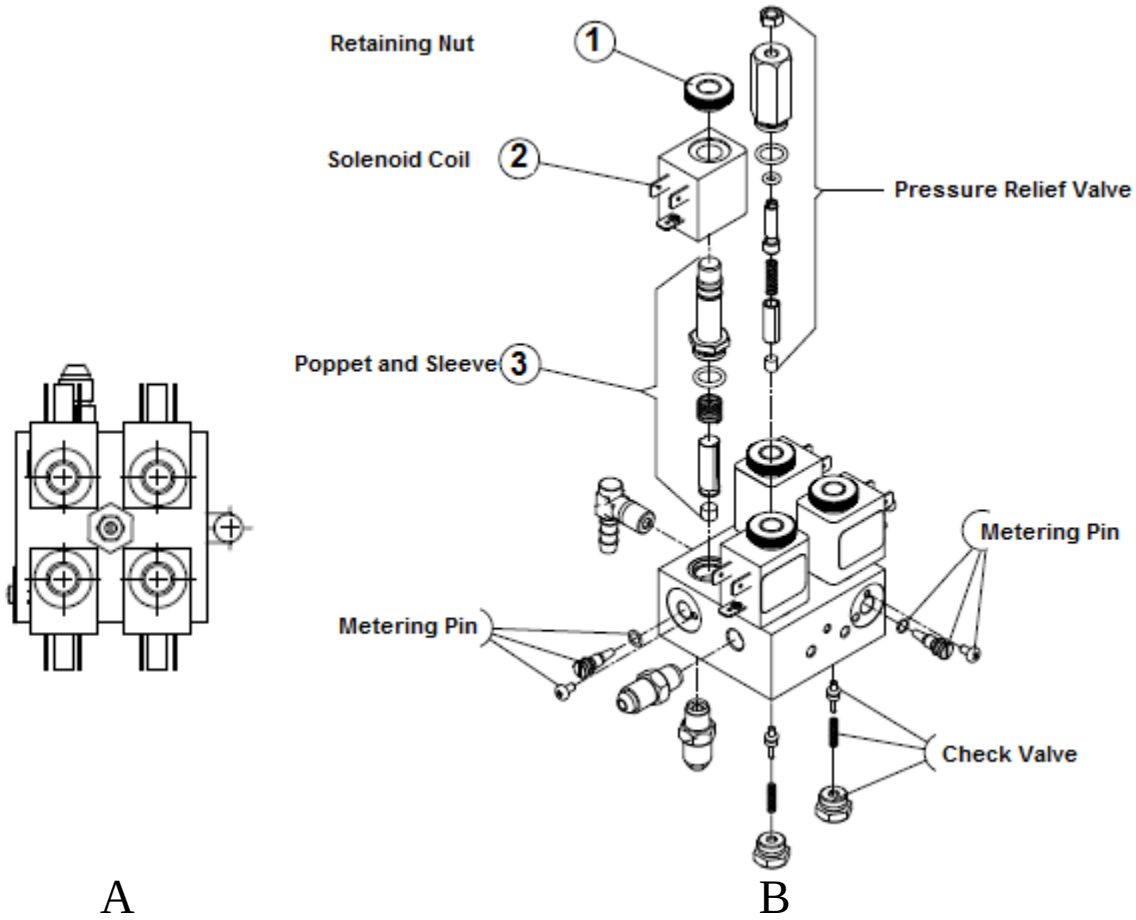


Figure 12

Speed Adjustment

Refer to Figure 13 and 14

Should a change in the back down speed be required?

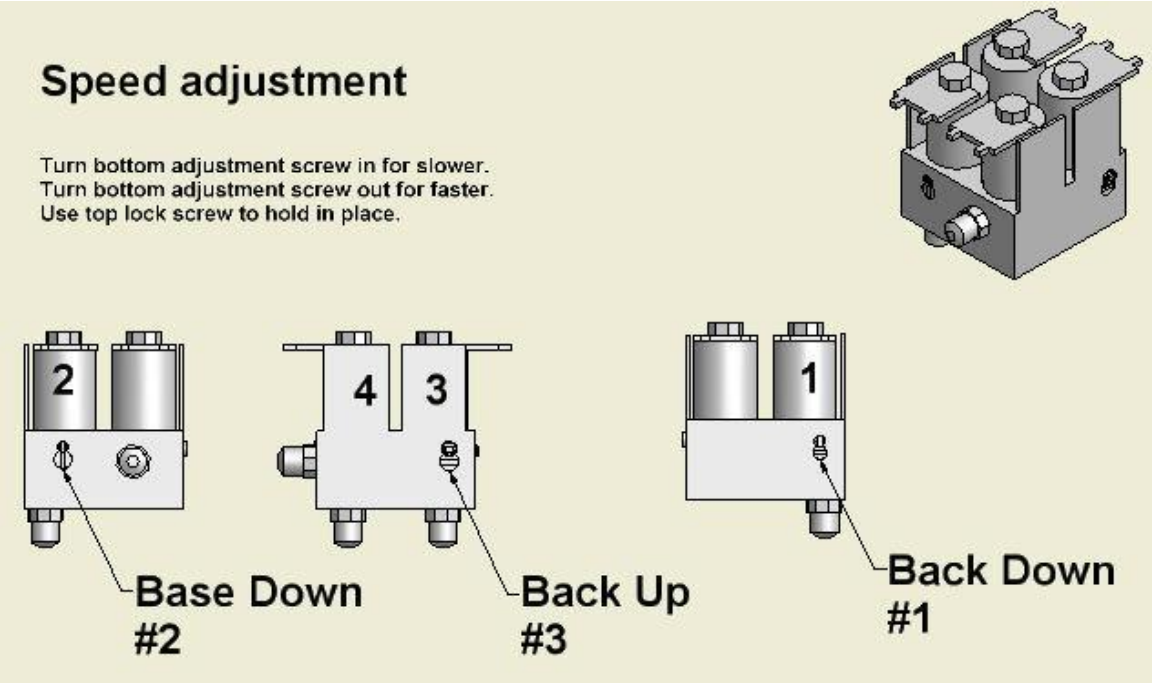


Figure 13

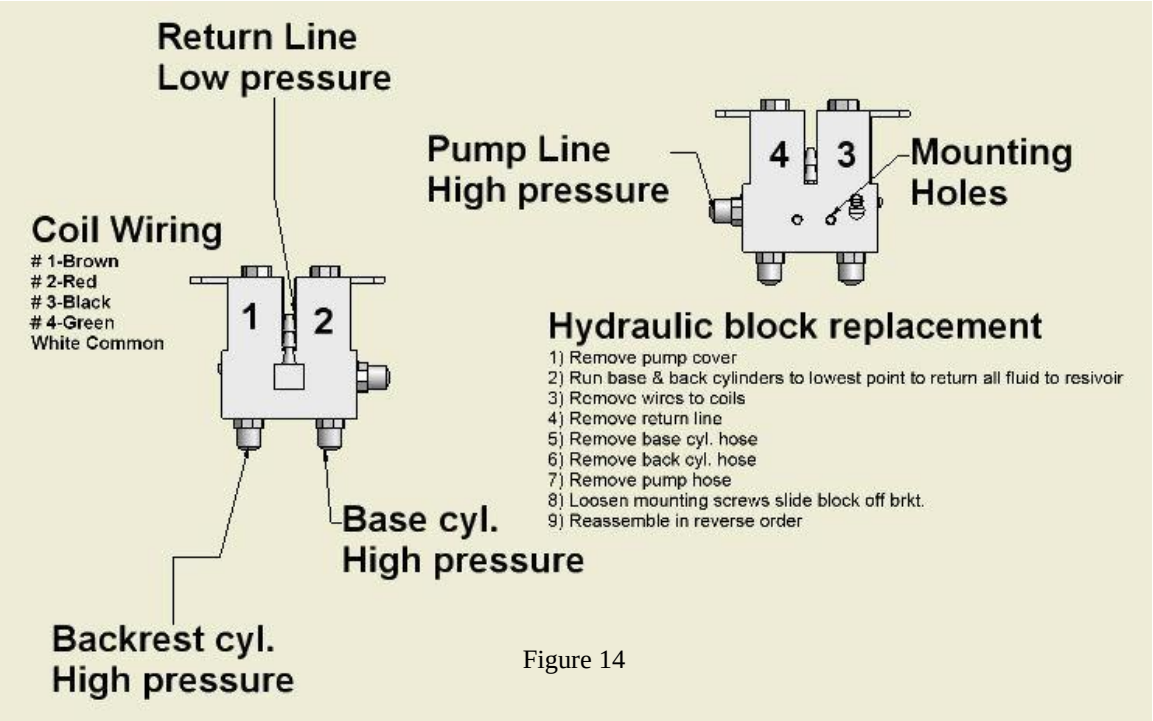
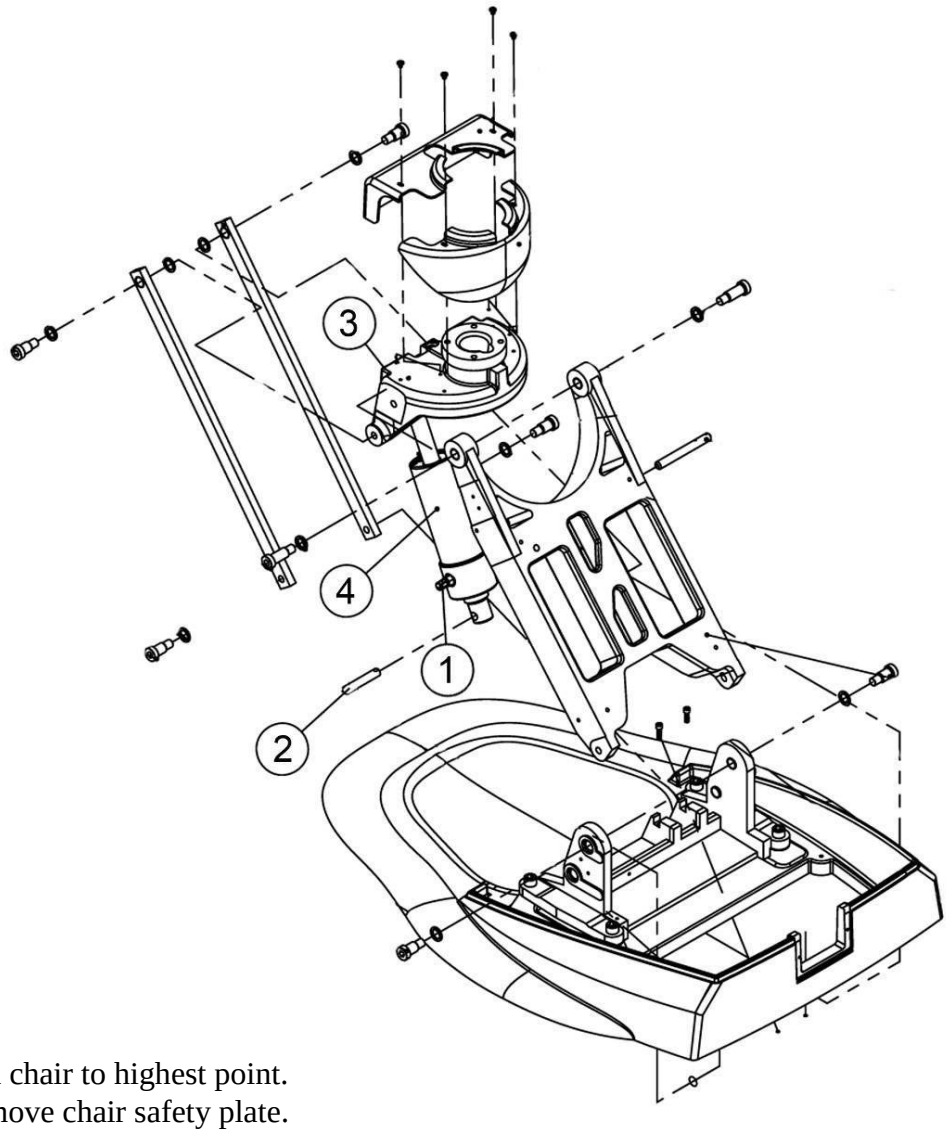


Figure 14

Lower Piston Replacement

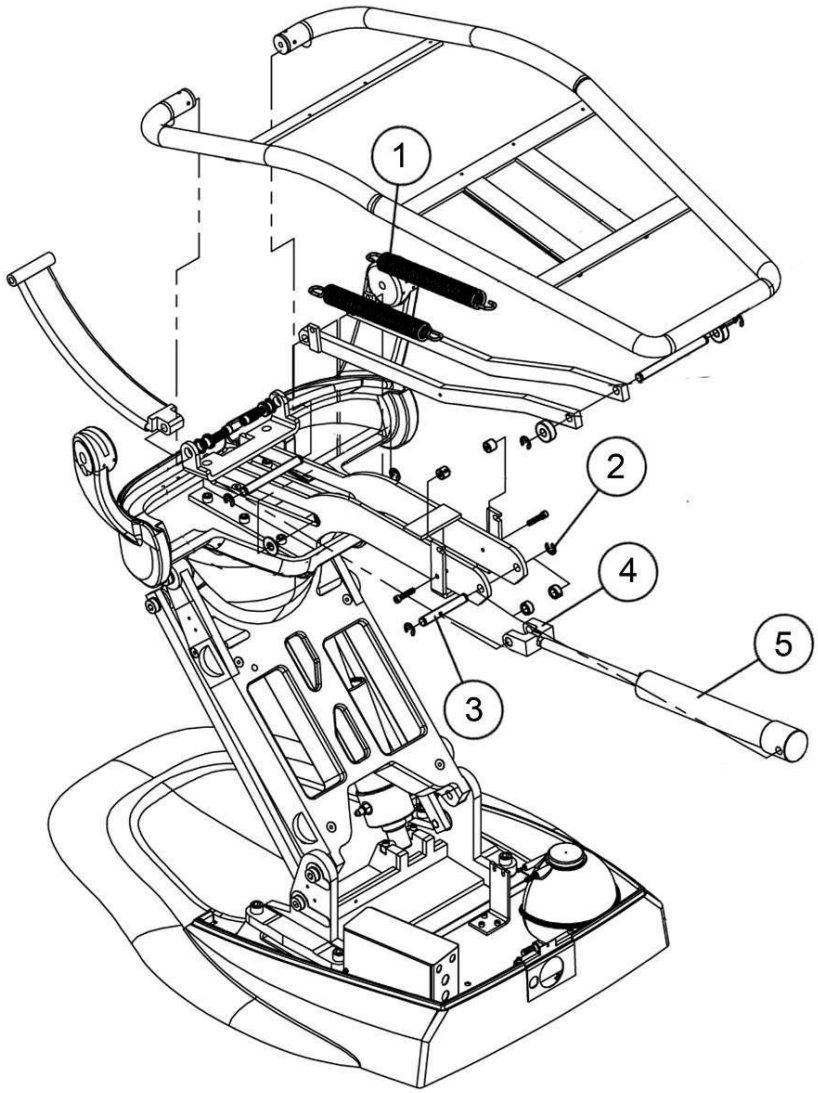
Refer to Figure 15



1. Run chair to highest point.
2. Remove chair safety plate.
3. Remove pump cover.
4. Lower chair to lowest point (new board put in soft limit jumper).
5. Remove high pressure hose from fitting (fig. 1).
6. Plug end of hose for any fluid leakage.
7. Lift base and block up for easier access.
8. Remove hitch pin on top pin of piston (inside of base casting – fig. 3).
9. Holding base piston remove upper pin (fig. 2).
10. Remove vent line from top of piston (clear poly tube).
11. Remove 2 screws on lower piston pin.
12. Replace lower piston (fig. 4).
13. Reassemble in reverse order.

Upper Piston Replacement

Refer to Figure 16



1. Remove seat cushion (Velcro to seat frame).
2. Lift seat frame for access to piston.
3. Move upper piston to lowest position.
4. Remove the 2 return springs (fig. 1).
5. Remove high pressure hose from fitting.
6. Plug end of hose.
7. Remove 1E-clip only from retaining pin at back of piston (fig. 2).
8. Remove retaining pin (fig. 3).
9. Loosen piston shaft using wrench flats.
10. Unscrew piston from clevis (do not remove pin – fig. 4)
11. Replace upper piston (fig. 5).
12. Reassemble piston in reverse order.

Potentiometer Adjustment

Refer to Figure 17

The potentiometer is a synchronized toothed belt and pulley that does not normally require adjustments or maintenance. If necessary to reset the Potentiometer Belt, refer to the figure below and is to be preformed from the patient's left side of the chair only:

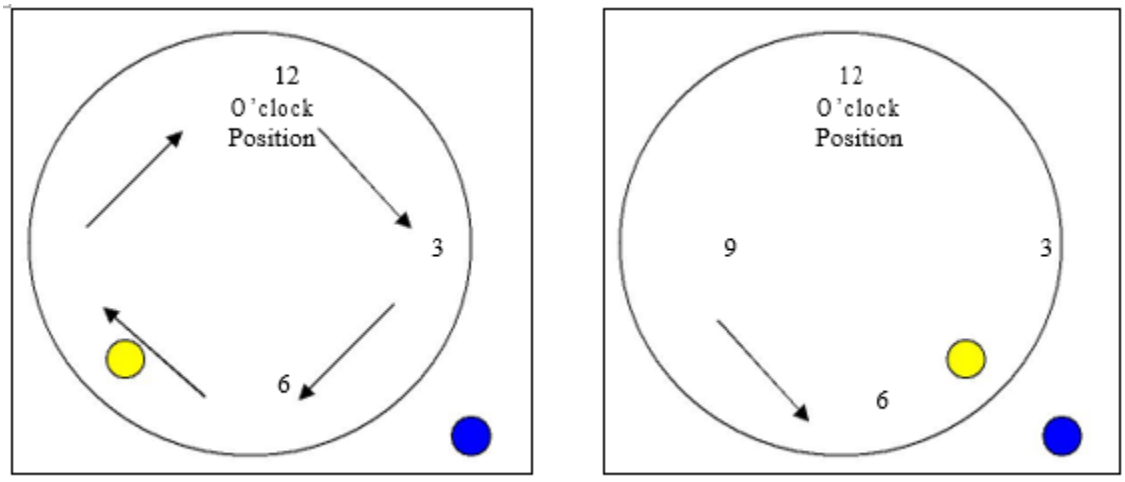


Illustration #1

Illustration #2

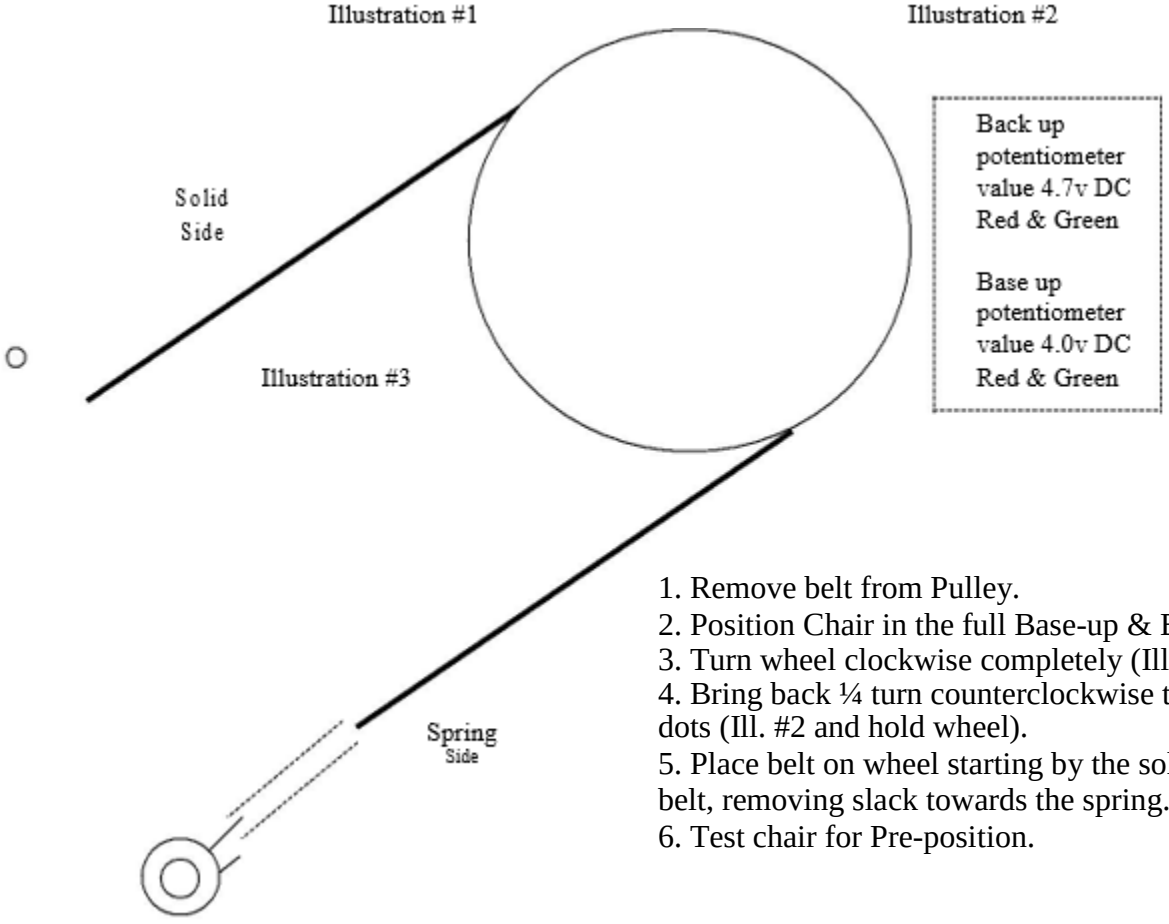


Illustration #3

1. Remove belt from Pulley.
2. Position Chair in the full Base-up & Back-up.
3. Turn wheel clockwise completely (Ill. #1)
4. Bring back ¼ turn counterclockwise to align dots (Ill. #2 and hold wheel).
5. Place belt on wheel starting by the solid side of belt, removing slack towards the spring.
6. Test chair for Pre-position.

Chair Wiring Diagram

Refer to Figure 18

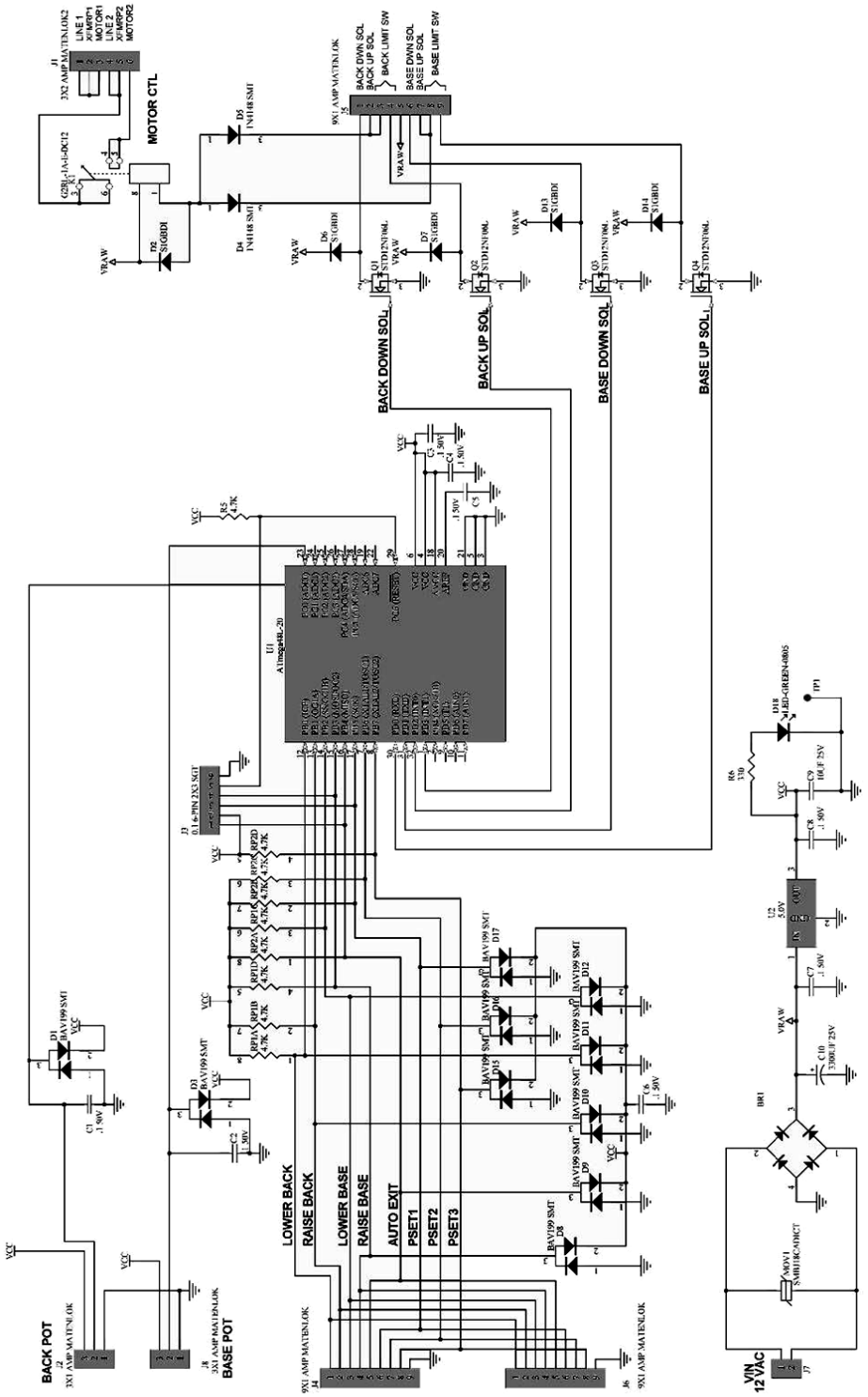


Figure 18

Main PC Board Replacement

Refer to Figure 19

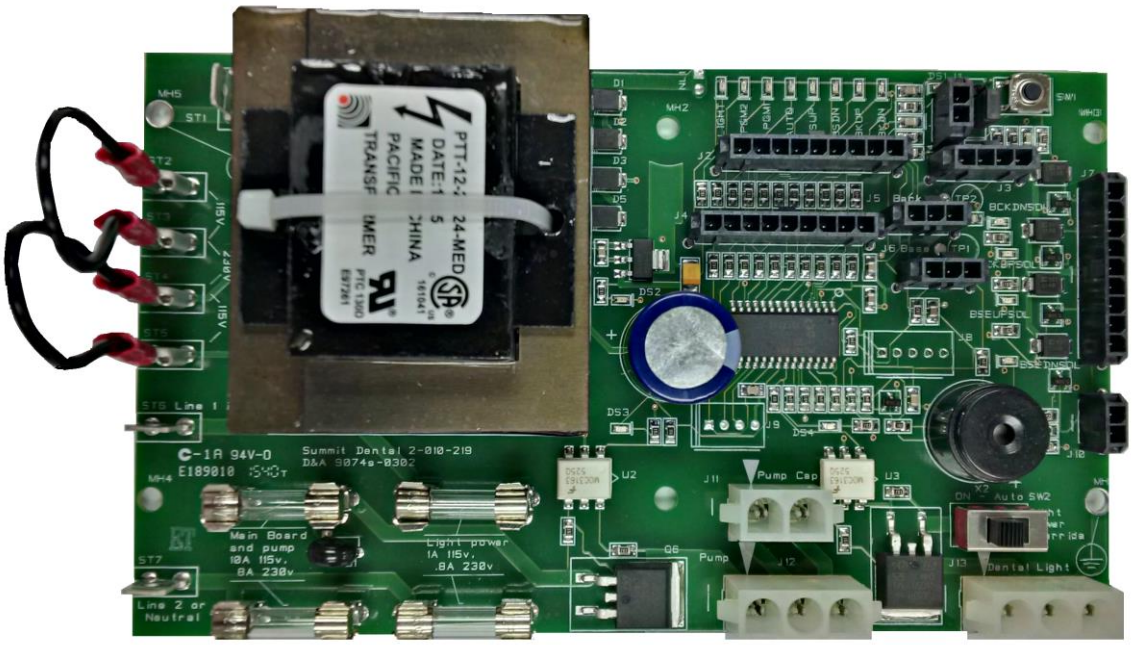


Figure 19 – see Legend chart on next page

1. Unplug chair from power source.
2. Remove pump cover.
3. Remove 2 screws on PC Board cover.
4. Unplug all connection on board. See figure
5. Remove 4 nuts holding board to back panel.
6. Replace with new board.
7. Test all chair movements.
8. Reassemble in reverse order.

Legend

Refer to Figure 19

Legend – Wire Colors and Abbreviations

COM	Common
PP1	Pre-Position 1
PP2	Pre-Position 2 (Palm Beach only)
EXT	Exit
BSU	Base UP
BSD	Base Down
BKU	Back Up
BKD	Back Down
BKL	Back Limit Switch
BSL	Base Limit Switch

BRW	Brown
ORG	Orange
GRY	Gray
BLU	Blue
RED	Red
GRN	Green
WHT	White
BLK	Black

Legend – Jumpers and Pins

J1	– L.E.D. (5v)
J3	– Foot Control or Switches
J2	– Soft Limit Jumper
J4	– Touch Pad
J5	– Foot Control or Switches
J6	– Back Potentiometer
J7	– Base Potentiometer
J8	Solenoid
	Pin 1 Back Down (BRW)
	Pin 2 Back Up (BLK)
	Pin 5 Common (WHT)
	Pin 6 Base Down (RED)
	Pin 7 Base Up (GRN)
J11	Safety Switch (trip pan)
J12	Pump Capacitor
J13	Motor Pump
J14	Dental Light

To Program Soft Limits

Refer to Figure 19

1. Put soft limit jumper on PCB in lower position (Pin 1 to 2). This causes all soft limits to be ignored and allows the “arm” switch to work.
2. Move chair to desired position.
3. Arm chair to learn limit by pressing arm switch on PCB (DS2 will light).
4. Press appropriate motion button (base/back/down/up) to set that limit.
5. Speaker will beep briefly and DS2 will go out.
6. Go to step II to set the next limit. Repeat this process 4 times.
7. If you change your mind, when chair is “armed” to learn a soft limit, pressing the arm switch on PCB will remove “armed” state so that direction switches operate to move chair again.

NOTE: Back up is set from the factory as it’s maximum, moving back to a higher position may damage chair. Contact technical service.

Flow Chair

Base UP
Switch
Input Light
Potentiometer
Soft Limit
Pump Light
Solenoid Circuit
Solenoid Open
Pump On
Movement

Brake Handle Position Adjustment

Refer to Figure 20

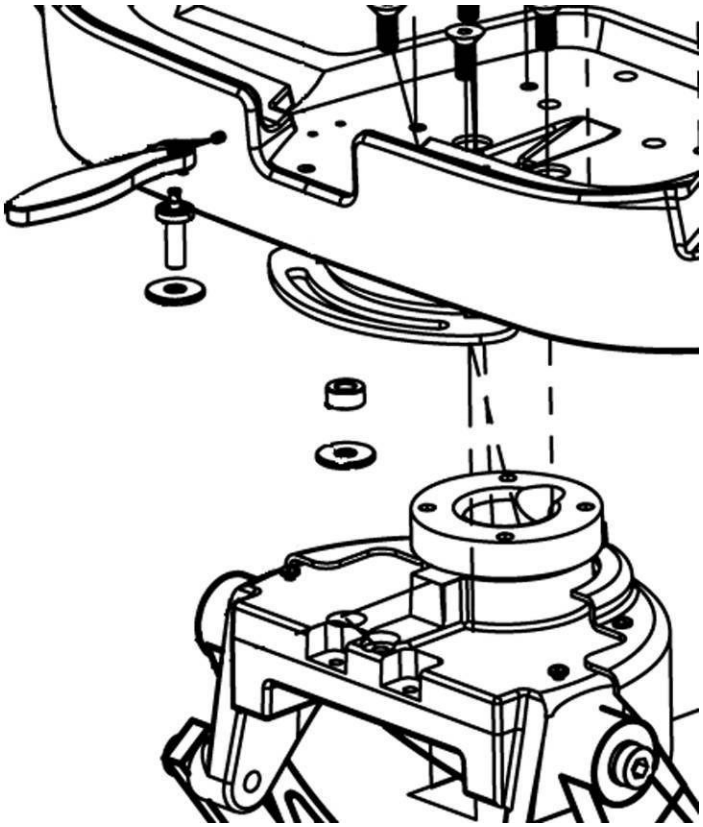


Figure 20

1. Loosen set screw on end of brake handle.
2. Lift handle until pin are clear of holes in lock pin.
3. Rotate to next set of holes.
4. Tighten brake with handle.
5. Check position of handle.
6. If position is right retighten set screw.

Chair Hydraulic Diagram

Refer to Figure 21

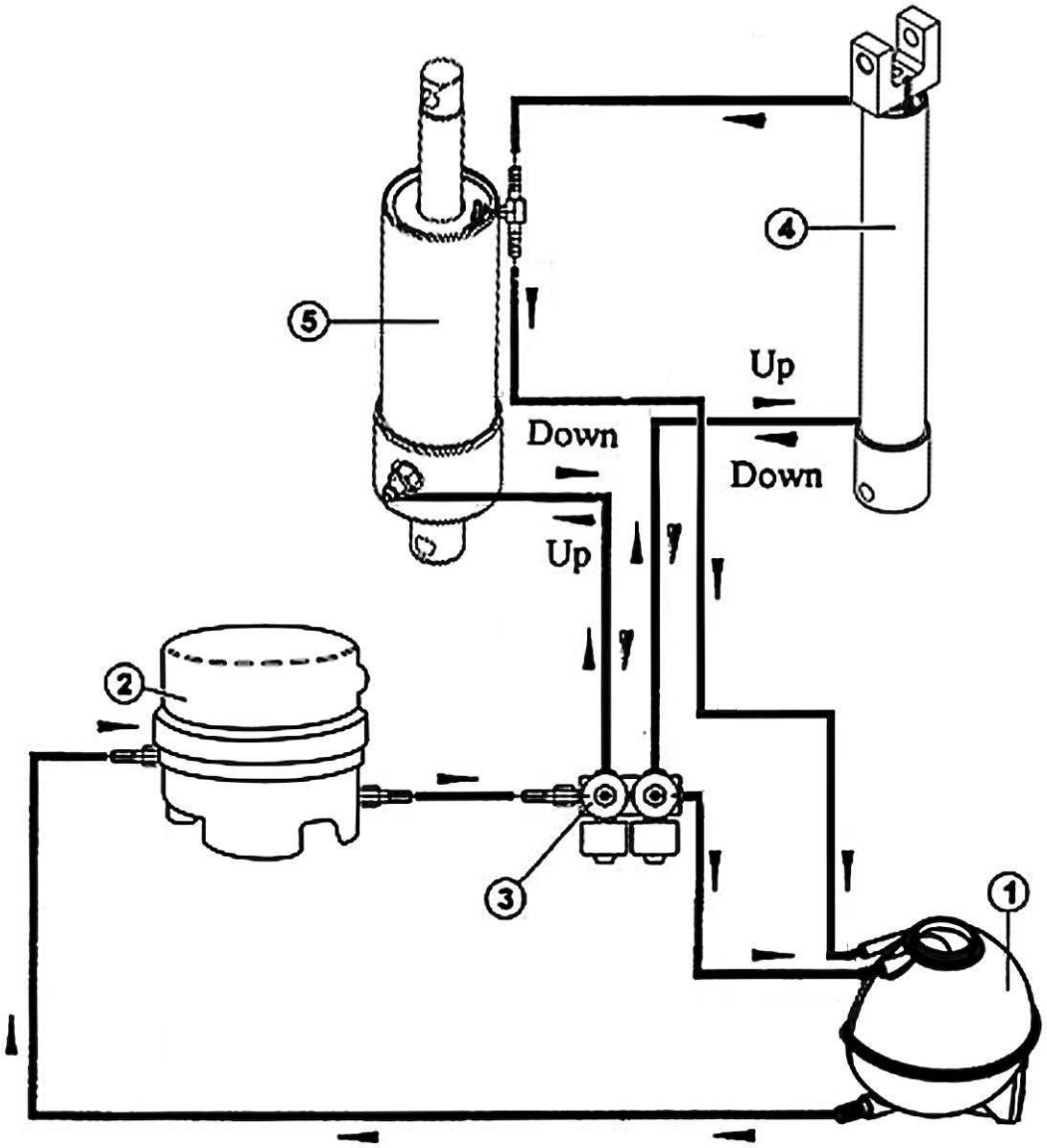


Figure 21

1 Oil Reservoir
2 Motor Pump
3 Hydraulic Block
4 Backrest Piston
5 Base Piston

Trouble Shooting Guide

No Movement

Possible Cause	Corrective Action
1 – Chair unplugged	Plug chair into receptacle
2 – No power from source	Reset circuit breaker
3 – Blown fuse or disconnected power cord	On the motor terminal strip, measure the AC voltage between terminals 2 & 5; reading should be 115V or 220V. If it is, then the power cord, fuse holder and fuse(s) are o.k. If reading between 2 & 5 is zero, then measure the voltage between 2 & 4; if reading is the line voltage, then the fuse is probably interrupted. Replace fuse. If reading between 2 & 4 is zero, check the power cord. Check L.E.D. light on PC Board.
4 – Disconnected fuse holder terminals	Check fuse holder(s) two-wire connections at the holder and terminal strip.
2 – Loose cables on motor terminal strip or PC Board cable connectors	Check all of the chair's cables (power cord, PC board, motor, foot control and solenoid) for tightness and metal contact.
6 – Defective Board Cable or Component on PC Board	Check voltage between motor terminal strip 1& 2 and press back or base up, if reading 0VAC check Board Cable for continuity. If not getting continuity from cable, replace cable or if there is continuity, replace control unit.
7 – Defective Control Unit Transformer	Check transformer's primary (black-white) and secondary (blue) wires for correct voltage. The primary should read 115VAC/220v/230vAC and secondary 10.5VAC (± 10%).

No Base Down Movement

Possible Cause	Corrective Action
1– Base down solenoid coil disconnected	Check cable connection at solenoid and PC Board.
2 – Open electrical leads of cable between board and solenoid coil	Check electrical leads of the cable for continuity; if open replace cable. Check membrane switch, membrane cable, foot control and valve cable
3 – Defective component of PC Board	
4 – Base down solenoid coil not magnetizing	

No Backrest Down Movement

Possible Cause	Corrective Action
1 - Backrest down solenoid coil disconnected	Check cable connection at solenoid and PC Board.
2 - Open electrical leads of cable between board and solenoid coil	Check electrical leads of the cable for continuity; if open replace cable. Check membrane switch, membrane cable, foot control and valve cable.
3 - Defective component of PC Board	Check power at solenoid coil; activate back down switch; if reading 0VDC replace Control Unit. Normal reading is 12VC (± 10%).
4 - Backrest down solenoid coil not magnetizing	Check coil for resistance, should read 22 ohms (± 10%).

No Backrest Up Movement Only

Possible Cause	Corrective Action
1 - Backrest up solenoid coil disconnected	Check connections at solenoid and PC Board.
2 - Open electrical leads of cable between board and solenoid coil	Check electrical leads of the cable for continuity; if open replace cable. Check membrane switch, membrane cable, foot control and valve cable.
3 - If motor is not running, limit switch for back (LS2) may be disconnected	Check limit switch connections at switch and corresponding terminals on PC Board; check LS2 leads for continuity.
4 -Jumper wire on PC Board may be disconnected	Check that jumper wire on PC Board is in place and making proper electrical contact
5 - Defective limit switch (LS2	Check switch with multimeter; if defective, replace limit switch.
6 - Defective component of PC Board	Check power at solenoid coil; active back up switch; if reading 0VDC replace Control Unit. Normal reading is 12VDC (+ 10%).
7 - Backrest up solenoid is not magnetizing or is burnt out	Check coil for resistance, should read 22 ohms (+ 10%).

No Base Up Movement Only

Possible Cause	Corrective Action
1 - Base up solenoid coil disconnected	Check connections at solenoid and PC Board.
2 - Open electrical leads of cable between board and solenoid coil	Check electrical leads of the cable for continuity; if open replace cable. Check membrane switch, membrane cable, foot control and valve cable.
3 - If motor is not running, limit switch for base (LS1) may be disconnected	Check limit switch connections at switch and corresponding terminals on PC Board; check LS1 leads for continuity.
4 - Defective limit switch (LS1)	Check switch with multimeter; if defective, replace limit switch.
5 - Defective component of PC Board	Check power at solenoid coil; active base up switch; if reading 0VDC replace Control Unit. Normal reading is 12VDC (+ 10%).
6 - Base up solenoid is not magnetizing	Check coil for resistance, should read 22 ohms. (+ 10%).

No Base And Backrest Up Movements

Possible Cause	Corrective Action
1 – Defective motor relay	Check voltage between 1 & 2 on the motor terminal strip, should be 115VAC or 220v/230vAC while up movements are activated. If voltage is zero, check connections of the cables at the motor and at the Control Unit.

Downward Movement Of Base Without Switch Activation

Possible Cause	Corrective Action
1 – Defective base check valve (retention) assembly	Remove check valve (retention) assembly; inspect spring and O-ring, replace all defective parts (see page 26).
2 – Debris in base down solenoid valve seat or seals	Remove base down solenoid valve seat and clean solenoid manifold assembly (see page 26).

Downward movement of back without switch activation

Possible Cause	Corrective Action
1 – Defective back check valve (retention) assembly	Remove check valve (retention) assembly; inspect spring and O-ring, replace all defective
2 – Debris in back down solenoid valve seat or seals	Remove back down solenoid valve seat and clean solenoid manifold assembly (see page 26)

Slow Or Sluggish Movement

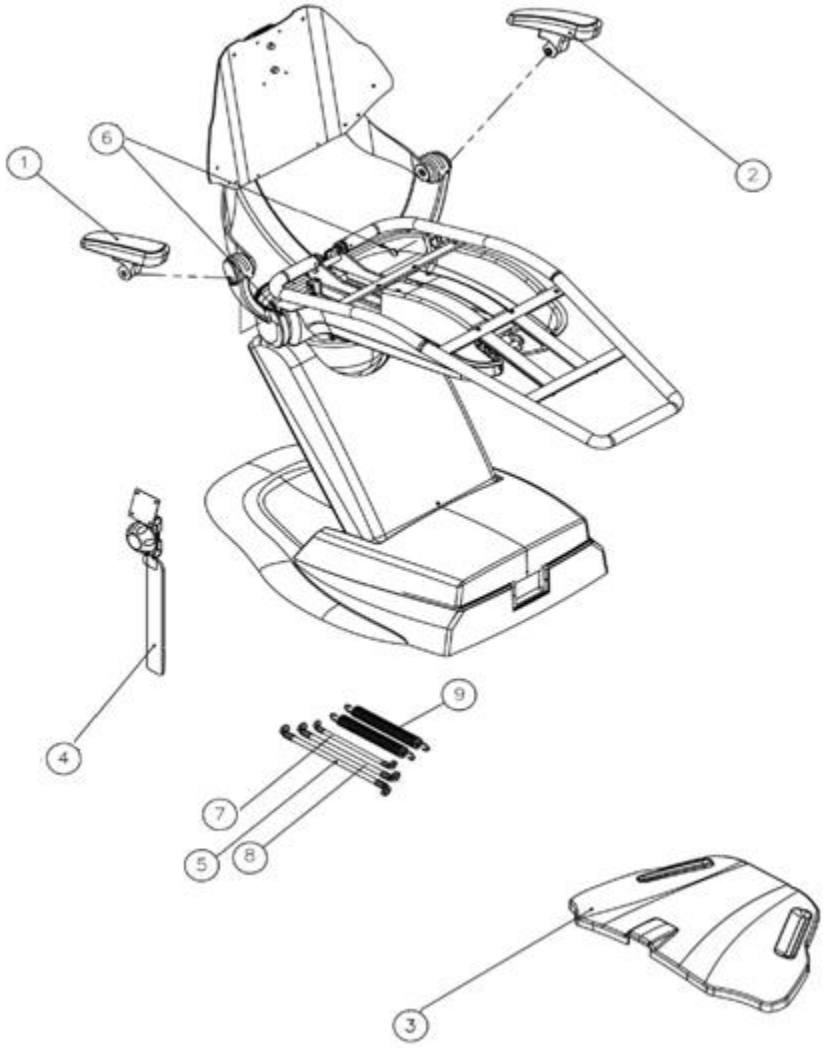
Possible Cause	Corrective Action
1 – Debris on one of the filter screens	Check and clean filter screens (there are filter screens at both the inlet and outlet sides of the block, see page 31 for diagram flow).

No Base Up Movement Only

Possible Cause	Corrective Action
1 - Base up solenoid coil disconnected	Check connections at solenoid and PC Board.
2 - Open electrical leads of cable between board and solenoid coil	Check electrical leads of the cable for continuity; if open replace cable. Check membrane switch, membrane cable, foot control and valve cable.
3 - If motor is not running, limit switch for base (LS1) may be disconnected	Check limit switch connections at switch and corresponding terminals on PC Board; check LS1 leads for continuity.
4 - Defective limit switch (LS1)	Check switch with multimeter; if defective, replace limit switch.
5 - Defective component of PC Board	Check power at solenoid coil; active base up switch; if reading 0VDC replace Control Unit. Normal reading is 12VDC (+ 10%).
6 - Base up solenoid is not magnetizing	Check coil for resistance, should read 22 ohms (+ 10%).

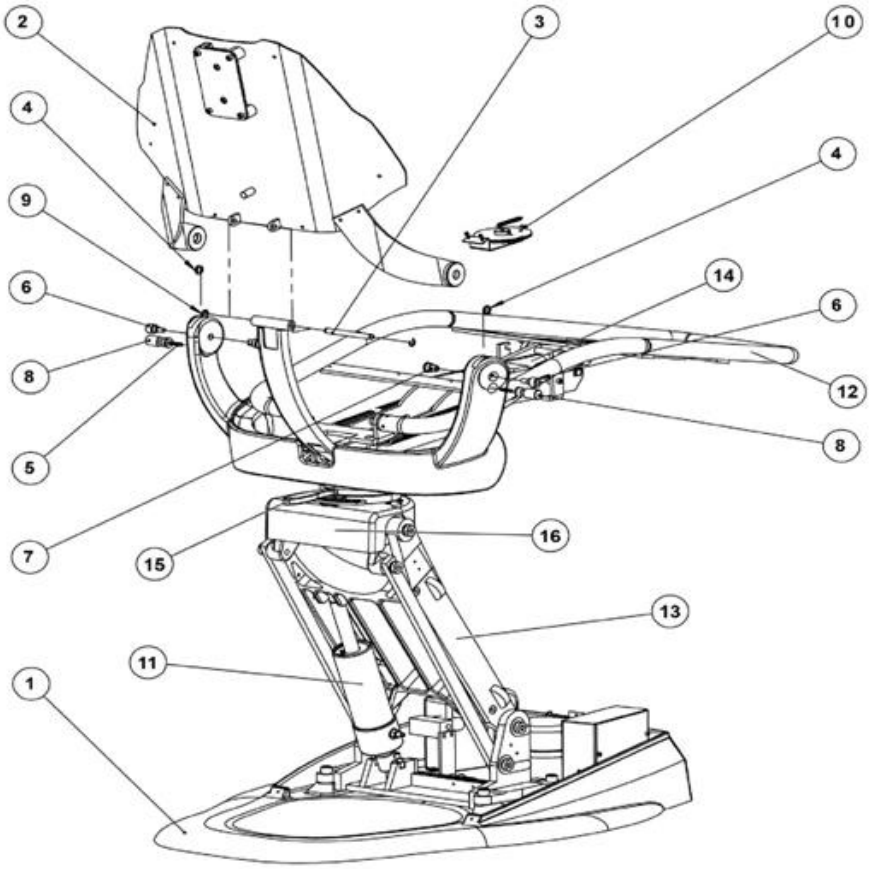
Parts List

Palm Beach Chair – Kits and Sub-Assemblies



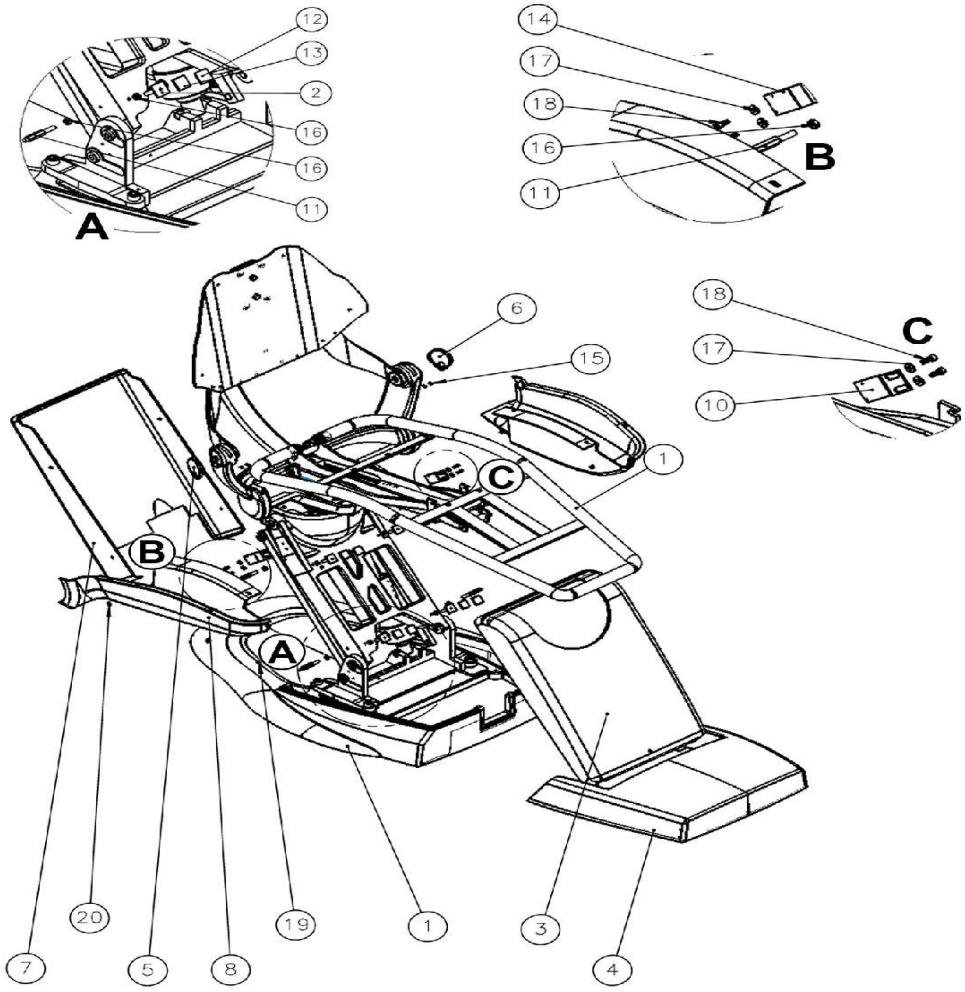
Item	Part#	Description
1	2-010-0035	Armrest Right Side
2	2-010-0034	Armrest Left Side
3	2-010-1108	Backrest Cover
4	2-010-1016	Headrest Frame Assy.
5	2-010-0018	Backrest Hose
6	2-010-0188	Armrest Beauty Cap
7	2-010-0212	Manifold Hose
8	2-010-0017	Base Hose
9	2-010-1095	Seat Spring

Palm Beach Chair Assembly – Pistons and Metal Parts



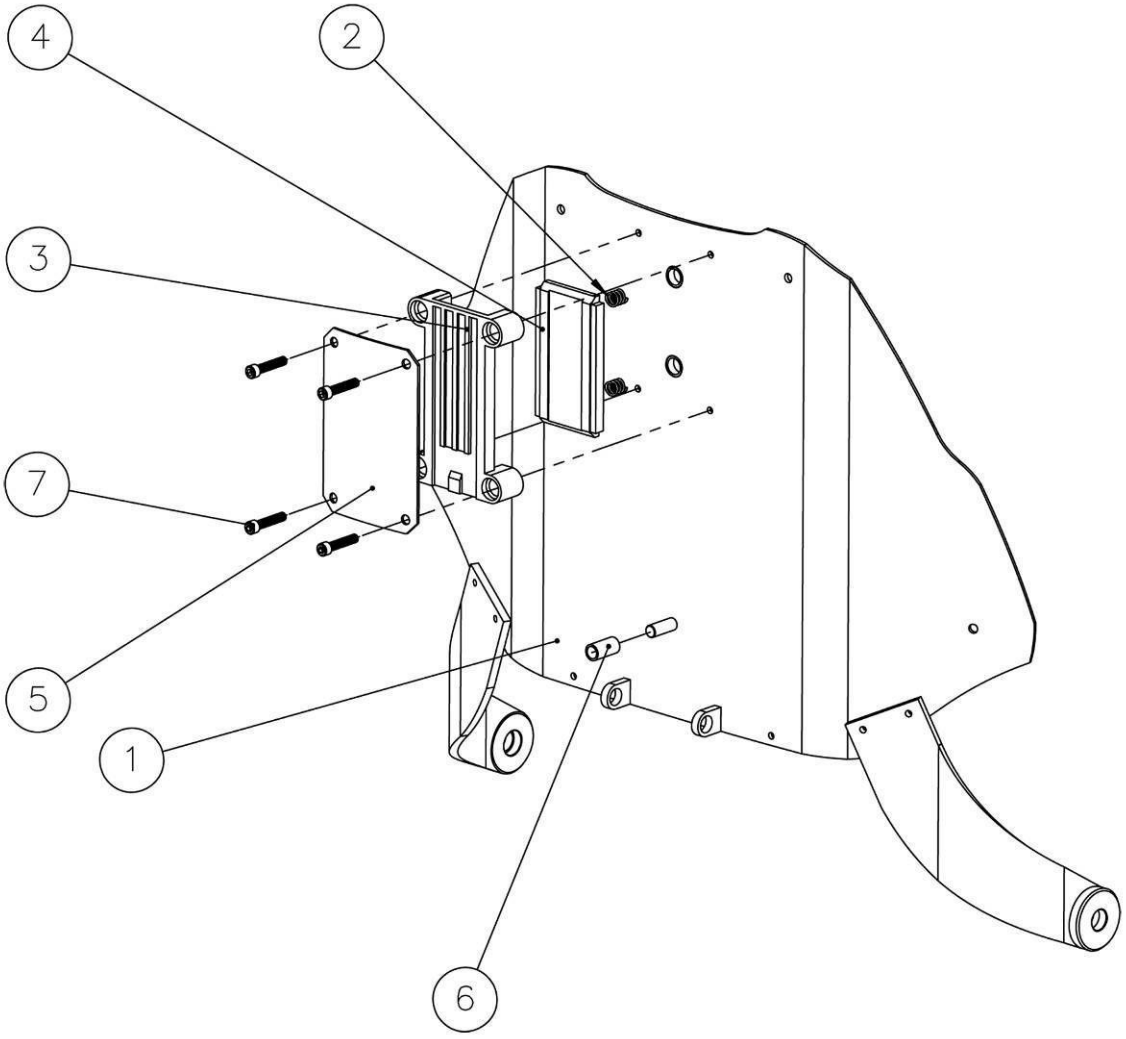
Item	Part#	Description
1	2-010-1023	Base Frame
2	2-010-1073	Backrest Assembly
3	4-010-1009	Backrest Pin
4	4-010-1057	Armrest Washer
5	5-010-1005	Armrest Swivel Spring
6	4-010-1005	Armrest Bolt
7	4-010-1048	Armrest Nut
8	4-010-1024	Armrest Swivel Button
9	5-010-0015	E-Clip 5/16
10	2-010-1037	Pre-Position Kit
11	2-010-1082	Base Piston
12	2-010-0003	Seat Frame
13	2-010-0189	Base Elevation
14	3-010-1003	Backrest Piston
15	2-010-0190	Swivel Handle
16	2-010-0191	Swivel Cover

Palm Beach Chair Assembly – Covers



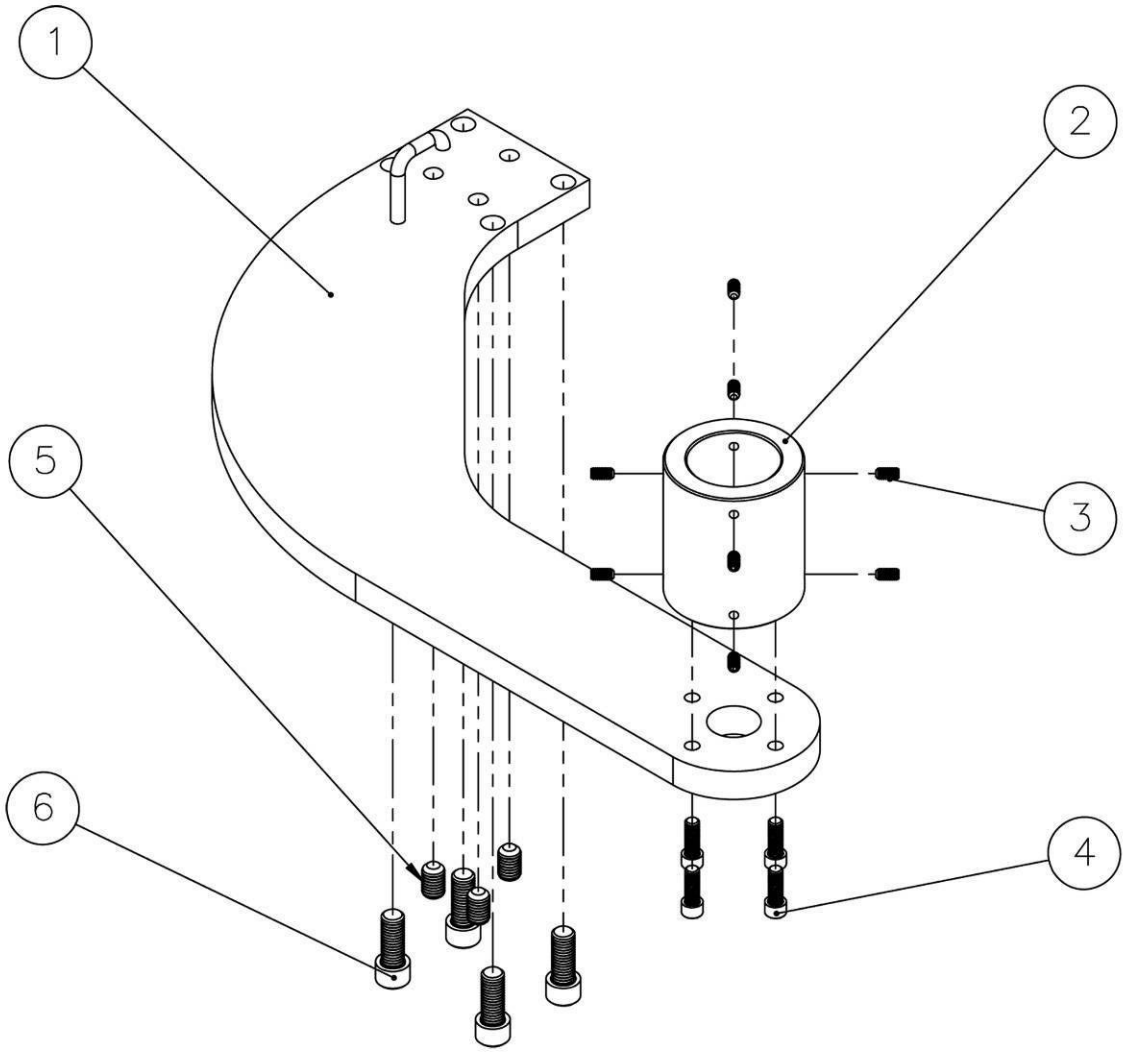
Item	Part#	Description	Item	Part#	Description
1	2-010-1023	Base Frame	11	2-010-0196	Hanger
2	2-010-0193	Velcro Support	12	2-010-0199	Black Velcro Top
3	2-010-1005	Upper Cantilever Cover	13	2-010-0200	Black Velcro Bottom
4	2-010-1006	Motor Pump Cover	14	5-010-0024	Safety Switch Bracket
5	2-010-1010	Arm Swivel Cover R	15	4-010-0036	Screw 10-24 x 3/8
6	2-010-1015	Arm Swivel Cover L	16	4-070-0107	Nut ¼
7	2-010-1004	Lower Cantilever Cover	17	4-020-0022	Zinc Washer #10
8	2-010-0194	Trendelenburg Cover R	18	4-070-0010	Screw 10-24 x ½
9	2-010-0195	Trendelenburg Cover L	19	4-010-0094	Screw 10-24 x ¼
10	5-010-0029	Back Limit Sw. Bracket	20	4-010-0049	Screw 10-24 x 3/8

Backrest Assembly 2-010-1073



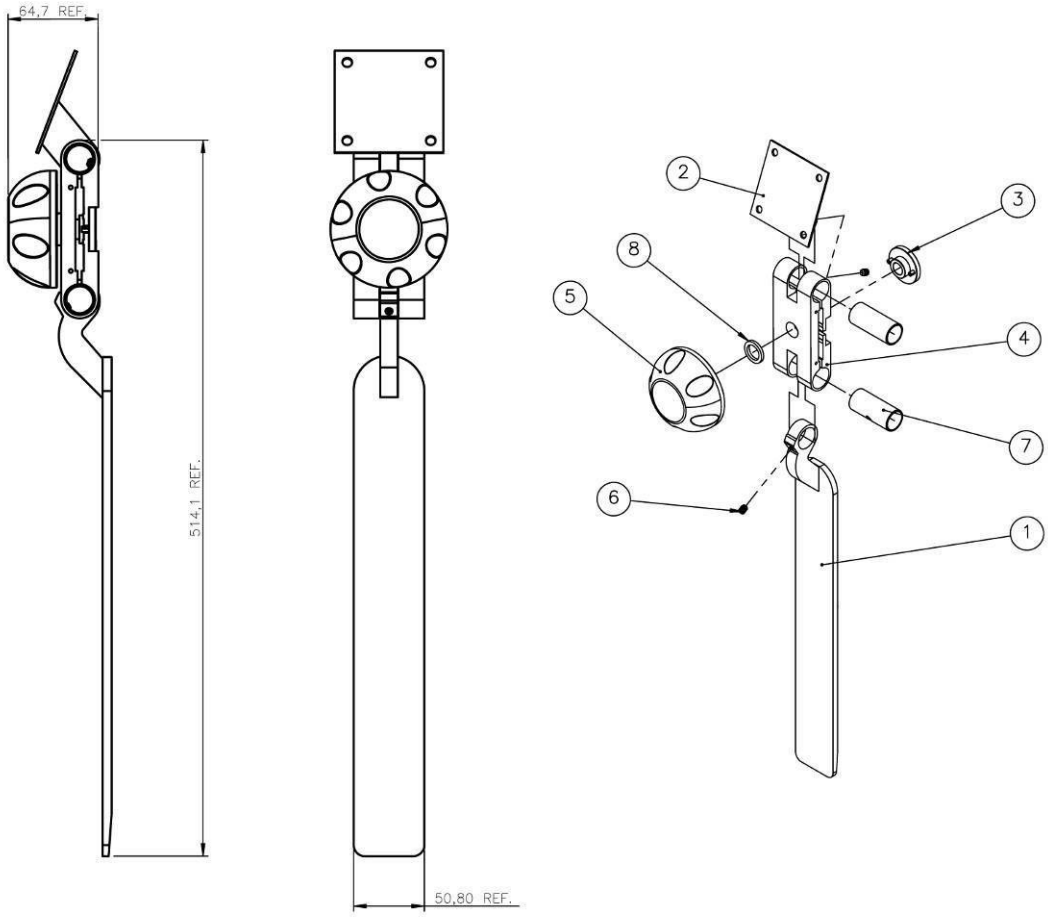
Item	Part#	Description
1	2-010-0208	Backrest Frame
2	2-010-1081	Spring
3	2-010-0051	Pressure Frame
4	2-010-0058	Pressure Support
5	2-010-1045	Pressure Plate
6	2-010-0210	Spacer
7	4-010-1049	Screw ¼-20 x 1-1/4

Post Mount Assembly 2-010-1074



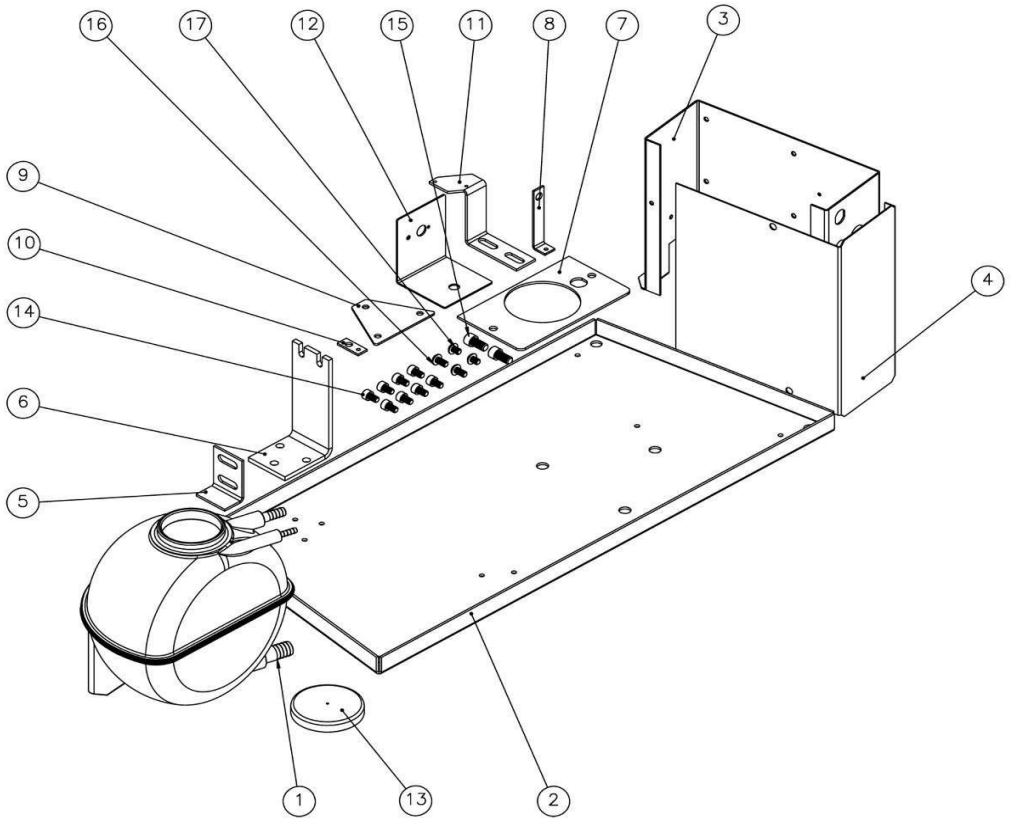
Item	Part#	Description
1	2-010-0211	Base with Hook
2	2-010-0038	Cup
3	4-070-0031	Screw ¼-20 x ½
4	4-070-0016	Screw 5/16-18 x 7/8
5	4-010-0043	Screw ½-13 x ¾
6	4-010-0040	Screw ½-13 x 1-1/4

Headrest Assembly With Knob 2-010-1016



Item	Part#	Description
1	2-010-0060	Post
2	2-010-0061	Base for Cushion
3	4-010-0012	Locking Nut
4	2-010-0066	Double Articulation
5	4-010-0014	Knob
6	4-010-0041	Screw Cup Point
7	4-010-0061	Rod
8	4-010-1047	Nylon Washer

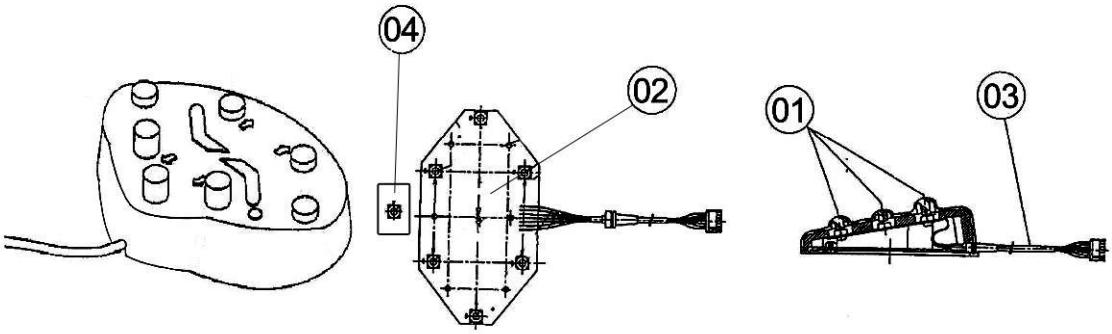
Tray Assembly 2-010-0183



Item	Part#	Description
1	2-010-0006	Oil Tank
2	2-010-0116	Tray
3	7-010-0052	PC Board Chassis
4	7-010-1052	Chassis Cover
5	2-010-1077	Oil Tank Bracket
6	5-010-0025	Hyd.Block Bracket
7	3-010-0035	Face Plate
8	5-010-0031	Large Bracket Bk Belt
9	5-010-0036	Base Belt Bracket
10	5-010-0037	Back Belt Bracket
11	5-010-0029	Back LS Bracket
12	7-010-0145	Pre-Position Bracket
13	2-010-0070	Oil Tank Cap
14	4-010-0050	Screw 10-24 x 5/16
15	4-010-1052	Screw ¼-20 x ½
16	4-010-0049	Screw 10-24 x 3/8
17	4-010-0094	Screw 10-24 x ¼

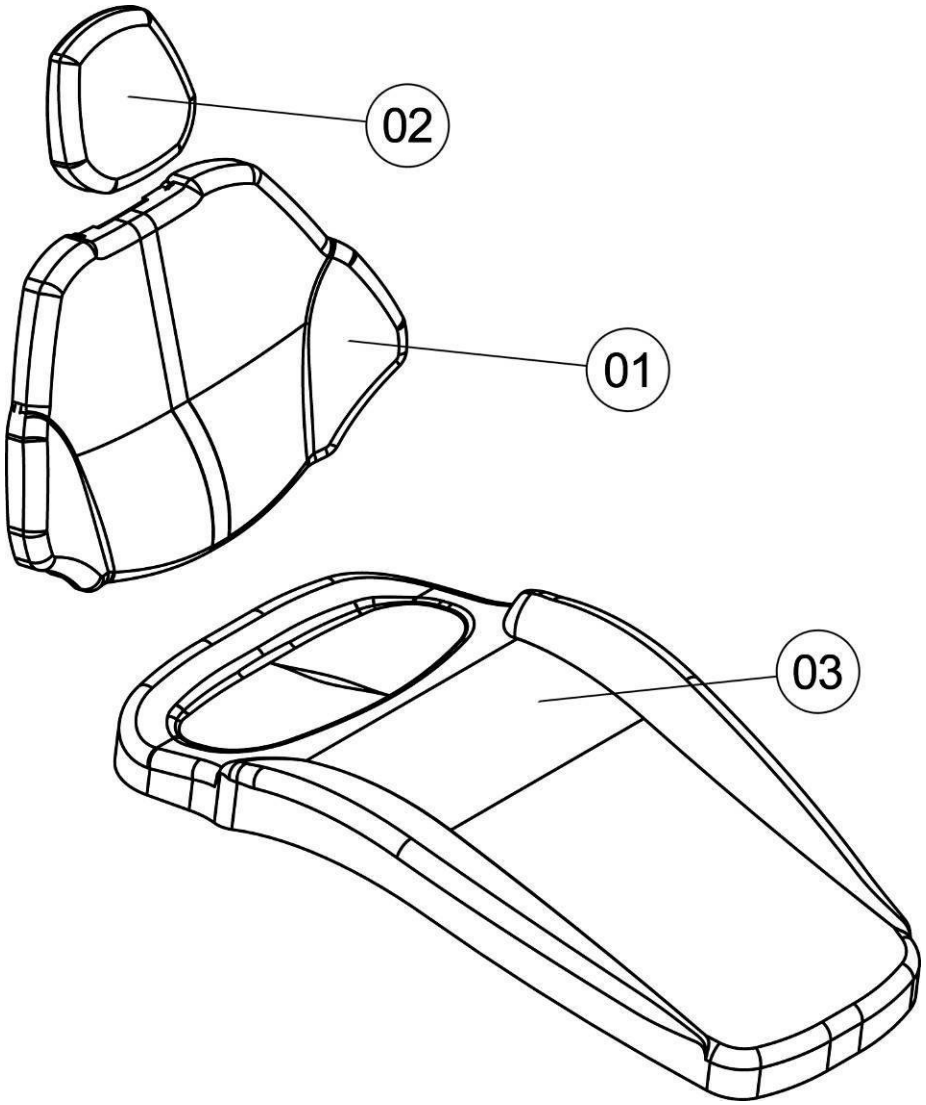
Item	Part#	Description
*	2-010-0025	Motor Pump 115v with Capacitor
*	2-010-0026	Motor Pump 220v with Capacitor
*	7-010-0305	Transformer
*	2-010-0219	PC Board
*	2-010-0228	Hydraulic Block
*	7-010-0050	Fuse Holder
*	7-010-0155	Fuse (See Fig. 12)

Foot Control with Cable Assembly 3-010-1023



Item	Part#	Description
1	2-010-0508	Cover
2	2-010-0505	PC Board
3	7-010-1026	Wire Assembly, Foot Control (75”)
4	2-010-0503	Small PC Board
5	2-010-0501	Chassis (Not Shown)

Upholstery Set



Item	Part #	**Description**
1	2-010-XXXX	Backrest Upholstery
2	2-010-XXXX	Headrest Upholstery
3	2-010-XXXX	Seat Upholstery
*	3-010-1050	Scuff Guard
*	2-010-0186	Headrest Plastic Guide

Pre-Position - Base

Not Illustrated

Part #	Description
3-010-1004	Belt, Pre-Position, Base (14”)
2-010-1085	Spring, Pre-Positioning, Base
3-010-1005	Potentiometer, Linear, Base
7-010-1138	Pulley, Pre-Position, Base
3-010-1006	Membrane Kit 7 Buttons and Wire

Pre-Position - Seat

Not Illustrated

Part #	Description
3-010-1007	Belt, Pre-Position, Back (19”)
2-010-1086	Spring, Pre-Positioning, Back
3-010-1008	Potentiometer, Linear, Back
7-010-1139	Pulley, Pre-Position, Back
3-010-1009	Backrest, Support, Pre-Position, Back

Wire Assemblies

Not Illustrated

Part #	Description
7-010-1136	Valve (36”), Base (26”) and Back (52”) Wire Assy
7-010-1036	Wire Assembly, Trip Pan (56”)
7-010-1028	Wire Assembly, Membrane Cable (86”)
7-010-0050	Fuse Holder
7-010-0155	Fuse12AMP (115v)
7-010-0176	Fuse 8AMP (220v/230v)
7-010-0047	Wire Assembly, Fuse Holder (8 ½”)

WARRANTY

Summit Dental Systems (SDS) warrants its products against defects in materials or workmanship from the date of shipment to the Buyer as follows:

Summit Dental Systems (SDS) Equipment:	**Warranty Period:**
Chairs, Delivery Units, Cuspidors, Lights	5 Years
Control Block Diaphragm (part of Delivery Unit)	Lifetime
All Upholstery, Stools, all Plastic Covers, and Cabinets	1 Year

Summit Dental Systems' sole obligation under the warranty is to provide parts for repair, or at its option, to provide a replacement product (excluding all labor and shipping fees). "In any action, BUYER'S remedies are limited to the warranty described above. BUYER shall not be permitted to claim lost profits, reliance, special, incidental, or consequential damages in any proceedings." The warranty does not cover damage from improper installation or maintenance, accident or misuse. The warranty does not cover damage resulting from the use of cleaning disinfecting or sterilization chemicals and processes. Failure to follow instructions provided in Summit Dental Systems' Operation and Installation Manuals (Owner's Guides) may void the warranty. In the event Warranty service must be performed to correct any defect, only an authorized Summit Dental System dealer may perform any and all warranty repairs. Any repairs by unauthorized dealers, technicians, or repairmen may void the warranty.

- In the case of a defective warranty item, a copy of the replacement invoice, model and serial number of the product under which it was replaced, and a description of symptoms of the defect must be returned with the part within 30 days of the replacement invoice date to Summit Dental Systems, 1280 SW 27th Ave Pompano Beach, FL 33069, USA, in order to receive credit. Any and all expenses for freight, labor to perform warranty service, and purchase of spare parts are the responsibility of the buyer. Any fraudulent claims made may void the warranty. Any additional warranty that may be provided by an authorized Summit Dental Systems dealer is the sole responsibility of said dealer.

- SDS reserves the right to make changes or improvements on any products without being required to modify existing equipment in a like manner.

- SDS reserves the right to make changes or improvements on any products without being required to modify existing equipment in a like manner.

Please complete and retain for your records the following Information:

In case of warranty part replacement/repair or when ordering a part, please call your authorized Summit Dental Systems dealer and have the following information available:

Owners' Name:	**Phone #:**
Model #:	**SDS Serial #:**
Dealer:	**Phone:**
	Purchase Date:

1280 SW 27th Ave - Pompano Beach - FL 33069

Toll Free: (800) 275-3368

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