

Installation
Operation
Maintenance
Troubleshooting
Version Apr/19





Summit Dental Systems
Toll Free: (800) 275-3368
www.summitdental.com

Congratulations!

All of us at Summit Dental Systems want you to know that your Marathon 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	3
Weight & Dimensions	9
Instructions for Use and Care	13
Installation Instructions	16
Parts List	24
Warranty	32

Important Information

Technical Specifications

Power inlet:	115 VAC, 60 Hz or 220 VAC, 50 Hz
Fuse:	115V – 6AMP MDA Time Delay 220V/230V – 8AMP MDL Time Delay Inlet
Duty Cycle	120 SEC ‘ON’/ 1080 SEC ‘OFF’
Base motor	F push = 6000N
Back Motor	F push = 6000N

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 below the seat on the cantilever.

Warning

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

⚠ WARNING

Turn power off before servicing. All electrical work including bulb 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

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

Adequate space must be given to allow for chair movement such that it will not interfere with adjacent fixtures or equipment.

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 Marathon Chair is intended for use in the electromagnetic environment specified below. The customer or the user of the Marathon Chair should assure that it is used in such an environment.		
EMISSION TEST	COMPLIANCE	ELECTROMAGNETIC ENVIRONMENT GUIDANCE
RF Emissions CISPR 11	Group 1	The Marathon 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. The Marathon 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.
RF Emissions CISPR 11	Class B	
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 Marathon Chair is intended for use in the electromagnetic environment specified below. The customer or the user of the Marathon 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 Marathon Chair requires continued operation during power mains interruptions, it is recommended that the Marathon 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: Using is the a.c. mains voltage prior to application of that test level.			

Guidance and manufacturer’s declaration – electromagnetic immunity

The Marathon Chair is intended for use in the electromagnetic environment specified below. The customer or the user of the Marathon 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	<p>Portable and mobile RF communications equipment should be used no closer to any part of the Marathon Chair, including cables, than the recommended separation distance calculated from equation applicable to the frequency of the transmitter.</p> <p>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</p>
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	<p>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).</p> <p>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.</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol</p>

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 Marathon Chair is used exceeds the applicable RF compliance level above, the Marathon 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 Marathon 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 Marathon Chair**

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













RATED MAXIMUM OUTPUT POWER OF TRANSMITTER W	SEPARATION DISTANCE ACCORDING TO FREQUENCY OF TRANSMITTER m		
	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.

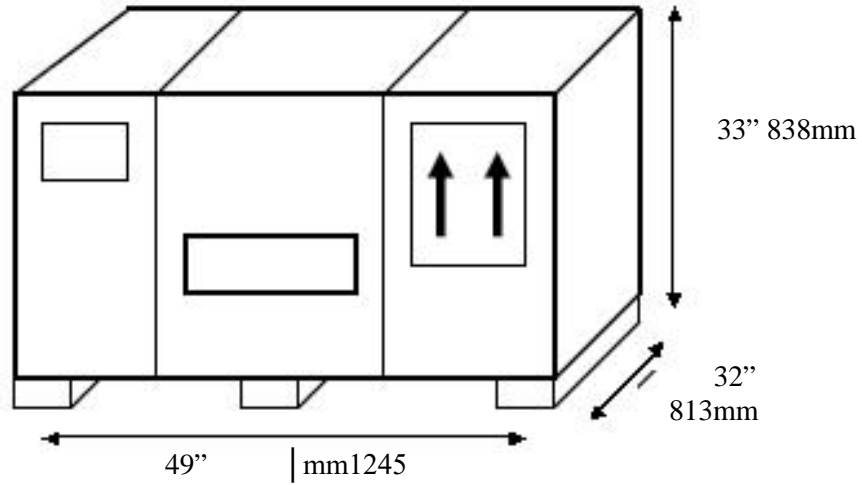
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Sample Cautionary Labels

Symbol	Description	Symbol	Description
	European Authorized Representative		Caution. Failure to follow instructions could result in damage to product or minor injury.
	Manufacturer of equipment.		Type B applied part.
	Date of manufacture.		Electrical and electronic waste. Do not dispose of with domestic waste.
	Serial Number.		Protective earth (ground).
	Model Number (Catalog Number).		Functional earth (ground).
	CE Mark - Conforms to applicable European Directives (refer to Declaration of Conformity).		
	Near Field Communication		

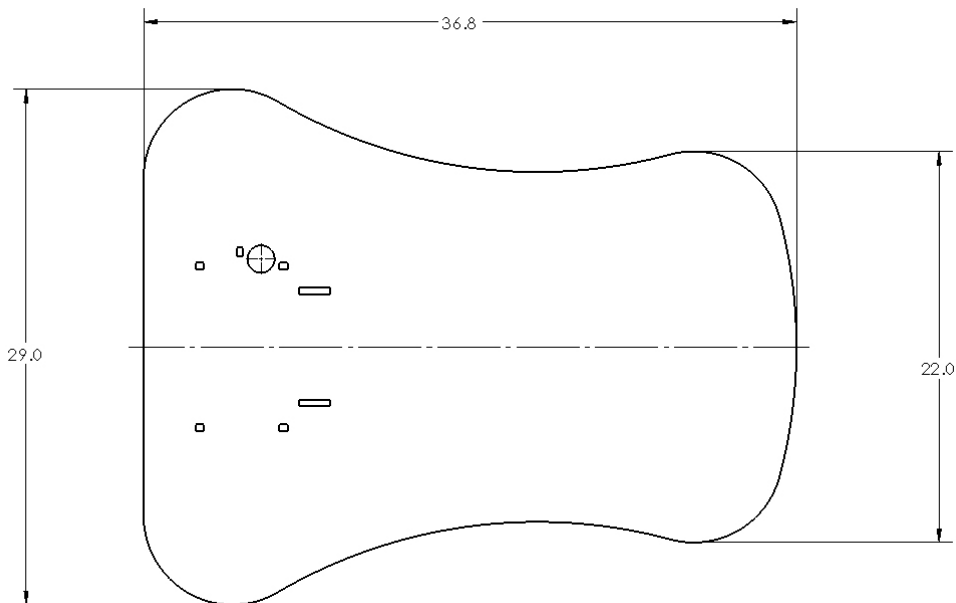
Weight & Dimensions

Shipping Information

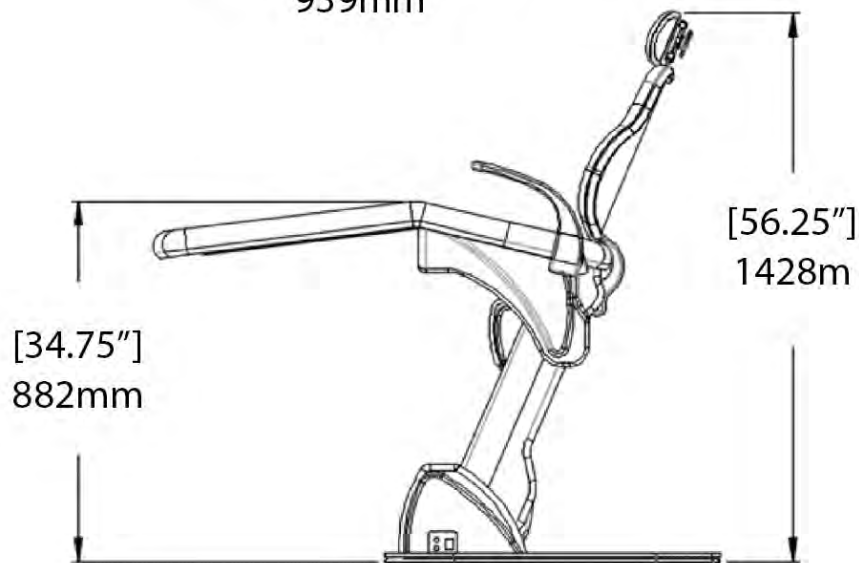
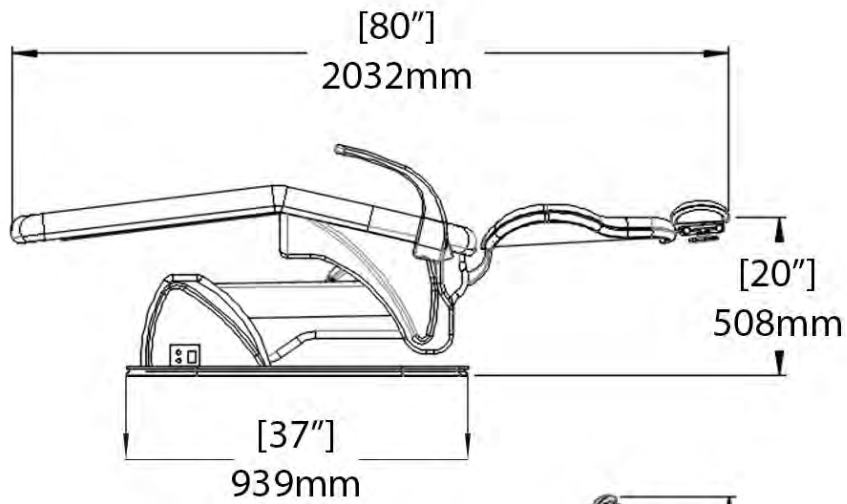
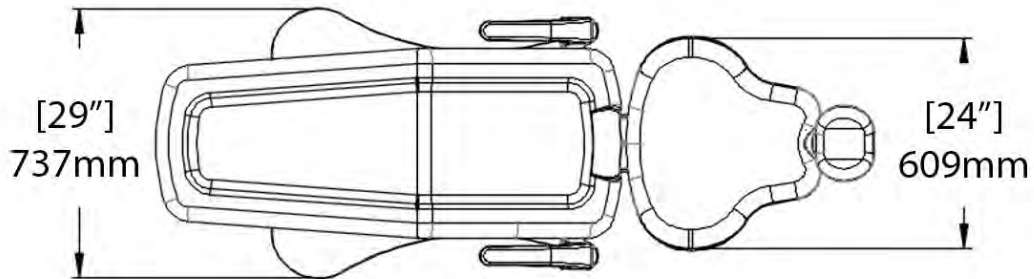


Marathon Chair
477 Lb | 216 Kg

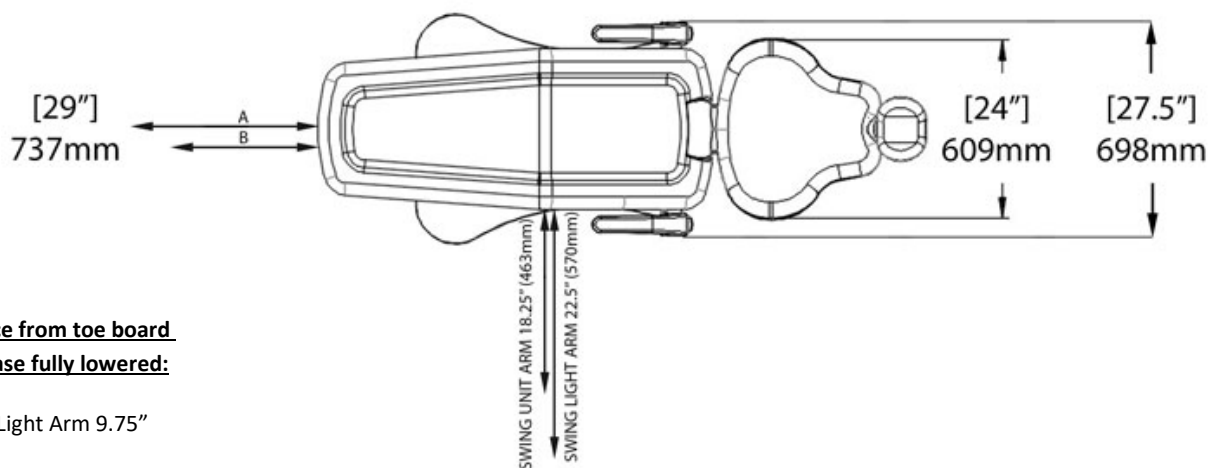
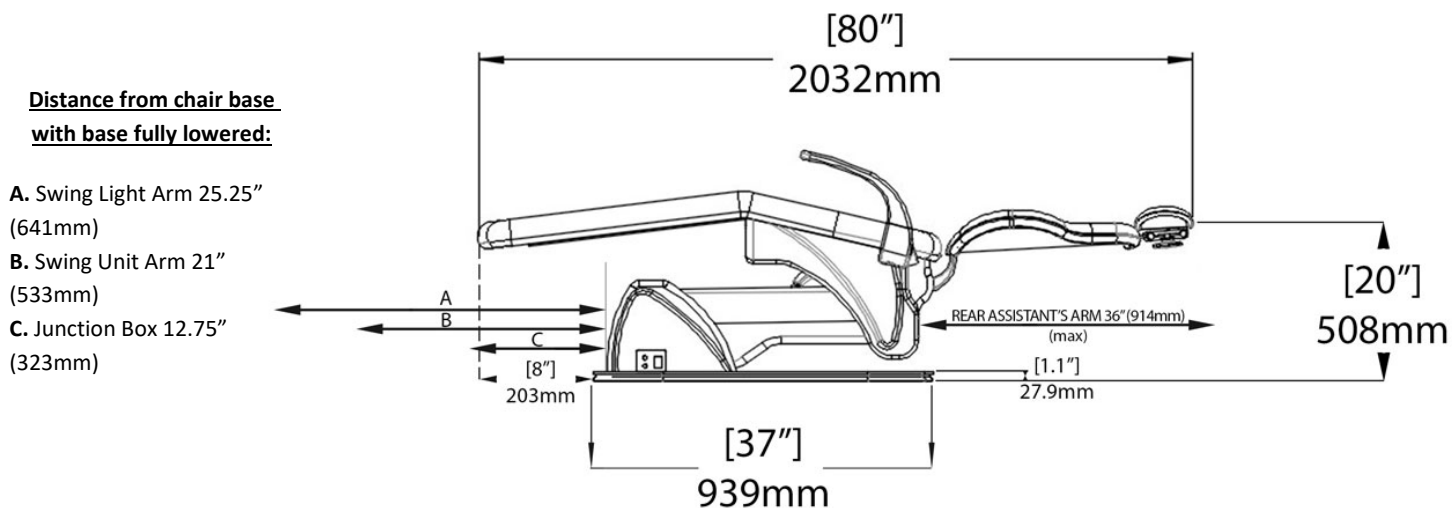
Footprint



General Chair Dimensions



6700M Marathon Chair Dimensions (Includes Swing Arms Dimensions)

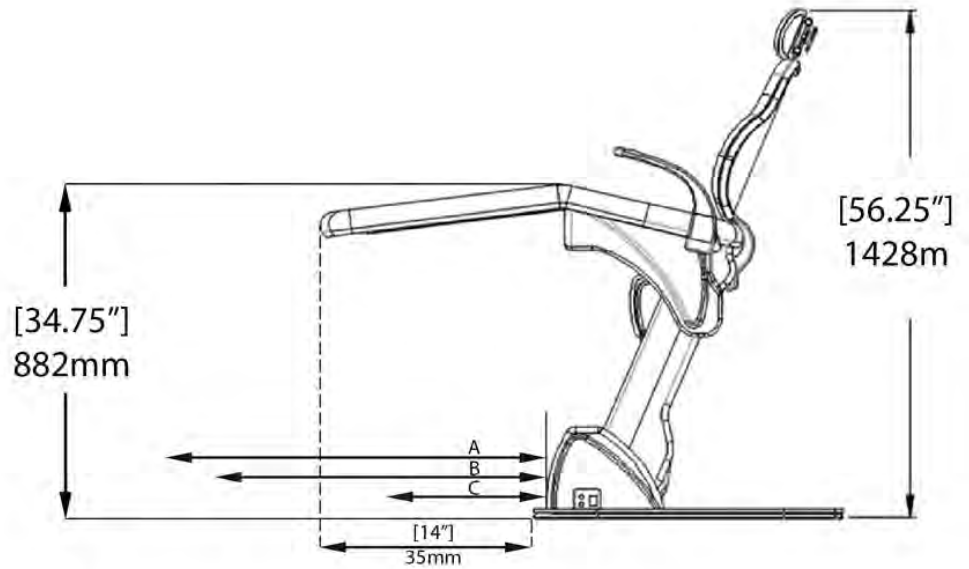


With Base Fully Raised

Note: Toe board moves approximately 6 inches forward when base is fully raised

Distance from chair base
with base fully raised:

- A. Swing Light Arm max 31"
(787mm)
- B. Swing Unit Arm max 27"
(685mm)
- C. Junction Box 12.75"
(323mm)

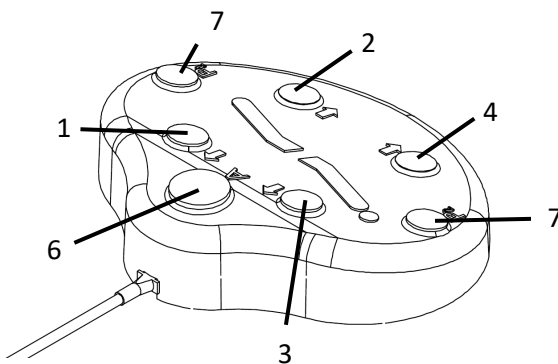


Foot Control & Membrane Control Pad

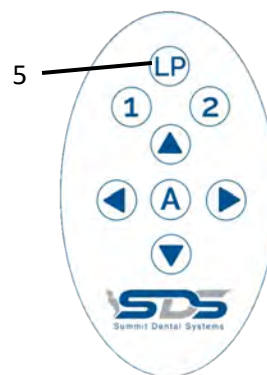
Refer to Figure 3 & 4

1. Base Up – press foot control button and hold until desired position is reached.
2. Base Down – press foot control button and hold until desired position is reached.
3. Back Up – press foot control button and hold until desired position is reached.
4. Back Down – press foot control button and hold until desired position is reached.
5. Last Position (LP) – Membrane Control Pad Only – Press and release to return the chair to the last position it was in before movement.
6. Automatic Return – press and release the button and the chair will automatically return to the exit position.
7. Pre-position P1(a) and P2(a) – press and release the button once and the base and back movements will continue until pre-position is reached. To access P1(b) and P2(b) Press and release the button rapidly twice (double tap) and base and back movement will continue until preposition is reached

NOTE: To interrupt the automatic return or the pre-position, press any button on the foot control or membrane control pad. To resume automatic return or pre-position, re-press 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 Marathon 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.

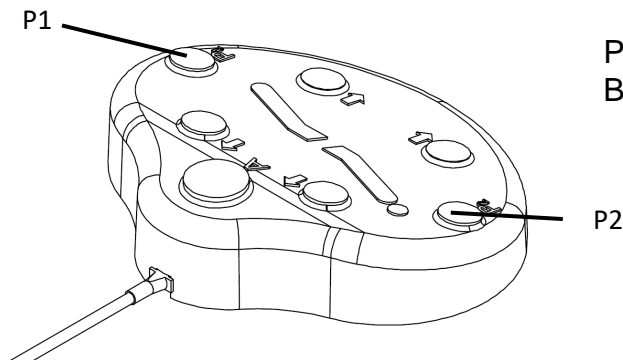


Figure 5

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 armrests or delivery unit), position the backrest and base of the chair in the desired position.
2. To program P1(a) and P2(a) depress and hold the “P1 or P2”, located on the foot control or on the membrane control pad, push and hold until the chair beeps. Release the Pre-position Memory Button and the new base and backrest positions will be stored in memory.
3. To program P1(b) and P2(b) depress and continue to hold after the chair beeps for the first time until you hear a double beep. Release the pre-position button and the second set of base and backrest positions will be stored in memory.

You can return the chair to your personalized position at any time by simply pressing and releasing the Pre-position Buttons to access P1(b) and P2(b) – Press and release the buttons rapidly twice (double tap.) The personalized entry position may be reprogrammed as often as needed.

Should you want to interrupt the automatic movements of your Marathon Dental Chair, press any 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

Day-to-day soil:

Remove ordinary dirt and smudges with a mild soap and water solution and a clean, soft cloth or towel; dry with a soft, lint-free cloth or towel. The use of vinyl “conditioners” or “protectants” is not recommended and should be avoided on all upholstery.

Barrier Technique:

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

Chemical Disinfecting:

For upholstery; Never use spray disinfectants, always use wipes. Use a non-alcohol, non-chorine, based wipe for plastic, metal, and upholstered surfaces.

Always clean the residue with mild soap and water.

CAUTION: Should you desire to use other cleaning methods, carefully try them in an inconspicuous area to determine potential damage to the material. Never use harsh solvents or cleaners which are intended for industrial applications. Avoid use of paper towels.

CAUTION: Cleaning products may be harmful/irritating to your skin, eyes, etc. Use protective gloves and eye protection. Do not inhale or swallow any cleaning product. Protect surrounding area/clothing from exposure. Use in a well-ventilated area. Follow all product manufacturer’s warnings. Summit Dental Systems cannot be held responsible for damage or injuries resulting from the use or misuse of cleaning 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

- Align the backrest frame with the holes in the backrest bracket.
- Insert the 4 backrest frame bolts and tighten them to secure the backrest frame to the backrest bracket.

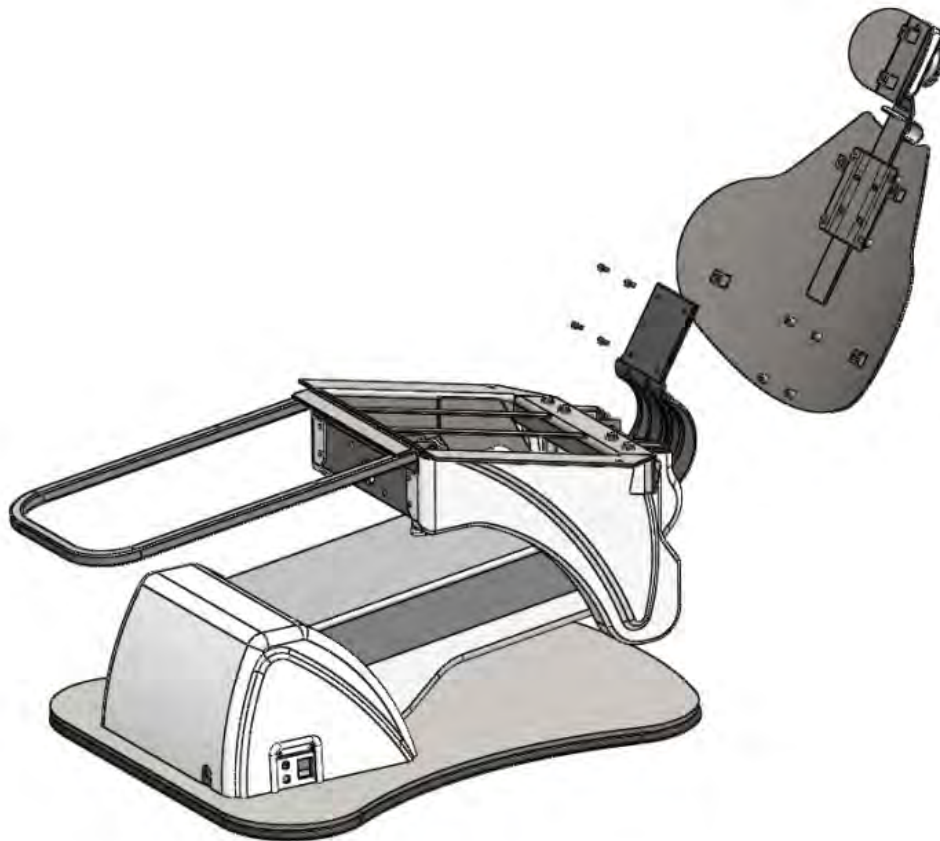


Figure 7

Swing Mount Installation

1. Align the four mounting holes in the swing mount with the corresponding holes in the seat frame. Insert the 4 bolts into holes and finger tighten them.
2. Level the swing mount using the four set screws then tighten the mounting bolts to secure the mount to the seat frame.

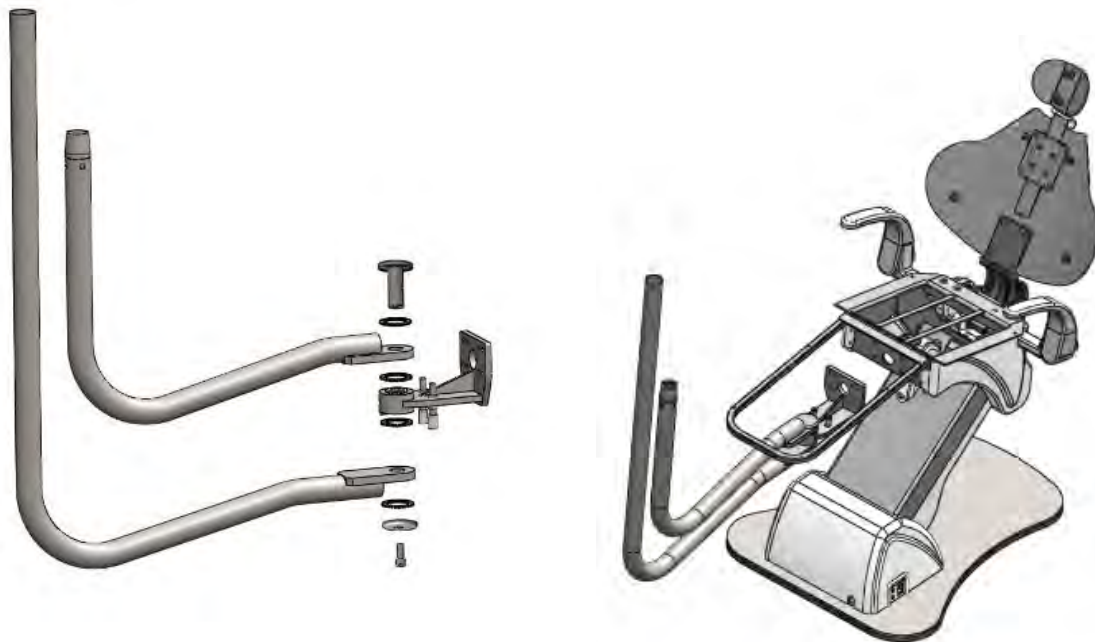


Figure 8a

Post Mount Installation

Refer to Figure 8a and 8b

3. Align the four mounting holes in the post mount with the corresponding holes in the seat frame. Insert the 4 bolts into holes and finger tighten them.
4. Level the post using the four set screws and tighten the mounting bolts to secure the mount to the seat frame.

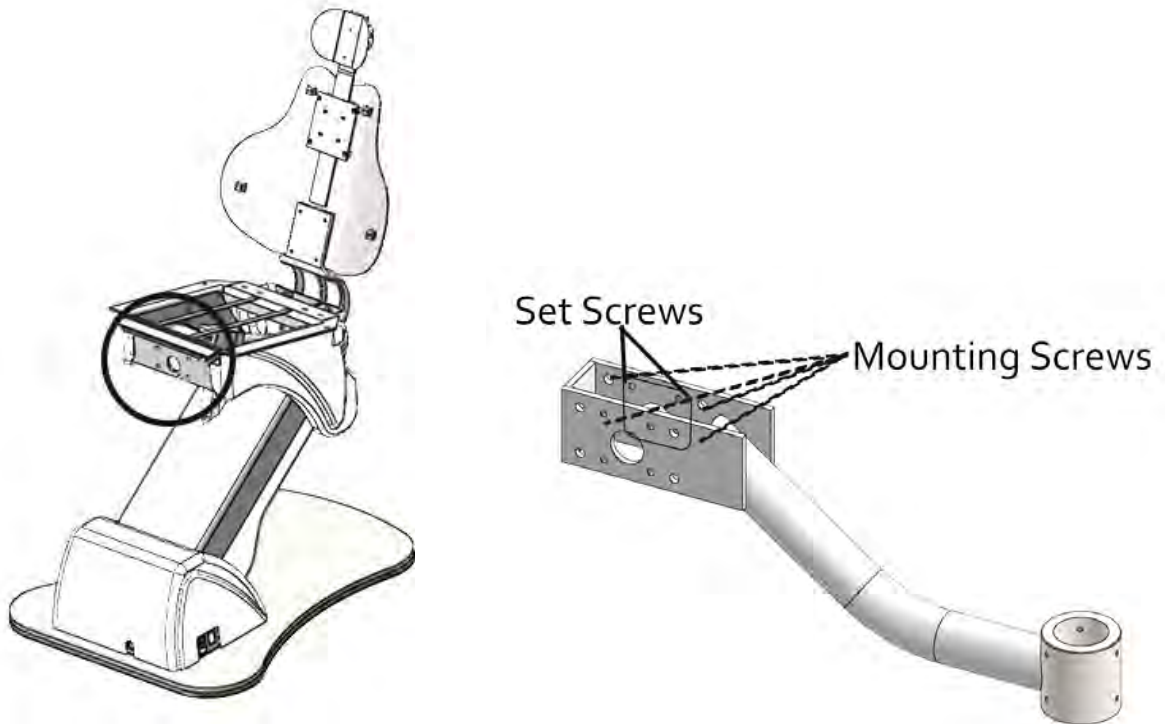


Figure 8b

Backrest Cushion Installation

Refer to Figure 9

1. Align the 4 seat cushion fasteners on the backrest cushion with the corresponding holders in the backrest frame.
2. Firmly press the cushion in place securing the fasteners into the receptacles.

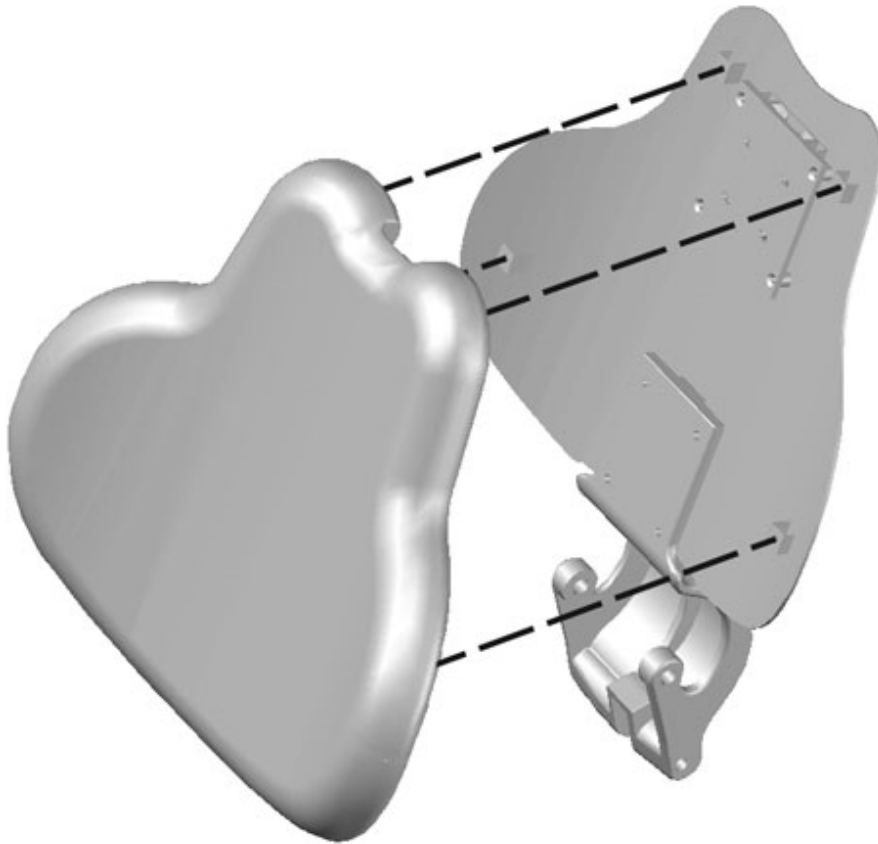


Figure 9

Seat Cushion Installation

Refer to Figure 10

1. Attach toe pan frame to the corresponding studs on the chair frame using the two 9/16" nuts and lock washers.
2. Attach the seat and cushion to the toe pan using the 6 upholstery screws. (secured to the seat cushion)

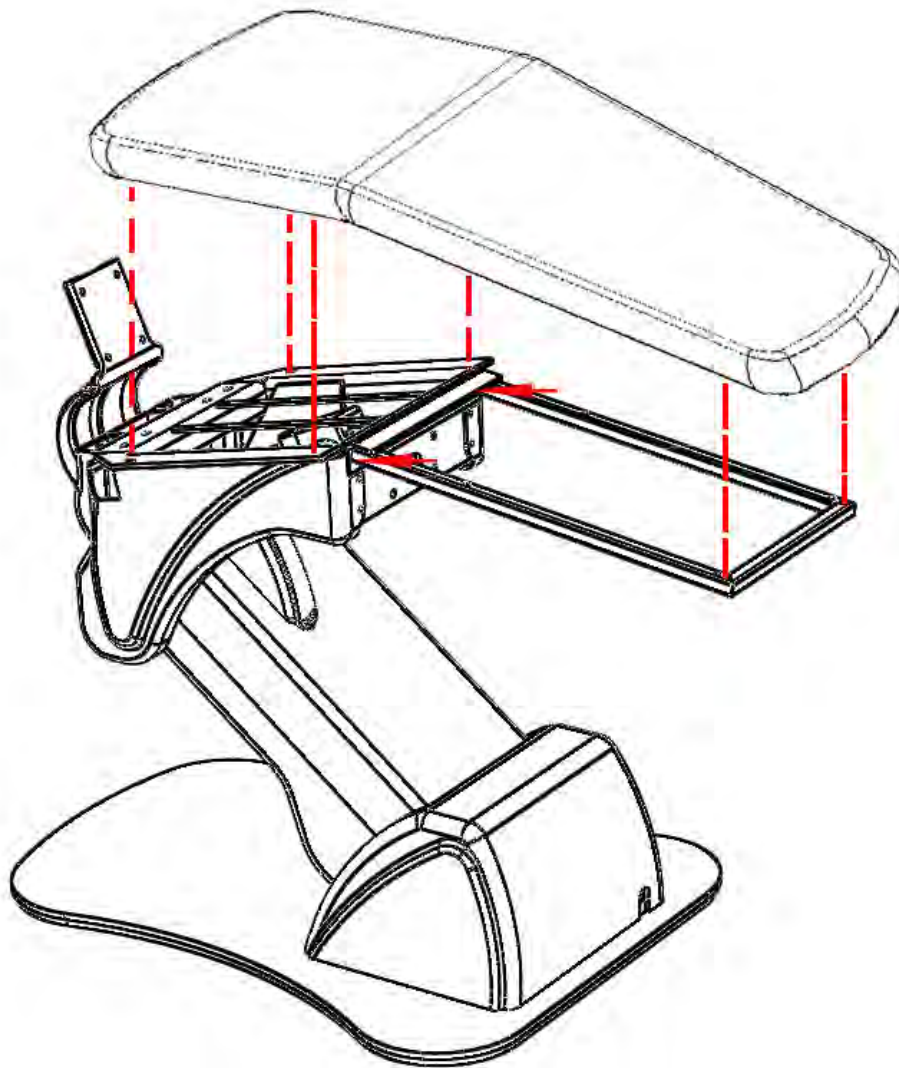


Figure 10

Resetting the Soft Limits

Refer to Figure 19

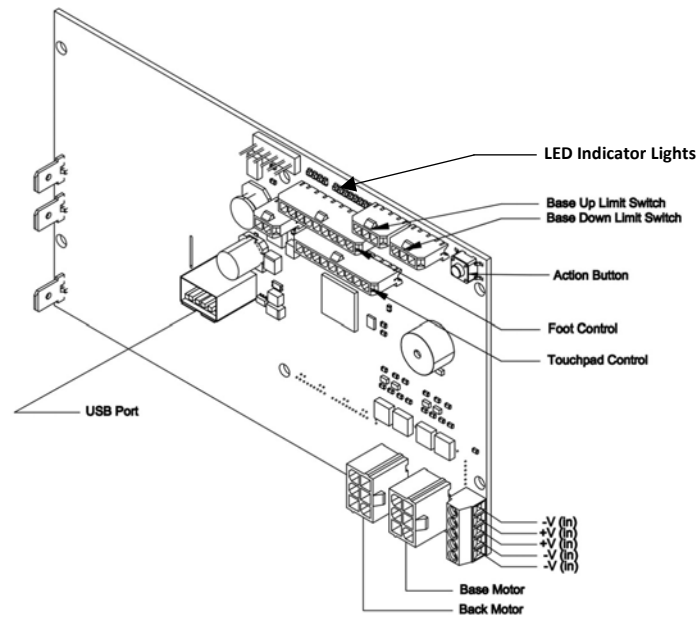


Figure 19

Should you need to re-set the P.C.B.

1. Press and release the white action button 7 times. The 4 indicators LEDs will flash.
2. Press and release the action button, wait 1 second then press and release the action button again.

Caution: The chair will move to find and set the upper and lower limits, and all pre-programmed positions will be lost.

3. When the chair stops, calibration is complete. Test all chair functions.

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	Check power cord. Check fuse continuity.
4 – Disconnected fuse holder terminals	Check fuse holder(s).
5 – Loose cables on PC Board cable connectors.	Check all of the chair's cables (power cord, PC board, motor, and foot control) for tightness and good contact.

No Base Down Movement

Possible Cause	Corrective Action
1 - Limit switch engaged or open circuit on limit switch wiring harness.	Check limit switch wiring for continuity. Check limit switch terminals for good contact. Check limit switch functionality.
2 - Foot control or membrane button engaged or short circuit in the wiring harness.	Check foot control and membrane switches for functionality. Check foot control wiring harness for short circuit.
3 - Base motor not getting power.	Check motor connections at the PCB.

No Base Up Movement

Possible Cause	Corrective Action
1 - Limit switch engaged or open circuit on limit switch wiring harness.	Check limit switch wiring for continuity. Check limit switch terminals for good contact. Check limit switch functionality.
2 - Foot control or membrane button engaged or short circuit in the wiring harness.	Check foot control and membrane switches for functionality. Check foot control wiring harness for short circuit.
3 - Base motor not getting power.	Check motor connections at the PCB.

No Backrest Down Movement

Possible Cause	Corrective Action
1 - Limit switch engaged or open circuit on limit switch wiring harness.	Check limit switch wiring for continuity. Check limit switch terminals for good contact. Check limit switch functionality.
2 - Foot control or membrane button engaged or short circuit in the wiring harness.	Check foot control and membrane switches for functionality. Check foot control wiring harness for short circuit.
3 - Backrest motor not getting power.	Check motor connections at the PCB.

No Backrest Up Movement

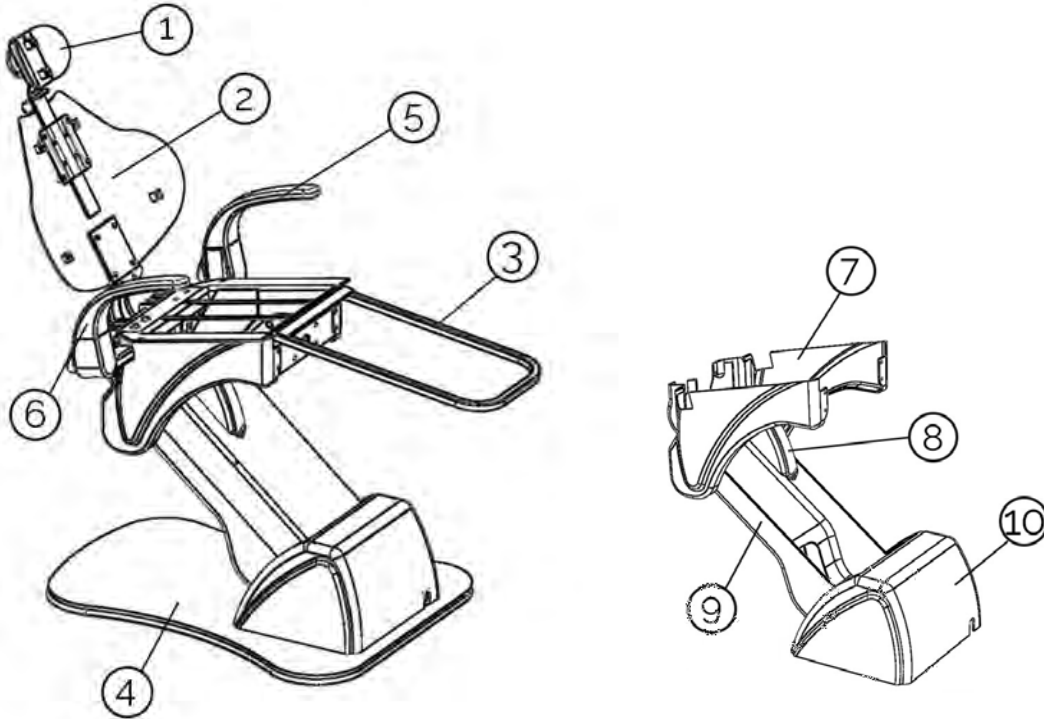
Possible Cause	Corrective Action
1 - Limit switch engaged or open circuit on limit switch wiring harness.	Check limit switch wiring for continuity. Check limit switch terminals for good contact. Check limit switch functionality.
2 - Foot control or membrane button engaged or short circuit in the wiring harness.	Check foot control and membrane switches for functionality. Check foot control wiring harness for short circuit.
3 - Backrest motor not getting power.	Check motor connections at the PCB.



Summit Dental Systems
Toll Free: (800) 275-3368
www.summitdental.com

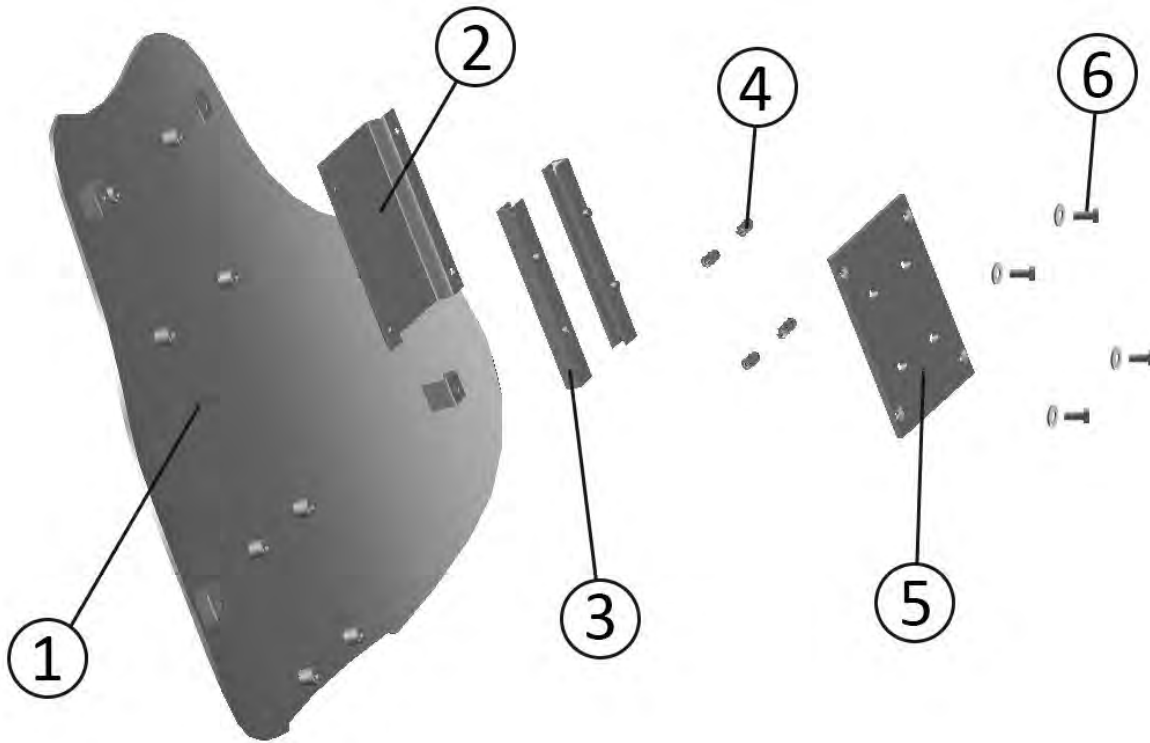
Parts List

Marathon Chair – Kits and Sub-Assemblies



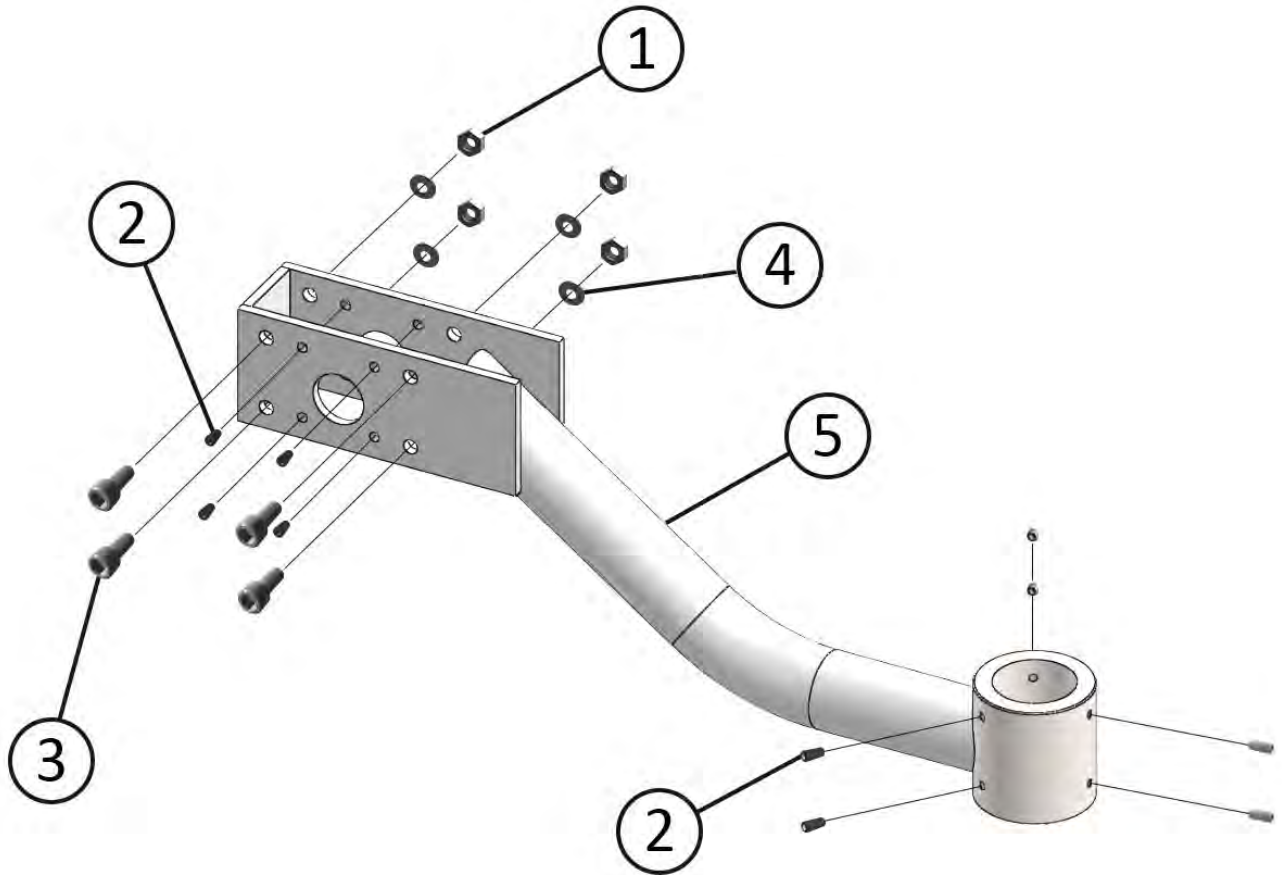
Item	Part#	Description
1	3-010-6009	Headrest Articulation Assembly
2	3-010-6010	Backrest Frame Assembly
3	3-010-6008	Toe Frame Assembly
4	3-010-6005	Base Plate Assembly
5	3-010-6021	Armrest Assembly, Left Side
6	3-010-6020	Armrest Assembly, Right Side
7	3-010-6013	Seat Frame Cover Assembly
8	2-010-6094	Cover, Plastic Base Motor Spindle
9	2-010-6070	Cover, Plastic Lower Cantilever
10	2-010-6069	Cover, Plastic Front

Backrest Assembly



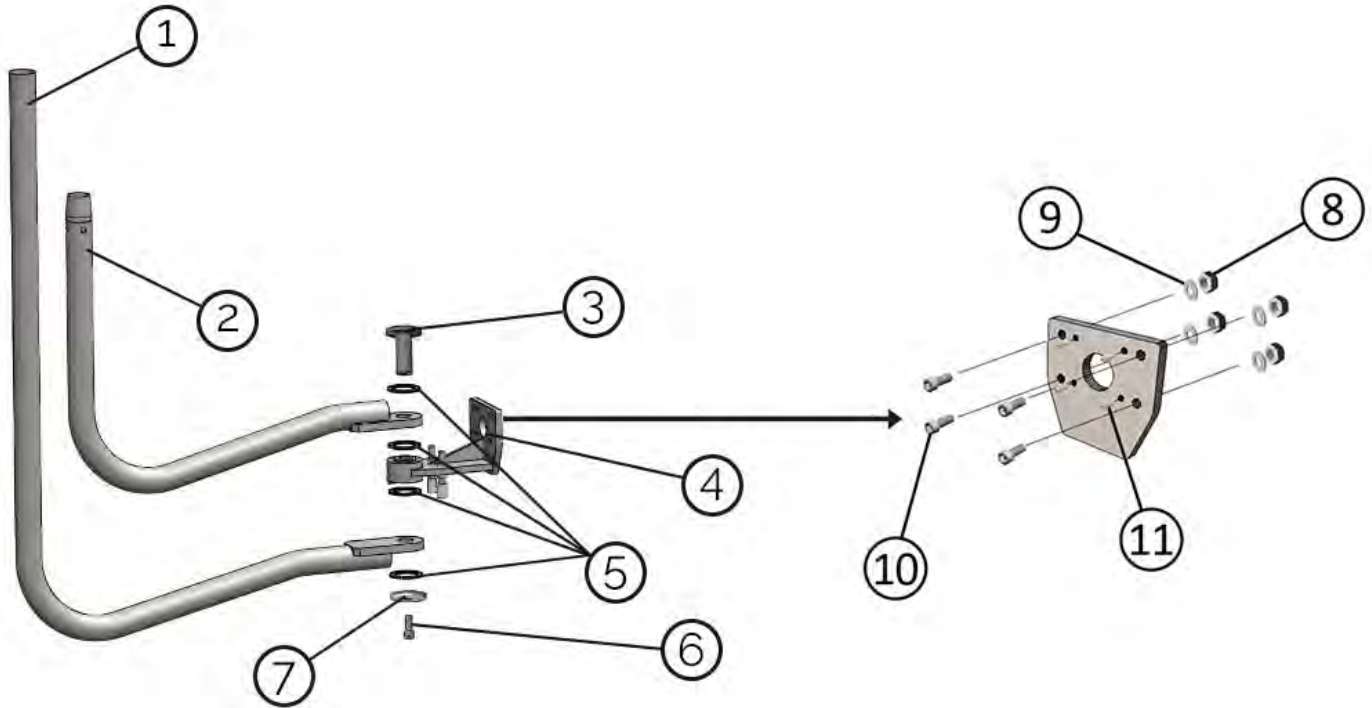
Item	Part#	Description
1	3-010-6010	Backrest Frame
2	2-010-6078	Base Plate
3	2-010-6080	Rail
4	2-010-6081	Plate Spring
5	2-010-6079	Upper Plate
6	4-010-0010	Bolt ¼ -20x ½ Hex Head
	4-010-0042	Washer, ¼"

Post Mount Assembly



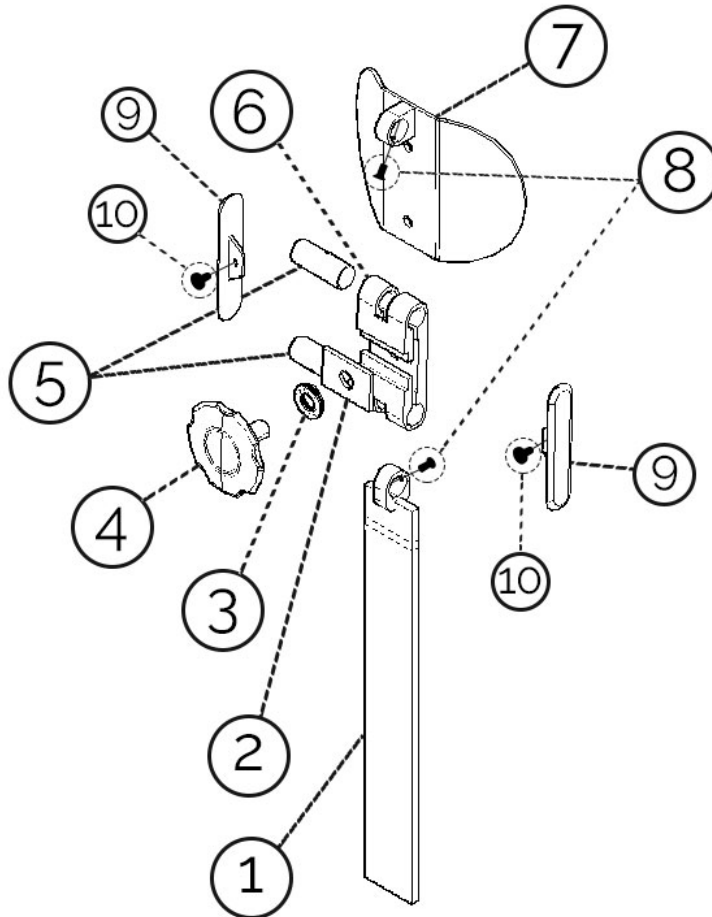
Item	Part#	Description
1	4-040-0026	Nut, 3/8
2	4-070-0110	Screw, Set Socket 5/1
3	4-010-0083	Screw, 3/8-16 x 1-1/4" Socket Head
4	4-010-1080	Washer
5	3-010-6036	Marathon Post Mount Adaptor

Swing Mount



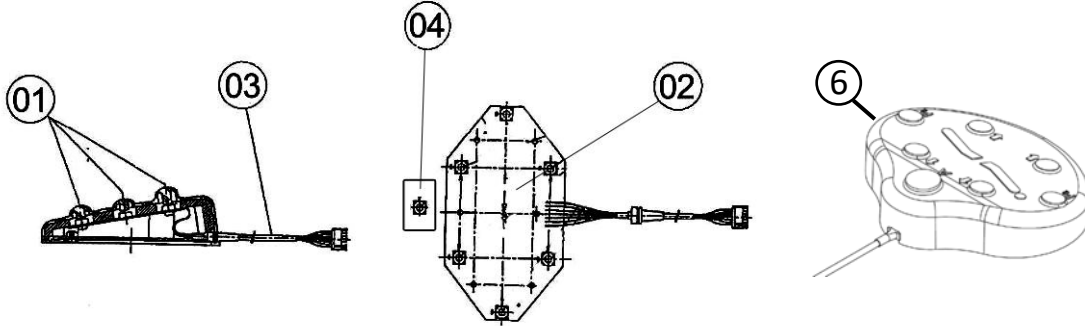
Item	Part#	Description
1	2-040-6001	Light Swing Mount
2	2-030-6001	Unit Swing Mount
3	2-010-0244	Swing Mount Pin
4	2-020-6001	Swing Mount Bracket
5	5-020-0139	Needle Bearing
	5-020-0152	Bearing Race
6	4-010-0040	Screw, 1/2-13 x 1-1/4
7	2-010-0245	Swing Mount Rotation Cap
8	4-040-0026	Nut, 3/8
9	4-010-1080	Washer
10	4-010-0083	Screw, 3/8-16 x 1-1/4" Socket Head
11	4-070-0110	Screw, Set Socket 5/1

Headrest Assembly With Knob



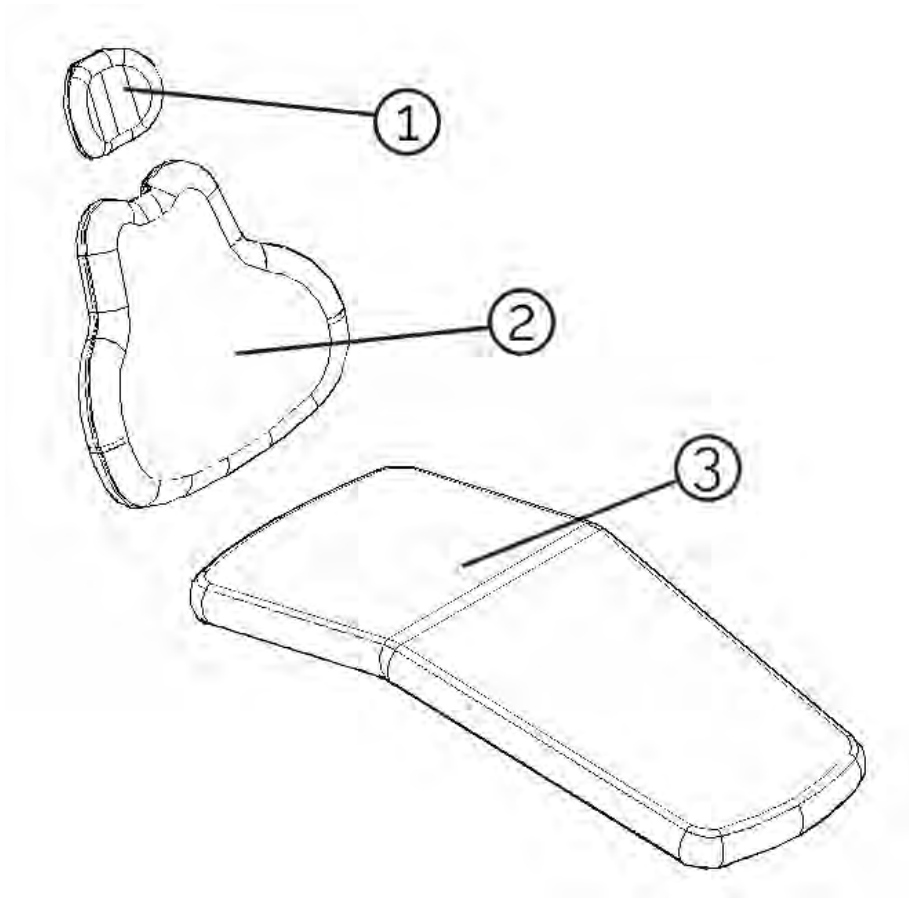
Item	Part#	Description
1	3-010-6017	Post
2	2-010-6032	Knob Rectangular Plate Support
3	2-010-0224	Bearing Set
4	2-010-6010	Knob
5	2-010-6046	Articulation Pin
6	2-010-6021	Articulation Support Body
7	3-010-6018	Pillow Frame
8	4-010-0046	Flat Head Screw
9	2-010-6104	Articulation Side Cover
10	4-010-0049	Pan Head Screw

Foot Control with Cable Assembly



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)
6	3-010-1023	Foot Control Assembly

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

*xxxx = color choice

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:

Chairs, Delivery Units, Cuspidors, Lights
 Control Block Diaphragm (part of Delivery Unit)
 All Upholstery, Stools, all Plastic Covers, and Cabinets

Warranty Period:

5 Years
 Lifetime
 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

www.summitdental.com