

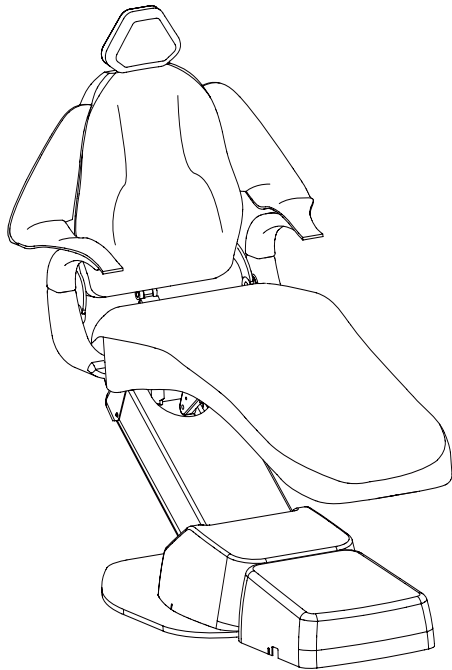


marus

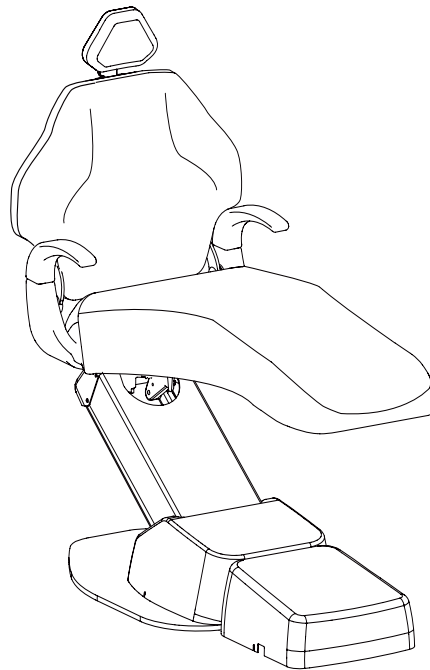
DC1700 Series

Hydraulic Chairs

OWNER'S MANUAL



Narrow Back



Wide Back

11727 Fruehauf Drive
Charlotte, NC 28273 USA
800-304-5332

Warranty Statement

All of our products sold to and installed by dealers are guaranteed to be free from defects in workmanship and materials for five years from date of purchase. Upholstery is warranted for a period of one year from the date of purchase. During that period, we will replace any defective part at no charge. Marus WILL NOT be responsible for dealer or service company labor charges or shipping charges to the Marus factory.

This guarantee does not cover normal wear, stains, cuts or scratches of upholstery or surface finishes or parts sold to OEM customers.

Staining, discoloration or deterioration of the equipment caused by disinfectant solutions is not covered under the warranty.

Marus will pay the return freight charges from the factory to the dealer. This guarantee does not cover damage resulting from improper installation, misuse or accidents incurred in shipping and handling.

All claims against the freight carrier must be initiated at the time the damaged items are received. The claim is the responsibility of the customer.

We are constantly striving to improve our products. We reserve the right to make modifications without the need for prior notification and are not obliged to modify previously manufactured items.

Fiber optic system note: Units equipped with the optional fiber optic system are covered under the Marus five year warranty, although the bulbs are items not covered under warranty and must be purchased.

It is the user's responsibility to read and understand the contents of this manual. This manual contains important information relative to hazards to personnel and property if this equipment is not installed, used and/or maintained as instructed.

Technical Support

Tech Support: 800-304-5332

FAX: 888-861-9366

Website: www.marus.com



Printed in the U.S.A.


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General Information and Warnings

Definitions of Symbols

The following symbols may be used throughout the product manual:


 **CAUTION.** Failure to carefully follow the described procedure may result in damage to the equipment.


 **WARNING.** Failure to carefully follow the described procedure may result in damage to the equipment and/or operator/patient injury.

 Risk of electrical shock present. Make sure power is disconnected before attempting this procedure.


IEC Symbols


The following symbols conform to IEC labeling standards and may be located throughout the product:

 AC (Alternating Current)


 Protective earth (Ground)


IPX4 Protected against splashing water


 Attention: Consult accompanying documents

 OFF


 ON

 Type B equipment
(Protected against electrical shock)

 Dangerous voltage

 Waste Electrical and Electronic Equipment

 Electrical Testing Lab

 Identification mark that indicates the product complies with the health & safety requirements as published by European Directives.

Authorized European Representative:

Medical Device and QA Services
76, Stockport Road
WA15 7SN
United Kingdom
e-mail: info@mdqa.co.uk

Equipment Disposal

Contact your local authorized dealer for proper disposal of the device and its components to ensure compliance with your local environmental regulations.

Incompatible Equipment

To guarantee the operational safety and function of this device, the use of unapproved units or accessories is not advised. Doing so could result in potential hazard.

Obtaining Technical Literature

The manufacturer will make available on request circuit diagrams, component parts lists, descriptions, calibration instructions or other information that will assist technical personnel to repair and replace serviceable items.

Interference with Electromedical Devices

To guarantee the operational safety of electromedical devices, it is recommended that the operation of mobile radio telephones in the medical practice or hospital be prohibited.

Strong EMI sources such as electro surgery units or x-ray units may affect performance. If performance problems occur, move the light to another electrical circuit or physical location.



WARNING: This product is intended for use by trained dental/medical professionals only.



WARNING: To safeguard patients and staff, you must disinfect the chair and all equipment before initial use, as well as between patients.

Electrical Specifications

	Volts	Cycles	Amps
Dental chair:	115 VAC	50/60 HZ	6.0 A ~
	230 VAC	50/60 HZ	3.5 A ~

IEC Medical Device Classification

Classification:	1
Type:	B
Operation Mode:	Intermittent
Splash Protection:	IPX4

Safety Notes

The pre-installation must be performed according to the requirements in our 'Pre-installation Instructions'.

As manufacturers of electro-medical products we can assume responsibility for safety-related performance of the equipment only if maintenance, repair and modifications are carried out only by us or agencies we have authorized for this purpose, and if components affecting safe operation of the unit that may be needed are replaced with original parts.

We suggest that you request a certificate showing the nature and extent of the work performed, from those who carry out such work, and specify that the certificate show any changes in rated parameters or working ranges, as well as the date, the name of the firm and a signature.



WARNING: Only authorized service technicians should attempt to service Marus equipment. Use of other than authorized technicians will void the warranty.



WARNING: To avoid injury, discontinue use of chair and have chair serviced by authorized dealer if oil is seen leaking from chair hydraulic system.



WARNING: Do not place anything under the chair base cover while the chair is operating, as injury could result if the safety circuit fails.



CAUTION: Use caution when filling the hydraulic reservoir to avoid overflow and spillage.



WARNING: To avoid possible injury and/or damage to the chair, do not apply full body weight on the headrest, backrest, toeboard and armrest. Doing so may cause the chair to tip.



WARNING: Do not place knees of legs under chair armrest when chair is being lowered.



WARNING: Maximum load rating for this chair is 350 lbs. To avoid personal injury and/or damage to the chair do not exceed this limit.



WARNING: Use caution when using arm rests as leverage when exiting the chair, as arms may rotate and cause patient to fall or get injured.



WARNING: Support the patient's head and neck when adjusting the headrest. Failure to do so may result in injury to the patient.



WARNING: Do not operate chair when safety cover is removed. Doing so may result in injury to the operator.



WARNING: A dental chair constructed with a magnetic headrest option may temporarily affect the function/programming of some implantable pacemakers or defibrillators. People who have these types of devices implanted should avoid dental chairs with this magnetic headrest option.

Storage Conditions:

-55°C to +50°C

10% to 90% Relative Humidity

Regulatory Information

Technical Description

The dental chair is used to position the patient so that the oral cavity is in the desired position for the dentist to perform various dental procedures. Dental chairs can be either hydraulically or electromechanically operated. There are two dynamic functions: the base (up/down) and the back (forward/back). These functions are activated by use of either a foot switch or a hand-operated touch pad.

The dental chairs have the provision to mount additional dental equipment including over-the-patient delivery systems. For this purpose the chair must provide a stable foundation for both the patient and the additional equipment.

Power to the chair is either 115 or 230 volts. The power is delivered to a microprocessor controlled printed circuit board. Software in the microprocessor controls the movement of the chair. The dentist can program some chair models to preset positions.

Device Classification

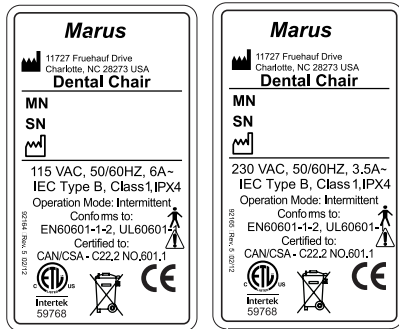


The dental chair is classified as Class 1 device under rule FDA CFR 21, Class I device under Health Canada guidelines, and a Class I device under rule 11 of the MDD 93/42/EEC of Annex IX.

Safety and Identification Markings

This dental chair can be identified by its product label, located inside or underneath the chair seat. This label states the chair model and serial number, electrical specifications, manufacture date and safety classification. Note the **SAMPLE** labels shown below.

Identification Labels
(115V and 230V models)



Safety Labels



(See *Definitions of Symbols* section)



Cleaning and Disinfecting Dental Equipment

Infection control in the dental office continues to be a high priority for our customers and end users. OSHA, the ADA and the CDC are also involved in this complex issue.

The Manufacturer will not attempt to specify the required intervals for disinfection nor can it recommend the overall best surface disinfectant. Please refer to the Infection Control Recommendations published by the American Dental Association for further information. The question is often asked, "What should I use to disinfect my dental unit, chair and light?" This question is more complex than it seems because of the wide variety of products on the market as well as formulations of the products changing to meet the needs of increased asepsis.

Barrier Technique

The Manufacturer strongly advocates the barrier technique be used whenever possible to preserve the finish and appearance of the equipment.

Wherever possible disposable barriers should be used and changed between patients. The barrier technique will ensure maximum long term durability of the surfaces and finishes of the equipment.

Chemical Disinfection

Regardless of the chemical disinfectant used, it is imperative that the equipment be thoroughly washed with mild soap and warm water at least once per day. This wash down will minimize the harmful effects of chemical disinfectant residues being allowed to accumulate on the equipment.

When using chemical disinfectants, always pay strict attention to the manufacturer's disinfectant directions. When using concentrated disinfectants, measure the concentrate carefully and mix according to package directions. Disinfectant solutions that are relatively harmless to surfaces at their recommended strengths can be corrosive at higher than recommended dilution ratios.

Unacceptable Disinfectants

Disinfectants with the following compositions **will harm** the surface finishes of dental equipment and are not recommended. **Use of these products will void your warranty.**

Chemical Composition

Strong Phenols/
Phenol-Alcohol Combinations

Sodium Hypochlorite/
Household bleach

Alcohol / Alcohol Based Wipes

Household Cleaners

Accelerated Hydrogen Peroxide (0.5%)

Conditionally Acceptable Disinfectants*

Disinfectants with the following compositions have been found to be the **least harmful** to the equipment surfaces by our test methods.

Chemical Composition

Iodophors**

Mild Phenols

Glutaraldehyde / Phenol Sprays

Synergized Super Quat

Phenol / Water Sprays

**The Manufacturer makes no representation as to the disinfectant efficacy of these products. We make no warranty expressed or implied that these disinfectants will not damage the surface finishes. Damage and discoloration of the surface finishes are not covered under the warranty.*

***Iodophor-based disinfectants will cause yellow staining on many surfaces. Regular washing with soap and water will minimize this staining. Iodophor neutralizers such as Promedyn are also available.*

Vacuum Utilities Note: *To ensure unrestricted flow of the assistant vacuum utilities, it is recommended that they be flushed with a non-foaming detergent at least once weekly. This process will greatly reduce buildup and will allow for proper vacuum operation at all times.*

Syringe Note: *To avoid damage to your syringe, it is necessary that only the Manufacturer's replacement parts are used. Use of any other manufacturer's part will damage the syringe and void its warranty.*

Cleaning Upholstery*

While staining and soiling exposures are common to upholstery fabrics, most may be removed by using the following cleaning methods.

Light Soiling

- Use a solution of 10% household liquid dish soap with warm water and apply with a soft, damp cloth. Be sure to rinse away any remaining solution from the chair's surface.
- If stubborn dirt remains as a stain embedded in the grain of the vinyl use a soft brush, and if necessary, a touch of cleaning powder or other household cleanser. In both situations, rinse and dry with a soft cloth.

Heavy Soiling

- Dampen a soft white cloth with naphtha (lighter fluid) or rubbing alcohol and rub gently. Rinse with a water dampened cloth to remove any remaining concentration.

Other Tips

- To clean stained or soiled areas, a soft white cloth is recommended. Avoid use of paper towels.
- To restore luster, a light coat of spray furniture wax may be used. Apply for 30 seconds and follow with a light buffing using a clean white cloth.
- When using strong cleaning agents such as rubbing alcohol or bleach, it is advisable to first test in an inconspicuous area to determine potential damage to the material.
- Never use harsh solvents or cleaners which are intended for industrial application.

**The Manufacturer makes no representation as to the cleaning efficacy of these products. We make no warranty expressed or implied that these cleaners will not damage the surface finishes. Damage and discoloration of the surface finishes are not covered under the warranty.*

Chair Setup and Installation

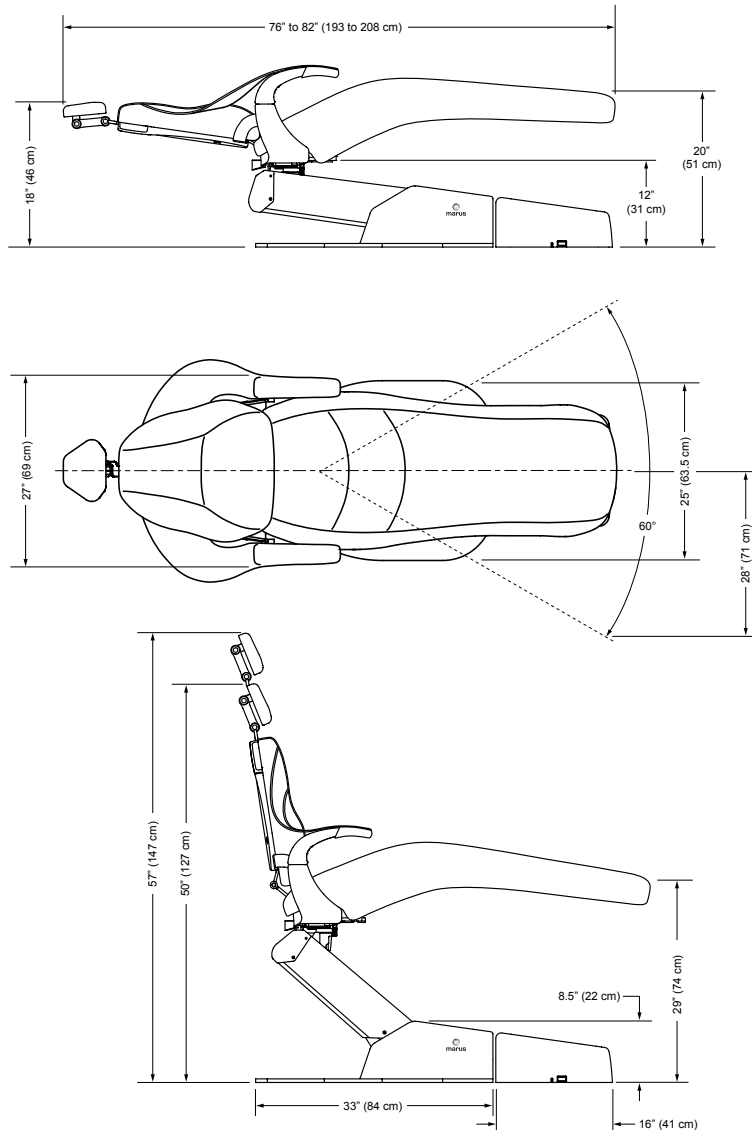
Before You Begin

- Study the overall dimensions of the chair shown below. Make sure the chair will have sufficient clearance when in both the upper and lower extremes of travel, including travel of the chair's backrest.
- Gather all necessary tools listed at right.
- Locate the chair hardware kit. During the installation process several parts in this kit will be referred to.
- Depending on the application, the chair's upholstery may or may not be installed at the factory. If the upholstery is not installed, refer to the specific *Upholstery Installation Instructions* shipped with the chair. (It is recommended that the upholstery not be installed until the entire unit is set up.)

Recommended Tools:

- 9/16" wrench
- Scissors or utility knife
- 1/8" hex wrench
- 1/4" hex wrench

Chair Dimensions



Chair Installation

1. Remove the carton lid and sides from the pallet as well as the packing material. Using a 9/16" wrench, remove the bolts holding the base plate to the pallet and cut the retaining straps.
2. Carefully slide the chair from the pallet to the location to be installed.

CAUTION: Chair weight is in excess of 300 pounds. Use an assistant to safely position the chair.

4. Raise the chair back from its shipping position and attach back link onto link pin (figure 1). Using a 3/32" hex wrench, tighten set screw on back link so that chair back is firmly retained.

Note: If the chair is NOT to be used as a stand alone unit, refer to the delivery unit installation instructions and install the delivery unit onto the chair prior to continuing this procedure.

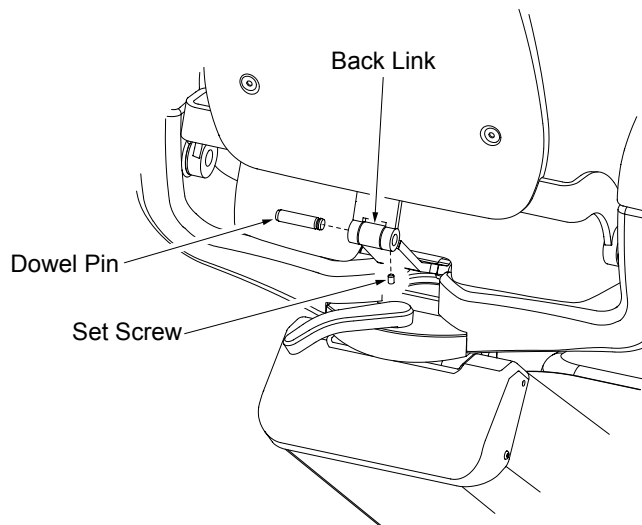


Figure 1

5. Locate and unpack the chair's seat rail assembly. Remove the four thumbscrews attaching the seat cushion to the toe rail.
6. Using the supplied hardware, attach the upholstery toe rail to the chair's upper structure as indicated (figure 2) using a 9/16 wrench or socket.

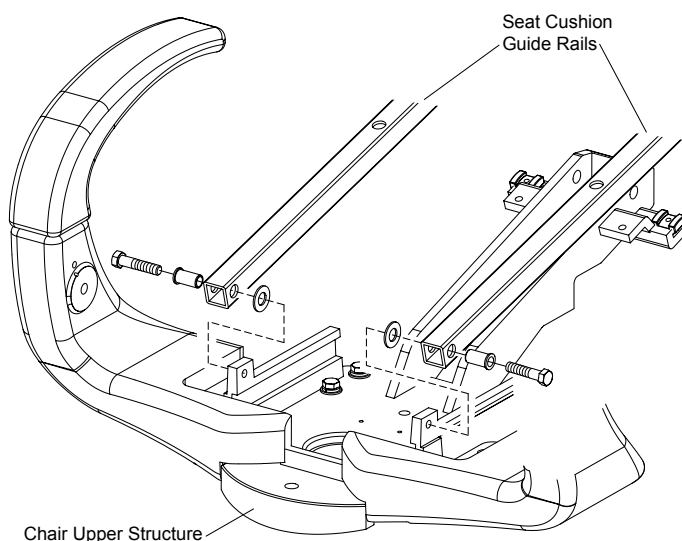


Figure 2

Chair Installation (Continued)

7. Set the seat cushion on the toe rail and attach the two thumbscrews closest to the foot of the cushion.
8. The upholstery assembly may then be lifted up to gain access to the rear mounting location. Insert the two remaining thumbscrews in the rear of the seat cushion.
9. This completes the installation procedure for the chair's upholstery.

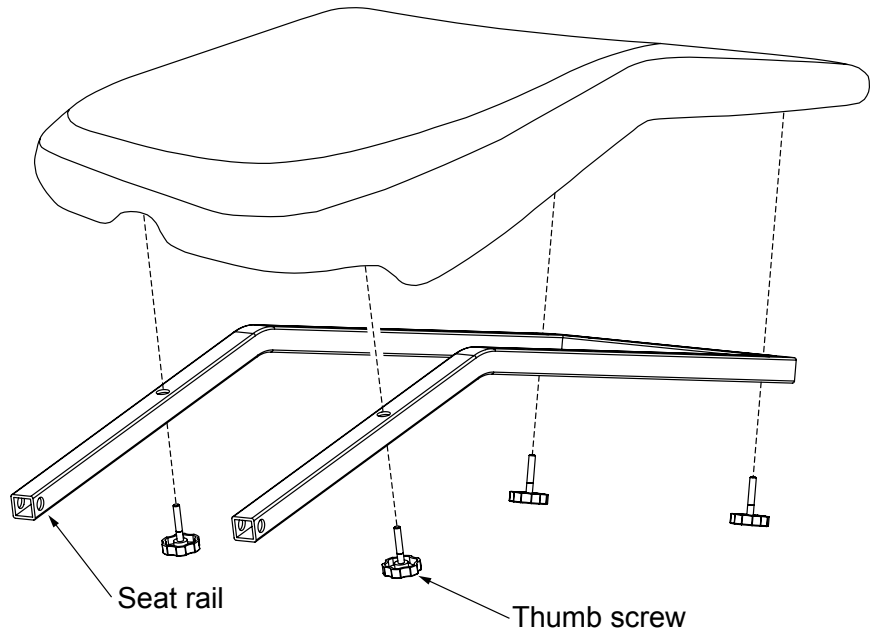
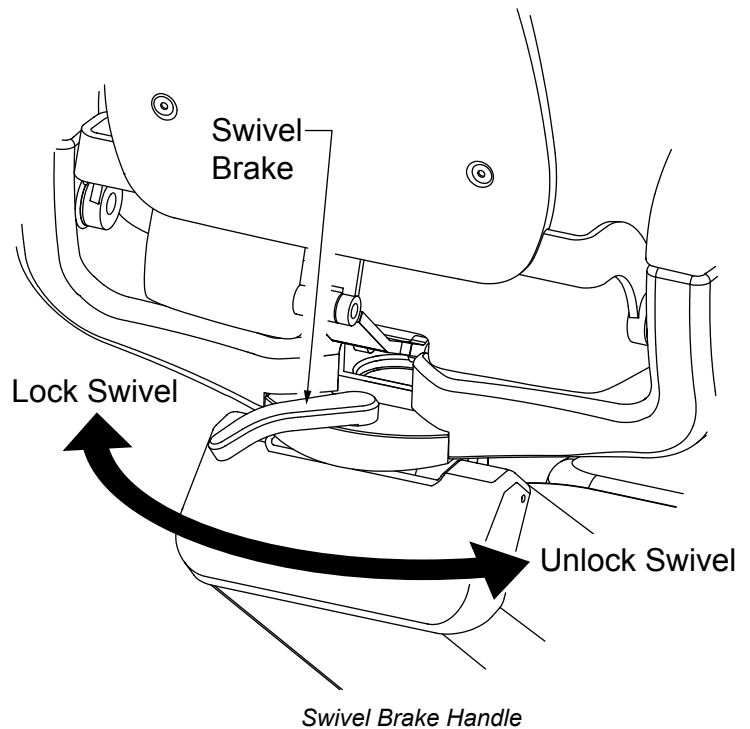


Figure 3

Chair Control Functions

Swivel Brake Handle

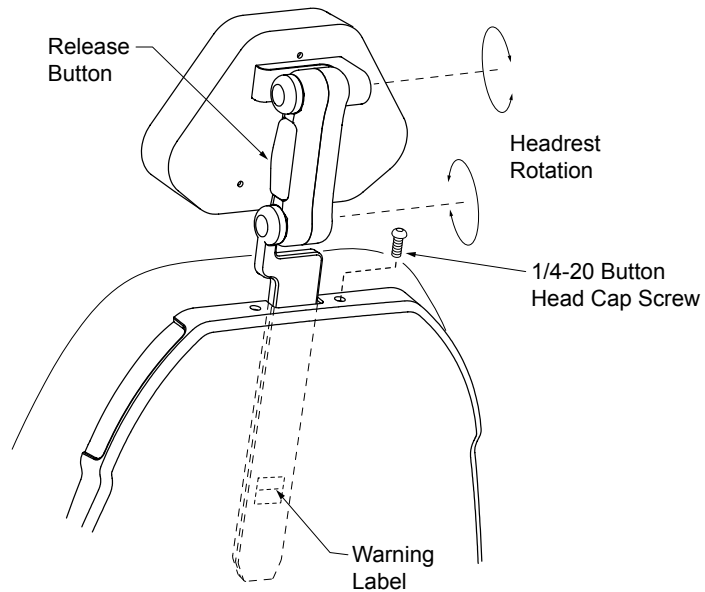
Locate brake handle below the chair back. Moving the handle to the right will unlock the chair's upper chassis and allow it to swivel 30° left or right. Moving the handle back to the left will re-engage the brake and lock the chair into position.



Chair Control Functions (Continued)

Quick Release Double-Articulating Headrest

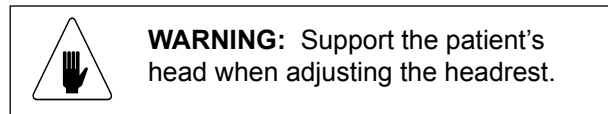
The headrest is adjusted by pressing the large release button. This unlocks both articulating joints allowing the desired position to be set quickly and accurately. To set the height, simply pull the headrest upward, away from the chair back until the correct position is found. To lower the headrest, push it downward into the chairback.



Glide Bar Tension Adjustment

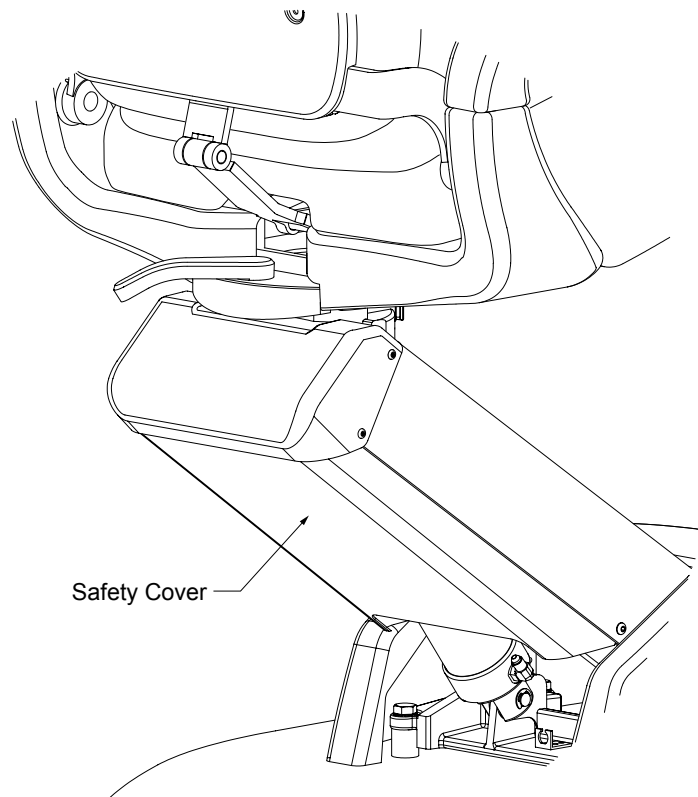
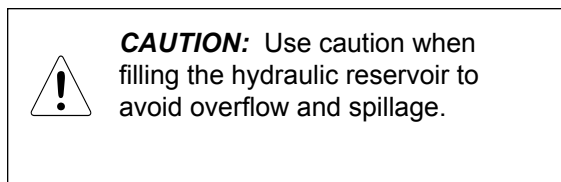
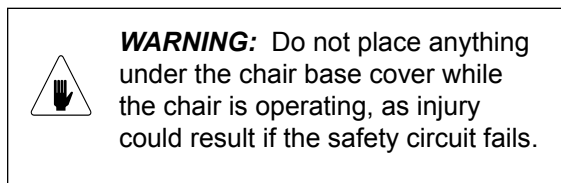
1. From the rear of the chair, remove the right side mounting screw of the chair's back cover (see figure at right).
2. Insert a 3/32 hex wrench into the hole down to the tensioning set screw. Turning the set screw clockwise increases glide bar tension, counter-clockwise will decrease tension. Once the desired tension is set, reinstall the 1/4-20 button head cap screw.

Note the location of the warning label on the opposite side of the glide bar. Do not use the head rest when the red line on the warning label is visible; it is extended too far out at this point and damage or injury may result.



Safety Stop Cover

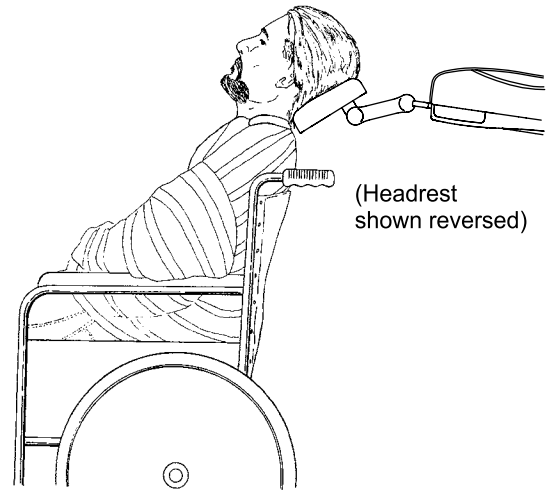
Located on lower back cover. This moving cover has an electric switch that will stop downward movement of the chair base if triggered.



Chair Control Functions (*Continued*)

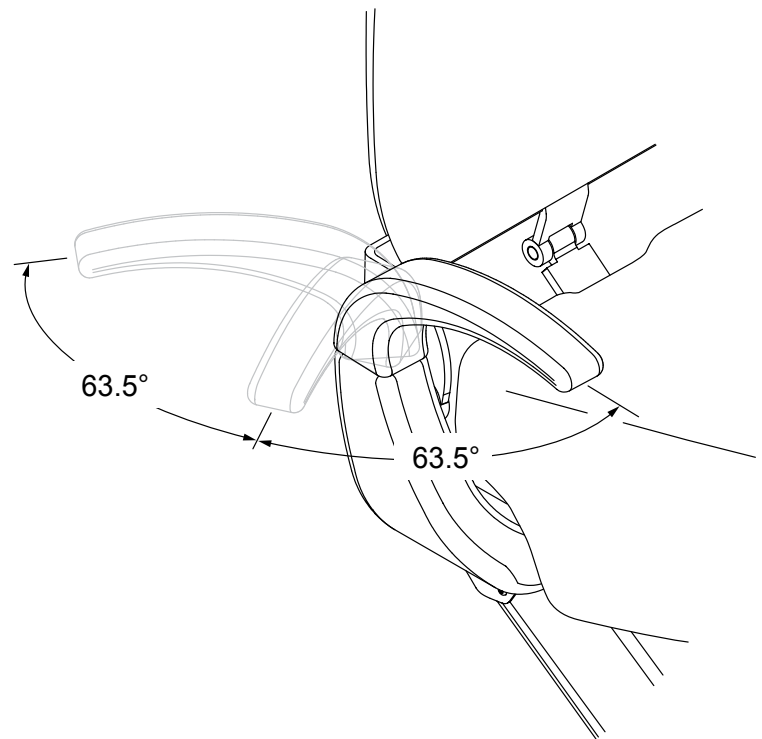
Positioning for Wheelchair Patients

Your chair can easily be converted to accommodate wheelchair patients. Remove the headrest by pulling upward out of the chair back; reinstall the headrest in a reversed position as shown. Loosen the adjustment knob and adjust headrest into desired position.



Swing-Out Arm Rests

The arm rests can rotate outward and will set in either of two positions (out at 63.5 degrees or back at 127 degrees). Simply push the toe end of the arm rest outwards until it rotates to one the desired positions. Pushing back towards the center of the chair will return the arm rest to its original position. There is a rotation stop in the arm to prevent the arm rest from rotating inwards toward the patient.

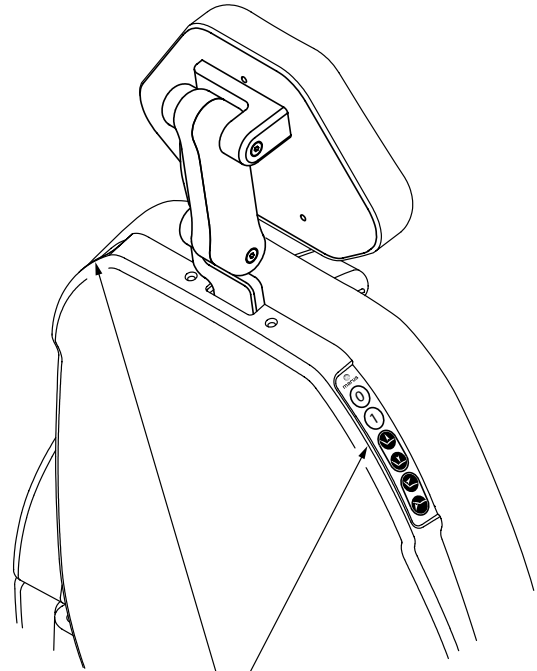


WARNING: Use caution when using arm rests as leverage when exiting the chair as arms may rotate.

Chair Control Functions (Continued)

Touchpad Back Control

The touchpad back switches allow the operator to control the base up and down and backrest up and down movements from readily accessible locations on the backrest itself. The controls can be used to operate the chair manually, or the operator may program and store desired preset positions.



Touchpad Location
Both Sides

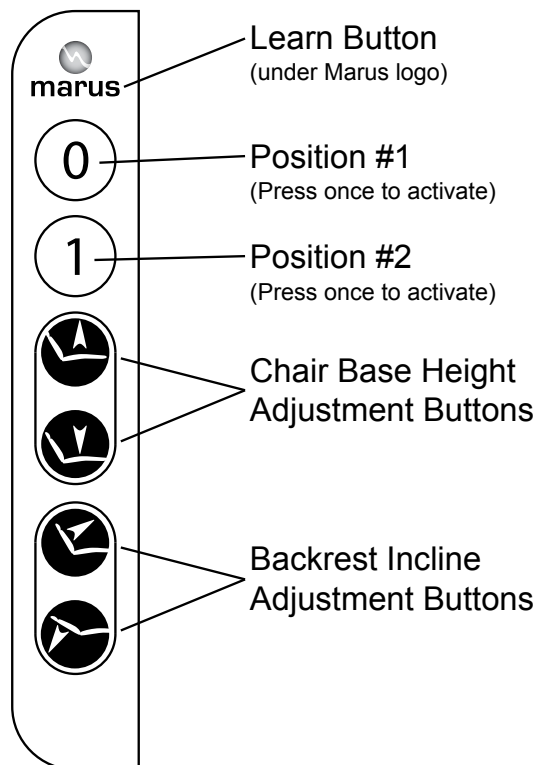
Touchpad Operation and Programming

Programming the #1 & #2 Positions

1. Adjust the chair to the desired position.
2. Press and hold the **LEARN** button. The chair will beep once to confirm. Continue holding the **LEARN** button while pressing the desired auto button *two* times.
3. Upon releasing the **LEARN** button, listen for *one* quick beep to confirm the position has been stored.

TO OPERATE - Press the same auto button *once*.

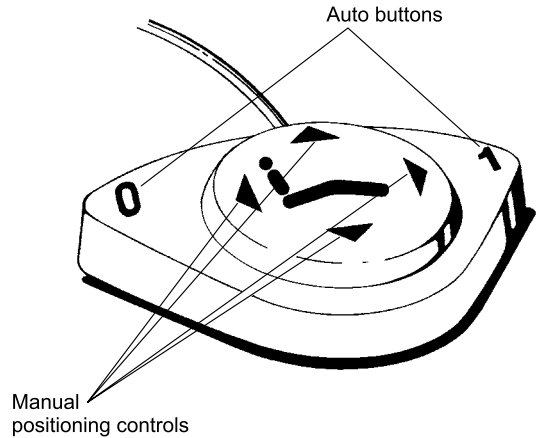
Please refer to following section for suggested working and patient entry/exit positions.



Chair Control Functions (Continued)

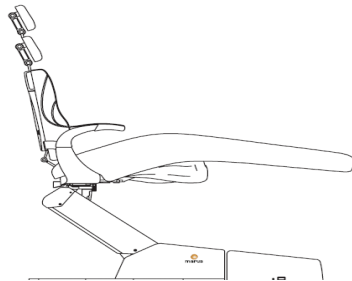
Electronic Foot Control

The electronic foot control allows the user to control the chair's manual base and back movement and access the automatic positions. (See *Foot Control Operation and Programming* section.)

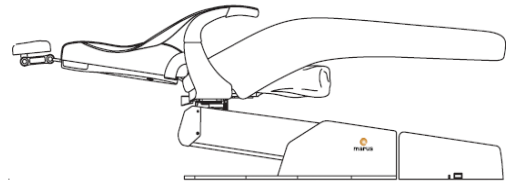


Foot Control Operation and Programming (Hydraulic Chairs)

The following types of positions are suggested:



POSITION 1: Exit



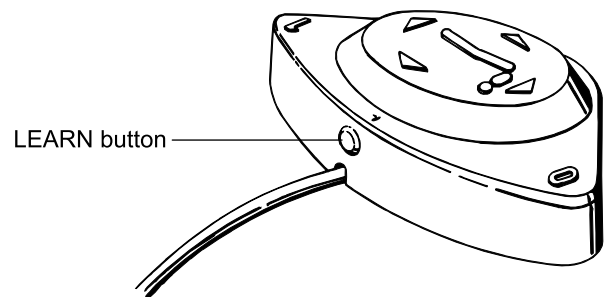
POSITION 2: Work position

Programming Automatic Positions

POSITIONS 1 AND 2

- 1 Adjust the chair to the desired position.
- 2 Press and hold the LEARN button. The chair will beep once to confirm. Continue holding the LEARN button while pressing the desired auto button *two* times.
- 3 Upon releasing the LEARN button, listen for *one* beep to confirm the position has been stored.

TO OPERATE — Press the same auto button *once*.



Learn Button on Foot Control

ELECTROMAGNETIC COMPATIBILITY

MEDICAL ELECTRICAL EQUIPMENT ELECTROMAGNETIC COMPATIBILITY (Instructions for use)

ELECTROMAGNETIC COMPATIBILITY

Electrical medical devices are subject to special EMC safety measurements and as a result the equipment must be installed according to the installation instruction manual.

PORTABLE ELECTRONIC DEVICES

Portable and mobile high frequency electronic communications equipment may interfere with electronic medical devices.

STATIC SENSITIVE DEVICES

Where labeled this equipment contains static sensitive devices that require special precautions when handling. At a minimum a grounded wrist strap that is connected to ground stud should be worn to reduce the possibility of damage to the light.

MEDICAL ELECTRICAL EQUIPMENT ELECTROMAGNETIC COMPATIBILITY (TECHNICAL DESCRIPTION)



ELECTROMAGNETIC COMPATIBILITY testing has been done for this product.

ACCESSORY USE

Using accessory devices not specified by the manufacturer for use with their equipment may result in an increase of electromagnetic emissions and/or a decrease in electromagnetic immunity of the system. Do not use any accessories not authorized or approved by the manufacturer.

INTERFERENCE FROM OTHER EQUIPMENT

If other equipment is used adjacent to or stacked with this equipment the system must be observed to verify normal operation.

ELECTROMAGNETIC COMPATIBILITY


Guidance and manufacturer's declaration-electromagnetic immunity

This product is intended for use in the electromagnetic environment specified below. The customer or the user of this product should ensure that it is used in such an environment.

IMMUNITY TEST	IEC60601 TEST LEVEL	COMPLIANCE LEVEL	ELECTROMAGNETIC ENVIRONMENT GUIDANCE
ELECTROSTATIC DISCHARGE (ESD) IEC 61000-4-2 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%. Where labeled, a ground strap (connected to ground lug) should be worn to reduce the possibility of damaged to the unit when servicing.
ELECTRICAL FAST TRANSIENT/BURST IEC 61000-4-4	Capacitive Clamp +/-1 kV, 5/50 nsec pulse +/-5 kHz repetition frequency Direct Injection +/-2 kV, 5/50 nsec pulse +/-5kHz repetition frequency	Capacitive Clamp +/-1 kV, 5/50 nsec pulse +/-5 kHz repetition frequency Direct Injection +/-2 kV, 5/50 nsec pulse +/-5kHz repetition frequency	Mains power quality should be that of 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 typical commercial or hospital environment.
VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS ON POWER SUPPLY INPUT LINES IEC 61000-4-11	30% reduction, 500 ms 60% reduction, 100 ms >95% reduction, 10 ms >95% reduction, 5000 ms	30% reduction, 500 ms 60% reduction, 100 ms >95% reduction, 10 ms >95% reduction, 5000 ms	Mains power quality should be that of typical commercial or hospital environment. If the user requires continued operation during power mains interruptions, it is recommended that the product be powered by an uninterrupted power supply or 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.

U_T is the AC. mains voltage prior to application of the test level.

ELECTROMAGNETIC COMPATIBILITY

Guidance and manufacturer's declaration-electromagnetic immunity			
This product is intended for use in the electromagnetic environment specified below. The customer or the user of this product should assure that it is used in such an environment.			
Immunity Test	IEC60601 Test Level	Compliance Level	ELECTROMAGNETIC ENVIRONMENT GUIDANCE
			Portable and mobile RF communications equipment should be used no closer to any part of the product, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	$d = 1.2 \sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 kHz to 2.5 MHz	3 V/m	$d = 1.2 \sqrt{P}$ 80 MHz 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz 2.5 GHz 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: 
<p>NOTE 1: At 80 MHz to 800 MHz, the higher frequency range applies.</p> <p>NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures objects and people.</p> <p>a) Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess 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 product is used exceeds the applicable RF compliance level above, the product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the product.</p> <p>b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.</p>			

ELECTROMAGNETIC COMPATIBILITY

Guidance and manufacturer's declaration-electromagnetic emissions

This product is intended for use in the electromagnetic environment specified below. The customer or the user should assure that it is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment guidance
RF emissions CISPR-11	Group 1	This product uses RF energy only for its internal function. Therefore, the emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR-11	Class B	This product is suitable for use in all establishments, other than 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 B	
Voltage Fluctuations / flicker Emissions IEC 61000-3-3	Complies	

CHECKLIST

Verify the following after installation or servicing of the chair:

- All manuals are present.
- All labels are present and legible.
- The chair is installed/assembled correctly and there is no mechanical damage on new installations.
- The chair can be moved and positioned freely without any drifting.
- The chair is connected to the appropriate power source.
- Dispose of all product parts and internal components per applicable codes, regulations and directives.
- The chair is setting on a level surface and has been properly leveled. Refer to installation instructions for information on how to properly level the unit.
- All hardware is installed correctly and all connections are properly attached.
- If applicable, the cover is closed and fasteners tightened (take care not to pinch tubing on wires).
- When depressing the touchpad (if applicable), the chair functions properly.
- While running the chair ensure there is nothing leaking from the tubing.
- The chair passes a high pot test.
- All terminals are connected securely.
- The chair passes a ground continuity test.
- The internal wiring is in good shape and not frayed.



marus

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