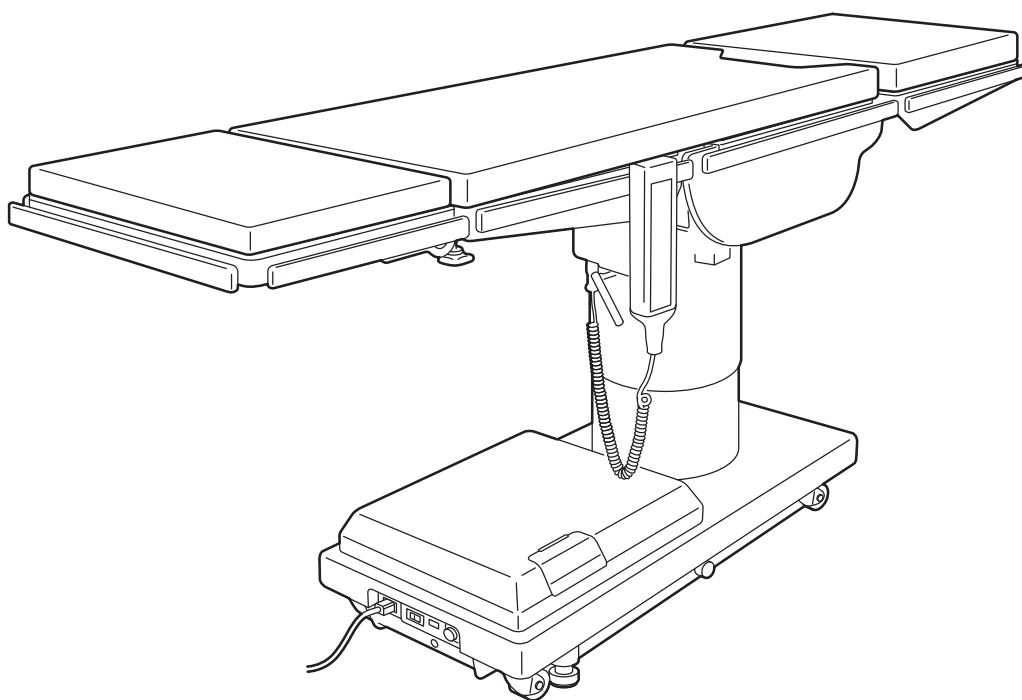


# ***Operating Table Operator's Manual***



## ***MOT-6702X***

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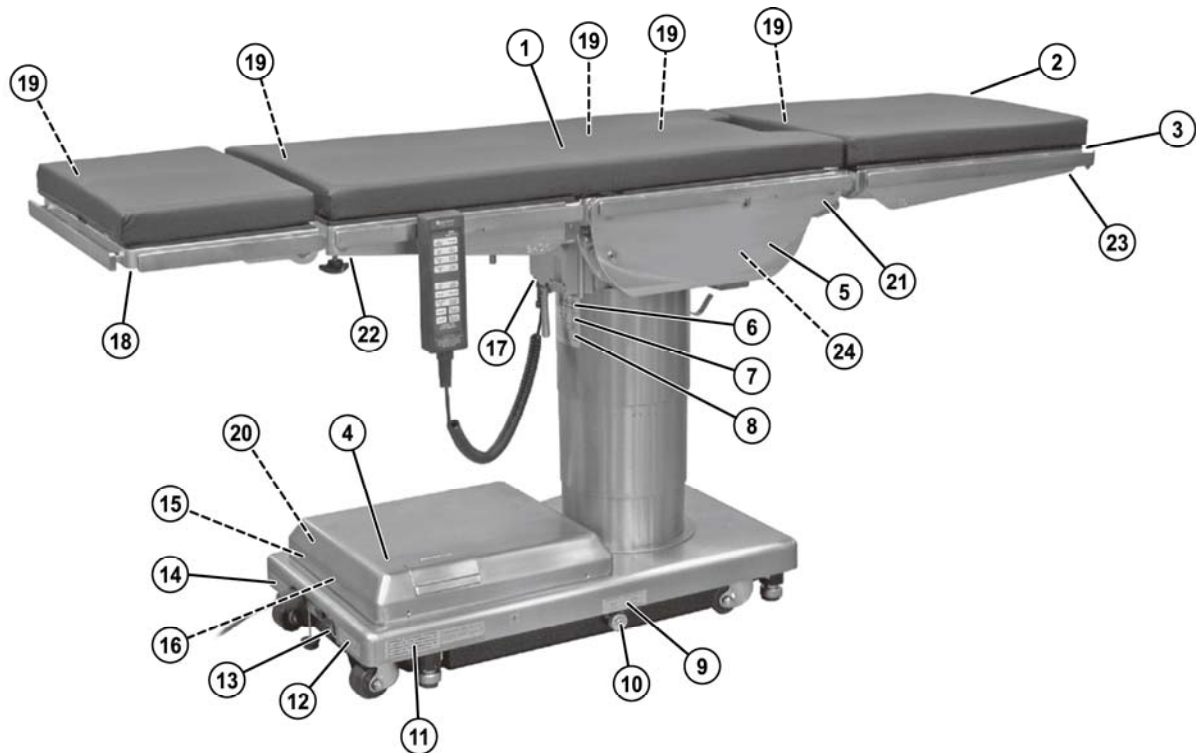
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Although current at time of publication, MIZUHO's policy of continuous development makes this manual subject to change without notice.

## WARRANTY

MIZUHO Corporation will repair defective parts of this product without charge for one year from the date of delivery/installment except for cases of damage caused by a third party's repair, act of nature, improper use or damage on purpose. All other warranty terms and conditions are subject to regulations of MIZUHO Corporation.

## EQUIPMENT LABELS



C656739

NOTE	REMARQUE
1 DUE TO INTERLOCK SYSTEM, BACK SECTION CANNOT BE RAISED ABOVE HORIZONTAL WHEN KIDNEY LIFT IS RAISED.	EN RAISON DU SYSTÈME D'INTERVERROUILLAGE, L'APPUI DORSAL NE PEUT PAS ÊTRE ÉLEVÉ AU-DESSUS DE L'HORIZONTALE LORSQUE L'ÉLEVATEUR RÉNAL EST SOULÉVÉ.

C656312

WARNING	MISE EN GARDE
2 USE HEAD SECTION AS FOOT EXTENSION ONLY WHEN REVERSING PATIENT ON TABLE. REFER TO OPERATOR MANUAL.	UTILISER LA PARTIE AVANT UNIQUEMENT COMME PALLAGE DE PIED - CONSULTER LE MANUEL D'UTILISATION AU MOMENT DE RETOURNER LE PATIENT SUR LA TABLE.

C656311

WARNING	MISE EN GARDE
3 DO NOT SIT ON END OF LEG SECTIONS AS LOADS IN EXCESS OF 145 LBS (65 KG) WILL CAUSE INSTABILITY THAT COULD CAUSE THE TABLE TO BE TIPPED OVER.	NE PAS S'ASSOIR SUR LES BORDS DE LA TABLE CAR UNE CHARGE DE PLUS DE 65 KG (145 LBS) PEUT ENTRAINER UNE INSTABILITÉ ET FAIRE BASCULER LA TABLE.

C642002



C656755



C610501



C656309

TABLE TOP	PLATEAU DE LA TABLE
7 ALWAYS LOCK THE TABLE TOP IN POSITION AFTER FULL ROTATION OF 180°. DO NOT ROTATE THE TOP WITH AN UNDISTRIBUTED PATIENT LOAD AS INSTABILITY MAY RESULT. EXERCISE CAUTION WITH THE TABLE TOP ROTATED 90° TO THE BASE SINCE AN IMPROPERLY DISTRIBUTED PATIENT LOAD MAY CAUSE THE TABLE TO BE TIPPED OVER.	8 TOULOURS MAINTENIR LA TABLE EN POSITION FORMÉE APRÈS UNE ROTATION COMPLÈTE À 180°. NE PAS FAIRE TOURNER LE PLATEAU AVEC UNE CHARGE DE PATIENT NON RÉPARTIE. CAR CELA POURRAIT ENTRAINER UNE INSTABILITÉ. FAIRE PRÉCAUTION LORSQUE LE PLATEAU DE LA TABLE TOURNE À 90° CAR UNE CHARGE DE PATIENT NON RÉPARTIE POURRAIT FAIRE BASCULER LA TABLE.

C656721



C653515



C653516



C656738

! DANGER	! DANGER
11 POSSIBLE EXPLOSION HAZARD IF USED IN THE PRESENCE OF FLAMMABLE ANESTHETICS.	POSSIBILITÉ D'EXPLOSION EN CAS D'UTILISATION EN PRÉSENCE D'ANESTHÉSIFIQUES INFLAMMABLES.

C656740

WARNING	MISE EN GARDE
12 TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER OR BACK. REFER SERVICE TO QUALIFIED SERVICE PERSONNEL. REFER TO ACCOMPANYING DOCUMENTS.	NE PAS RETIRER LE COUVERCLE OU LA FACE ARRIÈRE AFIN DE RÉDUIRE LE RISQUE D'ÉLECTROCUTION. CONFIER L'ENTRETIEN AU PERSONNEL DE SERVICE QUALIFIÉ. SE RÉFÉRER AUX DOCUMENTS D'ACCOMPAGNEMENT.

C653513



C656741

NOTE	REMARQUE
14 GROUNDING RELIABILITY CAN ONLY BE ACHIEVED WHEN THE EQUIPMENT IS CONNECTED TO AN EQUIVALENT RECEPTACLE MARKED "HOSPITAL ONLY" OR "HOSPITAL GRADE".	LA FIABILITÉ DE MISE À LA TERRE NE PEUT ÊTRE OBTENUE QUE LORSQUE L'ÉQUIPEMENT EST CONNECTÉ À UNE PRISE ÉQUIVALENTE REPÉRÉE "HÔPITAL UNIQUEMENT" OU "QUALITÉ HÔPITAL".

C655002



C653529

16 ⚠️ REPLACE BATTERIES ONLY WITH MIZUHO REPLACEMENT PART 24V(12x2)·17Ah

C653614



C653632 (AUST/NZ)



C653633 (EU)



C653620



C653623



C653624

WARNING	MISE EN GARDE
21 A Patient shall be set up to more than 1cm apart from a side rail so that a patient does not touch on side rails.	Un malade sera mis loin du rail du côté plus que 1cm afin qu'un malade ne touche pas le rail du côté.

C656757 (AUST/NZ)



C656756 (EU)



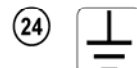
C656749 (AUST/NZ)














C656751 (EU)








C655001



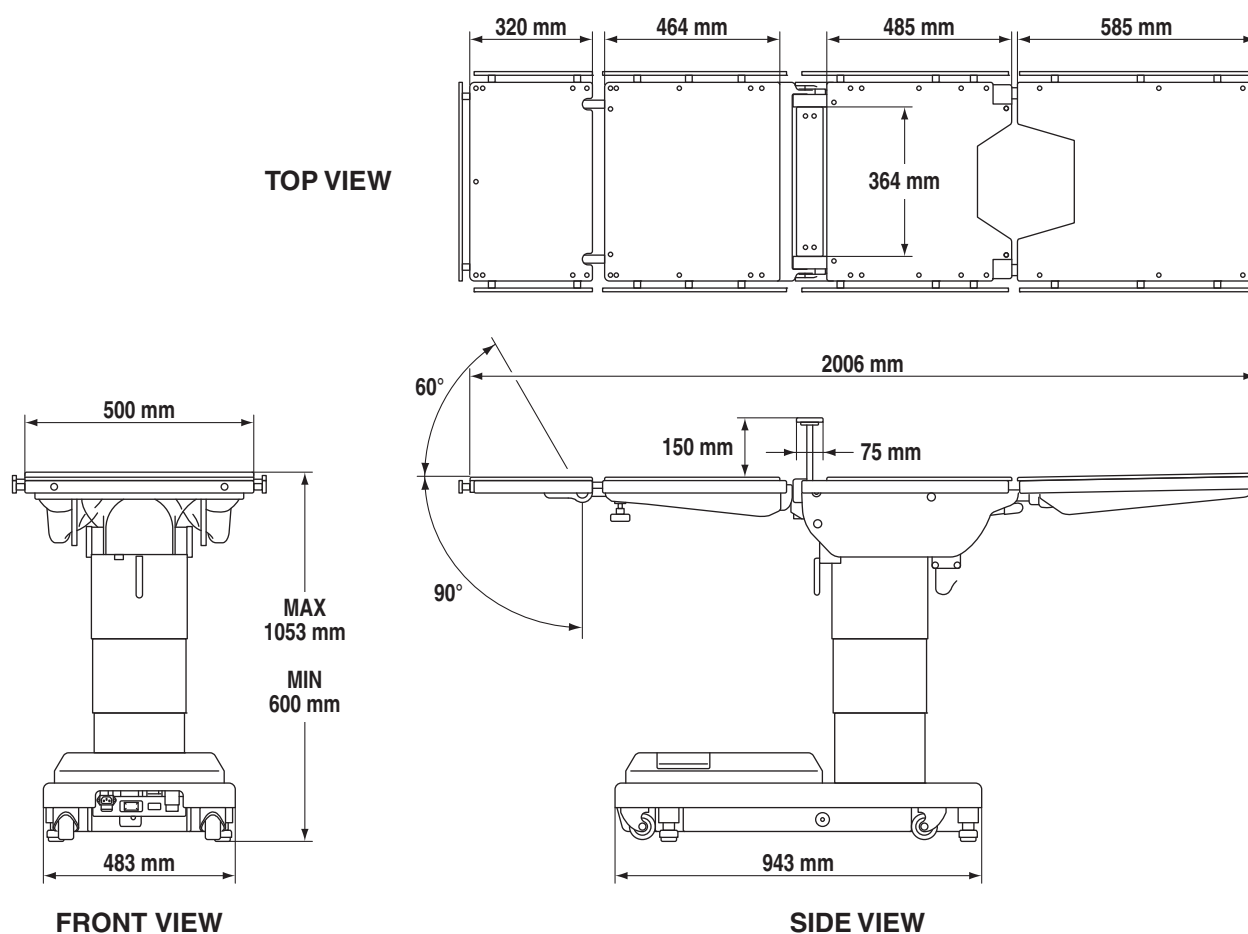
## SAFETY &amp; HEALTH SYMBOLS

Symbol	Description	Used On Product	Used In Manual
<b>NOTE</b>	Indicates important facts or helpful hints	<input type="radio"/>	<input type="radio"/>
 ISO 7010-W001	General warning sign (WARNING, CAUTION)	<input type="radio"/>	<input type="radio"/>
 Red ISO 7010-P001	General prohibition sign	<input type="radio"/>	
 Blue ISO 7010-M001	General mandatory action sign	<input type="radio"/>	
 Blue ISO 7010-M002	Refer to instruction manual	<input type="radio"/>	
 ISO 15223-1-5.1.1	Manufacturer	<input type="radio"/>	<input type="radio"/>
 ISO 15223-1-5.1.2	AUTHORISED REPRESENTATIVE IN THE EUROPEAN COMMUNITY	<input type="radio"/>	<input type="radio"/>
 ISO 15223-1-5.1.6	Catalogue number	<input type="radio"/>	
 ISO 15223-1-5.1.7	Serial number	<input type="radio"/>	
 IEC 60417-5019	Protective earth (ground)	<input type="radio"/>	
 IEC 60417-5021	Equipotentiality	<input type="radio"/>	
 IEC 60417-5032	Alternating current	<input type="radio"/>	

## SAFETY &amp; HEALTH SYMBOLS

Symbol	Description	Used On Product	Used In Manual
 IEC 60417-5638	Emergency stop	<input type="radio"/>	
 IEC 60417-5840	Type B applied part	<input type="radio"/>	
 IEC 60417-5841	Defibrillation-proof Type B applied part	<input type="radio"/>	
<b>IPX4</b> IEC 60529	Enclosure class (Splash-proof)	<input type="radio"/>	
 WEEE	Indicates waste disposal information	<input type="radio"/>	
 IEC 60417-5017	Earth (ground)	<input type="radio"/>	

## TABLE SPECIFICATIONS



### Electrical Specifications

Power Requirements: 100 - 240 VAC, 50 - 60 Hz, 400 VA  
 Current Leakage: Less than 500 micro amps  
 Power Cord : 4.5 m w/hospital grade connector (removable)  
 Duty Cycle: 3 min on, 7 min off  
 Battery Power: 24VDC (12Vx2) <model: FML12170-12V17Ah/Furukawa Battery>

### Classification

Class I Equipment

Applied Parts: Table Top/Type B Applied Parts Mattress/Defibrillation Proof, Type B Applied Parts (EU)  
 IPX4 Rated

- Equipment not suitable for use in the presence of flammable anesthetic mixture with AIR, OXYGEN or NITROUS OXIDE.
- This product does not intend to sterilize.

### Environmental Condition

	Condition of Use	Condition of Transport and Storage
Ambient Temperature	10 - 40°C	-10 - 50°C
Relative Humidity	30 - 75%	10 - 85% (No Condensation)
Atmospheric Pressure	700 - 1060 hPa	700 - 1060 hPa

Operating altitude : 2000 m max above sea level



## TABLE SPECIFICATIONS

### **Mechanical Specifications**

Maximum Lifting Capacity: 540 kg

Maximum Articulating Capacity: 450 kg

The height and width to be able to pass by: Height 10 mm/Width 80 mm (0.4m/s $\pm$ 0.1m/s)

## SPECIAL USER ATTENTION

**Prior to use, all personnel that may operate this table must be instructed in the correct operational procedures. This table is designed for use by trained and qualified personnel for human medical purposes only.**

**Initial use should not begin until after the users have been instructed by the manufacturer's representative.**

**A routine instructional program must be implemented by the facility for proper usage instructions for all personnel that may operate this table.**

**The maximum lifting capacity of the 6702X table is 540 kg and the maximum articulation weight capacity is 450 kg. When lifting or articulating large patients, pay close attention to the patient position as well as the positioning guidelines and limitations listed in the operation instructions.**

The extreme positioning capabilities of the 6702X Table requires special attention for possible interference points when using multiple function positioning. As with the operation of any surgical table, a certain amount of care should be exercised to position the patient safely. Although the thick pads and sheets substantially protect the patient, pinch points, located at the joints of the top section should always be considered. **BE SURE THAT THE ARMS, HANDS AND FINGERS OF THE PATIENT AND THOSE OF THE OPERATING ROOM PERSONNEL ARE CLEAR OF ALL MOVING PARTS BEFORE MOVING THE TABLE.** Proper restraints should always be used for patient safety.

Certain accessories such as the Uro-Drain Tray, Armboards and X-Ray top can be damaged when changing the position of the table top sections. Always look first to see if a desired movement is going to interfere with any accessories in use.

The operator has the ultimate responsibility of preventing damage to the table and surrounding equipment or possible injury to the patient or staff.

The operator must ensure proper positioning is maintained to prevent compromising respiration, nerve pathways or circulation.

In general, common sense will dictate when there is a potential hazard.

***The following precautions should be reviewed by all personnel prior to operating the table.***



### WARNING



Indicates a possibility of personal injury.



### CAUTION



Indicates a possibility of damage to equipment.

### NOTE

Indicates important facts or helpful hints.

This equipment is intended for use by healthcare professionals only. This equipment may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the table or shielding the location.



Do not use worn or damaged accessories, they represent an injury hazard.

Remove possible obstacles before lowering or tilting the operating table.

Do not place objects on the base of the table, a danger of damage exists during positioning.

Use caution when articulating the table top, pinch hazards exist.

**SPECIAL USER ATTENTION**

Always inspect product prior to use to ensure safe and correct operation. Any product deemed to be malfunctioning should be removed from service and labeled inoperable. Refer all service to a qualified MIZUHO service representative.

**NOTE**

If any buttons on the control unit are pressed continuously for longer than 10 minutes, the thermal protector of the pump motor will actuate and the operation of the table will be stopped. The thermal protector will reset in approximately 30 minutes.

**NOTE**

The operating table has a built-in self-diagnosis function to check if the operating table and control unit work properly.

1. Connect the power cord.
2. Press the BATTERY ON/OFF button on the pendant control.
3. Press one of the function buttons on the pendant control.

If two green battery indicators are lit, the pendant control works properly.

**NOTE**

Activating any function button will activate the brake system. Using the TABLE UP function to set the brakes provides a visual assurance that the brakes are locked without altering the table position, except when emergency brake is released.



Prior to operating the table, observe all table caution labels and review the SPECIAL USER ATTENTION section in the front of this manual.



Possible explosion hazard exists if table is used in the presence of FLAMMABLE ANESTHETICS.

**NOTE**

An equalization grounding terminal is located under the main power panel. This is provided as an alternate pathway to reduce the risk of static shock hazards. Always follow recommended grounding procedures to ensure patient and staff safety.



To avoid the risk of electric shock, this equipment must only be connected to a supply main with Protective earth. Power Cord has to be used the one which has a logotype of MIZUHO.



Please don't position the surgical table in such way that the operator has difficulty to disconnect the Equipment by plug or appliance outlet.

**NOTE**

The table will operate correctly on battery power with the power cord connected to a wall outlet or disconnected.

**NOTE**

Battery Operation must be turned OFF at the pendant control. It can not be turned Off using the main power switch.

## SPECIAL USER ATTENTION

**NOTE**

Turning the Main Power Switch ON will change the table operation to 100 - 240 VAC power.

**NOTE**

When the red light starts to blink (indicating low power in battery) the table will operate for approximately 5 continuous minutes, typically long enough to use the table for the rest of the day.

**NOTE**

The charging system operates **ONLY** when the table is in AC 100 - 240 V operation mode. While charging a battery, the operation of Power on/ off can be performed with a BATT ON/OFF switch.

**NOTE**

The table can be operated on 100 - 240 VAC power while the battery is being recharged.

**WARNING**

If the table is stored for a period greater than 6 months, the batteries should be removed and stored in a dry, clean condition at a storage temperature of 68°F (20°C). Batteries should be recharged every 6 months of product storage.

**WARNING**

A operator of operating table has to perform his/her activity at the position which is indicated in below drawing where he/she can push the emergency stop switch immediately and observe his/her patients.

**WARNING**

- Please confirm that the operating table is fixed stably after applying the brakes.
- DO NOT unlock brakes when patient is on the table. An uneven patient weight load may cause instability.
- If circumstances demand table brakes to be unlocked, the patient must be centered and evenly distributed on the table top (i.e. supine or prone position) with the table lowered to its lowest height position. The maximum patient weight should not exceed 230 kg. Table top rotation must be in normal orientation, that is, the back section over the long end of the table. Patient's head must be on the head section. Head section must be attached in its normal orientation to the table's back section.
- Prior to unlocking brakes, check for obstructions on the floor that might prevent the table from moving smoothly to new location. Relock the brakes immediately once the final position is reached and before commencing surgery. Table brakes should remain locked at all times if patient weight exceeds 230 kg.
- Don't move a table with patient carried. There is a risk that patient may fall and injure or staff may injure.
- Don't move a table with heavy object carried. There is a risk that heavy object may fall and damage or staff may injure.

**NOTE**

With an evenly distributed patient weight load, all table positioning functions will operate smoothly and quietly with a patient weight of up to 450 kg.

## SPECIAL USER ATTENTION

**NOTE**

To prevent table damage, a safety interlock limits Trendelenburg positioning to 20° if lateral tilt positioning exceeds 20°. An audible alarm will sound.

**WARNING**

To maximize patient safety, utilize proper restraint methods during extreme Trendelenburg positioning.

**NOTE**

To prevent table damage, a safety interlock limits lateral tilt positioning to 20° if Trendelenburg positioning exceeds 20°. An audible alarm will sound.

**WARNING**

In order to ensure the maximum safety, whenever lateral tilt is operated, be sure to utilize a restraint method. There is a risk that a patient may fall from operating table.

**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the back section from going above horizontal if the kidney lift is not all the way down. If the kidney lift is raised, an audible alarm will sound when the BACK UP button is pressed.

**NOTE**

If back section is below horizontal, BACK UP function is limited to 800 pound patient weight.

**WARNING**

The Leg section may hit the table base or the floor if both the leg and elevation systems are placed in their full down position.

**NOTE**

When REFLEX button is activated, if Kidney Bridge is up, the back section will not go above horizontal.

**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the kidney lift from going up if the back section is raised above horizontal. An audible alarm will sound.

**NOTE**

Elevation and brake system functions are not affected by the return to level function.

**CAUTION**

Please use the emergency switch at the urgent case only.

**CAUTION**

The Back Section/Kidney Lift safety interlock is not operational when the emergency back-up control switches are used.

**CAUTION**

The EMERGENCY BRAKE LOCK switch does not activate the brake system timer. The switch must be held until the brakes are completely locked, approximately 10 seconds.

**NOTE**

The emergency back-up control switches will function when the table is operating on 100 - 240 VAC power, battery power, or turned off.

## SPECIAL USER ATTENTION

**NOTE**

- The Emergency Brake Release Valve must be closed and tightened (counter-clockwise) before activating any hydraulic function.
- If the Emergency Brake Release Valve has been operated, the BRAKE UNLOCK button on the pendant control will have to be pressed before brakes will lock again.

**NOTE**

To make the Back Section easier to handle, remove the Head Section and X-ray Top prior to removing the Back Section.

**WARNING**

Ensure that the Leg and Back sections are properly engaged and secured to pins before use to prevent injury.

**NOTE**

The Leg and Back sections are labeled for proper orientation. The Leg section cannot be installed on the Back section pins.

**NOTE**

Normal table top position is with the head (and back) section over the power cord end of the base.

**WARNING**

Always lock the table top in position after rotation. DO NOT rotate the top with an unevenly distributed patient weight load as instability may result.

**WARNING**

- Make sure the TOP ROTATION LOCK HANDLE is tightened and the brakes are set before transferring the patient.
- Exercise caution with the table top rotated 90° to the base since an improperly distributed patient load may cause the table to be tipped over.

**WARNING**

Consult manufacturer's instructions when using high frequency surgical equipment, cardiac defibrillator and cardiac defibrillator monitors. Improper operation procedures might cause a burn on an operators or patient, and also cause the malfunction of the product.

**WARNING**

- When a patient is put on a mattress and his/her position is set up, a patient shall be set up to more than 1 cm apart from a side rail so that a patient does not touch on side rails (metal).
- The mattress should be attached in order not to come off while being in use.

**WARNING**

When an antistatic pathway is required, the table has to be used on an antistatic floor.

**WARNING**

The antistatic properties of the table are dependent on the use of the original pad set which was furnished with the table or an alternate approved replacement.

**WARNING**

Certain accessories may limit weight capacities. Check with your MIZUHO representative.

## SPECIAL USER ATTENTION

**WARNING**

MIZUHO Products are guaranteed for proper performance with the use of genuine MIZUHO accessories.

Accessories and products not furnished by MIZUHO have not been tested for proper performance and safety. Such applications or use are at the discretion of the user to ensure patient and staff safety.

**CAUTION**

- MIZUHO surgical tables are designed to be used by trained healthcare professionals only.
- Place a patient on the table after a 70mm minimum thickness mattress is certainly attached onto the table top for safeness of a patient.
- Attach a mattress onto the table properly in order not to slip off or come off the table during operation.
- Install a table board in order not to recognize the fixing screws.
- Put a patient on the table after the mattress is changed to proper position when the mattress is found to be out of proper position.

**WARNING**

Set up a patient's position in order not to touch the metal parts like table board or side rail of table top directly. Metal part might cause a burn.

**NOTE**

- A mattress is an applied part.
- Usable mattresses are as following.

50005M3
672C6M2
672C8M1

Mattress's shape is suitable for each table board.

- Tag which indicates that a mattress is an applied part and is made by MIZUHO is attached on a mattress.

**CAUTION**

DO NOT use the table if any of the inspection points fail.

**CAUTION**

Caution should be taken when cleaning the table to prevent excessive fluid entry into electrical connectors.

**WARNING**

Always follow the national blood-borne pathogens standards for protective clothing, including gloves, masks and eye protection when cleaning the surgical table.

**CAUTION**

Thoroughly read and follow the manufacturer's directions for all cleaning fluids. DO NOT use cleaners containing phenolics.

**CAUTION**

When using spray cleaners DO NOT spray fluids directly into electrical receptacles or micro switches.

**SPECIAL USER ATTENTION**

Before replacing pads on the table, make sure the pads and all mating surfaces are completely dry. Moisture trapped between the pads and mating surfaces may cause distortion of table tops.



- DO NOT disassemble the table. Unauthorized disassembling may cause electric shock or malfunction.
- Please contact your local distributor or manufacturer for maintenance or repair. The operating table should only be serviced or maintained by a factory trained personnel.

**NOTE**

Technical description of this product is due to the Maintenance Manual.  
The contents of Maintenance Manual are as follows.

SECTION I	HYDRAULIC SYSTEM
SECTION II	MECHANICAL TABLE ADJUSTMENTS
SECTION III	HYDRAULIC TROUBLESHOOTING
SECTION IV	ELECTRICAL SYSTEM
SECTION V	ELECTRICAL TROUBLESHOOTING

Maintenance Manual can be obtained only by the person who has had the service training of MIZUHO.



## SECTION I INTRODUCTION

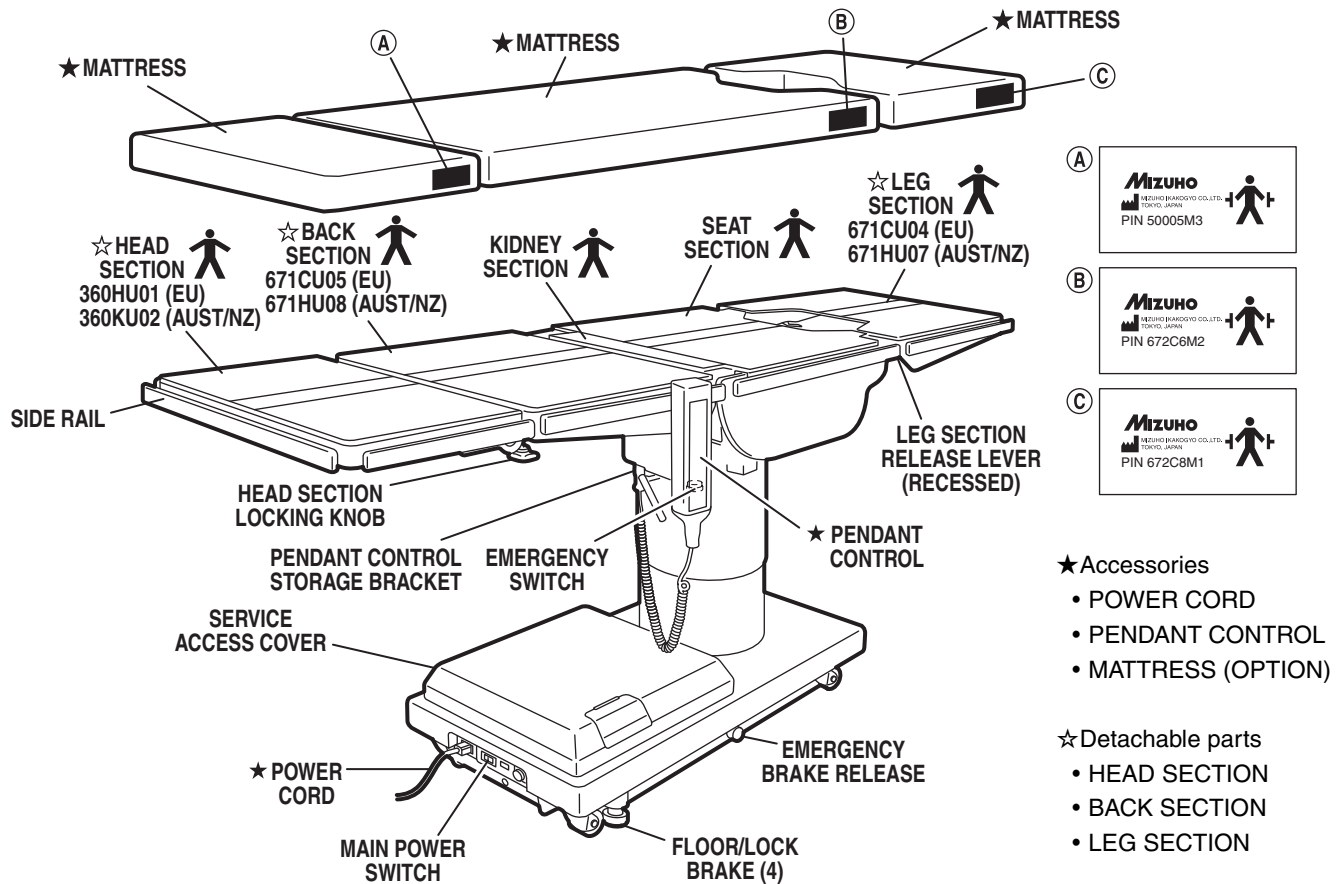


Figure 1-1. MOT-6702X

## 1-1. General

**a. Intend Use.** This Product is intended for holding a patient on the surgical operation.

**b.** A place to use this product should be an operating room in the hospital.

**c.** The user of this product should be doctors or nurses or medical engineers who have sufficient knowledge of this product.

The 6702X Surgical Table is an electro-hydraulically operated, general purpose surgical table. See figure 1-1.

The electro-hydraulic positioning functions operated by the hand-held, push button, pendant control unit are: Trendelenburg, lateral tilt, back section, elevation, leg section, flex/reflex, kidney lift, return to level, beach chair and the floor lock/brake system.

Manual controls are provided for head section positioning, table top rotation, emergency brake release, back section removal and leg section removal.

## 1-2. Power Requirements

The 6702X Surgical Table requires a 100 - 240 VAC, 50 - 60 Hz electrical power supply. The table is equipped with a removable 4.5 m long power cord with a three prong, hospital grade plug. The main power ON/OFF switch is located on the electrical panel on the front edge of the table base. See figure 1-2.

The battery charging indicator and foot control connector are also located on the electrical panel.

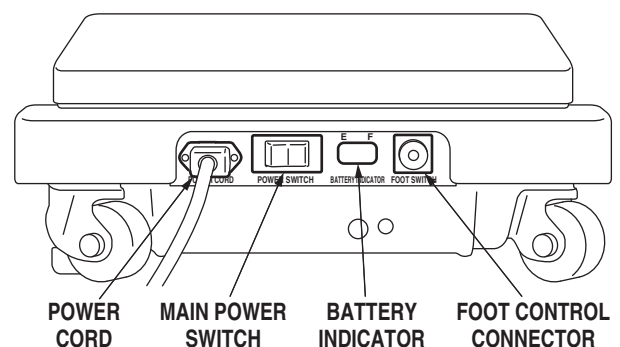


Figure 1-2. Electrical Panel

## SECTION I INTRODUCTION

### 1-3. Pendant Control Unit

The hand-held pendant control unit (figure 1-3) has a non-slip rubber cover which assures a positive grip during use. A spring clip hanger is located on the back of the control for storage. When the Pendant Control is not in use, it should be stored on a convenient side or end rail. A bracket is located under the table top next to the pendant control connector for storage of the Pendant Control when the table is not in use and during cleaning. See figure 1-4.

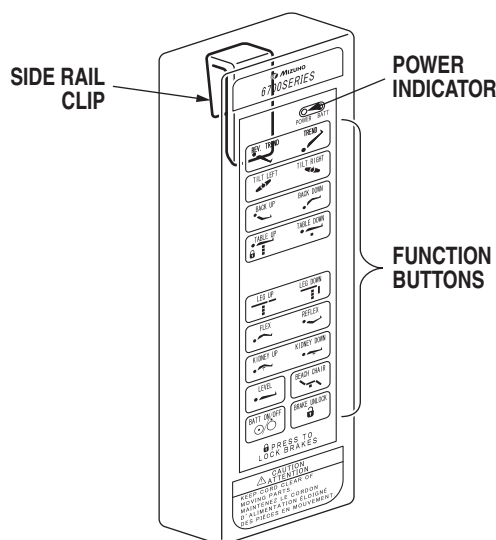


Figure 1-3. Pendant Control Unit

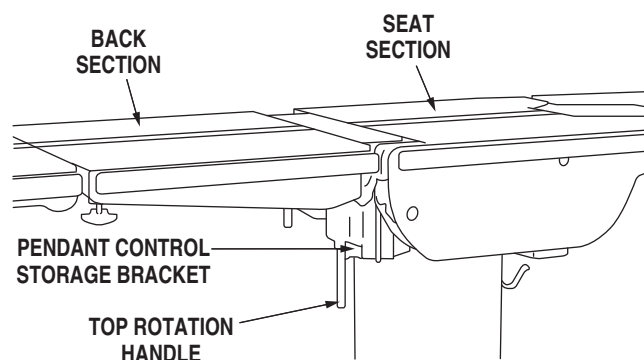


Figure 1-4. Pendant Control Storage Bracket

The function push buttons are identified with abbreviated descriptions for all functions. See figure 1-5. When illuminated the Trendelenburg and table up buttons are red, the remaining buttons are all green.

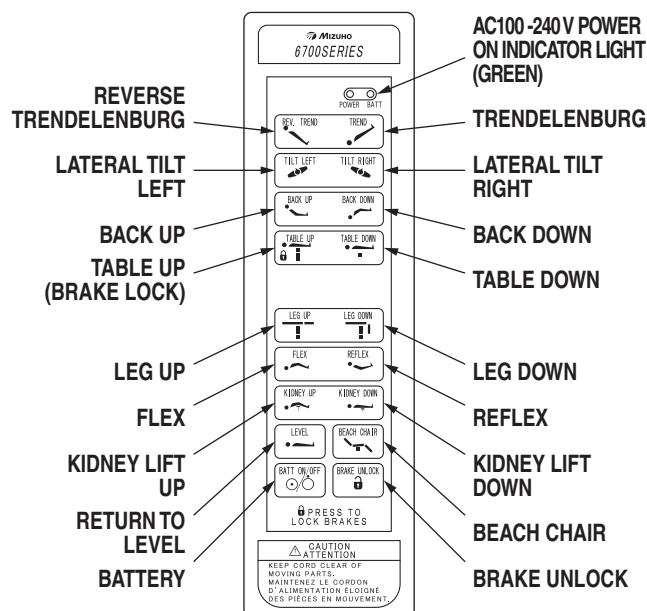


Figure 1-5. Function Buttons

#### NOTE

If any buttons on the control unit are pressed continuously for longer than 10 minutes, the thermal protector of the pump motor will actuate and the operation of the table will be stopped. The thermal protector will reset in approximately 30 minutes.

#### NOTE

The operating table has a built-in self-diagnosis function to check if the operating table and control unit work properly.

1. Connect the power cord.
2. Press the BATTERY ON/OFF button on the pendant control.
3. Press one of the function buttons on the pendant control.

If two green battery indicators are lit, the pendant control works properly.

**1-4. Floor Lock/Brake System**

The floor lock/brake system consists of four self-leveling, hydraulic brake cylinders which raise and support the table base off from the casters. Press the TABLE UP button on the pendant control to set the table's brakes. An electronic timer will activate the brake system until the brakes are completely set, approximately 8-10 seconds.

**NOTE**

Activating any function button will activate the brake system. Using the TABLE UP function to set the brakes provides a visual assurance that the brakes are locked without altering the table position, except when emergency brake is released.

## SECTION II OPERATION

### 2-1. Electrical Power

The 6702X table will operate on either 100 - 240 VAC or battery power.



**WARNING**

Prior to operating the table, observe all table caution labels and review the SPECIAL USER ATTENTION section in the front of this manual.



**WARNING**

Possible explosion hazard exists if table is used in the presence of FLAMMABLE ANESTHETICS.

#### NOTE

An equalization terminal is located under the main power panel. This is provided as an alternate pathway to reduce the risk of static shock hazards. Always follow recommended grounding procedures to ensure patient and staff safety.

### 2-2. AC 100 - 240 V Operation

Use the following procedures to operate the table on 100 - 240 VAC power.

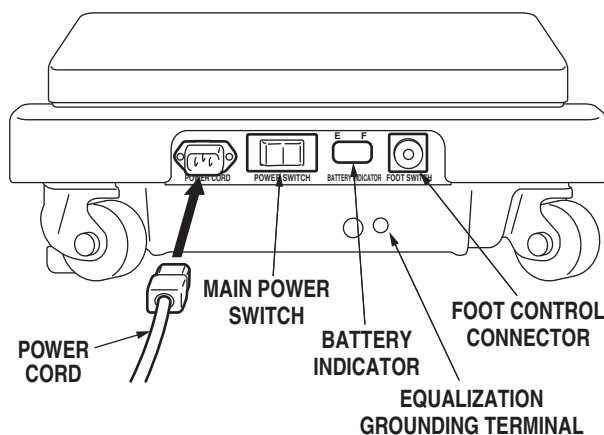
**a.** Make sure the Power cord is securely attached to the table. To install the power cord, align the cord connector with the base connector, insert the cord and twist clockwise to lock the cord into the connector. See figure 2-1. Plug the cord into a properly grounded, Hospital Grade, 100 - 240 VAC outlet. Make sure the power cord is routed to the outlet to prevent it from being in the way of operating personnel. To remove the power cord, and pull the cord connector out of the base connector.



**WARNING**

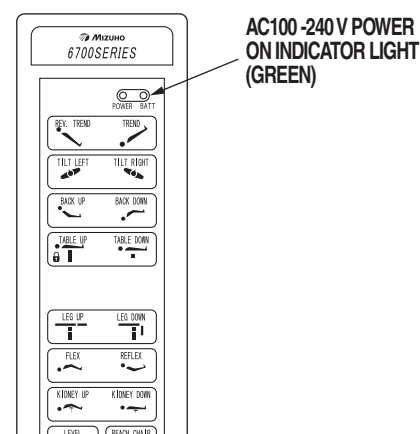
To avoid the risk of electric shock, this equipment must only be connected to a supply main with Protective earth. Power Cord has to be used the one which has a logotype of MIZUHO.

**b.** Activate the POWER SWITCH located on the electrical panel. The switch will illuminate.



**Figure 2-1. Electrical Panel**

The pendant control buttons and the green AC 100 - 240 V, POWER indicator light located in the upper right corner of the pendant control will illuminate. See figure 2-2.



**Figure 2-2. Pendant Control**

**c.** The table is now ready for 100 - 240 VAC operation.

**d.** When operating table is disconnected from commercial power supply, a power supply cable has to be pulled out from AC outlet.



**WARNING**

Please don't position the surgical table in such way that the operator has difficulty to disconnect the Equipment by plug or appliance outlet.

## SECTION II OPERATION

## 2-3. Battery Operation

a. Make sure the Battery Indicator and Main Power Switch indicator lights, on the electrical panel, are OFF. See figure 2-2. If the indicator lights are ON, turn AC 100 - 240 V operation OFF with the main power switch.

**NOTE**

The table will operate correctly on battery power with the power cord connected to a wall outlet or disconnected.

b. Press the BATT button on the hand-held pendant control. The pendant control buttons and the red BATTERY indicator light, located in the upper right corner of the pendant control, will illuminate.

c. The table is now ready for BATTERY operation.

d. To extend the battery charge life, turn the BATTERY power OFF with the pendant control when the table is not going to be used.

**NOTE**

Battery Operation must be turned OFF at the pendant control. It cannot be turned OFF using the main power switch.

## 2-4. Automatic Shut-Off

a. To prevent unnecessary discharge of the battery, a timer is built into the battery circuit. This timer will automatically shut the battery power OFF after 2 hours of table inactivity.

b. To turn the table ON again, press the BATT button on the pendant control, the pendant control buttons and the red indicator light will illuminate.

**NOTE**

Turning the Main Power Switch ON will change the table operation to 100 - 240 VAC power.

## 2-5. Charging the Battery

Batteries should be charged:

- When the table is placed into initial service
- As indicated by Battery Indicator
- Every week under normal service conditions

## a. Battery Indicator

In battery mode, three green LEDs and four yellow LEDs and three red LEDs are turned on sequentially according to a charge state. And in charging mode, three green LEDs and four yellow LEDs and one red LED turned on sequentially and turned off, then turned on sequentially again. The following list shows the battery charge level as indicated by the lighted bars.

**Battery mode**

4yellow·3green	100% (Fully charged)
4yellow·2green	89% (Charged)
4yellow·1green	78% (Charged)
4yellow	67% (Charged)
3yellow	56% (Charged)
2yellow	45% (Needs-Charging: BATT indicator on pendant will flash)
1yellow	34% (Needs-Charging: BATT indicator on pendant will flash)
3red	23% (Needs-Charging: BATT indicator on pendant will flash)
2red	12% (Needs-Charging: BATT indicator on pendant will flash)
1red	1% (Needs-Charging: inoperable)

**Charging mode**

1yellow	34% (Charging)
2yellow	45% (Charging)
3yellow	56% (Charging)
4yellow	67% (Charging)
4yellow·1green	78% (Charging)
4yellow·2green	89% (Charging)
4yellow·3green	100% (Fully charged)
1red	Battery Fuse Blown (inoperable)

**Error mode**

2red	Battery Fuse Blown (Need-Replace fuses)
------	---

## SECTION II OPERATION

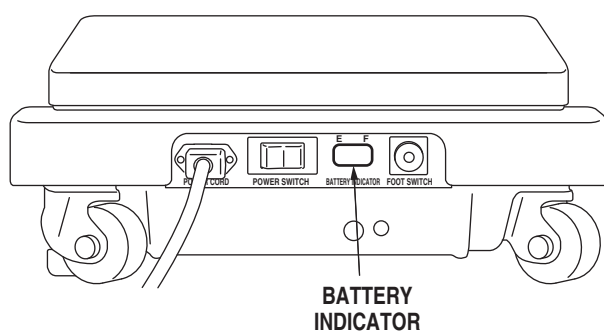


Figure 2-3. Battery Indicator

- b. If the battery needs to be charged when operating the table on battery power, the red indicator light on the pendant control will begin to blink.

**NOTE**

When the red light starts to blink (indicating low power in battery) the table will operate for approximately 5 continuous minutes, typically long enough to use the table for the rest of the day.

**NOTE**

The charging system operates **ONLY** when the table is in AC 100 - 240 V operation mode. While charging a battery, the operation of Power on/ off can be performed with a BATT ON/OFF switch.

- c. To recharge the battery, make sure the power cord is connected, plugged into a 100 - 240 VAC wall outlet and the main POWER SWITCH - ON.

**NOTE**

The table can be operated on 100 - 240 VAC power while the battery is being recharged.

- d. A full battery charge will last approximately 2 weeks under normal operating conditions. However, it is recommended to charge the batteries at the end of each week to establish a normal routine protocol. Lead acid batteries last longer if they are not permitted to fully discharge. The table features (2) 12 volt, sealed, lead acid batteries which require no manual maintenance. Lead acid gel batteries, under a proper charging program, feature an approximate normal life of 4 years.

**WARNING**

If the table is stored for a period greater than 6 months, the batteries should be removed and stored in a dry, clean condition at a storage temperature of 68°F (20°C). Batteries should be re-charged every 6 months of product storage.

- e. If the life of battery is degraded, the power might not be supplied from battery properly in the case that AC power supply can not be used due to the power failure.

**2-6. Positioning Functions**

The hand-held pendant control (figure 2-4) activates the following table functions:

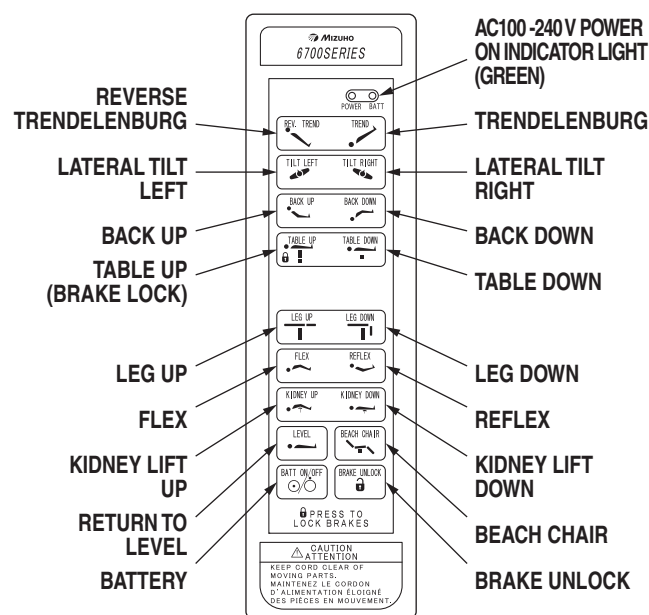


Figure 2-4. Pendant Control Function Buttons

**WARNING**

A operator of operating table has to perform his/her activity at the position which is indicated in below drawing where he/she can push the emergency stop switch immediately and observe his/her patients. See figure 2-5.

## SECTION II OPERATION

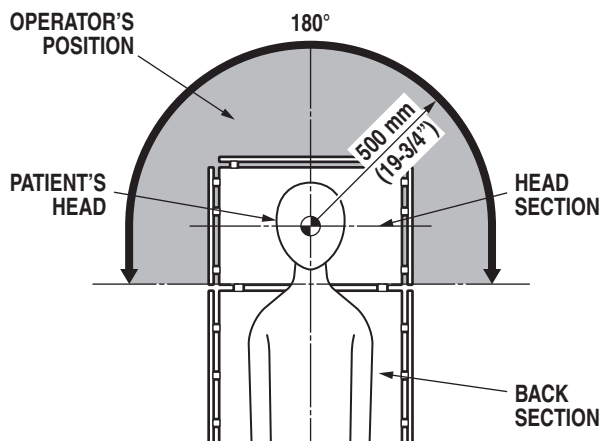


Figure 2-5. Operator's Position

Each positioning is operating while pushing the function button, and positioning will stop when the button is released. When an opposite function button against the current operation is pushed, current function is canceled.

**a. Floor Lock/Brake System** To activate the brakes without affecting table positioning, press the TABLE UP button. See figure 2-6. The elevation cylinder will not function until the brakes are completely extended.

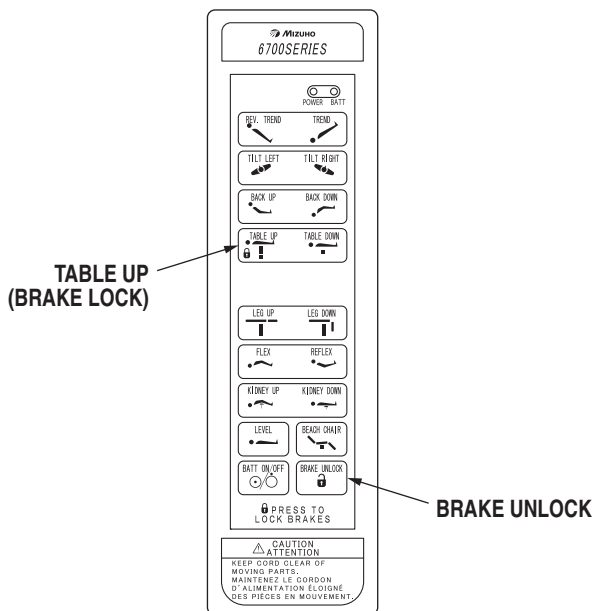


Figure 2-6. Brake System Activation

Press the BRAKE UNLOCK button on the pendant control to release the four self-leveling brake feet in order to move the table. See figure 2-6. The brake delay circuit automatically retracts the brake system. It takes approximately 7-8 seconds to totally release the system.

The table will continue working until stopping when the function button for brake fixing and releasing is pushed at least once.

The following operation should be performed when making an operating table shut down.

**At Battery Mode**

Push the ON/OFF button of Pendant Control Box.

**At AC Mode**

1. Unplug the Power cord from AC outlet
2. Switch to Battery Mode.
3. Push the ON/OFF button of Pendant Control Box.

**At unusual operation**

Push the emergency stop switch.

**WARNING**

- Please confirm that the operating table is fixed stably after applying the brakes.
- DO NOT unlock brakes when patient is on the table. An uneven patient weight load may cause instability.
- If circumstances demand table brakes to be unlocked, the patient must be centered and evenly distributed on the table top (i.e. supine or prone position) with the table lowered to its lowest height position. The maximum patient weight should not exceed 230 kg. Table top rotation must be in normal orientation, that is, the back section over the long end of the table. Patient's head must be on the head section. Head section must be attached in its normal orientation to the table's back section.



## SECTION II OPERATION

- Prior to unlocking brakes, check for obstructions on the floor that might prevent the table from moving smoothly to new location. Relock the brakes immediately once the final position is reached and before commencing surgery. Table brakes should remain locked at all times if patient weight exceeds 230 kg.
- Don't move a table with patient carried. There is a risk that patient may fall and injure or staff may injure.
- Don't move a table with heavy object carried. There is a risk that heavy object may fall and damage or staff may injure.

**NOTE**

With an evenly distributed patient weight load, all table positioning functions will operate smoothly and quietly with a patient weight of up to 450 kg.

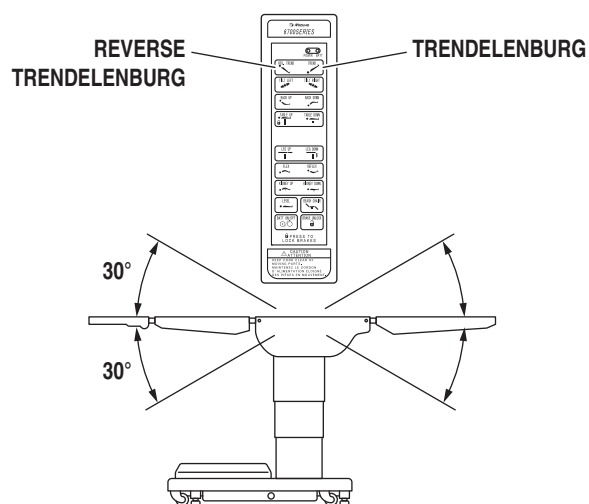
**b. Trendelenburg** To place the table in a Trendelenburg (head down) position, press the TREND button (figure 2-7). To place the table in a reverse Trendelenburg (head up) position, press the REV TREND button. Trendelenburg positioning of up to 30° may be obtained if lateral tilt positioning is less than 20°.

**NOTE**

To prevent table damage, a safety interlock limits Trendelenburg positioning to 20° if lateral tilt positioning exceeds 20°. An audible alarm will sound.

**WARNING**

To maximize patient safety, utilize proper restraint methods during extreme Trendelenburg positioning.



**Figure 2-7. Trendelenburg Positioning**



## SECTION II OPERATION

**c. Lateral Tilt** To achieve lateral tilt right (as viewed from the head end of the table), press the TILT RIGHT button (figure 2-8). To achieve lateral tilt left, press the TILT LEFT button. Tilt of up to 30° may be obtained if Trendelenburg positioning is less than 20°.

**NOTE**

To prevent table damage, a safety interlock limits lateral tilt positioning to 20° if Trendelenburg positioning exceeds 20°. An audible alarm will sound.

**WARNING**

To maximize patient safety, utilize proper restraint methods during extreme lateral tilt positioning.

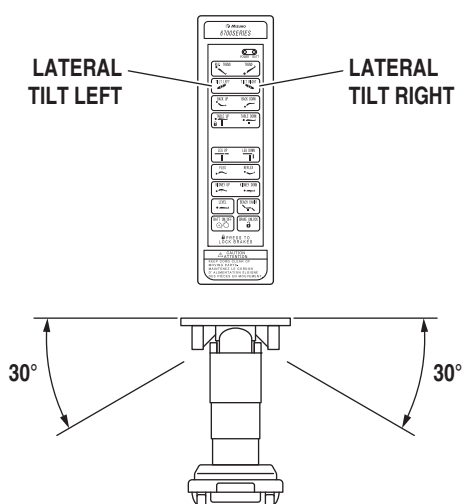


Figure 2-8. Lateral Tilt Positioning

**d. Back Section** To raise the back section, press the BACK UP button (figure 2-9). The back section will raise up to 90° above horizontal. To lower the back section, press the BACK DOWN button. The back section will go down to 40° below horizontal.

**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the back section from going above horizontal if the kidney lift is not all the way down. If the kidney lift is raised, an audible alarm will sound when the BACK UP button is pressed.

**NOTE**

If back section is below horizontal, BACK UP function is limited to 360 kg patient weight.

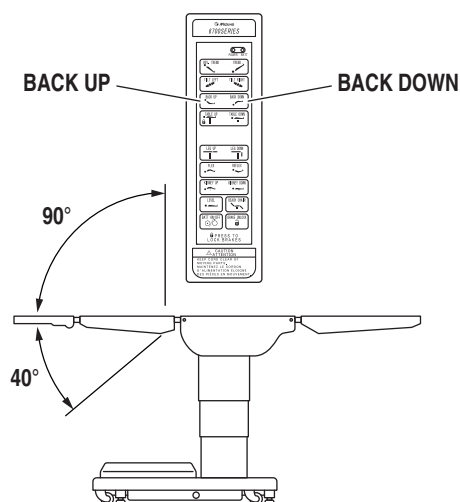


Figure 2-9. Back Section Positioning

## SECTION II OPERATION

**e. Elevation** To raise table top, press the TABLE UP button (figure 2-10). The table will lift a patient weight of 540 kg up to a maximum height of 1053 mm (1143 mm with X-Ray top and 50 mm pad). To lower the table top, press the TABLE DOWN button. The table top will go down to a minimum height of 600 mm.

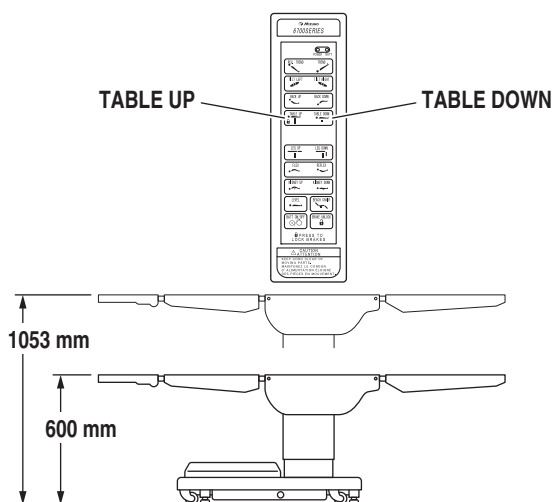


Figure 2-10. Elevation Function

**f. Leg Section** To lower the leg section, press the LEG DOWN button (figure 2-11). The leg section will go down to 100° below horizontal. To raise the leg section, press the LEG UP button. The leg section will go up to 20° above horizontal.



The Leg section may hit the table base or the floor if both the leg and elevation systems are placed in their full down position.

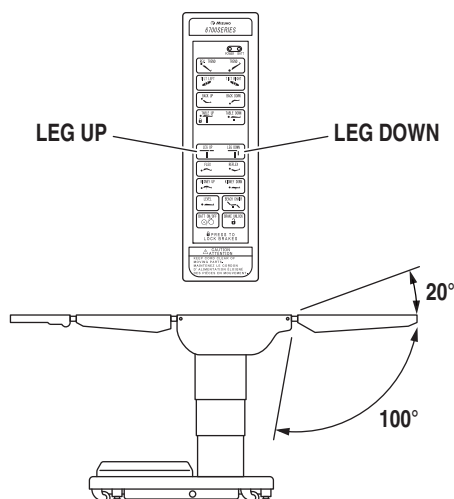


Figure 2-11. Leg Section Positioning

**g. Flex Positioning** To place the table top in a flex position from horizontal, press the FLEX button (figure 2-12). To return the table top to a horizontal position or into a reflex position, press the LEVEL or REFLEX button.

## NOTE

When REFLEX button is activated, if Kidney Bridge is up, the back section will not go above horizontal.

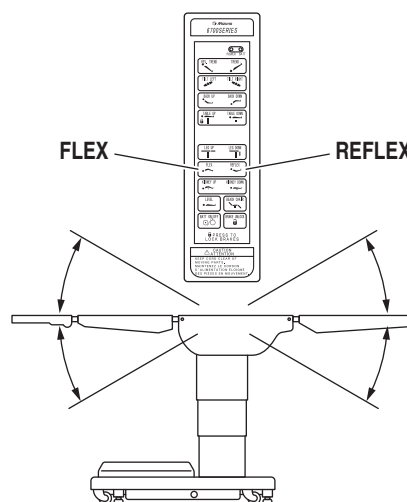


Figure 2-12. Flex/Reflex Positioning

**h. Kidney Lift** To raise the built-in kidney lift, press the KIDNEY UP button (figure 2-13). Up to 6 inches of lift can be achieved. Press the KIDNEY DOWN button to lower the kidney lift.

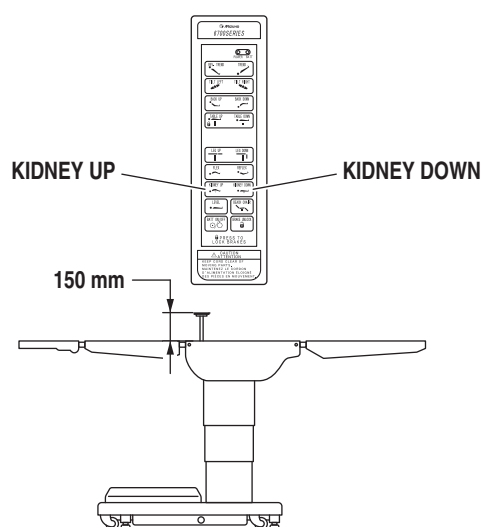


Figure 2-13. Kidney Lift Positioning

## SECTION II OPERATION

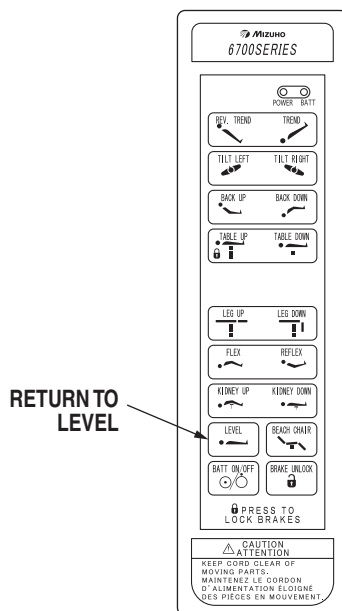
**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the kidney lift from going up if the back section is raised above horizontal. An audible alarm will sound.

**i. Return To Level** To return the table top to a level position, press the LEVEL button (figure 2-14).

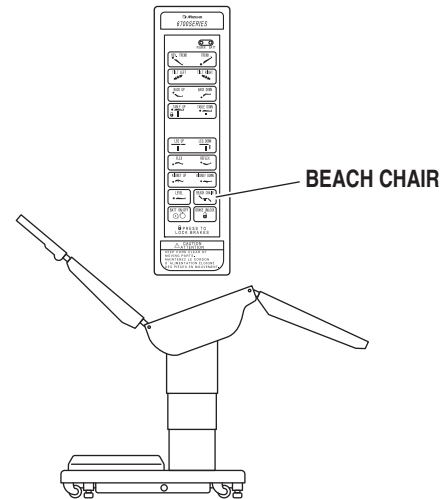
**NOTE**

Elevation and brake system functions are not affected by the return to level function.



**Figure 2-14. Return to Level**

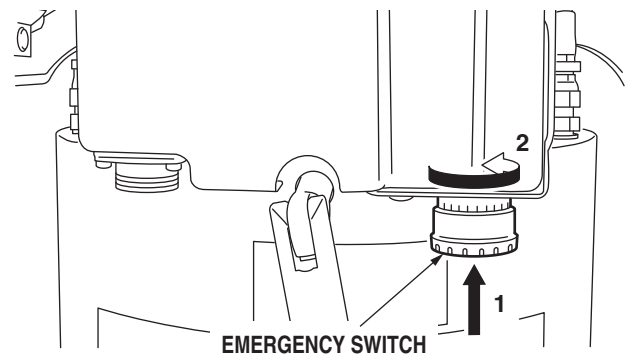
**j. Beach Chair** To place the top in the beach chair position from a level position, press the BEACH CHAIR button (figure 2-15). The back section will raise, the leg section will lower and the Trendelenburg positioning will function simultaneously. The functions will stop when Trendelenburg reaches its limit.



**Figure 2-15. Beach Chair Positioning**

**2-7. Emergency Switch**

Emergency switch is above the control box connector.



**Figure 2-16. Emergency Switch**

1. Press the Emergency Stop Switch if operator's or patient's finger gets caught in the joint of back section during operating the back section.
2. Then turn the Emergency Stop Switch to the direction of the arrow and release from activating the Emergency Stop.
3. Lastly press the switch for the opposite operation and release the caught finger.

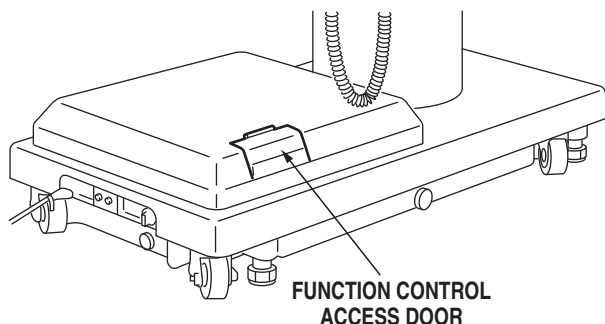
## SECTION II OPERATION

**CAUTION**

Please use the emergency switch at the urgent case only.

**2-8. Emergency Back-up Controls**

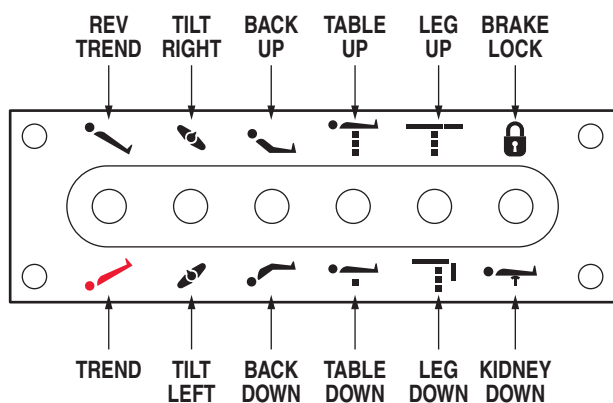
a. The emergency back-up control switches are located under the access door on the service access cover in the table base. See figure 2-17.

**Figure 2-17. Emergency Controls Location**

b. In the event of either a power failure or a problem with the hand-held pendant control, the table can be operated using the emergency back-up switches. Simply push the desired emergency switch in the appropriate direction to operate the table functions. See figure 2-18.

**CAUTION**

The Back Section/Kidney Lift safety interlock is not operational when the emergency back-up control switches are used.

**Figure 2-18. Emergency Back-Up Controls****CAUTION**

The EMERGENCY BRAKE LOCK switch does not activate the brake system timer. The switch must be held until the brakes are completely locked, approximately 10 seconds.

**NOTE**

The emergency back-up control switches will function when the table is operating on 100 - 240 VAC power, battery power, or turned off.

c. Switches are provided for Trendelenburg, lateral tilt, back section, elevation, leg section, kidney down and brake lock. These switches are spring-loaded so they return to the neutral or center position when released.

**2-9. Emergency Brake Release**

In case of a power failure or an electrical problem within the table, the emergency brake release system can be used to move the table. The control knob for this function is located on the side of the table base and is identified by an EMERGENCY BRAKE RELEASE label. Turn the knob clockwise to release the brakes. See figure 2-19.

**WARNING**

- DO NOT unlock brakes when patient is on the table. An uneven patient weight load may cause instability.
- If circumstances demand table brakes to be unlocked, the patient must be centered and evenly distributed on the table top (i.e. supine or prone position) with the table lowered to its lowest height position. The maximum patient weight should not exceed 230 kg. Table top rotation must be in normal orientation, that is, the back section over the long end of the table. Patient's head must be on the head section. Head section must be attached in its normal orientation to the table's back section.

## SECTION II OPERATION

- Prior to unlocking brakes, check for obstructions on the floor that might prevent the table from moving smoothly to new location. Relock the brakes immediately once the final position is reached and before commencing surgery. Table brakes should remain locked at all times if patient weight exceeds 230 kg.

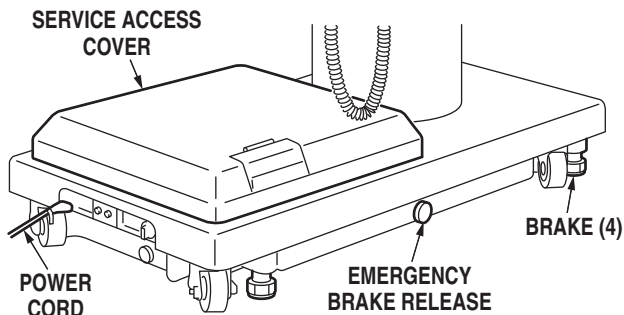


Figure 2-19. Emergency Brake Release

## NOTE

- The Emergency Brake Release Valve must be closed and tightened (counter-clockwise) before activating any hydraulic function.
- If the Emergency Brake Release Valve has been operated, the BRAKE UNLOCK button on the pendant control will have to be pressed before brakes will lock again.

## 2-10. Head Section

a. A quick release positioning bar located under and to the front of the head section (figure 2-20) is used to raise or lower the head section. Pull the release bar toward the head end to allow the section to pivot up or down. Positioning from 60° above horizontal to 90° below horizontal in 15° increments is available. Release the bar to lock the head section in position.

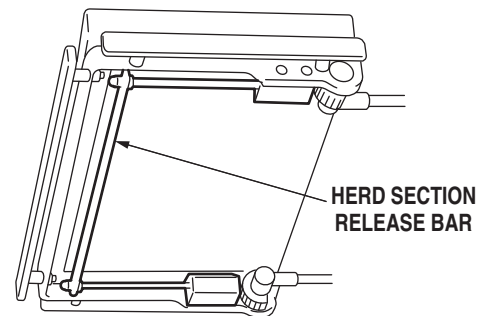


Figure 2-20. Head Section Adjustment

b. By loosening two locking knobs beneath the back section, an additional 50 mm of longitudinal adjustment can be achieved. If desired, the head section may be removed by loosening the locking knobs and pulling it straight out of the back section.

The 6702X Table has the capability of attaching the head section to the leg section for use as a foot extension ONLY. Do not reverse the patient on the table without first consulting with MIZUHO.

Two locking knobs are located on the inside of the leg section for securing the head section. See figure 2-21.

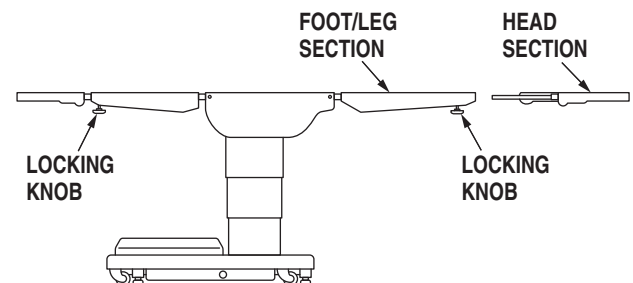


Figure 2-21. Repositioning Head Section (for use as a Foot Extension)

## SECTION II OPERATION

### 2-11. Leg and Back Section Removal

a. The Leg Section and the Back Section on the 6702X tables are both removable. See figure 2-22 (Leg Section shown).

b. To remove either section, level the table top, simultaneously depress both release levers and pull the section out. Press the LEG DOWN or BACK DOWN button on the pendant control to position the attachment pins down and out of the way.

#### NOTE

To make the Back Section easier to handle, remove the Head Section and X-ray Top prior to removing the Back Section.

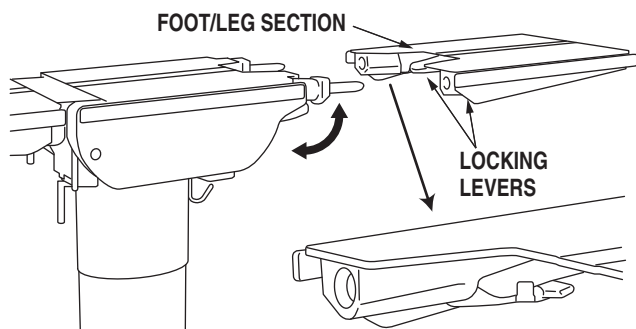


Figure 2-22. Leg Section Removal

c. To install the Leg Section, press and hold the LEG UP button until the attachment pins completely stop. Install the section on the pins. Level the table top and pull out on the section to make sure the release levers are completely locked.

d. To install the Back Section if the attachment pins are not aligned, press and hold the BACK DOWN button until the attachment pins completely stop (40° down). Press REV TREND to bring the pins up to a level position.



Ensure that the Leg and Back sections are properly engaged and secured to pins before use to prevent injury.

#### NOTE

The Leg and Back sections are labeled for proper orientation. The Leg section cannot be installed on the Back section pins.

### 2-12. Table Top Rotation

#### NOTE

Normal table top position is with the head (and back) section over the power cord end of the base.

a. The table top can be horizontally rotated 210° without having to rotate the entire table. Refer to figure 2-23. To rotate the top, turn the TOP ROTATION LOCK HANDLE counterclockwise to release, grasp the table by the head end and rotate the top counterclockwise. Lock the top in position by tightening the TOP ROTATION LOCK HANDLE clockwise.



Always lock the table top in position after rotation. DO NOT rotate the top with an unevenly distributed patient weight load as instability may result.

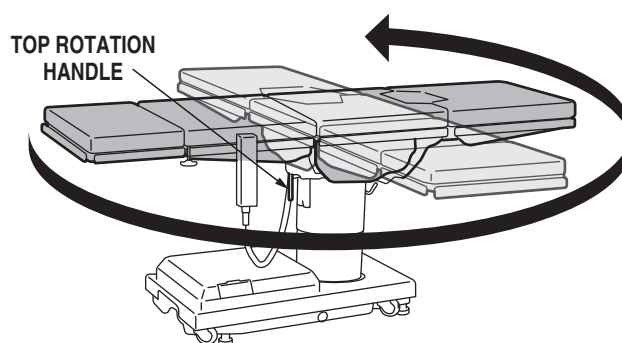


Figure 2-23. Top Rotation

## SECTION II OPERATION

**WARNING**

- Make sure the TOP ROTATION LOCK HANDLE is tightened and the brakes are set before transferring the patient.
- Exercise caution with the table top rotated 90° to the base since an improperly distributed patient load may cause the table to be tipped over.

**WARNING**

Consult manufacturer's instructions when using high frequency surgical equipment, cardiac defibrillator and cardiac defibrillator monitors. Improper operation procedures might cause a burn on an operators or patient, and also cause the malfunction of the product.

**WARNING**

- When a patient is put on a mattress and his/her position is set up, a patient shall be set up to more than 1 cm apart from a side rail so that a patient does not touch on side rails (metal).
- The mattress should be attached in order not to come off while being in use.

**WARNING**

When an antistatic pathway is required, the table has to be used on an antistatic floor.

**WARNING**

The antistatic properties of the table are dependent on the use of the original pad set which was furnished with the table or an alternate approved replacement.

**2-13. Positioning**

The use of certain optional accessories available from MIZUHO further extend the positioning capabilities of the 6702X Tables. Refer to the optional accessories manual or contact your MIZUHO representative for further details.

**WARNING**

Certain accessories may limit weight capacities. Check with your MIZUHO representative.

**WARNING**

MIZUHO Products are guaranteed for proper performance with the use of genuine MIZUHO accessories.

Accessories and products not furnished by MIZUHO have not been tested for proper performance and safety. Such applications or use are at the discretion of the user to ensure patient and staff safety.

A patient's position setup is performed under the condition that a mattress is equipped to the upper surface of table top.

1. Attach a mattress to table board.  
A mattress which is made by MIZUHO and is exclusive use of this table is used. (Refer to the following Notes)
2. Put a patient on the table.
3. Set up the patient's position in accordance with the purpose of the operation. (Figure 2-24)

## SECTION II OPERATION

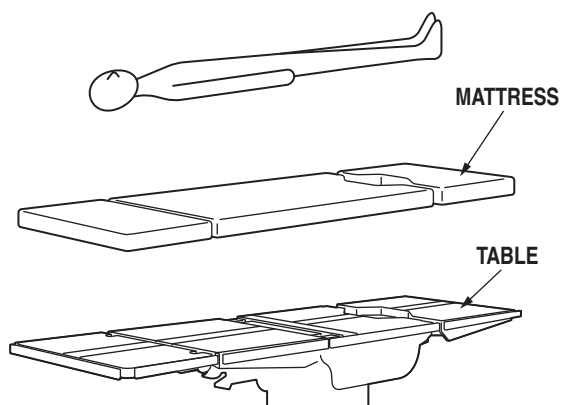


Figure 2-24. Patient Positioning

**CAUTION**

- MIZUHO surgical tables are designed to be used by trained healthcare professionals only.
- Place a patient on the table after a 70mm minimum thickness mattress is certainly attached onto the table top for safeness of a patient.
- Attach a mattress onto the table properly in order not to slip off or come off the table during operation.
- Install a table board in order not to recognize the screw caps. (Figure 2-25)

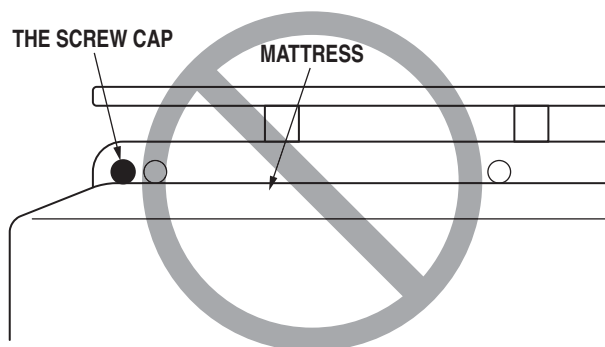


Figure 2-25. Recognize the screw caps

- Put a patient on the table after the mattress is changed to proper position when the mattress is found to be out of proper position.

**WARNING**

Set up a patient's position in order not to touch the metal parts like table board or side rail of table top directly. Metal part might cause a burn.

**NOTE**

- A mattress is an applied part.
- Usable mattresses are as following.

50005M3
672C6M2
672C8M1

Mattress's shape is suitable for each table board.

- Tag which indicates that a mattress is an applied part and is made by MIZUHO is attached on a mattress.



Tag

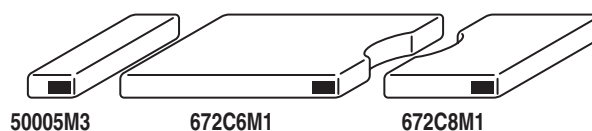


Figure 2-26. Tag of Mattress



## SECTION III MAINTENANCE

**3-1. Routine Inspections · Performed Daily by Operator**

The following inspections should be done before and after each use of the table.

- a. Inspect all table pads for damage.
- b. Inspect all table top sections for damage.
- c. Inspect the table top assembly, all top sections and the base for stability.
- d. Inspect the power cord and plug for any signs of burns or damage.
- e. Test the operation of the main power switch.
- f. Test all functions of the pendant control for proper table movement.
- g. Inspect the table base surface and the floor for any signs of oil leaking.
- h. Perform steps of cleaning procedure.
- i. Recharge batteries /check battery charge.

**CAUTION**

DO NOT use the table if any of the inspection points fail.

**Performed weekly**

- a. Check each function for movement to ensure quiet and smooth operation.
- b. Check the overall condition of the hand control.

**Performed monthly**

- a. Inspect casters and hydraulic floor lock assembly, clean as necessary.
- b. Inspect the emergency back-up switches for operation.
- c. Inspect hand control cord condition.
- d. Inspect table pad condition.

**3-2. Preventive Maintenance**

The following preventive maintenance checks and services are recommended to ensure the serviceability and proper operation of your MIZUHO Surgical Table, and should only be performed by qualified MIZUHO trained personnel.

During normal cleaning, a general visual examination should be made checking for leaks, loose bolts or parts, and cracked, chipped, or missing paint. Any necessary repairs should be made.

Annually or as required based on usage, the following checks and services should be performed:

- a. Check all hydraulic fittings, mini-valves and slave cylinders for proper operation and any signs of leaks.
- b. Check the hydraulic speed controls and adjust if necessary.
- c. Pressure check (with a gauge) the pressure relief valve.
- d. Check all mechanical adjustments and adjust as necessary.
- e. Check hydraulic fluid level.
- f. Lubricate the slider assembly.
- g. Check function of foot leg release levers, (release knob early models). Lubricate as necessary.
- h. Check the recharging of batteries:
  - Whenever table is placed into use.
  - Whenever the last bar on power panel is displayed.
  - Whenever the table is unused for an extended period of time.
- i. Check table top level function.
- j. Inspect emergency back-up controls.

**SECTION III MAINTENANCE****3-3. Cleaning Recommendations****CAUTION**

Caution should be taken when cleaning the table to prevent excessive fluid entry into electrical connectors.

**a. Cleaning**

The following procedures should be followed when cleaning the surgical table between cases.

Place table top in level position prior to starting cleaning procedure.

**WARNING**

Always follow the national blood-borne pathogens standards for protective clothing, including gloves, masks and eye protection when cleaning the surgical table.

Remove major contaminants from the table with disposable materials following appropriate biohazard waste disposal procedures.

Remove all table pads and place them on a flat surface for cleaning.

**CAUTION**

Thoroughly read and follow the manufacturer's directions for all cleaning fluids. DO NOT use cleaners containing phenolics.

Apply cleaning fluid liberally to top and sides of each pad and wipe with a clean lint-free cloth.

Using a clean, damp, lint-free cloth, wipe the pads to remove the cleaning fluid.

Using a clean, dry, lint-free cloth, wipe the pads to remove all moisture.

Repeat the steps to clean the bottom of the each pad.

**CAUTION**

When using spray cleaners DO NOT spray fluids directly into electrical receptacles or micro switches.

Repeat cleaning procedure for all table surfaces including the top, sides, elevation column, base and all accessories.

**CAUTION**

Before replacing pads on the table, make sure the pads and all mating surfaces are completely dry. Moisture trapped between the pads and mating surfaces may cause distortion of table tops.

When the cleaning procedure is complete, replace all pads and accessories as applicable.

Remove pendant control from table side rail and apply cleaning solution to the pendant control and cord.

Use a clean cloth dampened with water to remove cleaning solution.

Use another clean damp cloth to remove any remaining residue.

Install pendant control on side rail for storage when cleaning procedure is complete.

**b. Disinfection**

The following procedure should be followed when disinfecting an operating table.

1. Remove all table pads from the operating table.
2. Apply a proper quantity of disinfectant on the clean and lint-free cloth, and wipe the top and sides and bottom of the pads with the cloth. A proper quantity of disinfectant means a quantity which the cloth with disinfectant does not dry when wiping.
3. Disinfect the table board of the table top and the surface of side rail in the same procedure.
4. Wipe all disinfected parts with dry, clean and lint-free cloth within 15 minutes after disinfecting.

Usable antiseptic solutions which we have already confirmed are as the following lists.

Use the antiseptic solutions listed as follows.

	Medicine Name
1	0.1% sodium hypochlorite (halogenated chemical)
2	Hypo Alcohol (iodine decolorant)
3	Chlorhexidine (0.5% chlorhexidine gluconate)
4	Benzalkonium chloride (10% invert soap)
5	Povidone iodine
6	80% ethanol
7	Oxydol (hydrogen peroxide)
8	Isopropyl alcohol (IPA)

## SECTION III MAINTENANCE

### 3-4. Operator Troubleshooting

#### Troubleshooting Notes:

When troubleshooting a table malfunction, first determine the following:

1. Does the problem affect all control functions?
2. Does the problem affect only one control function?
3. If the problem affects one control function is it in both directions?
4. Is the problem intermittent?
5. Is the problem no movement of a table surface or does the table surface lose position?

MALFUNCTION	POSSIBLE CAUSE	CORRECTIVE ACTION
Table will not turn on	Mains switch off	Turn on Mains switch
	Defective hand control	Replace hand control
No movement	Totally discharged batteries	Charge table batteries
	Defective hydraulic pump	Contact MIZUHO Service
	Defective control box	
	Defective hydraulic valve	
	Defective hand control	
Table remains on battery mode when main power cord is connected	Incorrect Mains connection	Reconnect - correct Mains connection
	Defective power cord	Replace power cord
	Main breaker blown	Reset Mains circuit breaker
	Main power is off	Turn Mains power switch on
Power falls even though the battery is charged	Battery is degraded	Contact MIZUHO Service
The status of Battery Indicator is 2red	Fuse is degraded	Contact MIZUHO Service

Replacement and reconnect of battery and fuse and reset of breaker have to be performed by trained service staff of MIZUHO. If corrective actions for the following symptoms are necessary, be sure to contact an agency of MIZUHO.

Battery powered tables must always be equipped and operated with (2) 12V lead acid sealed batteries available only through MIZUHO.

- Grounding reliability can only be achieved when the equipment is connected to a properly grounded receptacle. Where the integrity of the external Protective Earth Ground is compromised equipment must be operated on battery mode if applicable.
- Use only MIZUHO Replacement Parts for power cord and pendant control. Refer to Replacement Parts section.

### 3-5. Maintenance Matrix

The specific items listed in the MAINTENANCE MATRIX shall be inspected and repaired or replaced as necessary. The suggested time intervals are intended as a guideline only and actual maintenance will vary by use and conditions. For optimal usage, safety and longevity of the product, have it serviced only by an authorized MIZUHO representative with authentic MIZUHO replacement parts.

## SECTION III MAINTENANCE

## SURGICAL TABLE MAINTENANCE MATRIX

Component	1 Year	2 Years	5 Years	7 Years
Lateral Tilt Housing Bolts	X			
Side Rails & Gravity Stops	X			
Velcro	X			
Hydraulic Oil Level	X			
A.C. Power Cord	X			
Self-Leveling Brake Pad	X			
Lubricate Casters	X			
Lubricate Elevation Column	X			
Tighten X-Ray Top Standoffs & Apply Blue Loctite®	X			
Back Section Cylinder	X			
Trendelenburg Cylinder and Retainer Nut	X			
Lateral Tilt Cylinder	X			
Elevation Cylinder	X			
Kidney Lift Cylinder	X			
Foot-Leg Section Cylinder	X			
Slide Cylinder	X			
Plumbing & Terminal Block Assembly	X			
Battery, 12 Volt		X		
Brake Pads			X	
Casters			X	
Pendant Control Assembly			X	
Main ON/OFF Switch				X
Power Cord Assembly				X
Power Cord Receptacle				X
Pendant Control Connectors				X
Grounding Lead				X
Back Section Micro Switches				X
Trendelenburg Micro Switches				X
Leg Section Micro Switches				X
Lateral Tilt Micro Switches				X
Brake Cylinders				X
Emergency Brake Release Valve				X
Pump/Motor Assembly				X
Pressure Relief Valve Assembly				X
Hydraulic Oil System Flush				X
Mini-Valves				X
Riser Cord Assembly				X
Slider Column				X
Elevation Shroud Gasket				X
Access Cover Gasket				X
Labels & Operation Decals				X

## SECTION III MAINTENANCE

### 3-6. Service

Required table maintenance should be performed by MIZUHO trained maintenance personnel using MIZUHO authorized replacement parts and service techniques.

Preventive Maintenance contracts are available through your local MIZUHO representative.

To obtain MIZUHO authorized service or preventive maintenance contracts, contact your nearest MIZUHO representative or write or call:



#### WARNING



- DO NOT disassemble the table. Unauthorized disassembling may cause electric shock or malfunction.
- Please contact your local distributor or manufacturer for maintenance or repair. The operating table should only be serviced or maintained by a factory trained personnel.

#### NOTE

Technical description of this product is due to the Maintenance Manual. The contents of Maintenance Manual are as follows.

SECTION I	HYDRAULIC SYSTEM
SECTION II	MECHANICAL TABLE ADJUSTMENTS
SECTION III	HYDRAULIC TROUBLESHOOTING
SECTION IV	ELECTRICAL SYSTEM
SECTION V	ELECTRICAL TROUBLESHOOTING

Maintenance Manual can be obtained only by the person who has had the service training of MIZUHO.

The environmental condition for transporting is as follows.

- Atmosphere temperature: -10 ~ 50°C
- Relative humidity: 10 ~ 85% (No Condensation)
- Atmospheric Pressure: 700 ~ 1060 hPa

The durability of this operating table is 10 years.

#### Manufactured by:

**MIZUHO Corporation**  
3-30-13 Hongo, Bunkyo-ku  
Tokyo 113-0033, Japan  
<http://www.mizuho.co.jp>

#### European authorized representative :

**EMERGO EUROPE**  
Westervoortsedijk 60  
6827 AT Arnhem,  
The Netherlands

### 3-7. Disposal Instructions

The end of the useful life for the MIZUHO Surgical Table is when this product can no longer be serviced to comply with MIZUHO standards as determined by a MIZUHO authorized service representative.

Contact your MIZUHO authorized representative for disposal instructions regarding the MIZUHO Surgical Table or parts in accordance with current environmental regulations for medical products.

Pay special attention to the following disposals:

- Hydraulic Fluid
- Lead Acid Batteries

## SECTION IV ELECTROMAGNETIC EMISSIONS

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, with the exception of transducers and cables sold by the Manufacturer of this device as replacement parts for internal components, may result in increased Emissions or decreased Immunity of the 6702X Surgical Table.

The 6702X Surgical Table should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, the 6702X Surgical Table should be observed to verify normal operation in the configuration in which it will be used.

<b>GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS</b>		
The 6702X Surgical Table is intended for use in the electromagnetic environment specified below. The customer or the user of the 6702X Surgical Table should assure that it is used in such an environment.		
<b>Emissions test</b>	<b>Compliance</b>	<b>Electromagnetic environment – guidance</b>
RF emissions CISPR 11	Group 1	The 6702X Surgical Table 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 A	The 6702X Surgical Table 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 A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

## SECTION IV ELECTROMAGNETIC EMISSIONS

### RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE 6702X SURGICAL TABLE

The 6702X Surgical Table is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the 6702X Surgical Table can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the 6702X Surgical Table as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2,5 GHz
W	$d = 1.2\sqrt{P}$	$d = 1.2\sqrt{P}$	$d = 2.3\sqrt{P}$
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 metres (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.




## SECTION IV ELECTROMAGNETIC EMISSIONS

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY			
The 6702X Surgical Table is intended for use in the electromagnetic environment specified below. The customer or the user of the 6702X Surgical Table 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 line(s) to line(s)  ±2 kV line(s) to earth	±1 kV line(s) to line(s)  ±2 kV line(s) to earth	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 6702X Surgical Table requires continued operation during power mains interruptions, it is recommended that the 6702X Surgical Table be powered from an uninterruptible 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
<b>NOTE:</b> $U_T$ is the a.c. mains voltage prior to application of the test level.			

## SECTION IV ELECTROMAGNETIC EMISSIONS

## GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC IMMUNITY

The 6702X Surgical Table is intended for use in the electromagnetic environment specified below. The customer or the user of the 6702X Surgical Table 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 150 kHz to 80 MHz	<p>Portable and mobile RF communications equipment should be used no closer to any part of the 6702X Surgical Table, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p><b>Recommended separation distance</b></p> $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P} \text{ 80 MHz to 800 MHz}$ $d = 2.3\sqrt{P} \text{ 800 MHz to 2.5 GHz}$ <p>where <math>P</math> is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and <math>d</math> is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, <sup>a</sup>should be less than the compliance level in each frequency range. <sup>b</sup></p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m 80 MHz to 2.5 GHz	

**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 people.

<sup>a</sup> 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 6702X Surgical Table is used exceeds the applicable RF compliance level above, the 6702X Surgical Table should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the 6702X Surgical Table.

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



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Sales Agent



EMERGO EUROPE  
Westervoortsedijk 60  
6827 AT Arnhem, The Netherlands



**MIZUHO Corporation**

3-30-13 Hongo, Bunkyo-ku  
Tokyo 113-0033, Japan  
<https://www.mizuho.co.jp>