

MANUAL

Ver 1.3

APR.2020

CE RX-2000



■ **Table of Contents**

Preface -----	1
Indications used for the safety -----	2
Safety precautions -----	3
Product features -----	5
Product description -----	6
Cautions before use -----	10
How to use -----	11
Corrective action against product failure and malfunction -----	19
How to replace components -----	21
Warranty -----	25
Storage and management method after use -----	25
Installation description -----	26
Box contents -----	42
Labelling -----	43
Map -----	44

■ **Preface**

Thank you very much for your purchase of our ophthalmic unit and chair (model name: RX-2000).

Please read safety precautions carefully before you use the product.

Precautions mentioned here are very important contents for the safety and make sure to observe the instructions.

Usage Environment

- ✓ Use the product at room temperature (-10°C~40°C), humidity (30~85%) and air pressure (70~106Kpa), and avoid direct sunlight.
- ✓ Install the product to be horizontal and stable for smooth operation.
- ✓ Always check if power cord has been connected properly before use.
- ✓ Please use at AC220 ~ 230V, 50/60Hz.
- ✓ When you do not use this instrument, please turn off the power.

■ Indications used for the safety

This instruction manual specifies important contents to prevent hazards that may jeopardize the user or other persons or the damage of the property in advance and to use the product safely and properly.

Please be well aware of following signs or symbols and observe the instructions after reading "Safety precautions" and main contents.

Symbols and Meanings

	Warning	If the product is used without observing the information given under this symbol, injury or death may result.
	Caution	If the product is used without observing the information under this symbol, personal injury or property damage may result.

Signs and Meanings

	It indicates a warning. Further details are indicated as sentence or picture near sign.
	It indicates a prohibition. Further details are indicated as sentence or picture near sign.
	It indicates an order. Further details are indicated as sentence or picture near sign.

■ Safety precautions

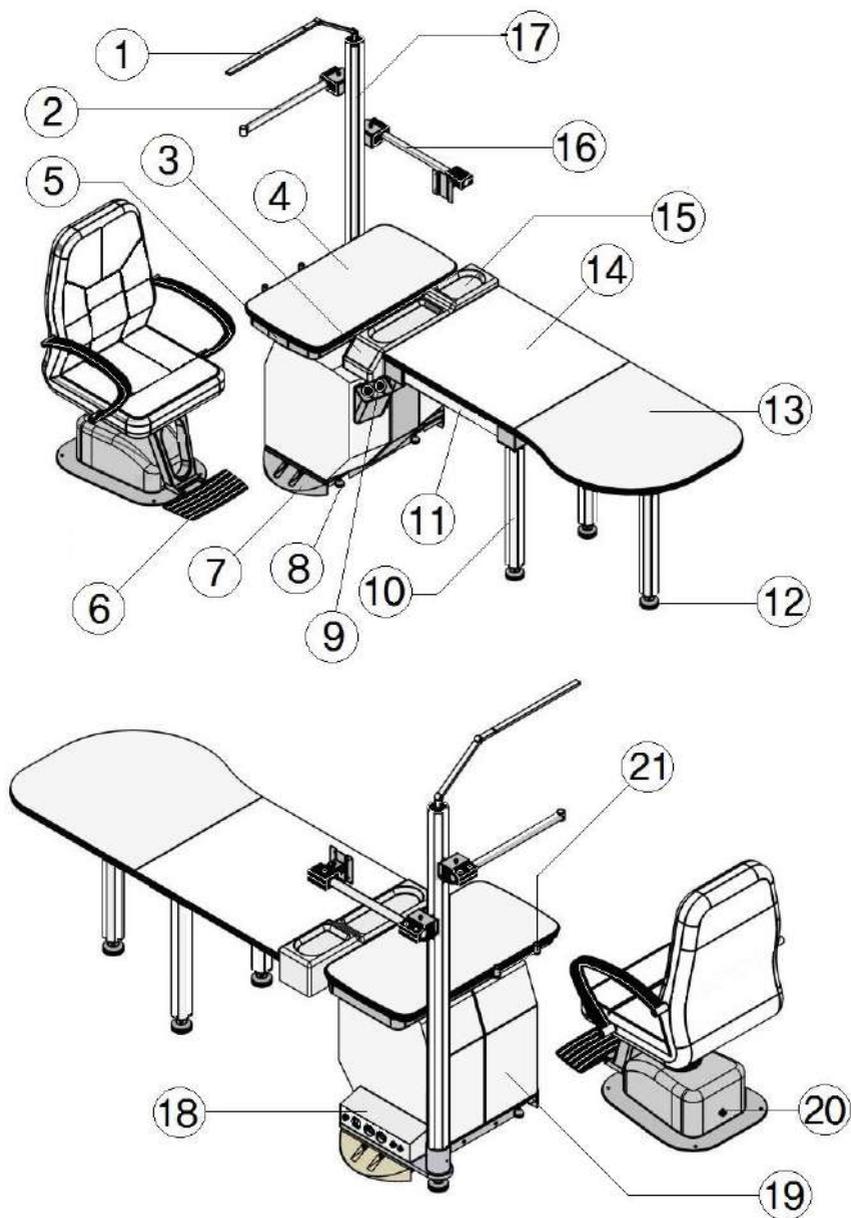
Signs	Preventive Items
	Do not disassemble the instrument for repair. You might get electric shock. Please contact the dealer you purchased for repair.
	Do not put the instrument at the place where water or liquid is sprayed. Fire or electric shock may occur.
	Connect it to single-phase AC power plug. If it is connected to other place, fire or electric shock may occur.
	Replace the fuse after unplugging power cord. If not, electric shock may occur. Use rated fuse only.
	When smoke is generated from the instrument or other problem occurs, unplug the power cord immediately. If not, there may be a risk of fire. Please contact the dealer you purchased for repair.
	When you put the instrument at the table, do not make it slanted more than 5° or put it unstably. You might get injured due to the instrument.

Signs	Preventive Items
	<p>Do not put heavy object on the table. You might get injured due to the instrument.</p>
	<p>Do not insert the finger into the moving instrument while it is being operated. You might get injured due to the instrument.</p>
	<p>Do not open the cover. You might get electric shock. Please contact the dealer you purchased for repair.</p>
	<p>Check if voltage of main power is identical to the one specified in instruction manual of the instrument.</p>
	<p>When you are not sure of voltage that you are going to use, contact the company that is in charge of electric equipment or its maintenance to check voltage of main power before use.</p>
	<p>In order to protect the instrument and to secure electrical safety, multi-outlet or connection for other purposes should not be used for the connection of the instrument.</p>

■ Product features

- ④ You can select Right-type or Left-type according to the nature of doctor's office.
- ④ It is very convenient to use slide table by the adoption of locking and releasing device with one touch system.
- ④ Since power supply device of slit lamp has free voltage function, voltage control is easy and all kinds of slit lamps are available to install.
- ④ Since it has built-in charger, 4 kinds of battery handle charging of Retino or Micro Scope is available.
(Charging available models: Welch Allyn, Neitz, Keeler, Heine)
- ④ Height of chair and slide table can be adjusted by foot switch apart from console box.
- ④ Chair can be lower down to the lowest position with one-touch using full down function of console box.
- ④ Console box enables to turn ON/OFF the indoor lamp, and treatment convenience has been optimized through the automatic function that is able to be connected with slide table.

■ Product description



Ⓢ Name and function of each part

- ① Stand lamp: Lamp ON/OFF can be controlled using control panel.
- ② Chart arm: It can mount chart projector.
- ③ Control panel: It can move treatment table and chair UP/DOWN, turn the stand lamp ON/OFF and control indoor lamp in AUTO/MANUAL mode.
- ④ Slide table: It is a treatment table that is able to attach slit lamp.
There is a safety switch at the lower part of the table.
- ⑤ Table unlock lever: It can release locking of treatment table.
- ⑥ Foot-rest: It is a foot-rest. (Option)
- ⑦ Base wing: It fixes horizontality of the main body and prevents wobbling.
- ⑧ Level foot of main body: It controls horizontality.
- ⑨ Charger: It charges battery handle for scope.
- ⑩ Leg: There is a level foot that is able to control the height.
- ⑪ Drawer: It can store accessories or can have built-in trial lens foam (option).
- ⑫ Table level foot: It can control horizontality of side table.
- ⑬ Side table: It can be installed in doctor's table additionally.
- ⑭ Doctor's table: It is a table with the drawer.
- ⑮ Tray: It can store accessories.
- ⑯ Monitor arm: Monitor can be mounted on it.
- ⑰ Stand pole: Chart arm, monitor arm and stand lamp can be mounted on it.
- ⑱ Main body connection part: There are AC 220V power input socket with built-in room lamp and fuse, AC220V surface mounted receptacle (2 openings), chair, and foot switch connector.
At left side, there is room lamp fuses (2 ea.).

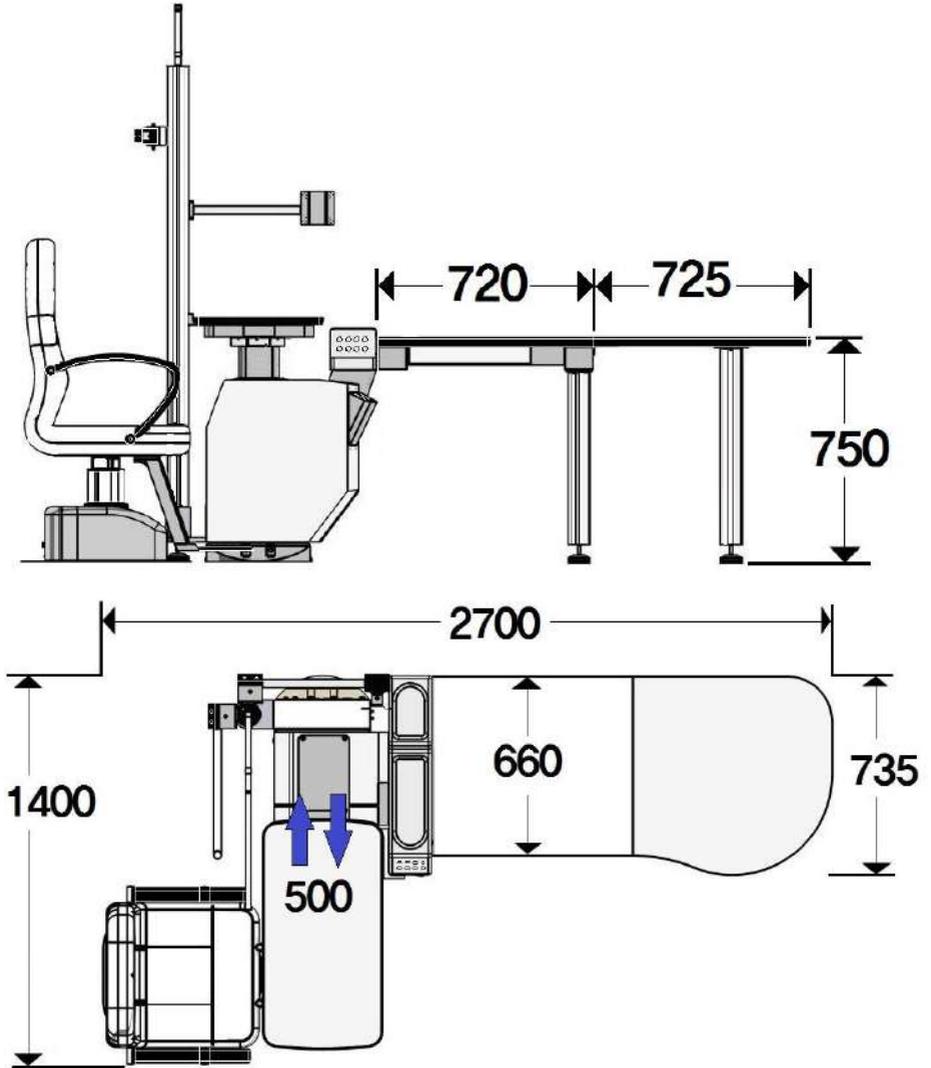
- ⑲ Main body cover
- ⑳ Chair connector: It connects chair control cable.
- ㉑ Slit lamp holder: tighten when installation(see the installation guide)

Performance and electrical features

- ✓ Size of treatment table: 830x430mm
- ✓ Sliding distance of treatment table: 500mm
- ✓ Height of treatment table: Min.755~Max.920mm
- ✓ Max. allowable load of treatment table: 30kg
- ✓ Safety device for collision protection: When the lower part of treatment table is touched, descending of the table and ascending of the chair stop.
- ✓ Slit lamp power: DC5.5~14.5V (Free Voltage),
It is set as DC12V at the factory.
- ✓ LED power for Fixation: DC3.5~7V
- ✓ Charger spec.: DC3.5~3.75V
- ✓ DC output: DC7V, 1.5A
- ✓ Size of doctor's table: 720x660mm
- ✓ Size of side table: 725x735mm
- ✓ Unit weight: 166kg
- ✓ Chair height: Min.480 ~ Max. 790mm
- ✓ Max. allowable load of chair: 130kg
- ✓ Chair weight: 49kg
- ✓ Rated voltage & power consumption: AC220V 50/60Hz, 350VA

- ✓ Classification by type and degree of protection about electric shock: Class 1, Type B Applied Part

Ⓢ **Dimension (unit: mm)**



Standard accessories and Spare parts

Please check following accessories. () indicates the quantity.

- ✓ User's Guide (1EA)
- ✓ 10W LED Lamp, attached at stand. (1EA)
- ✓ Fuse 5A (2EA) is included in power input socket of main body.
- ✓ Chair control cable 1,800mm, Grey (1EA)

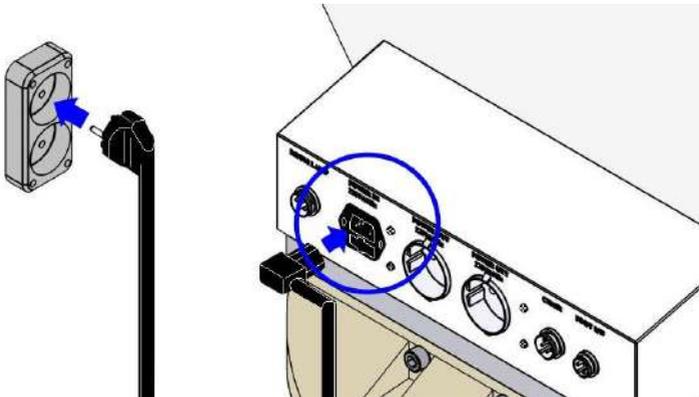
Cautions before use

- ✓ When you find any problem during the operation of the instrument, stop using the instrument immediately and isolate the patient from the instrument, and turn off the power and contact the dealer you purchased or our company.
- ✓ You should use specified power for safe use of the instrument. When the voltage is too high or too low, system may not work properly.
- ✓ You should use genuine fuse that matches with the voltage specified in instruction manual.
- ✓ You should not put any heavy object on slide table that exceeds available weight.
- ✓ The instrument should not be disassembled by non-professionals. This may cause the failure of the instrument or cause the problem in power system.
- ✓ You should not alter the instrument or change its components for other purposes.
- ✓ The person who has no knowledge about the use of the instrument or children should not operate or access to the instrument.

■ How to use

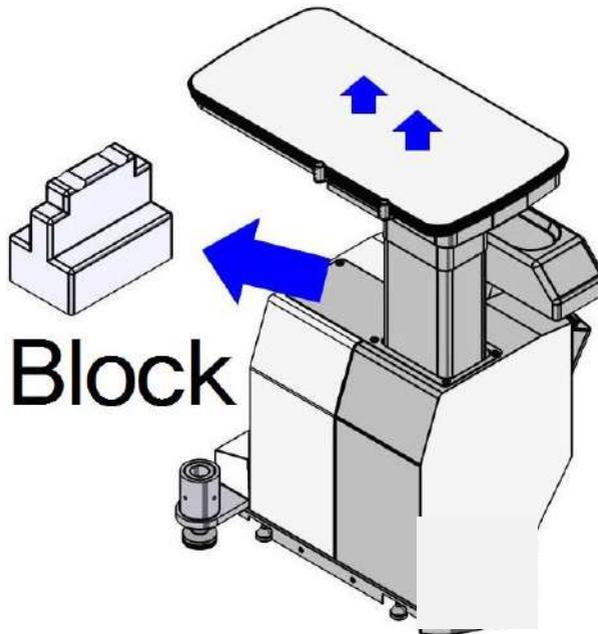
Ⓢ Preparations before use

1. Check if voltage of main power is identical to the one specified in instruction manual of the instrument. When you are not sure of voltage that you are going to use, contact the company that is in charge of electric equipment or its maintenance to check voltage of main power before use.
2. In order to protect the instrument and to secure electrical safety, multi-outlet or connection for other purposes should not be used for the connection of the instrument.
3. After putting the plug into the outlet, press power switch at control panel for about 3 seconds. (POWER ON)

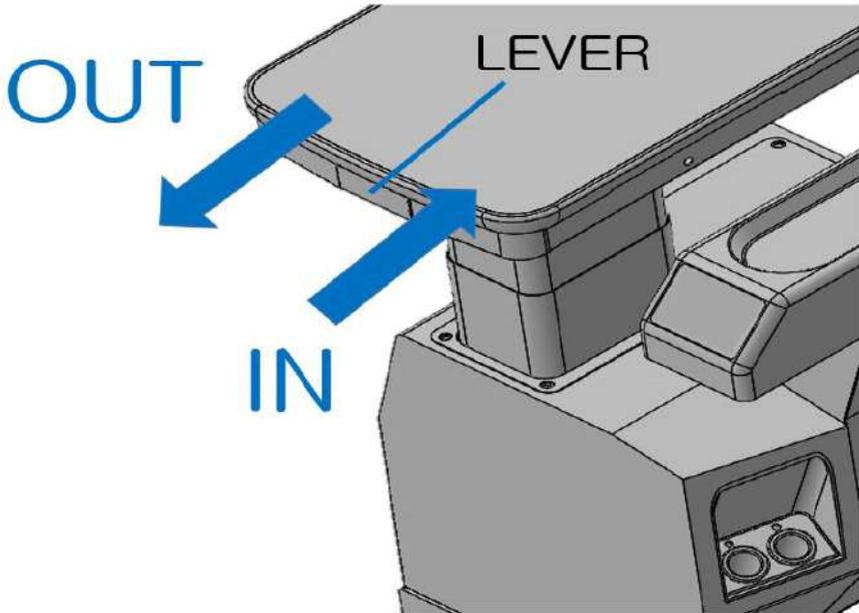


4. Press chair ascending switch at control panel.

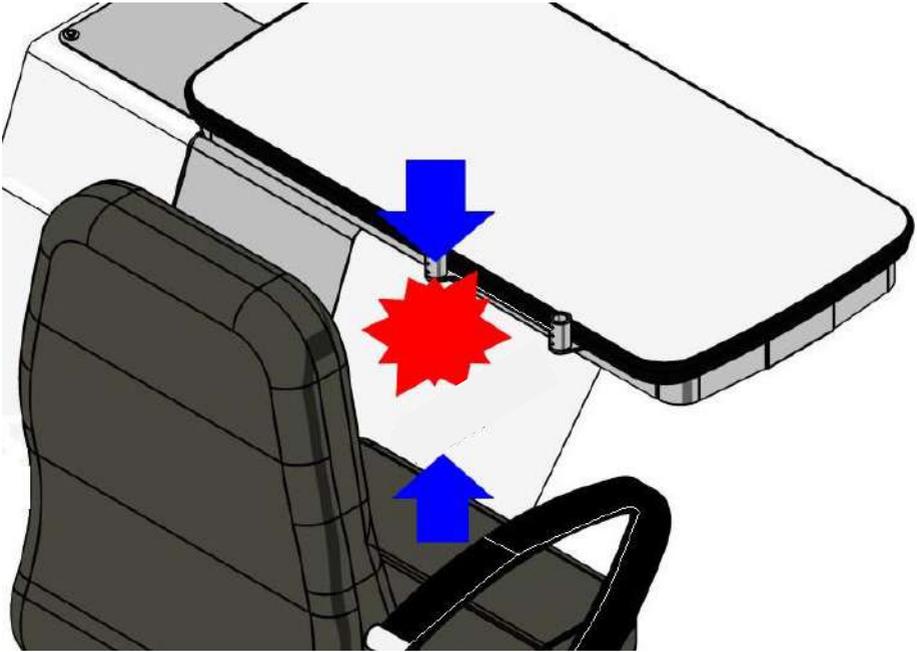
- ✓ Remove styrofoam block inserted into slide table.



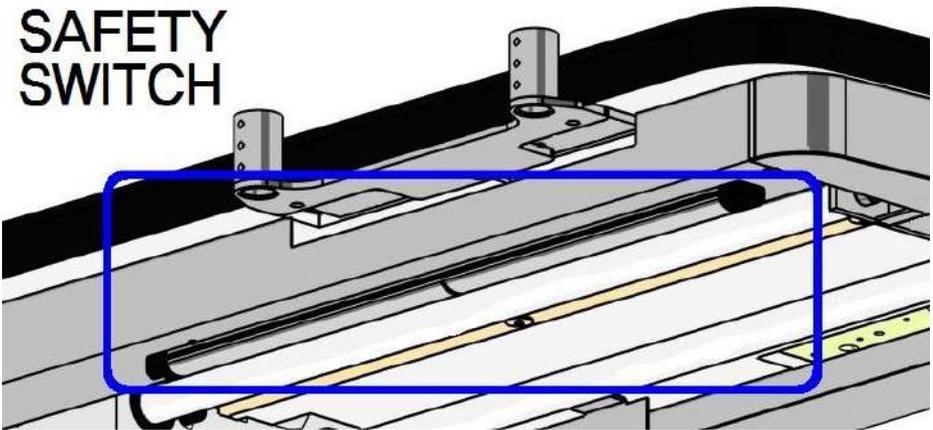
② How to operate the instrument



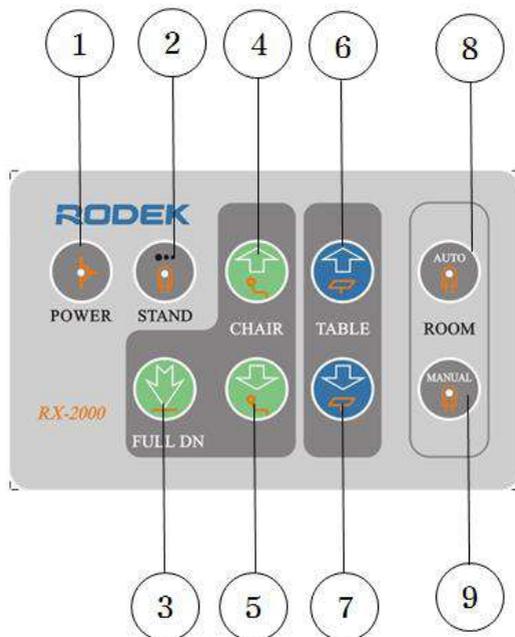
- ✓ You can release locking of treatment table using the switch inside of lower part of table moving lever.
- ✓ When you pull the lever, locking of treatment table is released.
- ✓ The slit lamp is turned on and table is locked when table slides completely to OUT direction.
- ✓ When the table slides to IN direction, then the slit lamp is turned off and the table is locked.



- ✓ If patient's knee touches the lower part of slide table, descending of the table and ascending of the chair stop.



✓ Functional description of control panel



- ① Main Power ON/OFF (Press for about 3 seconds.)
- ② Stand Light ON/OFF
- ③ Chari Full Down > Move to the lowest position with one-touch
- ④ Chair UP
- ⑤ Chair DOWN
- ⑥ Slide Table UP
- ⑦ Slide Table DOWN
- ⑧ Indoor lamp ON/OFF > Linked with slide table (AUTO)
- ⑨ Indoor lamp ON/OFF > Manual

- ✓ Foot Switch (Chair UP/DOWN)



- ✓ It brightens up the mood of treatment room by ergonomic and simple design, and it provides convenience since simultaneous height adjustment of chair and slide table is available.



- ✓ You can use all functions in a convenient position to operate and it has storage space in upper area.



- ✓ Through the use of LED lamp, there is no dazzle with minimized power consumption and semi-perpetual durability.



- ✓ Charging of Retinoscope and Microscope are available and it doesn't need separate charger (Welch Allyn, Neitz, Keeler, Heine).



- ✓ Power consumption has been minimized due to optimized design and all kinds of slit lamps can be installed since free voltage function is included in slit lamp bulb power supply.



- ✓ Treatment table can be used in narrow space independently and conveniently.

■ Corrective action against product failure and malfunction

Ⓢ Troubleshooting

	<p>Warning</p>	<p>Do not disassemble the instrument for repair. You might get electric shock. Please contact the dealer you purchased for repair.</p>
	<p>Caution</p>	<p>Do not open the cover. You might get electric shock. Please contact the dealer you purchased for repair.</p>

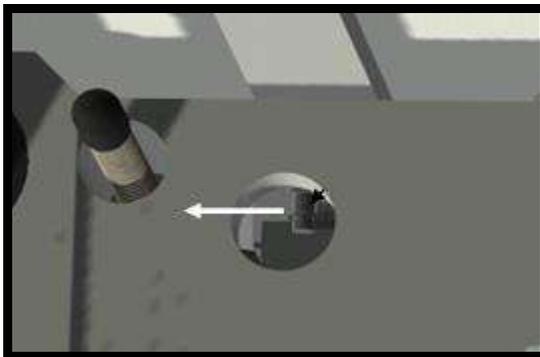
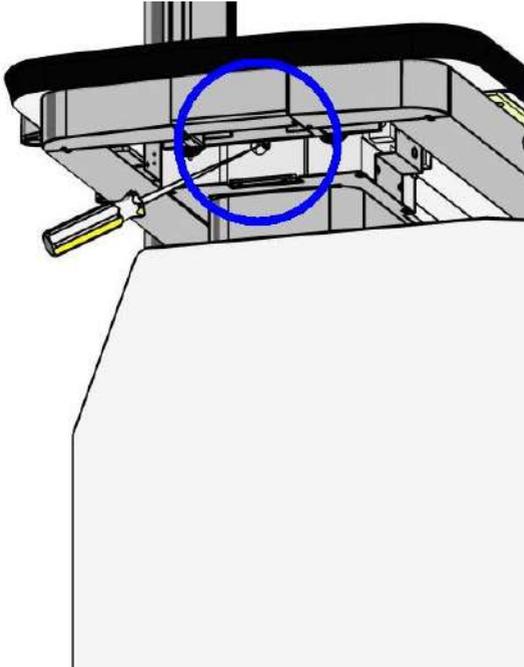
When problem occurs, please check following check list. Otherwise contact the dealer you purchased.

✓ **Check List**

Content	Cause	Action	Reference
Chair or table doesn't work	Power cord connection check	Turn off the power and connect the power cord.	
	Power switch check	Check if the main switch is turned on.	
	Fuse check	Refer to "Fuse replacement"	
	Safety switch operation	Check safety switch in lower part of slide table and check if there are foreign substances on it.	

Ⓢ **How to release manual locking of treatment table**

- ✓ To release locking of treatment table, push the lever for lock through the hole with the driver or thin stick into the direction of arrow as shown below.



■ How to replace components

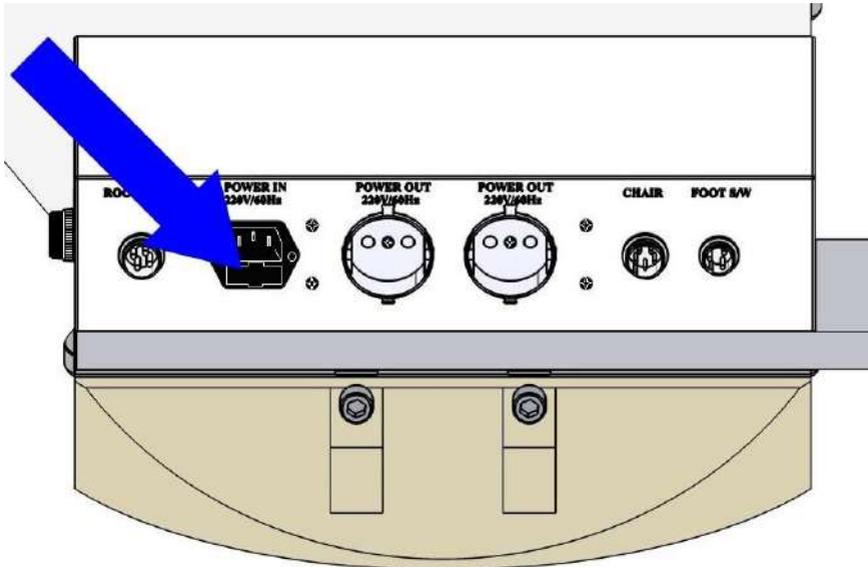
Ⓢ Daily Management

- ✓ Please turn off the power when not in use.
- ✓ Do not put the instrument at dusty place.

Ⓢ Fuse Replacement

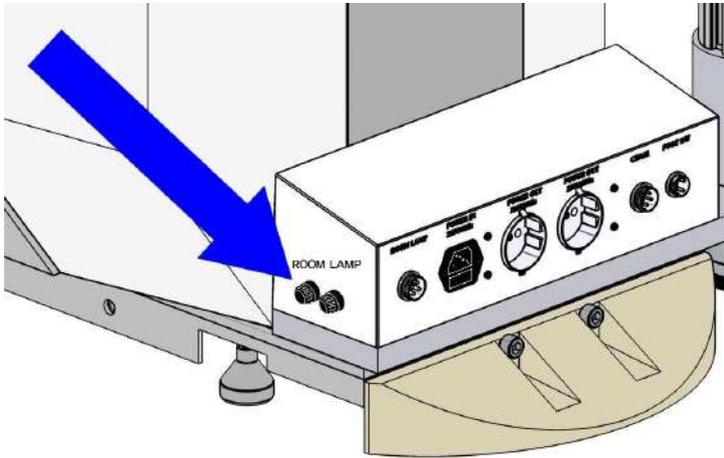
	Warning	Replace the fuse after unplugging power cord. If not, electric shock may occur. Use rated fuse only.
-----------------------------------------------------------------------------------	----------------	------------------------------------------------------------------------------------------------------------

- ✓ Replacement of fuse for power input socket



- ✓ Open the fuse holder in lower part of power input socket using the screwdriver or sharp tool.
- ✓ Replace it with new fuse (250V 5A 2EA)

- ✓ Replacement of fuse for room lamp controller
- ✓ Replace the fuse turning it counterclockwise



Ⓜ Cleaning of external cover

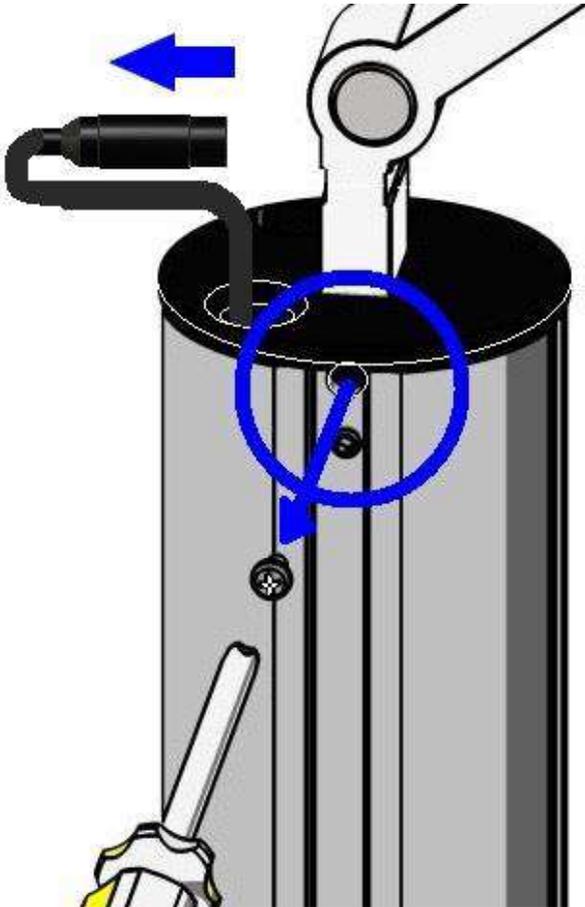
	Caution	Do not open the cover. You might get electric shock. Please contact the dealer you purchased for repair.
	Caution	Do not install at the place where there is chemicals storage site or gas generation site. Install at the place where there is no water. Install at the place not affected by atmospheric pressure, temperature, humidity, sunlight, salt, ion component, etc. Unplug the power cord when not in use.

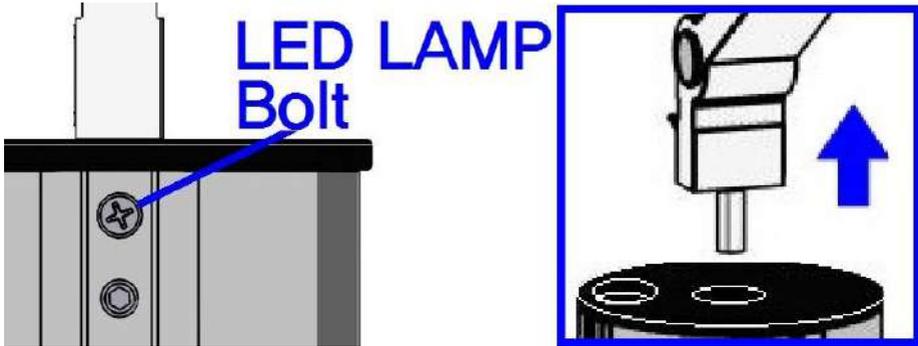
When you clean external cover or operation panel, wipe it with soft cotton cloth and use kitchen cleaner for set stains on surface.

Ⓜ Replacement of lamp

	Warning	When you replace the lamp, turn off the power. You might get electric shock. Do not replace the lamp with turning the power on. You might get a burn.
-----------------------------------------------------------------------------------	----------------	-------------------------------------------------------------------------------------------------------------------------------------------------------

Make sure if power switch is turned off.





- ✓ Pull out power adaptor cable after turning off the lamp switch.
- ✓ Unscrew the bolt using screwdriver (+).
- ✓ Replace it with new lamp separating LED lamp.
(Contact the dealer you purchased for lamp purchase.)

■ Warranty

Free repair period is one year from the date of purchase.

Failure due to the negligence of the user is not included in warranty coverage.

■ Storage and management method after use

- ✓ When treatment is completed, lower down the chair to the lowest position.
- ✓ Move the treatment table to non-treatment position after use.
- ✓ Store it at the place where there is no water.
- ✓ Store it at room temperature.
When not in use for a long time, store it covering with clean cloth.
- ✓ Turn off the main power completely when not in use.

Do not install or store it at the place where there is a lot of humidity or under the direct sunlight.

Lowest and highest temperature for installation and storage
(Lowest: -10°C ~ Highest: less than 40°C)

- ✓ Recommended humidity for installation and storage (30% ~ 85%)
- ✓ When you clean the instrument, wipe it with soft cotton cloth and use kitchen cleaner for set stains on surface.
- ✓ Check horizontality of the slide table when you move the instrument.

■ Installation Description

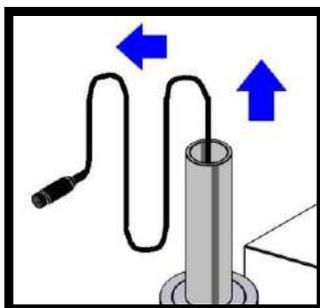
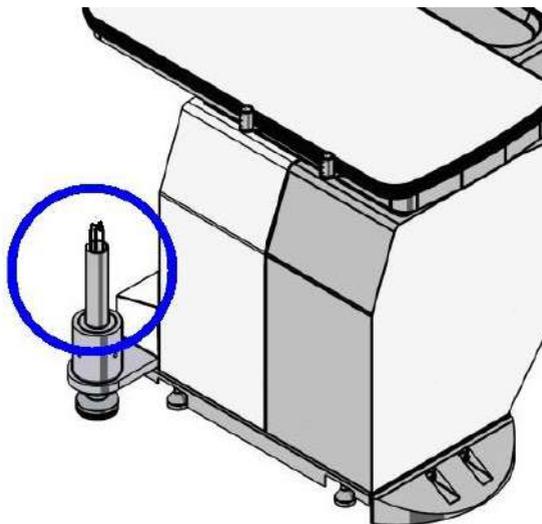
Ⓢ **Bolts required for assembly are tightened in the product.**

Ⓢ **Following tools are required.**

- ✓ (+) Screwdriver
- ✓ Hexagon wrench
- ✓ Sharp tool like awl

② Installation of stand

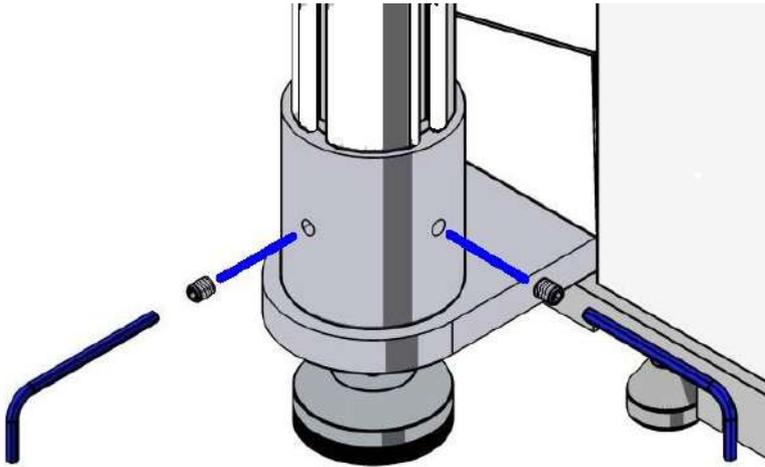
1. Pull out lamp cable inserted into connection pipe as shown below.



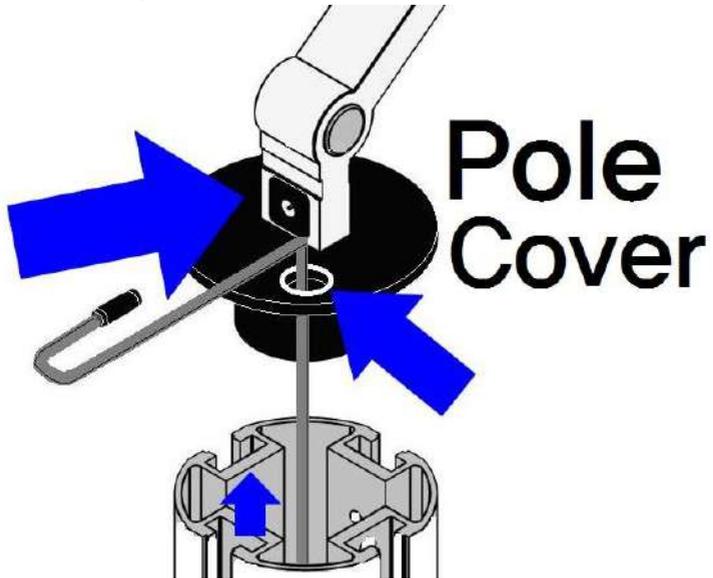
2. Pull out lamp cable from lower part to upper part penetrating the hole of stand pole (assembled by connection pipe).



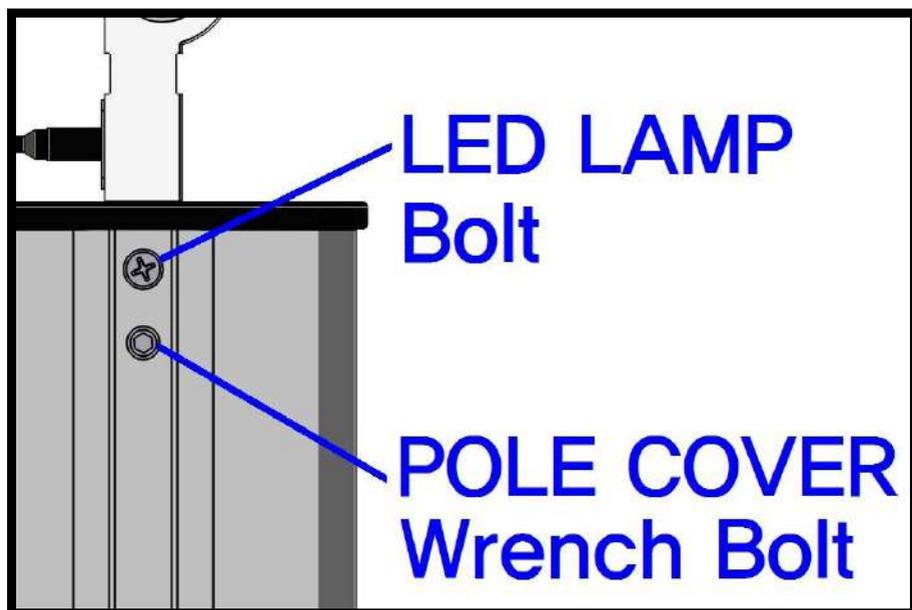
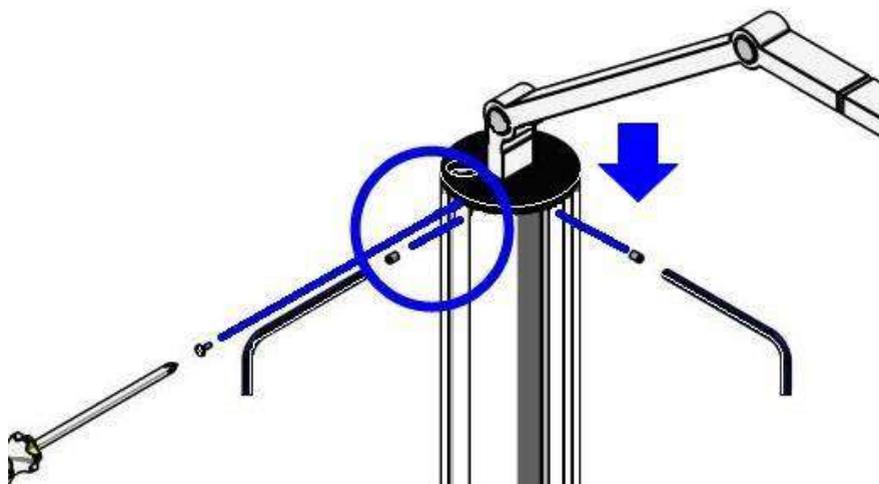
3. Insert stand pole into the base and fix it.



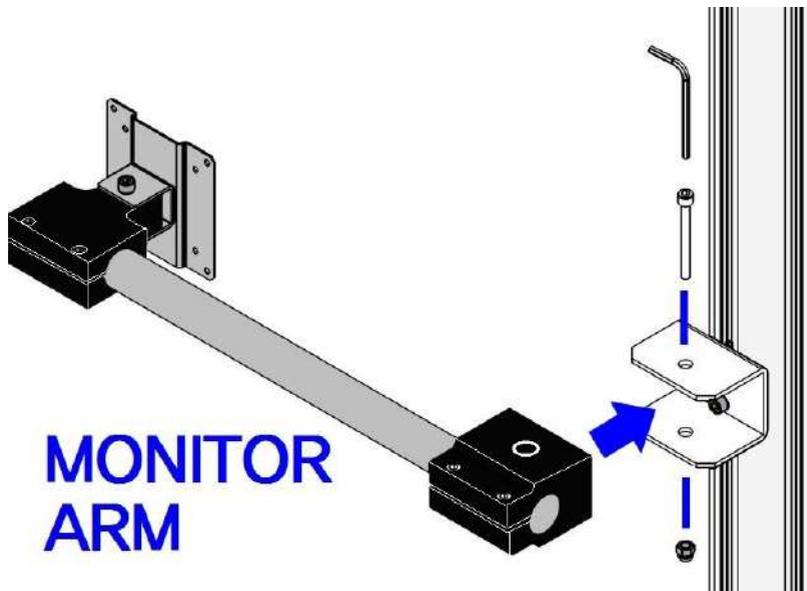
4. Insert the cable into LED lamp inserting stand lamp cable into the hole of pole cover.



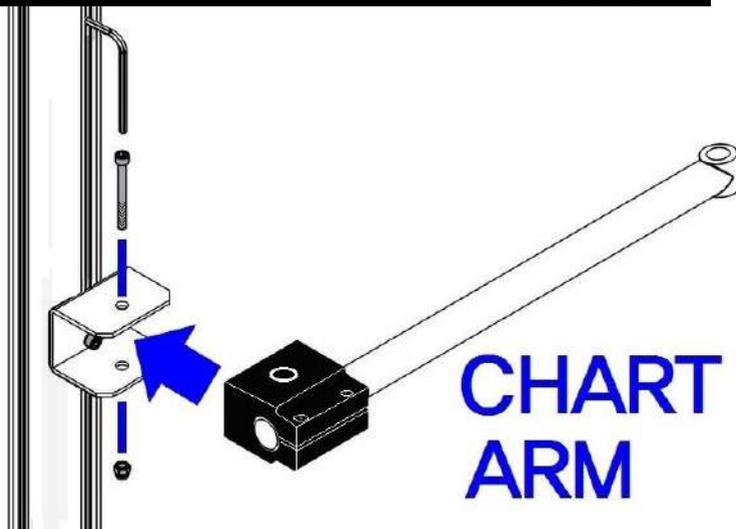
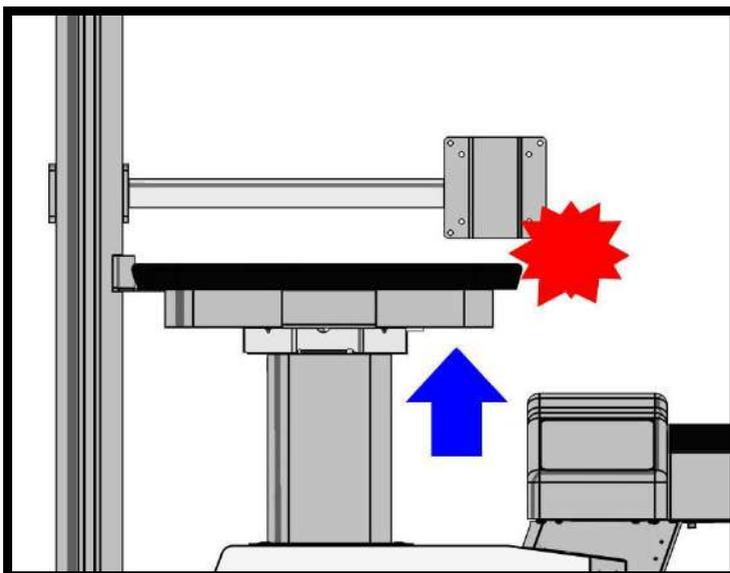
5. Insert pole cover into the pole (upper part) and fix it.



6. Install monitor arm and chart arm; use a wrench.

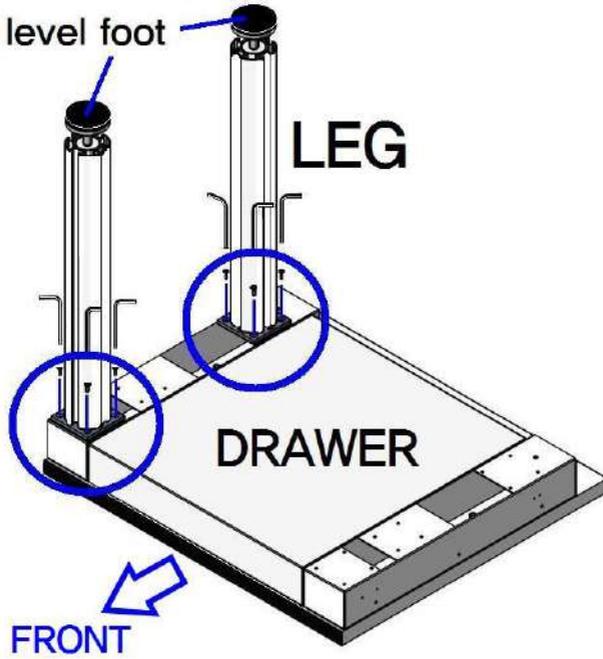


- ✓ When you install monitor arm, be careful not to interfere with treatment table.



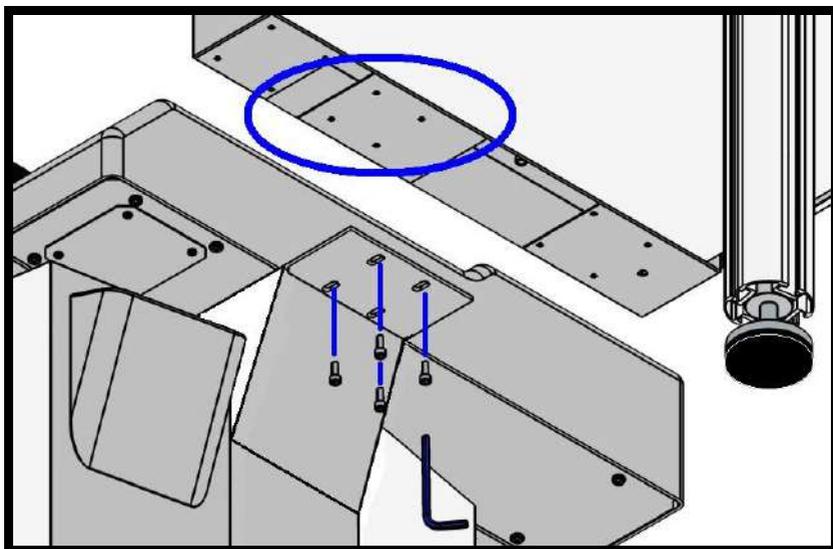
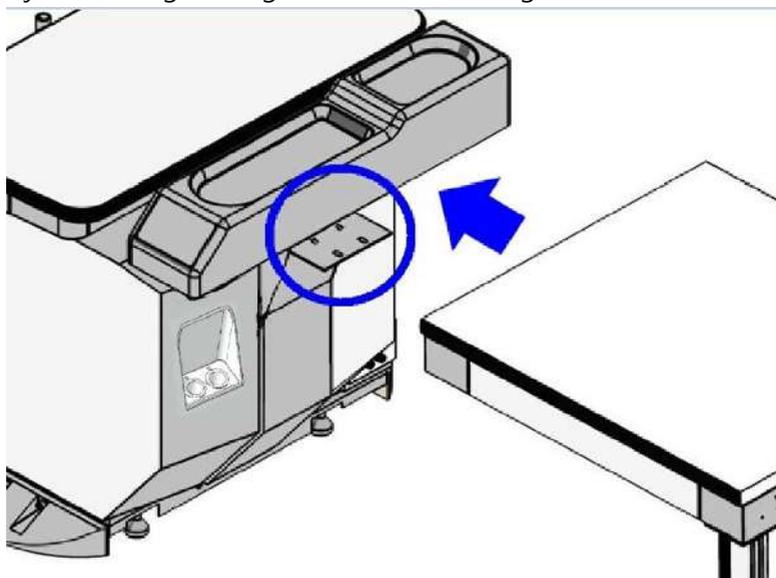
Ⓢ Doctor's table assembly

1. Put the legs on the doctor's table. Use a wrench.



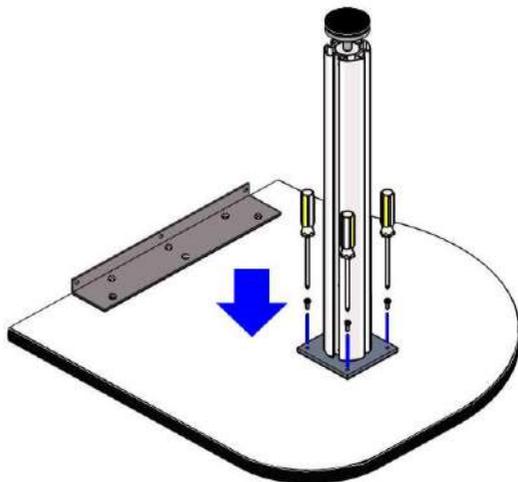
2. Mount doctor's table to main body.

- ✓ Adjust the height using level foot on the leg.

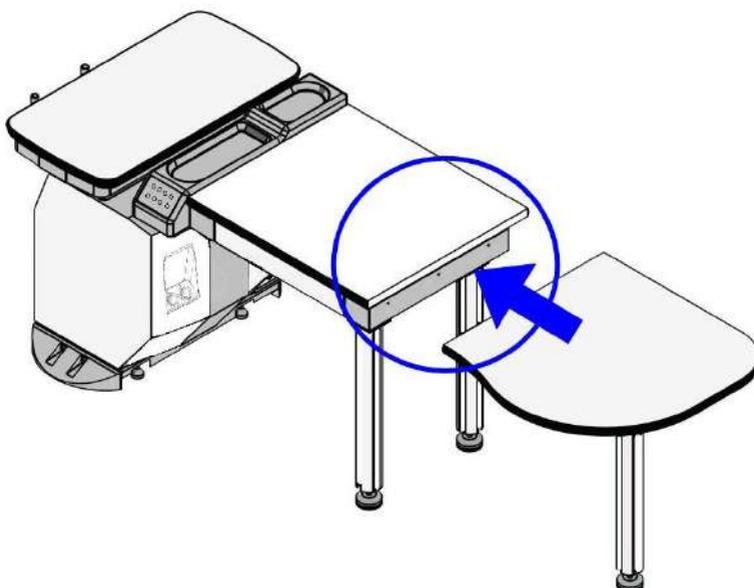


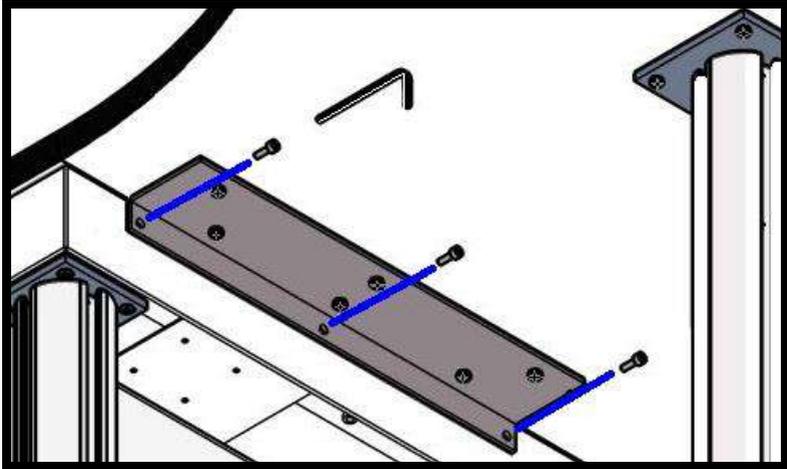
Ⓢ Side table assembly

1. Put the legs on the side table. Use screwdriver 9+).



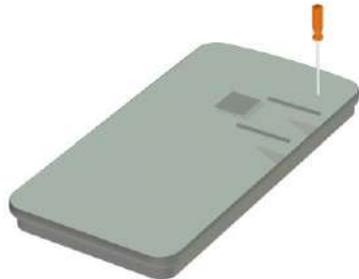
2. Attach side table to the doctor's table: Use a wrench.





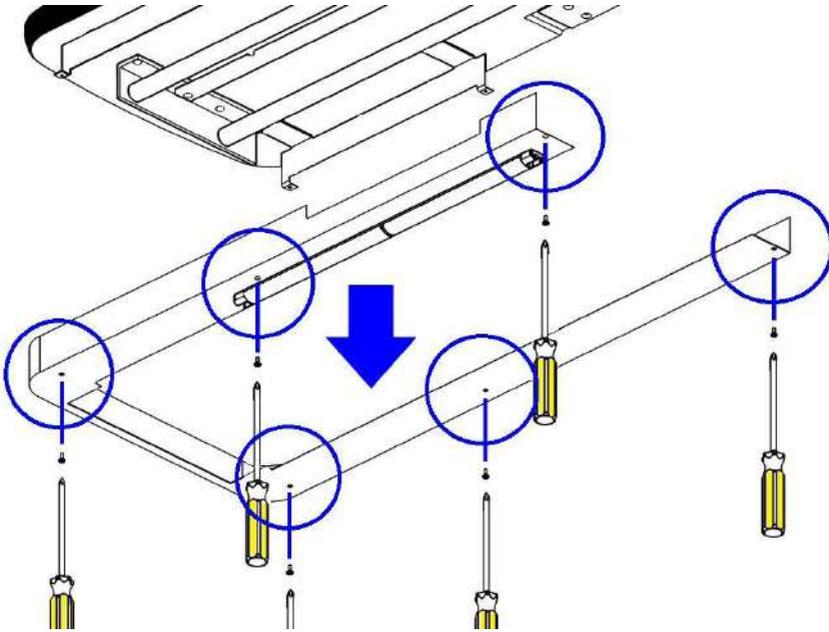
Ⓢ Installation of main body of slit lamp

1. Match the pattern line to the table for installation of slit lamp.
 2. Position the component to proper location and confirm the location. Then make a hole accurately on the part that you desire to assemble with a drill.
- ✓ Be careful not to make hole on the table.

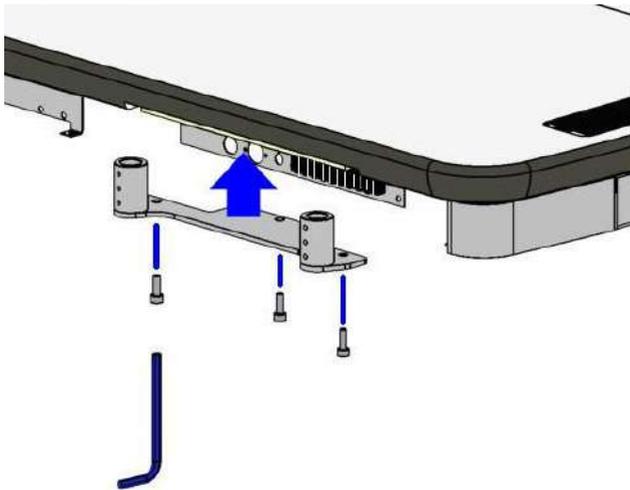


Ⓢ Installation of jaw support

1. Remove the cover to attach jaw support; Use screwdriver (+).

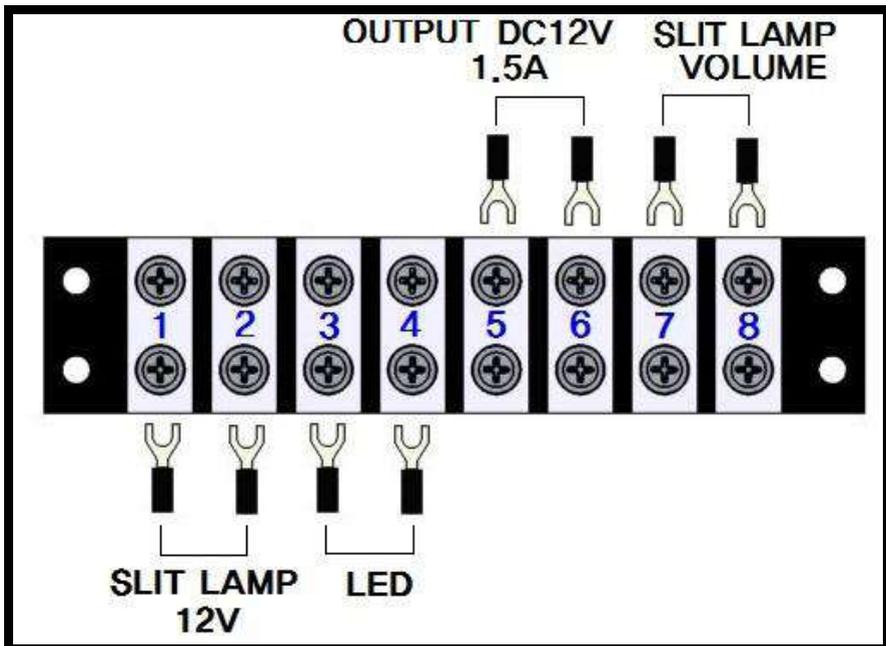
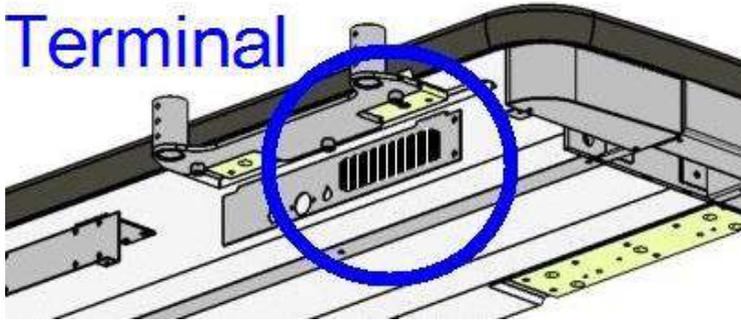


2. Attach jaw support.



3. Check the number of terminal and connect bulb line of slit lamp and wire for LED lamp.

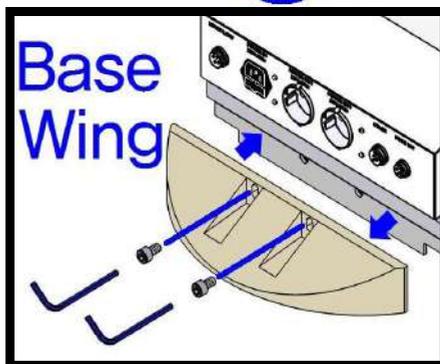
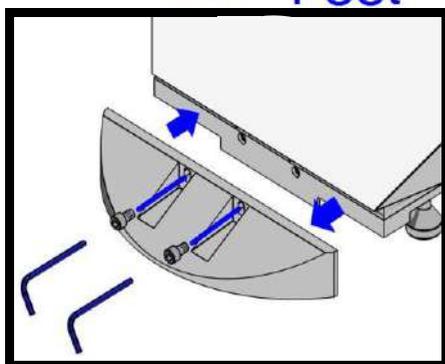
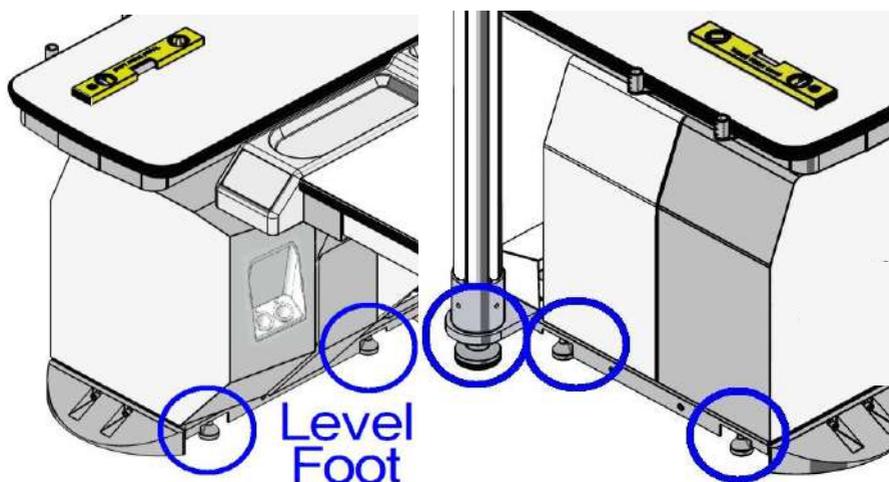
- ✓ Connect the terminal as below.
- ✓ Arrange the cables after connecting terminal.



- ✓ Unless the wires for slit lamp are tied up neatly, it may cause the problem due to the interference while table is sliding.

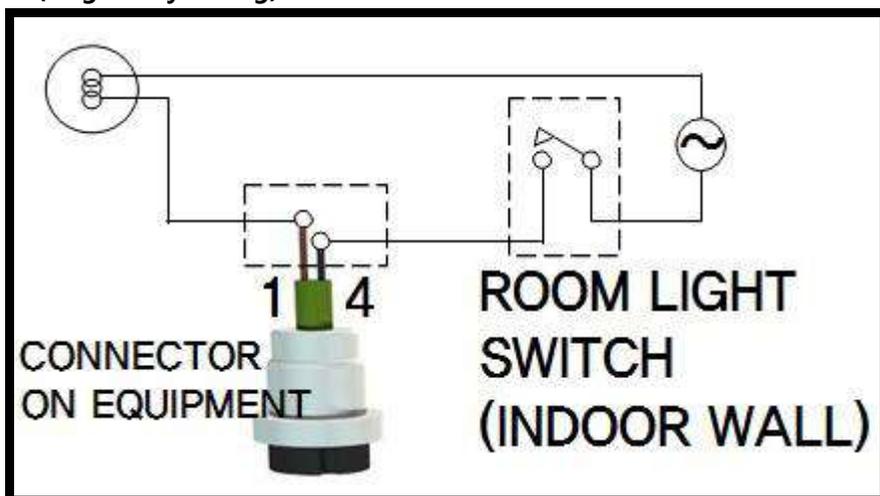
④ Horizontal adjustment

- ✓ Adjust horizontality of the table using level foot attached on main body and lower part of stand, and re-attach base wing.
- ✓ If you do not have leveler, unlock the treatment table and adjust the horizontality using the method that the table doesn't move by itself.
- ✓ If the horizontality is not adjusted correctly, the table may not work smoothly.

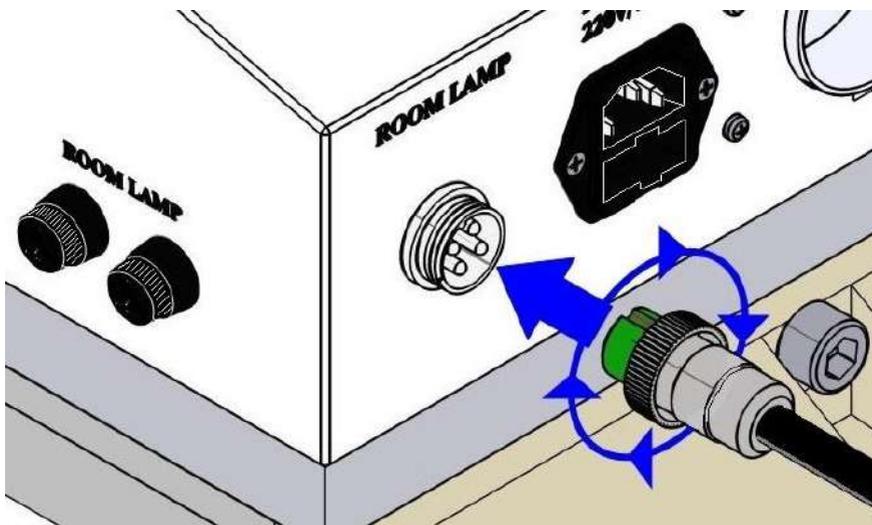


④ Connection with indoor lamp

1. Connect switch line of indoor lamp with the connector (single-way wiring)

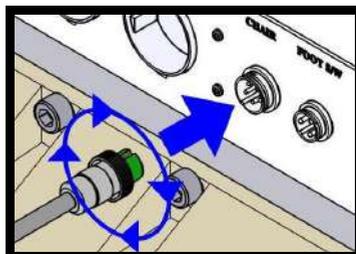
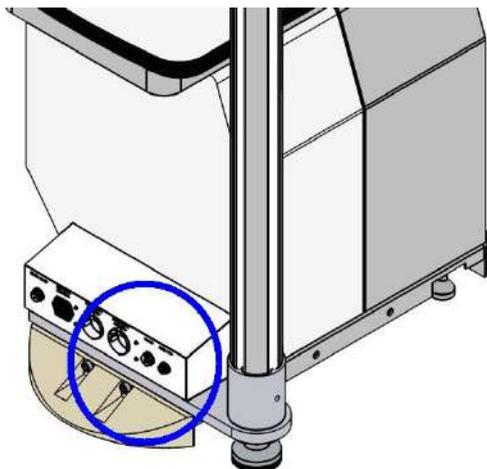
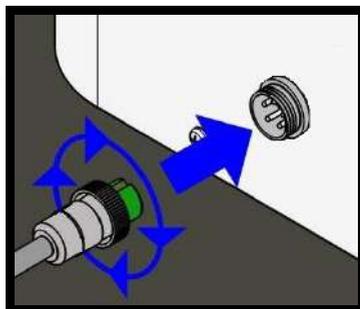
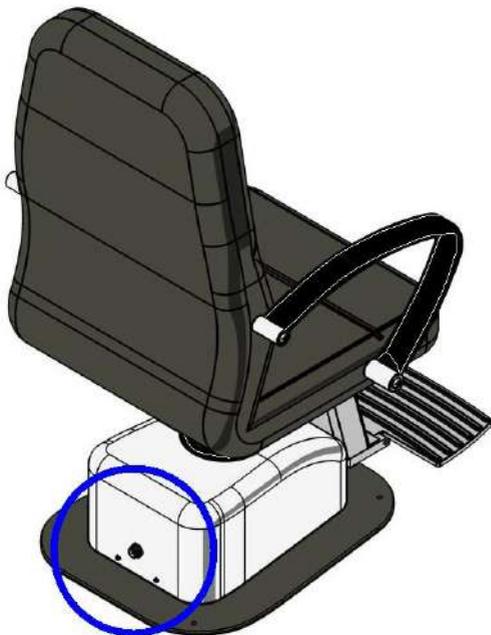


2. Connect the connector of the instrument to the main body.



④ Chair cable connection

- ✓ Connect chair control cable to chair connector of the main body.

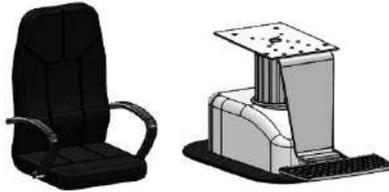


■ Box contents

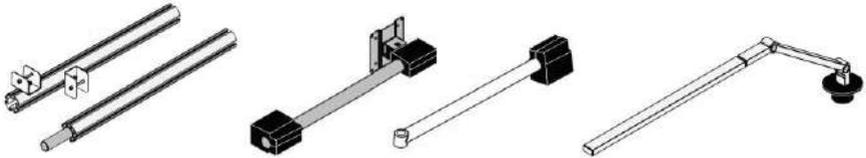
① Main Body



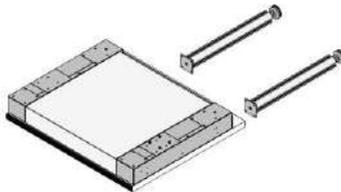
② Chair



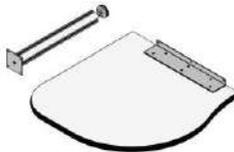
③ Stand Pole, Chart Arm, Monitor Arm, LED Lamp, Accessories and parts



④ Doctor's Table, Legs, Accessories and parts



⑤ Side Table, Legs Accessories and parts



■ Labelling

- ✓ Product Name: Refraction Unit & Chair
- ✓ Item Name: Ophthalmic Unit & Chair
- ✓ Model Name: RX-2000
- ✓ License No.: No. 05-351
- ✓ Name of Manufacturer: Rodek Co., Ltd.
- ✓ Address: 61, Jikji-daero 456 beon-gil, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, Republic of KOREA
- ✓ Phone: 043)274-2520 Fax: 043)275-2520
- ✓ Website: <http://www.Rodek.co.kr>
- ✓ E-mail: Rodek@Rodek.co.kr
- ✓ Manufacturing No. & Date: Indicated on the label
- ✓ Weight and packing unit: 215kg
- ✓ Electrical Rating & Power Consumption
 - Rated Voltage: AC220V
 - Rated Frequency: 50/60Hz
 - Power Consumption: 350VA
- ✓ Classification by type and degree of protection about electric shock
 - Class 1, Type B Applied Part
- ✓ This product is 「Medical Equipment」.
- ✓ Manual version: 2020.04 (VER.1.3)

■ Map

