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JIANGSU SUXIN MEDICAL EQUIPMENT CO., LTD

Operating Light



Operating instructions



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一、 General

Thank you for using our SX series surgical shadowless lamp!

To use SX series surgical shadowless lamp correctly and safely, please read this operation manual carefully before installation and use. SX series surgical shadowless lamp is novel in style and reasonable in structure, which is widely used for lighting needs of various surgical occasions. Its streamlined and totally closed structure makes it fully meet the requirements of high standard disinfection process in operating room.

This product shall not be used in flammable, explosive, anesthetic and other corrosive gases. Do not prevent liquid entering, please disinfect according to the requirements of this manual.

SX series operating shadowless lamp application requirements:

Standard installation height: 3M

Equipment classification: Class II equipment with PA connector, no failure function.

The device is transported and stored in the following environment:

Ambient temperature: 10°C~30°C

Relative air moisture: 10%~80%

Normal Working condition:

Voltage: ~220V±10%

Power: 50Hz±1%

二、 Range of Application

The product can eliminate the shadow in the operation and provide the operation lighting for medical units.

三、 Construction and working principle

The surgical shadowless lamp is composed of three parts: swivel body, balancer and lamp head.

The working principle of the swivel body is that the swivel arm rotates 360 degrees around the rotating spindle. According to the position of the operating table in different operating rooms, the shadowless lamp can be



turned to the ideal position required by doctors.

The balancer is to balance the force of the shadowless lamp head in different positions by the spring force generated by the compression spring.

The installation height of shadowless lamp ranges from 2.9m to 3.2m, the ideal height is 3.05M, and the lamp head body rises to 2.2m to 2.3m, which can be used for thoracic, abdominal, brain surgery and other operations; the lowest height of lamp head body from the ground is about 1.1m, which can be used for anorectal, gynecology and other operations requiring lateral illumination.

The operation shadowless lamp can be configured with different combinations according to the needs for different operations.

四、 Technical parameters

1. Micro-computer digital control circuit, with 20-step dimming, can fully meet the doctor's visual brightening effect, reduce visual fatigue; and has brightness memory.

2、 Technical parameters:

Our company reserves the right to change the products, specifications and performance without notice.

Model	SX-I	
	700	500
luminance (Lx)	70000-120000	70000-120000
Color Temperature (K)	3400-6700	3400-6700
Color index (Ra)	85-100	85-100
D50 Spot dia. (mm)	50-125	50-125
D70 Spot dia. (mm)	120-280	120-280
Light depth (mm)	140	100
The total irradiance (W/m ²)	≤900	≤900



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Voltage and power supply	220V±10% AC
Power	50Hz±1%
Features	
Horizontal swivel arm rotates around the cover	360°
Balancer rotates around the tube	320°
Balancer rotating(up/down)	80°
Horizontal swivel arm rotates around balancer	320°

五、 Instructions before installation

1、 Basic requirement

Operating light is a special device hanging in the roof of operating room, and the security of basic installation is especially important. The product's basic requirement is to be capable of loading **500 kg** static load, have enough rigidity, and insure bearable load and rigidity.

Standard height of operating room is 3 meters.

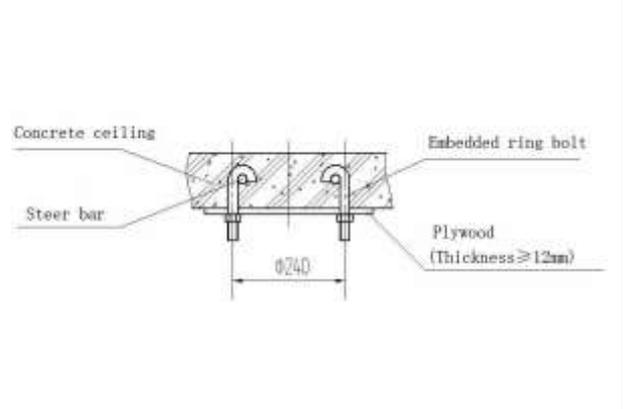
Notice: the users are responsible for infrastructure construction and security.

Preset modes (only for reference)

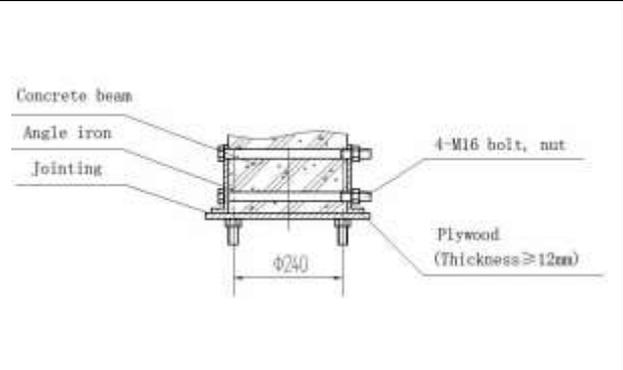
Requirement description	Design
<p>2.1、 Dimensions of preset plywood Four $\Phi 14$ holes are processed on the plywood, and hole positions are evenly distributed among $\Phi 240$ mm diameters. Plywood thickness ≥ 12mm, and the material is No.45 Steel. Plywood external diameter $\geq \Phi 360$mm, and may also be processed into square dimension ≥ 360mm.</p>	
<p>2.2、 Ceiling plywood-type A piece of plywood is placed respectively at the top and bottom of the ceiling and it should be fixed with M12 bolt, nut, spring gasket and flat gasket. M12 bolt (with screw thread) should be longer 60mm than the plywood.</p>	



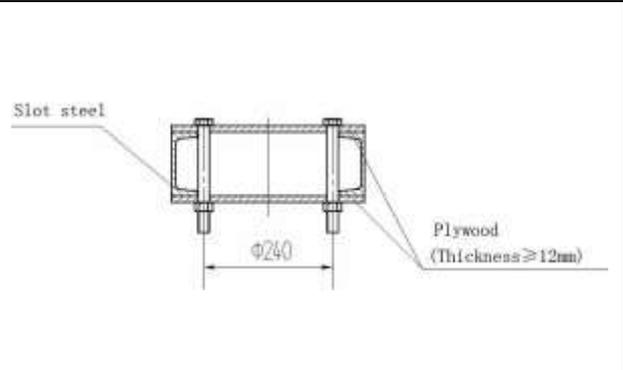
2.3、Ceiling pre-embedding
 When construction is being performed on the ceiling, four ring bolts (M12) should be embedded into the ceiling, and ring bolts must be jointed with the steel bar. Position and dimension of ring bolts should be decided according to the requirements in Figure 1.
 M12 bolt (with screw thread) should be longer 60mm than the plywood.



2.4、Beam joining mode
 The plywood should be jointed with the angle iron, and the holes should be drilled in the beam and then M16 bolts and nuts should be fixed in the beam.
 Four M12×60 bolts should be jointed on the plywood, and their dimensions should be processed according to the requirements in Table 2.1.



2.5、Installation modes of channel steel
 Two pieces of channel steel will be installed on the wall, and the plywood will be fixed with M12 bolts. M12 bolt (with screw thread) should be longer 60mm than the plywood.
 Notice: The installation of channel steel must ensure that operating light won't shake when it is used.



Requirement description

2.6、Basic currency
 Soleplate's dimension of the company is identical with other domestic companies. If the user replaces the product, foundation board needn't be altered. If the user replaces the product, foundation board needn't be altered. For safety, the user should carefully check the intensity and status of original foundation board.
 If the dimension of existing foundation board doesn't conform to the dimension required by the company, the company may customize commutating board for the users.

2.7、Solutions of super-high operating room
 If the height of operating room is more than 3.2meter, height-extending shelf must be installed on the plywood, and the users may order the shelf in the company.



2.8、 Power cabling requirements

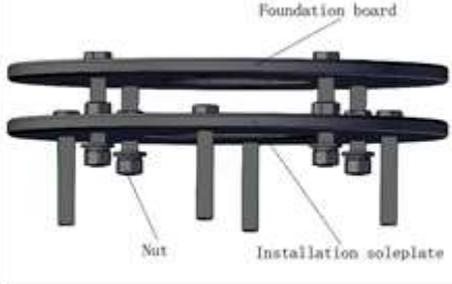
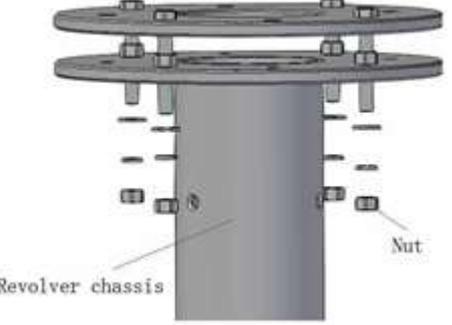
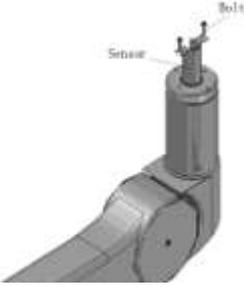
Power requirement for operating light is (220-230V~, 50Hz, 500VA)

The users must install power switch (10A) on the metope in operating room, and the power switch must cut off phase line and neutral line of the power simultaneously. Cabling position of power supply cords should be from power switch to foundation board. Secure capacity of power supply cords is 15A.

WARNING: (1) grounding cords of the power part must be reliable. Independent safety grounding cords must be connected, and be connected with protection earth terminal of operating light.

Notice: The power switch should comply with the standard IEC328, our company will not configure the main power switch.

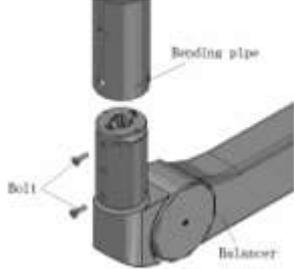
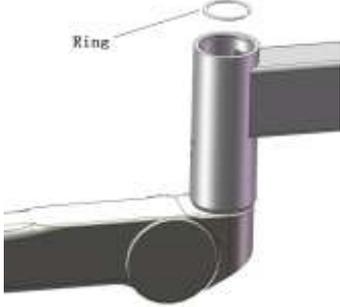
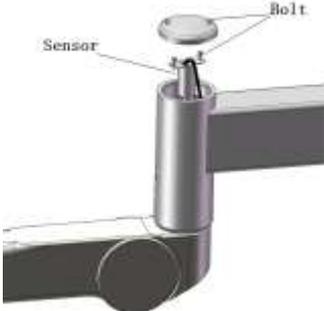
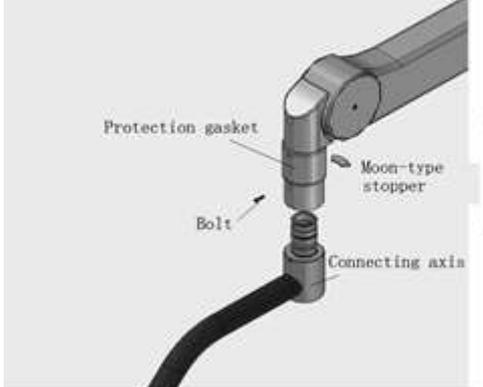
六、 Installation

Installation description	Design
<p>1、 Installing the soleplate Screw four M12 nuts into the foundation soleplate; embed four holes of installation soleplate into 4 pieces of screw of foundation soleplate, and then screw plat gasket, spring gasket and nuts. Adjust bottom nuts so as to make installation soleplate keep horizontal. Screw tight the above 4 nuts.</p>	
<p>2、 Installing the Drop tube Screw four M12 nuts into the installation soleplate; embed four holes of revolver chassis into 4 pieces of screw of foundation soleplate, and then screw plat gasket, spring gasket and nuts. Adjust bottom nuts so as to make the revolver's chassis keep horizontal, and screw tight the nuts.</p>	
<p>3、 Installing the balancer 1 Dismantle two socket head bolts located in the connection point of balancer and revolver, insert revolver's driver into the axis hole of connection point, and screw up the bolts. Caution: don't dismantle other two countersunk head bolts.</p>	



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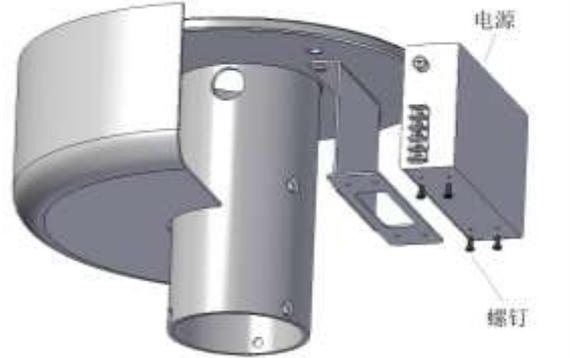
<p>4 Installing the balancer 2 Dismantle 4 bolts of the balancer, push the balancer into the axis hole of the revolver, and screw 4 bolts into the screw.</p>	
<p>6.2.5 Installing the balancer 2 Insert the balance arm to swivel, use tools to lock the balance arm by retainer ring</p>	
<p>Installation description</p>	<p>Design</p>
<p>6.2.6 Installing the balancer 2 Insert the Sensor to balance arm, fix it by screw, then close the cover plate and tighten the screw</p>	
<p>4、 Installing the light body Screw down protection set's bolts at the front of the balancer, push up the protection set, and pull out moon-type stopper. Push connection axis between lamp body and balancer into connecting hole at the front of the balancer, press into the moon-type stopper, push the protection set into the original position, and screw up the bolts. Caution: Moon-type stopper must be pushed completely into the slot.</p>	



5、Installing switch power supply

Dismantle the four screws on the switch power supply, install it on the power supply rack, and fix it with the four screws.

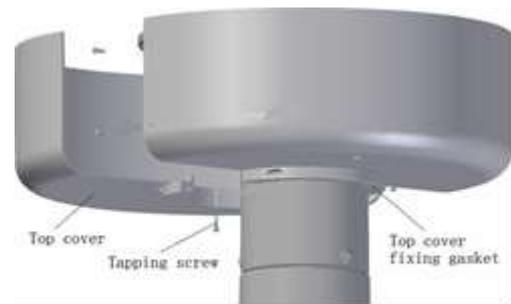
Caution: according to the wiring diagram, connect the switching power supply on the rotating body with the network power supply firmly, and connect the protective grounding wire. Check that the switch power supply voltage selection key should be on the specified network power supply voltage gear.



6、Installing the top cover

Loosen the bolts on top cover's fixing gasket, place the top cover on the revolver, and then join the top cover with 6 tapping screws.

Fold the top cover's fixing gasket, and embed the steps of top cover fixing gasket into the top cover's holes. Push up the top cover so as to make the top keep horizontal with the revolver's chassis or ceiling. Screw tight inner hexagon bolt of top cover fixing gasket.

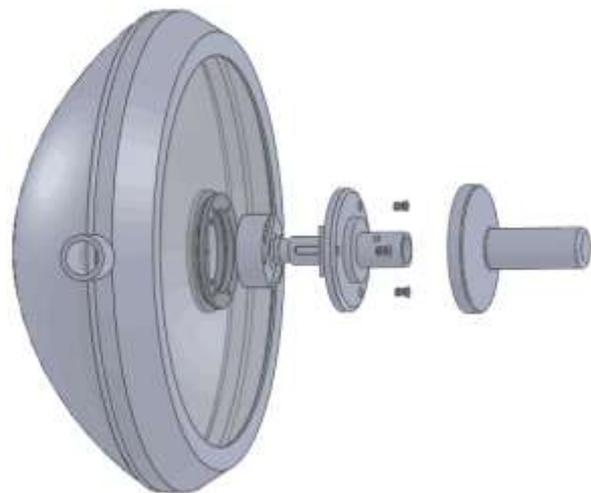


Installation description

Design

7、Installing the Halogen lamp wick assembly

Take out the wick assembly in the packing box, install 2 lamp beads, align the gap on the plexiglass plate as shown in the figure, insert and tighten three screws, and install the handle.





七、 Receiving inspection

Open shadowless lamp switch and check if the light is in normal operation.

1、 Check the electric dimming control panel of shadowless lamp control handle.

A Touch control panel switch and check if it is sensitive.

B Touch control panel light source button and check if it is sensitive.

2、 Rotate the lamp holder handle, adjust the focusing surface of the light, and check whether the light source can concentrate light at the focus. (Focusing height is 1M)

3、 Rotate and pull the rotating body, balancer and lamp holder body to check whether the shadowless lamp can be positioned at each position.

八、 Operation

1、 Inspection,

A、 Remove shadowless lamp handle to disinfect, then install the disinfected handle.

(press the button on the base of your thumb)

B、 Open the power supply switch and inspect if the device in normal operation.

2、 Procedures and methods in operation.

A、 Open the power supply switch on the wall, touch the open button on the lamp holder control panel.

B、 Adjust the rotating body, balancer and lamp holder position to make the device in an ideal working status.

C、 Adjust the focus surface to the operating position by turn the spotlight handle, press the handle control panel, touch the switch and adjust an ideal brightness with increasing and decreasing the light illumination.

D、 Press the on-off button on the control panel, turn off the device and the power supply switch on the wall when finishing the operation.

3 Warning:

The main power supply must be cut off otherwise the components will be damaged.



九、Service

- 一、Shadowless lamp should be inspected annually by professional person, if any loose parts should be fastened.
- 二、Repairs or adjustments must be made only by the manufacturer, Interference by a third party will invalidate any customer claims under our guarantee.
- 三、Our products warranty is one year.
- 四、The products sold by our company enjoy lifelong maintenance after the warranty period!

十、Security;

- 一、Our produced operating shadowless lamps with seven years safety performance and service life.

To ensure the safety use, we great recommended to continued use our products after the expiration of its service life, we will give the maximum discounts.

- 二、The load capacity up to 500kgs to avoid the shadowless lamp falling.
- 三、All connecting parts should be inspected annually to avoid any falling accidents.
- 四、Output line and lead-out line should be connected correctly according to the different colors when installing the lamp lines.

(The person must have the basic professional knowledge.)

十一、Troubleshooting and repair

1、Troubleshooting performed by the users.

Phenomenon	Possible reason	Solution
Power indicator light on the control panel isn't on	Power isn't switched on	Turn on power's switch on the wall
	Power board's electrical wires are cut off	Reconnect power board's electrical wires
Power indicator light on the control panel isn't on	Fuse is burned out	Replace the fuse
Balancing force is too tight or too loose	Balancer's spring is too big or too small	Adjust balancer's spring
Revolver can't be oriented	Revolver's chassis isn't horizontal	Adjust chassis's nuts



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	Damper is loose	Screw tight the damper
Light body can't be oriented	The bolts of light body rubber gasket are loose	Screw tight the bolts

Above-mentioned troubleshooting operating should be performed according to related chapters in the manual.

WARNING:

- When performing the troubleshooting, network power must be cut off.
- 2、 Replacing halogen shadowless lamp bulb.

Remove the disinfection handle, loosen the three connecting screws, pullout the light source components and replace the bulb.

SX-IHalogen bulb specification	
Dia.700 bulb:	24V 150W
Dia. 500 bulb:	24V 100W

Notice: To ensure the optical quality, we recommend to buy our company bulb without using other bulbs. Don't take the bulb by hand to avoid any fingerprints on the bulb and affect the light source.

Waring: When replace the halogen bulb, the power must be cut off first, also the bulb must be in the cold temperature status.

3、 If the rotating parts and body can be positioned, also the lamp drifts, pls have a view of the screw.

4、 Informing our company;

If the device still will not work after eliminating the above faults, pls kindly contact us at the first time.

十二、Maintenance

- 1、 All the connecting parts should be inspected each month to ensure the device can work smoothly without any accidents.
- 2、 After each operation, besides the normal disinfection and cleaning, the



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disinfection handle also must be removed to disinfect and then install the detachable handle.

- 3、 Always wipe the lamp body with soft cloth to prevent floating dust.
- 4、 The lamp holder should be wiped with glass cleaner.

Notice: Handle、 disinfection handles and lamp panel shall not be cleaned with organic solvent.

十三、 Manufacturer' notes

The manufacturer of the products specified in the user's manual is:

Jiangsu Suxin Medical Equipment Co., Ltd.

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E-mail: adeline-lu@suxing-med.com

十四、 Drawing

SX- I Type Halogen Shadowless Lamp Electrical Drawing

