



Shadowless operating lamp
HF-SY320/320CLED
Operation, Installation and Maintenance Manual
(Technical Specifications)

Shanghai Huifeng Medical Instrument Co., Ltd.

Office address: Building 2#, NO.885, Qiuxing Road, Nicheng Town, Pudong New Area, Shanghai, China.

Factory address: Building 2#, NO.885, Qiuxing Road, Nicheng Town, Pudong New Area, Shanghai, China.

Postal code: 201306

Tel: 021-58084992

Fax: 021-58085105

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1.Introduction

1.1 Your qualifications as a user

●For trained technical staff only

The LED operating lamp and these operating instructions are intended for medical and technical staff in the hospital and doctor's office who are familiar with the work involved from their medical training and hold a licence to that effect (in states where such a licence is required by law).

●Adjustments to be carried out by trained service technicians only

The work in the "Adjustments" section must be carried out by one of the service technicians in compliance with the safety information.

●Cleaning to be carried out by trained cleaning staff only

The equipment must only be cleaned by trained cleaning staff.

Please read through these operating instructions carefully before using the equipment. This will allow you to take advantage of all the benefits offered by this new item of equipment and to protect yourself and others from any harm.

PS: Please pay attention to the electromagnetic interference between the device and the device.

1.2 INSTRUCTIONS OF SAFE OPERATION

● Use only after proper installation

These operating instructions only apply after proper installation in accordance with the applicable installation instructions and proper commissioning by the authorized installation engineer. These operating instructions are not a replacement for training the user in the safe use, function, operation and care of the equipment.

● Comply with safety instructions

The equipment's construction and design are state-of-the-art and it is safe to use when operate in accordance with all the instructions and safety information contained in these operating instructions.

However, the equipment can constitute a hazard, in particular if it is operated by inexperienced staff or those with insufficient training, or if it is used incorrectly, in beach of the safety instructions contained in these operating instructions or not in accordance with its intended use.

● In case of problems

If you encounter problems which are not covered by these operating instructions, you should immediately call for the after-sale service from HFMED for your own safety and

that of your patients.

1.3PRODUCT DESCRIPTION AND APPLICATION

The product consists of light source and light stand. It is applicable in the operating room and treatment room for local illumination of the patient's surgery or examination area, main for surgical assisted illumination. It is a lighting fixture that does not have an automatic fail-safe function.

1.4NOTICE

Light allergy disabled this product

1.5 WORKING PRINCIPLE

An LED secondary light-emitting tube is installed in each of the lamps, and the light of the secondary light-emitting tube is irradiated onto the convex mirror and then projected onto the illuminated surface. The convex mirror is the key component of the lamp. According to the surgical requirements, the dimensions of each part of the convex mirror are determined after precise optical calculation. The light passes through the aluminum shell that absorbs the heat of the diode, and then the convex mirror reflects the light to one meter to form a very bright cold spot. The doctor can clearly locate the spot in the diagnosis or treatment area.

1.6 PRODUCTION DATE

Please refer to the product label

1.7 WARRANTY

2 years

2. Important information for the operator

2.1 Security features

Trained personnel: The cleaning and disinfection of the LED operating lamp described in Section 13 must only be performed by trained cleaning personnel.

Trained service personnel: Inspection and maintenance work in Section 14 must be performed by trained service personnel only.

Maintenance, Repair, and Replacement: The manufacturer is legally responsible for the safety of this equipment only if maintenance, repair, and replacement of the equipment is performed by the manufacturer or its representatives in accordance with the manufacturer's guidelines.

2.2 Training Responsibilities

Train users:

Use these operating manuals as a basis for training personnel on equipment operation, cleaning and care.

2.3 Retrofits and modifications

Unauthorized Alterations and Modifications:

For safety reasons, unauthorized modifications and modifications to the device are not permitted.

Unauthorized modifications and modifications to the equipment will void the manufacturer's warranty. The manufacturer is not liable for damage or damage caused by unauthorized alterations and modifications or the use of non-original spare parts.

Use original spare parts only: Use only original spare parts!

2.4 Safety instructions for the environment

Disposal of packaging materials:

The removed packaging materials should be disposed of in accordance with the national environmental protection requirements.

Disposal of equipment:

When the equipment has reached the end of its useful life, it must be taken out of service.

The dismantled equipment should be classified according to the different materials of the product components.



WARNING: First cut off all power to connected equipment before dismantling the equipment.

3. Technical characteristics of LED lighting system

3.1 Lamp head

Illumination:

The illuminance can be adjusted in 8 levels, and the gear position can be displayed digitally.

The size of the lighting area:

The size of the lighting area is adjustable.

3.2 LED lights

LED operating lamp uses an innovative light source, namely LED (Light Emitting Diode).

Average service life:

LED lights have an advantage over conventional halogen or gas discharge lamps in that they have a very long service life.

Low heat production:

The bigger advantage of LED is that they generate less heat because they don't emit IR (infrared rays) or UV (ultraviolet rays), which can be irritating to the skin.

Extremely low failure rate:

By using a large number of LED, the lamp head has a very low failure rate, the failure of a single LED will not impair the function of the lamp head.



3.3 Technical parameters


















| Electrical characteristics | |
|----------------------------|--|
| Content | HF-SY320/320CLED |
| Input power | 180VA |
| LED bulb power rate | 3.2V/3W |
| LED bulb quantity | 37/37 |
| Main fuse | F1.6A-L250V |
| Power voltage | 110-240V~ |
| Power frequency | 50/60Hz |
| Technical data | |
| Rated illuminance | ≥110,000lx |
| Color temperature | 3800K±300K; 4400K±300K; 5000K±300K |
| Spot diameter | 110 mm-190mm |
| Total irradiance | Not over 1000W/m ² (Note that irradiance may exceed 1000W/m ² in areas where several lamp caps overlap lighting) |

| | | |
|---|------------------|---|
| Illuminance depth | ≥1300mm | |
| Spot distribution | | Spot diameter between 110-190mm,when edge illuminance reaches 50% of the center illuminance light, the diameter d50 should not be less than 50% of spot diameter d10. |
| CRI | | Ra≥95 R9≥90 |
| The ratio of irradiance to illumination | | Irradiance Ee to illuminance Ec ratio should not exceed 6mW/(m2lx) |
| Mechanical characteristics | | |
| Content | HF-SY320/320CLED | |
| Rotator horizontal rotation | 360° | |
| Balance arm horizontal rotation | 360° | |
| balance arm up/down | 90° | |
| Spring arm elbow horizontal rotation | 360° | |
| lamp head holder elbow around arm elbow | 175° | |
| lamp head around holder elbow | 175° | |

4. Compliance description

4.1 Symbols of security requirements and their meanings

| Symbol | Implication | Symbol | Implication |
|---|-----------------------------------|---|---|
| ~ | Alternating current | N | Permanent installation of intermediate connection points for equipment |
|  | Refer to the instructions for use |  | Follow the operating manual note: "Follow the operating manual" on the device |

| | | | |
|--|--|---|--|
|  | Package symbol, fragile, handle with care |  | Package symbol, keep the way up, it shows the correct upright position of the distribution packages for transport and storage. |
|  | Package symbol, keep away from rain |  | Package symbol, do not roll over the package during transportation. |
|  | Package symbol, stacking limit by number, it shows the maximum number of identical transport package which may be stacked on the bottom one, where “n” is the limiting number. |  | Package symbol, the package shall be stored, transported, and handled within temperature limits. |
|  | Attention! Refer to the instruction |  | General warning symbols |
|  | Mind Your Head |  | Non professionals are prohibited from dismantling |
| Class I | Equipment that relies on basic insulation and additional safety precautions for connecting protective grounding conductors to accessible parts | IPX2 | The degree of protection against ingress of liquid is classified as ordinary equipment |
|  WARNING | The operator SHOULD operate in accordance with the instructions under the symbol, otherwise it may cause personal injury. |  | Warning of electric shock that may cause serious injury or even fatal injury |
| CAUTION | The operator SHOULD operate in accordance with the instructions under the symbol, otherwise it may cause product failure, damage or affect the use. |  Prohibited | Operation prohibited by the operator |
|  | This is used to indicate an action that must be performed |  | This symbol is used to identify the manufacture’ s series number |
|  | CE Mark |  | This symbol is used to indicate the name and address of the manufacturer. |

| | | | |
|---|--|---|-------------|
|  | Authorized Representative in the EUROPEAN COMMUNITY |  | Use-by date |
|---|--|---|-------------|

4.2 Product Standards

Execute the product technical requirements of this product

4.3 Mandatory standards

This product fully complies with IEC60601-1 "Medical electrical equipment Part 1: General safety requirements" and the industry standard IEC60601-2-41 "Medical electrical equipment Part 2-41: Special requirements for basic safety and basic performance of shadowless operating lights and diagnostic lights". IEC 60601-1-2 Medical electrical equipment - Part 1-2: General safety requirements.

5. Transportation and Storage

5.1 Ambient temperature: -40°C~+55°C

5.2 Relative humidity: ≤93% Indoor without corrosive gas and good ventilation.

5.3 Atmospheric pressure: 860hPa~1060hPa

6. Environmental safety


6.1 Disposal of packaging materials

The removed packaging materials should be disposed of in accordance with the national environmental protection requirements.

6.2 Disposal of equipment

The service life of LED operating lamp is 5years. In order to ensure the safe use of the product by the user, please replace it after five years.

When the equipment has reached the end of its useful life, it must be taken out of service. The dismantled equipment should be classified according to the different materials of the product components.

 **WARNING:** Cut off all power to connected equipment before dismantling the equipment.

7. Pre-installation instructions

7.1 Normal working conditions:


- Power supply voltage: AC110-240V; frequency: 50/60Hz;
- Working temperature: 10 °C ~ 30 °C; relative humidity is not more than 80%;
- Standard installation height: 2.4-2.9m.
- The lamp head uses 24V extra low voltage.

The degree of protection against electric shock is no applied parts. Working system: continuous operation. It is a malfunction light.

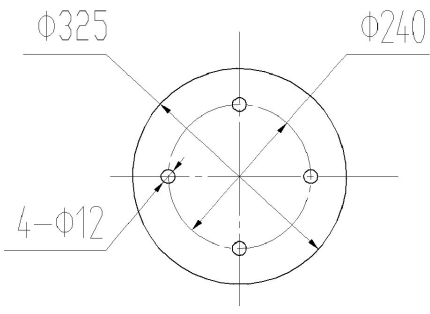
7.2 Basic requirements

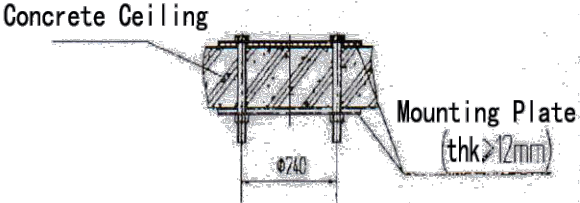
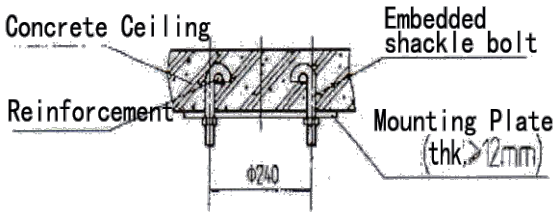
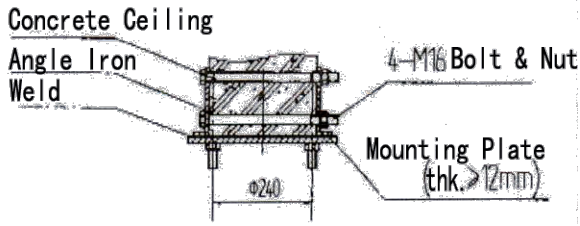
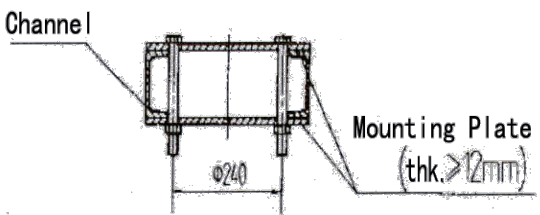
it is a special device fixed on the roof of the operating room, and the safety of the foundation placement is particularly important. The basic requirement of the company's products is that it can carry a static load of 500 kg and have sufficient rigidity to ensure that it can bear the load and rigidity.

The standard height of the operating room is 3 meters.

 Note: Foundation construction and its safety are the responsibility of the user. Users must install AC220V power supply double-way cut-off switch on the wall.

7.3 Precast Method (for information only)

| Description of Requirements | Sketch |
|--|--|
| <p>7.3.1 Dimension of Precast Mounting plate</p> <p>Fabricate four $\Phi 14$ holes on mounting plate. These holes shall be equally distributed around the center of a circle in diameter $\Phi 240$.</p> <p>Mounting plate: thickness $\geq 12\text{mm}$, steel grade 45, outside diameter $\geq \Phi 325\text{mm}$ (or $\geq 325\text{mm}$ if it is fabricated as a square plate)</p> |  |

| | |
|---|---|
| <p>7.3.2 Mount through on-ceiling mounting plate couple</p> <p>Place and secure two mounting plates on both top and bottom surface of ceiling with M12 bolts, nuts, spring washers and flat washers.</p> <p>The threaded part of each M12 bolt shall be 60mm higher than the surface of mounting plate.</p> |  <p>Concrete Ceiling</p> <p>Mounting Plate (thk. > 12mm)</p> <p>Ø240</p> |
| <p>7.3.3 Mount through embedded part in ceiling</p> <p>Embed four M12 shackle bolts into ceiling during construction and weld them to reinforcement.</p> <p>These bolts shall be located as per figure 1.</p> <p>The threaded part of each M12 bolt shall be 60 higher than the surface of mounting plate.</p> |  <p>Concrete Ceiling</p> <p>Reinforcement</p> <p>Embedded shackle bolt</p> <p>Mounting Plate (thk. > 12mm)</p> <p>Ø240</p> |
| <p>7.3.4 Mount through beam attachments</p> <p>Securely weld mounting plate on angle iron, drill holes in beam, and attach plate on beam with M16 bolts.</p> <p>Weld 4 M12×60 bolts on mounting plate as per dimensions shown in Table 2.1.</p> |  <p>Concrete Ceiling</p> <p>Angle Iron</p> <p>Weld</p> <p>4-M16 Bolt & Nut</p> <p>Mounting Plate (thk. > 12mm)</p> <p>Ø240</p> |
| <p>7.3.5 Mount through channel</p> <p>Install 2 channels on wall and secure mounting plate with M12 bolts. The threaded part of each bolt shall be 60mm higher than the surface of mounting plate.</p> <p>Note: The channels shall be arranged in such a way that during operation the shadowless operating lamp will not sway.</p> |  <p>Channel</p> <p>Mounting Plate (thk. > 12mm)</p> <p>Ø240</p> |
| <p align="center">Description of Requirements</p> | |
| <p>7.3.6 Versatility of Mounting Base</p> <p>Our base plate has the same installation dimension with those manufactured by other companies in China. There is no need to change base plate in case product will be changed. For the sake of safety, user is required to inspect the strength and other conditions of base plate before mounting on apparatus.</p> <p>We can also provide custom-tailored adapter plate when the existing base plate can not meet your requirements on dimensions.</p> | |

7.3.7 Solutions for Operating Room with Ultrahigh Ceiling Height

If ceiling height of operating room exceeds 3.2m, an extending frame must be attached to the mounting plate. We provide custom-tailored extending frame.

7.3.8 Wiring Requirements

The power supply for shadowless operating lamp is rated at 220V±10%, 50Hz±1Hz.

On the wall of operating room, the user should install main switch (T10AL-250V) and quick-acting fuse (T5AL-250V) in such a manner that the switch can cut off phase lines and zero line simultaneously. The wiring should be made from main switch to base plate with power cord rated at safe current 15A.

External power line wiring should be 2.5mm².

The specific requirements for emergency measures for external power supply wiring are shown in Figure 2

Warning: Power supply must be reliably earthed by additional separate protection earthing line, which should be connected to protection earthing terminal of shadowless operating lamp.

8. Installation Guidance

8.1 Preparation:

Please check the packing box according to the ordered product model, open the packing box, take out the protective packing material, and take out the parts of the LED surgical lighting.

Please check carefully according to the following packing list, if there is any missing parts, please contact our company immediately

Packing List

| HF-SY320/320CLED |
|--|
| ①Rotator*1 ②Balance arm*2 ③Lamp head*2 ④Handle*2 ⑤Service card*1 User manual*1 Qualified Certificate*1 ⑥Fuse*4 |

Note: Before installation, ensure that the protective packaging is intact to avoid damage or loss of equipment components.



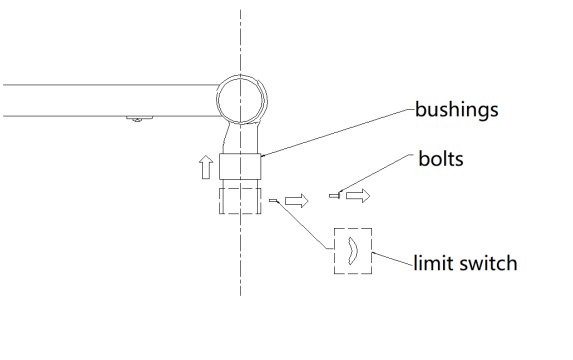
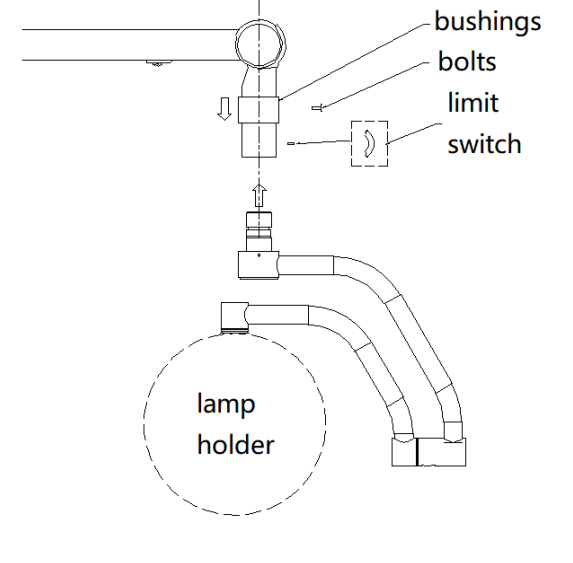
WARNING: Double check the condition of the foundation plate to ensure its safety.

Fully check the electrical connection and safety to ensure its safety.

Strictly follow the following requirements and procedures for installation.

8.2 Installation

| Item | Picture | Detailed description |
|-------------------------|---------|---|
| Install the rotator | | Screw on 4*M12 nuts on the basic bottom plate, insert the 4 holes of the rotating body chassis into the 4 screw rods of the basic bottom plate, and screw on the flat washers, spring washers and nuts. Adjust the bottom nut to make the rotating body chassis level, and tighten the nut. |
| Install the balance arm | | Insert the transmitter plug at the beam end of the rotating body into the transmitter socket at the balance arm end, fix the two fixed feet of the transmitter plug with two types of M4 screws, then extend the swivel sleeve at the balance arm end into the elbow end of the beam, and use 4 M4 screws to fix and tighten. |

| | | |
|----------------------------------|---|---|
| Remove the balancing arm fitting |  | Remove the screws with a screwdriver, move the sliding sleeve upwards by hand, and take out the limit piece (note: the sliding sleeve cannot be removed). |
| Install the |  | Align the balance elbow joint on the lamp head with the hole of the balance arm and put it in, insert the immediately, move the down to the position, tighten the screws, and the lamp head is installed. (Users should not unpack by themselves) |

8.3 Structure and Debugging Operations

1. Product model HF-SY320/320CLED

(1) Description of product structure (see Figure 01)

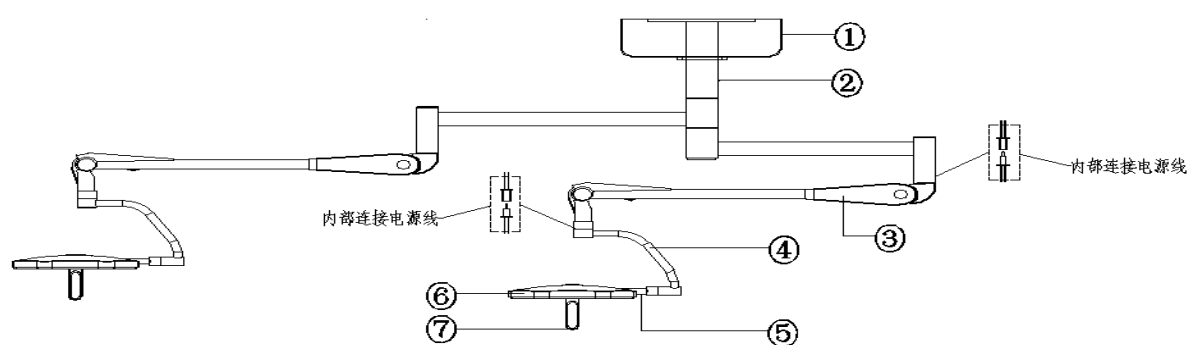


Figure 01

- Structural components: composed of ①top cover ②rotator ③balance arm ④balance elbow ⑤lamp head bend ⑥lamp head
- Ceiling height: The height of the rotator ② can be customized according to the ceiling height to meet the height of lamp head operation.
- Power supply: The power supply is connected inside the top cover ①. Therefore, only

trained service personnel may remove the top cover ①.

- Maneuverability: In order to achieve operability, the lamp head ⑥ is equipped with a balance elbow ④ and a lamp head elbow ⑤ for convenient and flexible positioning.
- Control panel: The control panel is located on the side of the lamp head ⑥.
- Sterilization operation: Allows complete disinfection of the detachable handle ⑦

Installation and commissioning instructions

- Maneuverability: Rotator ②, balance arm ③, balance elbow ④ and lamp head elbow ⑤ can fix the lamp head in the desired position.

Rotator ② and balance arm ③ can rotate infinitely on the horizontal plane,

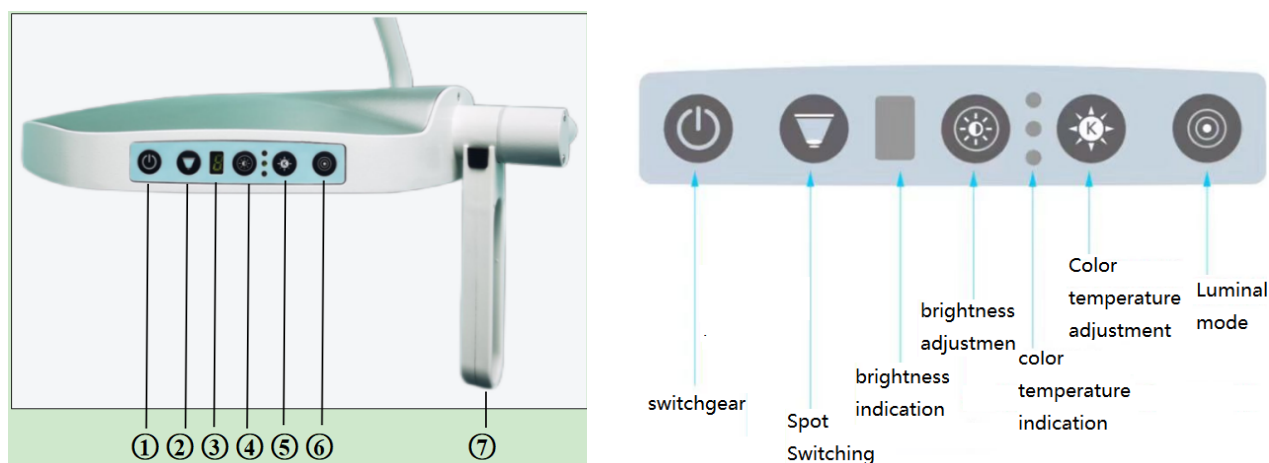
The balance arm ③ can move up 45°, down 45°,

The balance elbow ④ can rotate infinitely on the horizontal plane,

The lamp head elbow ⑤ can be rotated 175°, and the lamp head ⑥ can be rotated up to 175°.

- Balance arm height limitation: The upward movement of the balance arm ③ can be limited to a horizontal position to prevent collision with the ceiling.
- Changing the height limit: the height limit is fixed during installation and can be changed later (see 10.3 Adjusting the height limit).
- Balance arm function: for easier control and positioning of the lamp head.
- Adjust the tension: The spring supports the weight of the lamp head, if the balance arm is drooping, the spring tension must be adjusted (see 10.1 Tension adjustment).
- Brake function: Rotating body ②, balance arm ③, balance bend ⑤ and lamp head bend ⑤ have brake damping screws to ensure accurate positioning.
- Adjust braking resistance: If the lamp head cannot be positioned accurately, the braking force must be adjusted (see 10.2 Adjusting the braking force).

9. Operation instructions



9.1 Turn on the light switch

Paste the operation surface of the lamp head, and the button ① is the power switch of the lamp.

9.2 Positioning the lamp head and installing the detachable handle

9.2.1 Working distance: Hold the lamp head by the non-sterile outer edge of the lamp head or the non-sterile control handle, and place it at a distance of 70-140cm from the operation area.

9.2.2 Detachable handle: Push the detachable handle ⑦ inward until you hear the sound of the snap lock engaging, and then check whether the fixing is firm.

9.3 Light adjustment

9.3.1 The size of the lighting area:

Press the button ② to adjust the size of the lighting area.

9.3.2 Illumination:

Set the illumination level to the desired level by pressing the button ④. ③ Display the level of illumination

9.3.3 Color temperature:

Press button ⑤ to adjust the color temperature to the required color temperature file.

9.3.4 ENDO mode:

Press the key ⑥ to click to enter the ENDO mode, and click again to return to the normal mode.

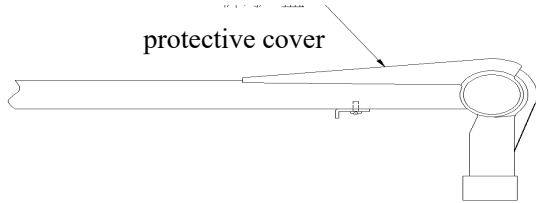
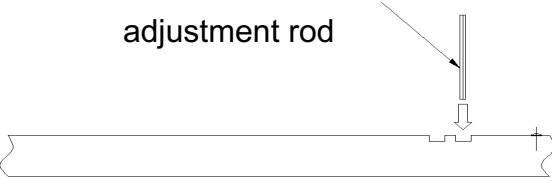

9.4 Switch to turn on and off the lamp head

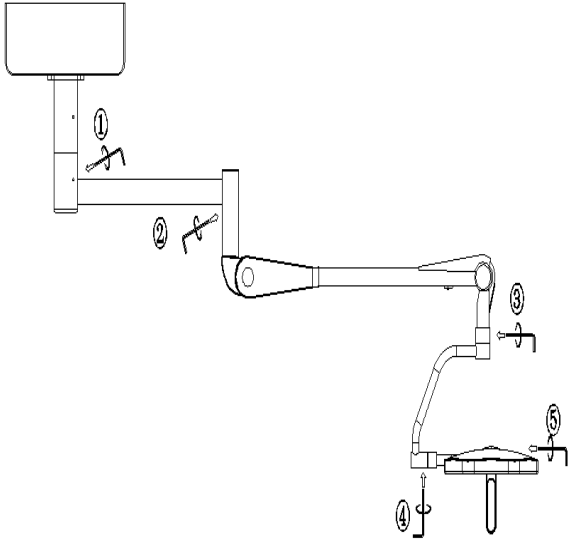
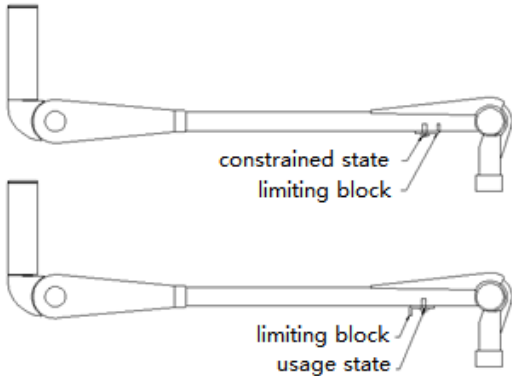
Switching on: Press the on/off button ①, the lamp head lights up again with the pre-selected setting.

Off: Press the on/off button ①, the lamp head goes out

Power off: Turn off the main switch in the operating room and the lights are powered off.

10. Spring arm adjustment

| Item | Picture | Detailed description |
|--|---|---|
| 10.1 Adjusting the Spring Tension of the Balance Arm |  | <p>protective cover Open the</p> <p>of the adjustment hole at the end of the balance arm.</p> |
| |  | <p>Take out the adjustment rod on the reverse side of the cover to adjust the up and down angle of the balance arm, so that the adjustment hole is exposed.</p> |
| |  | <p>1. Insert one end of the adjustment rod into the adjustment hole, and rotate the adjustment hole clockwise according to the position of the balance arm in this picture (there is a + - mark on the balance arm, adjust in the + direction)</p> <p>2. After every 3 adjustments, the balance arm moves up and down to check whether it can hover normally, and if it can hover normally, reset all accessories in the above order. If you cannot hover, repeat the adjustment.</p> |

| | | |
|---|---|--|
| <p>10.2 Adjusting the braking force on the system</p> |  | <p>The brakes are already adjusted during installation. Like all mechanical components, brake damping screws are subject to wear. If the lamp head cannot stop at a fixed position, the braking force must be adjusted through the braking damping screw. All the brake screws are screws with slots, adjust the brake damping screws in the order of ①-⑤ in the left figure.</p> <p>1. Use a suitable wrench to turn the two brake damping screws on the rotating body ① and the balance arm ② clockwise to increase the braking force.</p> <p>2. Use a suitable wrench to turn the three brake damping screws ③-⑤ clockwise to increase the braking force.</p> |
| <p>10.3 Adjusting the height limit of the balance arm</p> |  | <p>When disassembling the lamp head, the must be adjusted to the restricted state, and the balance arm can be disassembled only when it is horizontal, so as to prevent the balance arm from colliding with other parts or people.</p> |

11.Troubleshooting

| Trouble | Cause | Solution | Reference |
|---|--|--|-------------|
| Suspension/handling performance section | | | |
| Colliding with other components | Height limit setting error | Adjust height limit | Content 10# |
| Optical systems/lighting technology section | | | |
| The interconnecting elements of the lighting module are not lit | Electronic component failure | Call the maintenance department | 13.4 |
| Low illuminance | The illuminance setting is too low | Increase illuminance | 9.3 |
| The lighting area is not circular | The lamp head is not in the surgical field | Reposition the lamp head | 9.3 |
| | The lighting area is not set correctly | Adjust the focus lighting area | 9.3 |
| The light is not on | Interruption of power supply | Check the power supply, check the fuse | — |
| | The lamp head has been turned off by the control panel | Press the on/Off button | 9.4 |
| | Electronic component failure | Call the maintenance department | 13.4 |
| Sterilized part | | | |
| The service life of detachable handle is too short | Incorrect sterilization techniques | Check sterilization technique | 12.2.2 |
| The detachable handle is damaged or cracked | It has reached its service life | Change handle | 12.2.2 |

12. Cleaning, disinfection and sterilization

12.1 Cleaning



Warning: 1. It is necessary to use a suitable cleaning agent and clean it with a

slightly damp but not wet cloth.

2. Turn off the main power switch on the wall within the working range of the lamp to ensure that the lamp is powered off and prevent it from being turned on again.
3. Avoid splashing wet equipment, do not wet clean the system.
4. Do not insert any objects into the holes of the device.

| <i>Note</i> |
|---|
| <p>Surface damage</p> <ol style="list-style-type: none">1. Do not use any substances that can cause abrasion, detergents containing gasoline solvents, paint thinners, alkaline, acidic, ethanol-based (such as ethanol, propanol) or cleaning substances containing acetaldehyde.2. Use a small amount of detergent to ensure that no liquid enters the lamp cap or suspension system |

12.2 Disinfection and sterilization

12.2.1 Disinfection



Warning: 1. It is necessary to use a suitable disinfectant, and use a slightly damp but not wet cloth for disinfection.

2. Turn off the main power switch on the wall within the working range of the lamp to ensure that the lamp is powered off.

And prevent it from being opened again.

3. Avoid splashing wet equipment, and do not perform wet disinfection on the system.
4. Do not insert any objects into the holes of the device.
5. The detoxification of the lamp holder can only be performed when the lamp holder is cooled.

| <i>Warning</i> |
|--|
| <p>Harmful to health</p> <p>Disinfectants may contain substances that are harmful to health</p> <ol style="list-style-type: none">1. Use only disinfectants that meet hospital health regulations2. The operator must disinfect according to the requirements of the national authority responsible for sanitation and disinfection |

Note

Surface damage

1. To avoid damage to stainless steel components, do not use disinfectants containing chlorine or halogen-based
2. To avoid brittleness of plastic components, use only low-ethanol detergents
3. Use a small amount of disinfectant to ensure that no liquid enters the lamp or suspension system

12.2.2 Sterilization of removable handles

Warning

Harm to the patient

Please replace damaged handles with cracks or deformation immediately as they may fall into the surgical wound
The operator must clean and disinfect according to the requirements of the relevant national committee

Removing/installing the detachable handle

Press the buttons on both sides of the detachable handle and pull the handle out.

Push the detachable handle inward until you hear the sound of the lock engaging, and then check whether the connection is firm.

Cleaning and Sterilization of the Removable Handle

You can use a weak alkaline cleaner that does not contain active chlorine, and use a cleaning cloth or a sterile cloth to wipe it clean. The cleaner must be completely rinsed off with water.

The detachable handle must be rinsed with running water prior to sterilization to initially remove contaminants.

The sterilization method of the detachable handle is steam sterilization, the pressure is 102.9kPa, the temperature is sterilized at 121°C for 20 minutes, once per operation, the detachable handle is placed vertically with the open side facing down, and it can be detached during the sterilization process. The handle cannot come into contact with other objects.

When the detachable handle is taken out after sterilization, it can only be moved when the temperature drops to room temperature, and check whether the detachable handle is damaged and the surface is cracked to prevent unqualified occurrence.

During certain inspections/inspections and maintenance, it is necessary to check the safety and functionality of your equipment.

13. Inspection, maintenance and repair

13.1 Do the inspection before each use as below

13.1.1 Please check whether the function button on the panel normal works well

13.1.2 Under normal conditions of turning on the lights, please check whether the screws and parts are loose, and whether the joints can be with flexible rotation, to confirm whether the conduction of the lamp is defective, and whether the service life of the lamp is overdue, etc., and it can be used only after checking the normal condition.

13.1.3 Whether the appearance of paint is damaged; (dangerous to open wounds)

13.1.4 Check if the consumables is replaced regularly, and replace it immediately if there is any crack or deformation.

| Model number | Consumable | Recommended replacement cycle | Operation |
|----------------|------------------|-------------------------------------|------------------------|
| HF-SY320/320CL | Removable handle | Replace after 50-time sterilization | Please refer to 12.2.2 |

13.2 Annual maintenance and repair

13.2.1 Safety inspection of joints

Since the LED operating lamp is a permanently suspended device, its safety is of paramount importance. It is necessary to regularly check the status of the connecting nuts and other connecting screws on the chassis of the rotating body, and tighten them immediately if any looseness is found.

13.2.2 Electrical Safety Inspection

Check the connection status of the power line on the power board inside the top cover. If the connection is found to be loose, immediately tighten the connection screw on the terminal block. If there is oxidation, replace the connection terminal. Use a shaker to check that the protective ground wire is firmly connected.



NOTE: The above inspections are performed at least once a year.

WARNING: The mains power must be cut off for electrical inspection.

If the user signs a service agreement with the company, the company can conduct regular inspections for the user.

To avoid damage or destruction, if any damage or failure occurs, please contact the Customer Service Department of Shanghai Huifeng Medical Instrument Co., Ltd. immediately.

13.3 The following circumstances are exempt from liability

13.3.1 damage caused by force majeure or natural disasters;

13.3.2 If the room height exceeds the (2.4-3.2M) range, it affects the use of product performance characteristics, or the grid voltage exceeds the specified range of the product, resulting in damage caused by non-product reasons;

13.3.3 exceeds the product lifespan;

13.3.4 Failure to operate, maintain or maintain the product in accordance with the requirements of the product manual;

13.4.CONTACT INFORMATION OF AFTER-SALE SERVICE

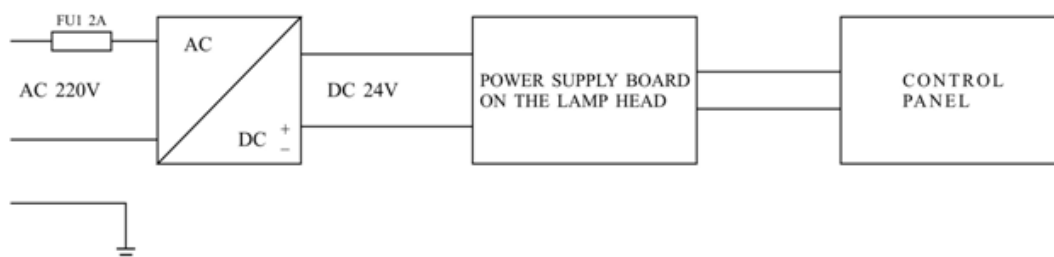
Customer Service Department of Shanghai Huifeng Medical Instrument Co., Ltd.

Tell:+86-021-58084992, 58082099

Fax:+86-021-58085105

Accredited Investors/manufacturer:Shanghai Huifeng Medical Instrument Co., Ltd.

14. Circuit diagram



Pic.2 circuit diagram

15. Appendix A (Product Drawing)



Pic.3 HF-SY320/320C LED

Shanghai Huifeng Medical Instrument Co., Ltd.

Office address: Building 2#, NO.885, Qiuxing Road, Nicheng Town, Pudong New Area, Shanghai, China.

Factory address: Building 2#, NO.885, Qiuxing Road, Nicheng Town, Pudong New Area, Shanghai, China.

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