Illumination Lamp

Catalog

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Overview

This manual covers the following specifications and models of surgical lighting lamps: Standard type; Suspended four- hole, suspended five-hole, suspended nine-hole, suspended twelve-hole, suspended twelve-hole + five-hole, suspended four- hole + four-hole, suspended four-hole + five-hole, suspended five-hole + five-hole, mobile four-hole, mobile five-hole; LED type: Suspended four-hole, suspended five-hole, mobile four-hole, mobile five-hole, suspended four-hole + four-hole, suspended four-hole + five-hole, suspended five-hole + five-hole, suspended twelve-hole, suspended nine-hole, suspended nine-hole + five-hole, suspended twelve-hole + five-hole.

To ensure the rational use of our products, please carefully read this manual before installation and clinical application. This manual comprises both the user guide and the technical specification.

Scope of Application of the Product

This product is suitable for surgical illumination in emergency rooms and operating rooms of healthcare institutions.

Structure

Surgical illumination lamps are categorized into portable and fixed types.

The mobile type includes four-hole and five-hole (vertical) configurations, primarily consisting of three components: the lamp body, support columns (including balancers and upper/lower column tubes), and a base. The fixed type comprises five-hole (hanging), nine-hole, twelve-hole configurations, as well as mother-and-child lamps, mainly composed of three parts: the lamp body, balancer, and rotating assembly.

Installation and Adjustment

Installation Requirem-entsforFixedSurgi-calShadowlessLights

- Basic Requirements

  - Users may perform the basic construction according to Figure 1, Figure 2, or Figure 3 based on the structural characteristics of the operating room, with the bolt positioning dimensions shown in Figure 4.
  - The foundation must be capable of supporting loads exceeding 500 kg.
  - The required ceiling height in the operating room is 2.8–3.1 m. If the ceiling height exceeds 3.1 m, an extension frame must be installed.

The support frame shall possess sufficient stiffness to prevent vibration of the lamp body.

(You may place an order with our factory for extension brackets.)

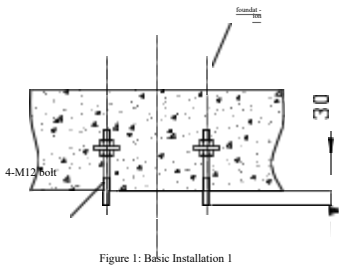


Figure 1: Basic Installation 1

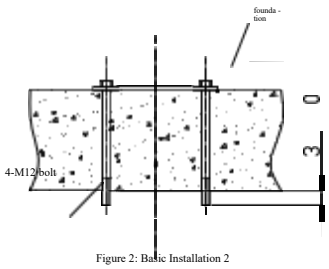


Figure 2: Basic Installation 2

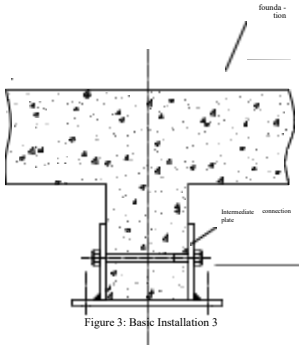


Figure 3: Basic Installation 3

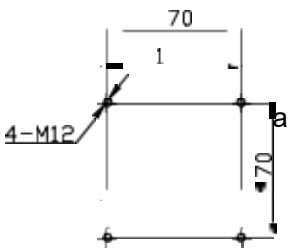


Figure 4: Dimensions of Embedded Bolt Positions

- Electrical installation requirements (see Figure 5)
  - The cross-sectional area of the conductor (input line) shall not be less than 1.5 mm ².
  - The protective grounding wire of the surgical lamp must be reliably connected to the permanently installed grounding point in the grid power supply.
  - The protective grounding wire must not be loosened without using tools; the screws used for internal protective grounding connections must be fully secured to prevent accidental loosening from the exterior of the equipment.
  - The protective grounding wire must be connected before the power supply is turned on and disconnected only after the power supply is turned off.
- Installation of the rotating body (see Figure 5)
  - Calibrate the foundation connector using the installation positioning plate (1);
  - Pre-tighten four M12 nuts onto each of the four M12 bolts (with the bolts protruding approximately 30 mm and all four nuts aligned horizontally). Mount the rotating assembly onto the bolts, then tighten them using the four M12 nuts along with flat washers and spring washers. Ensure that the base axis is perpendicular to the horizontal plane to guarantee balanced operation of the surgical shadow lamp.
  - Connect the external power cord to the power cord on the rotating body (2).

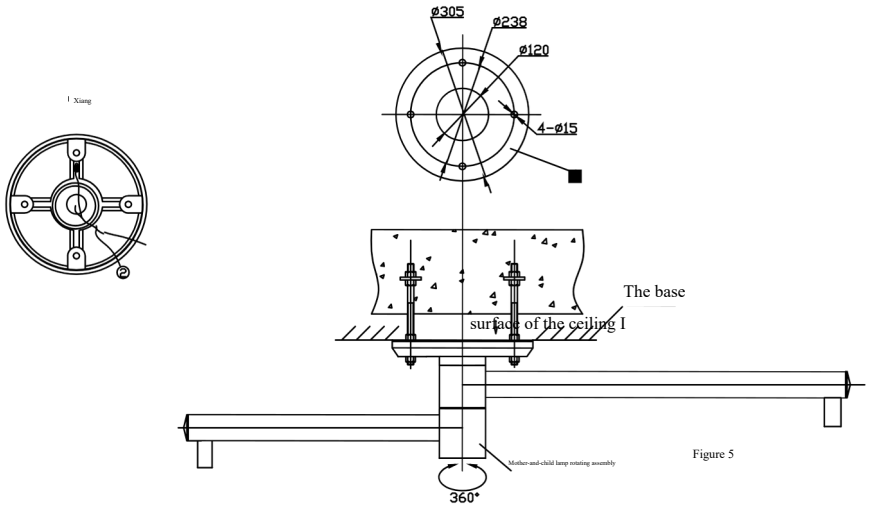


Figure 5

- Installation of the Balancer (Type I) (see Figure 6a)
  - Connect the terminal (3) of the balancer's straight power cord to the terminal (4) of the beam top power cord (plug-in connection).
  - Insert the straight pipe into the top of the beam and secure it with screws (5).

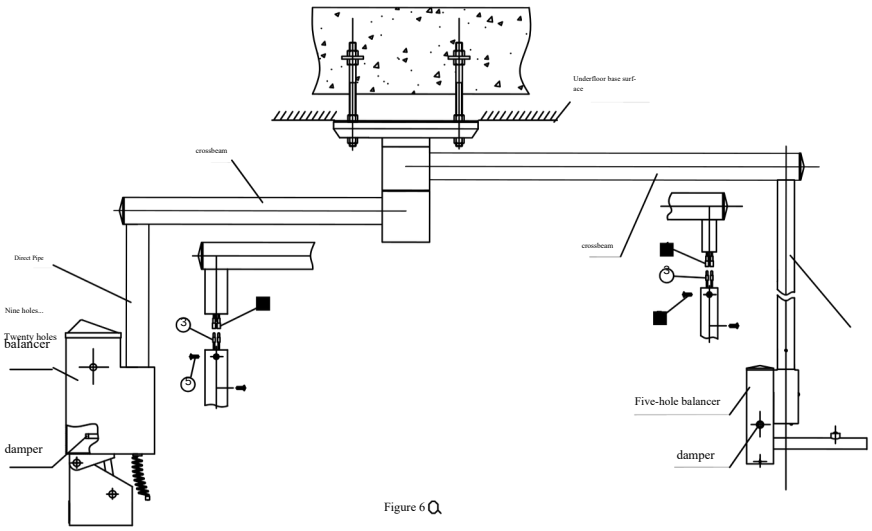


Figure 6

- Installation of the Balancer (Type II) (See Figure 6b)
  - Connect terminal (3) of the balancer's straight power lead wire to terminal (4) of the rotating arm's power lead wire.
  - Insert the straight tube into the end of the rotating arm and tighten it with screw (5).

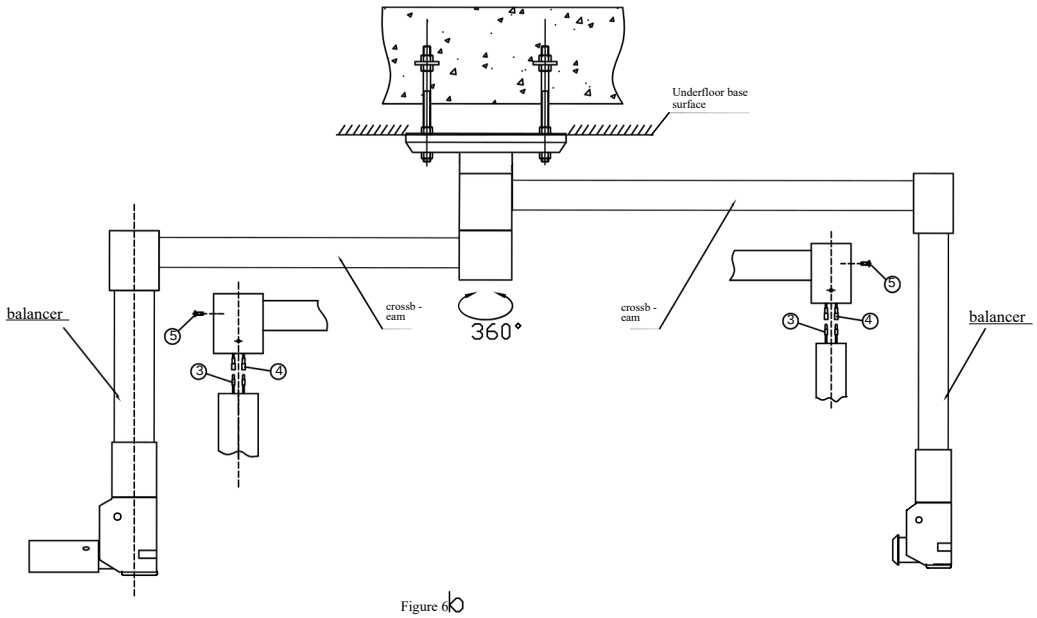


Figure 6

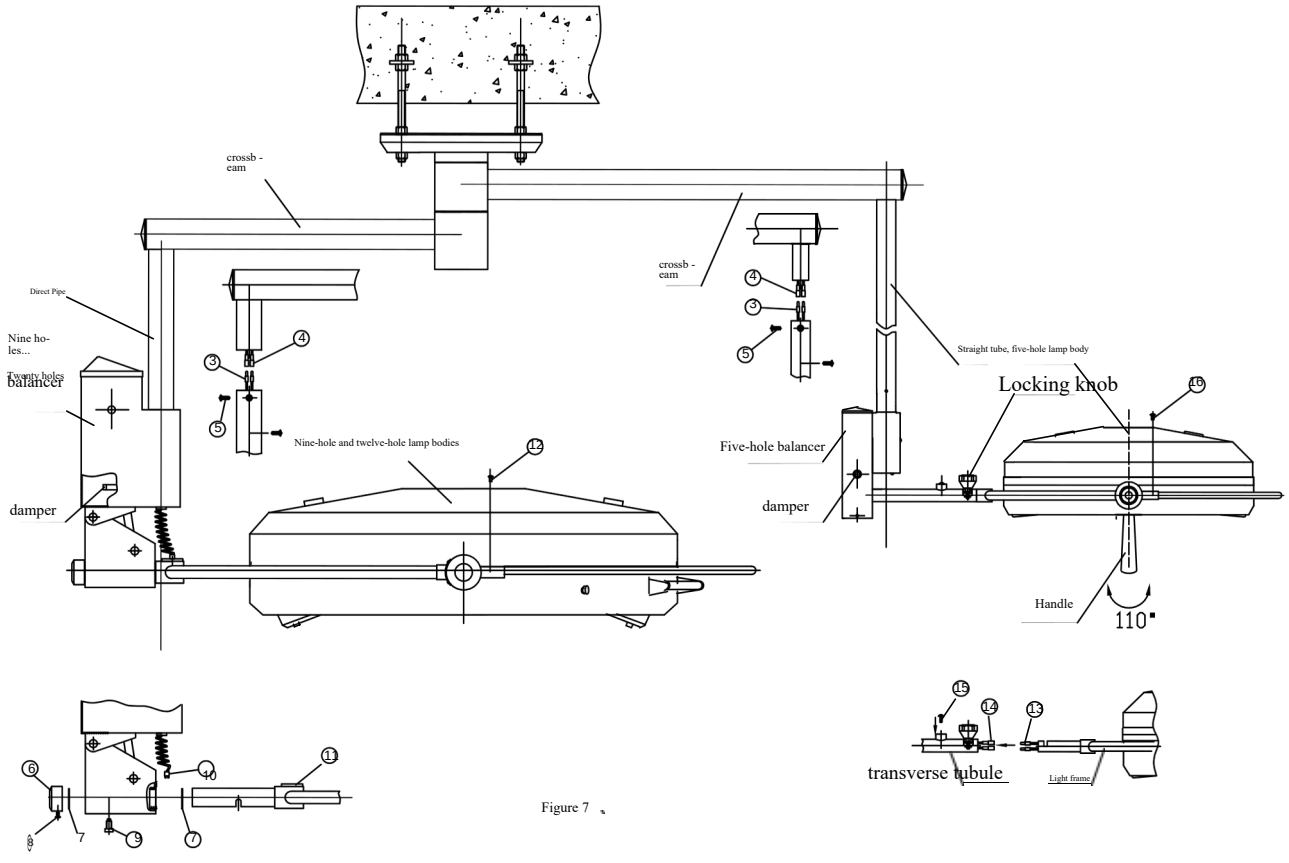


Figure 7

- Installation of the lamp body (Type I) (see Figure 7a)

- Fit the fork-shaped tube sleeve over the gasket (7) (one piece), as specified on the balancer.Insert into the hole, then fit the gasket (7) (one piece).

- Install the sheath (6) and secure it with screws (8).
- Supra-rotatorius positioning screw (9)
- Connect the spiral wire (10) on the balancer to the socket (11) on the fork-shaped tube shaft.
- Install the long handle pipe and secure it with screws (12).

Substance Main lamp (Sub-lamp)

- Connect the terminal (13) of the lamp holder power cord to the terminal (14) of the cross-bar power cord (plug-in connection).
- Insert the lamp holder into the horizontal tube and tighten the positioning screw (15).
- Install the pull pipe, secure it with screw (16), and attach the handle.

■ Installation of the lamp body (Type II) (see Figure 7b)

- Remove the plastic cover (6) and the self-tapping screw (7) from the lamp holder, then extract the power lead terminal (9).
- The power lead-out wire (8) from the balancer terminal passes through the shaft hole of the lamp frame, which is then mounted onto the shaft at the balancer end and secured with screws (10).
- Connect the power lead-out terminal (8) to the wiring terminal (9), cover the lamp holder opening with the plastic cover (6), and secure it with self-tapping screws (7).
- Install the headlight head onto the long handle tube, secure it with screws (11), and attach the headlight head handle sleeve.
- Install the small lamp head handle cover.

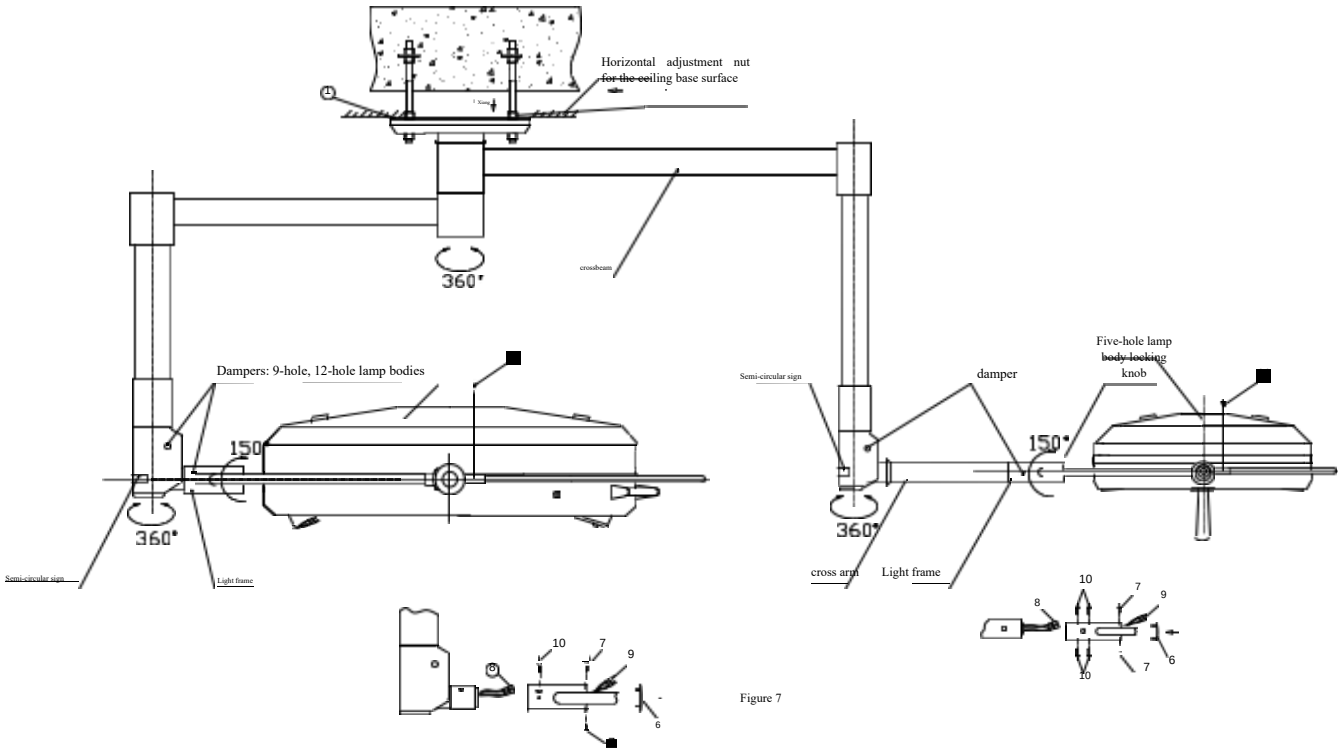


Figure 7

adjust

■ By adjusting the damper on the balancer, you can modify the damping force governing the lamp's vertical movement.

■ By adjusting the damper on the horizontal tube, you can modify the damping force that causes the lamp body to rotate around the horizontal arm.

■ The black cover rings on both sides of the lamp body allow adjustment of the damping force governing the lamp's rotation around the stand.**Mobile Surgical Shadowless Lamp (see Chapter 8 Structural Installation Diagram)**

Installation Requirements

■ Installation of the base and columns

- Connect terminal (1) of the base power cord to terminal (2) of the lower column tube power cord.
- Connect terminal (4) of the lower column tube power cord to terminal (5) of the balancer power cord.
- Insert the lower column tube into the base hole and secure it with screw (3).
- Insert the upper column tube into the lower column tube and secure it with screw (6).

■ Installation of the lamp body

- Connect terminal (7) of the balancer power cord to terminal (8) of the lamp body power cord.
- Insert the lamp holder into the horizontal tube and tighten the positioning screw (9).
- Install the controller.
- Install the handle pipe and secure it with screws (10) (five-hole vertical type).

adjust

- By adjusting the damper on the balancer, you can modify the damping force exerted on the moving lamp body.
- By adjusting the tightness of the locking knob, you can modify the damping force that restricts the lamp's rotation around the cross tube.

Operation and Usage

■ Portable structure

1、 Prior to surgery, insert the plug into a ~220V power socket; the green indicator light will illuminate, indicatingthatpowerissupplied.Turnontheswitchandadjustthepositionofthelampbodyandthefocalpoint of the light spot. After surgery, promptly turn off the switch and unplug the power cord to cut off the power supply.

2、 The dimming knob is used to adjust the focal plane of the light spot.

3 、 The handle is used to adjust the position of the lamp body and rotate it around the lamp stand. 4 、 Whenmovingtheentirelamp,adjustitsorientationtothecentralposition(alignedwiththeswitchonthe lowercolumntube),thenslowlypushandpullthecolumnwithbothhandsfromaheightof1meterabovethe ground.

5、 When moving the entire lamp up or down a slope, the angle should be less than 10° (if the slope is too steep, transport it manually to prevent tipping).

■ Fixed structure

1、 Prior to surgery, connect the power supply, turn on the switch, and adjust the position of the lamp body and the focal point of the light spot. After surgery, promptly turn off the switch and disconnect the power supply.

2、 The long handle tube is used during the rotation of the lamp body around the rotating shaft and the balancer, as well as during the vertical oscillation of the lamp body. During rotation, when the two lamp bodies intersect, collision between them should be avoided.

3 、 The short handle tube or handle sleeve is used only when the lamp body rotates around the lamp holder.

4 、 The dimming knob is used to adjust the focus plane of the light spot.

5、 The adjustment knob is used to adjust the light brightness.

Maintenance and Repair

1 、 To replace a bulb or fuse, first disconnect the power supply. Allow the bulb to cool completely before proceeding. Use a (crosshead screwdriver) to open the front thermal insulation cover, wear gloves, unscrew the old bulb, and install the new one.

2、 Regularly inspect the connection status of all mounting screws for the surgical lighting lamp, and promptly tighten any loose screws (the manufacturer requires quarterly inspections).

3、 If the lamp body is misaligned, adjust it using the damper and locking knob.

4、 Prior to surgery, all surgical components shall be sterilized with 75% alcohol in accordance with the requirements of the "GB15982-1995 Hospital Disinfection and Hygiene Standard".

5、 The surgical shadowless lamp should be frequently wiped clean with a soft cloth to prevent dust accumulation.

Important Notes

1、 The installation of surgical illumination lamps shall be performed by professionals, and the connections must be reliable.

2、 The interrupting device of the fixed surgical shadowless lamp is located externally on the equipment.

3 、 Regularly inspect the operating condition of the shadowless lamp, particularly at all connection points, to prevent loosening or falling. (The manufacturer requires semi-annual inspections.)

4 、 The power supply must be disconnected before replacing light bulbs or fuses.

5 、 This device shall not be used in environments containing flammable or explosive anesthetic gases.

6、 The maintenance of surgical illumination lamps must be performed by personnel designated by the manufacturer or by professional technicians.

7 、 When users seek professional repair services for their products and require replacement parts (e.g., light bulbs, fuses, etc.), they must use parts of the exact same model and specifications as the original ones. Relevant specifications can be obtained from our factory's after-sales service department.

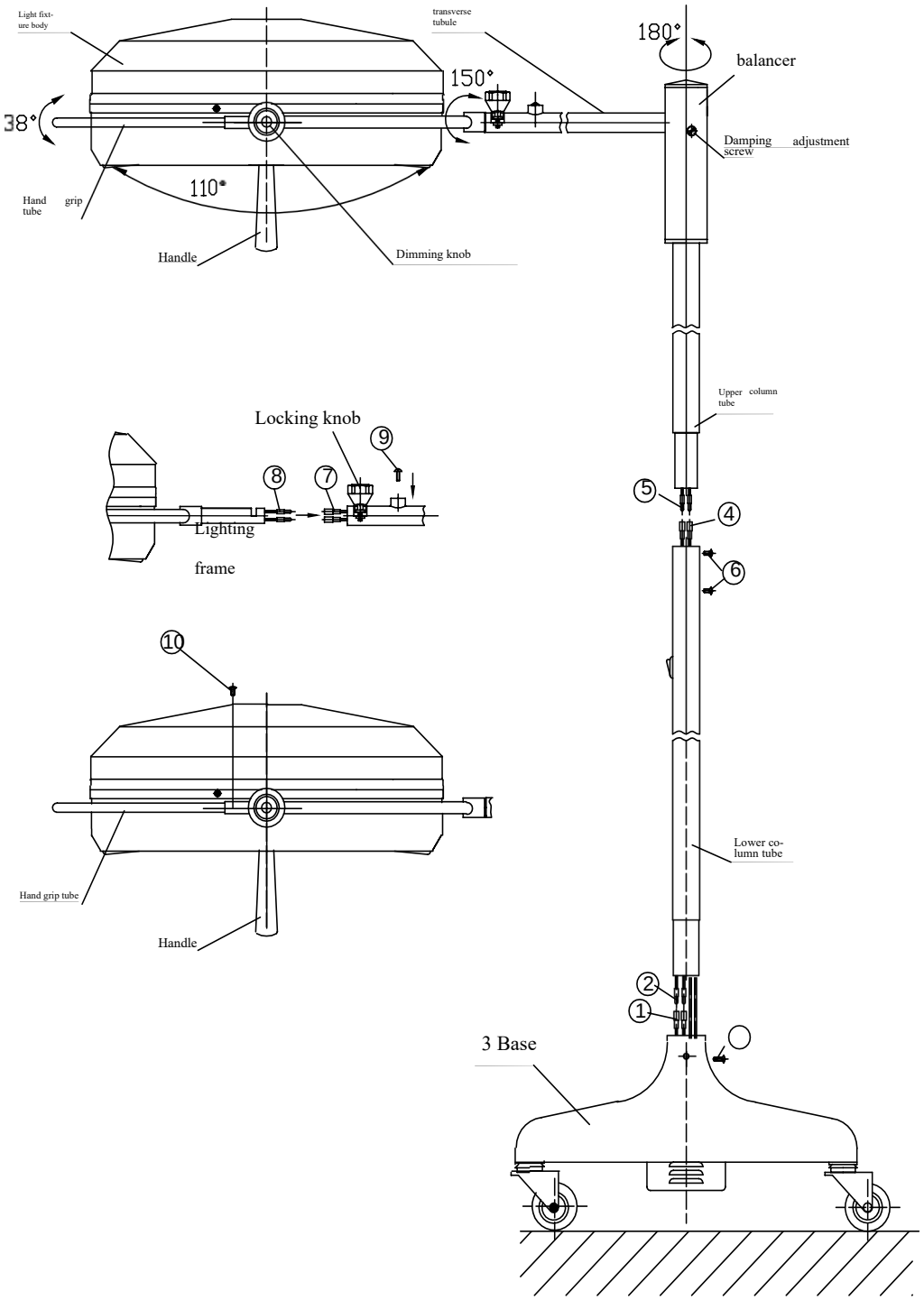
8、 The warranty period for surgical illumination lamps is one year, calculated from the date of purchase invoice. Users are requested to submit the completed receipt along with a copy of the invoice to our factory, where we will process the warranty claim accordingly.

9、 The surgical shadowless lamp produced by this factory comes with a ten-year warranty for safety performance; products must be replaced upon expiration.

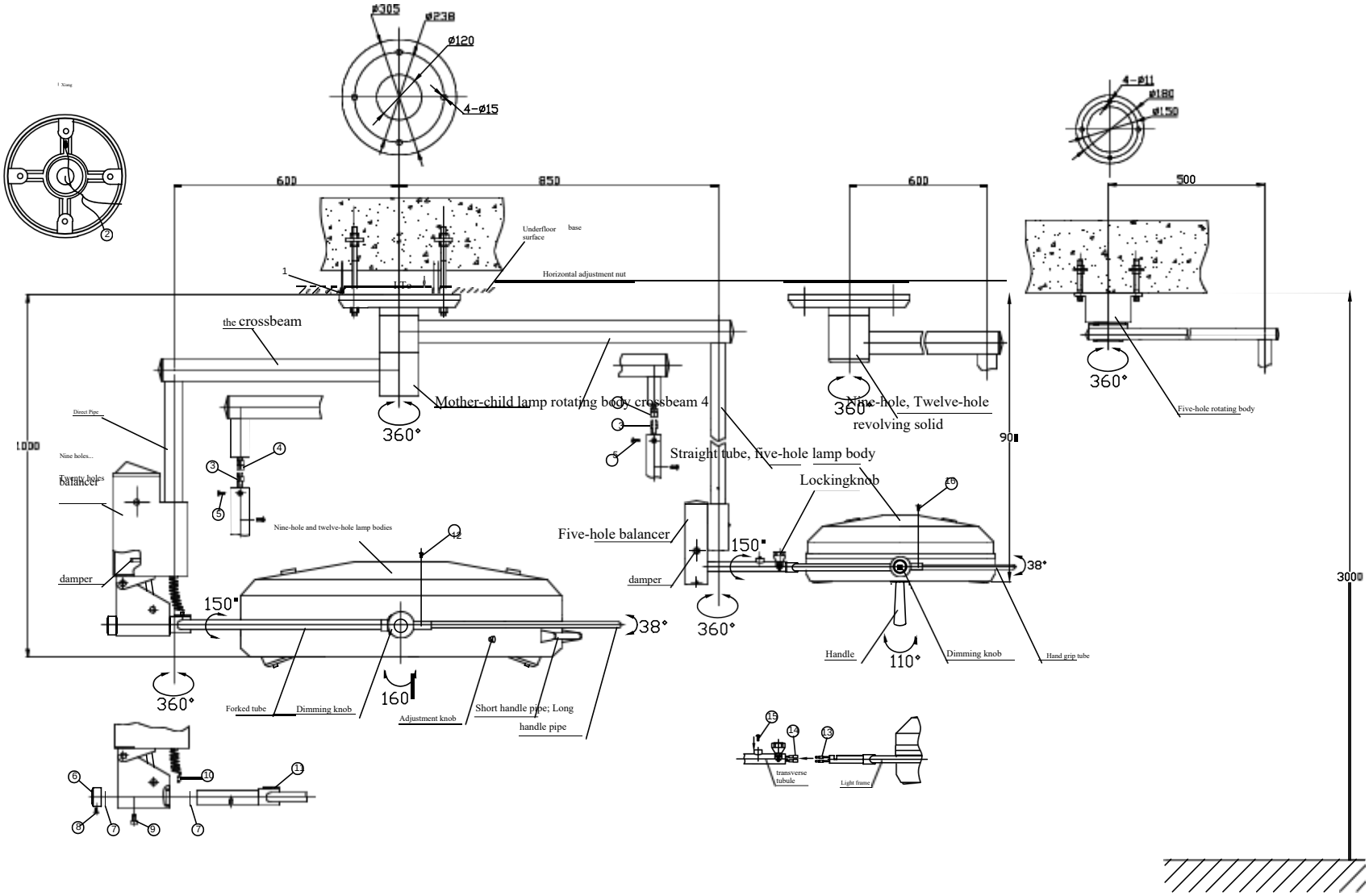
10 、 It is a normal phenomenon for the surgical lamp to flicker during voltage sags or brief interruptions.

11 、 The manufacturer reserves the right to modify products without prior notice.

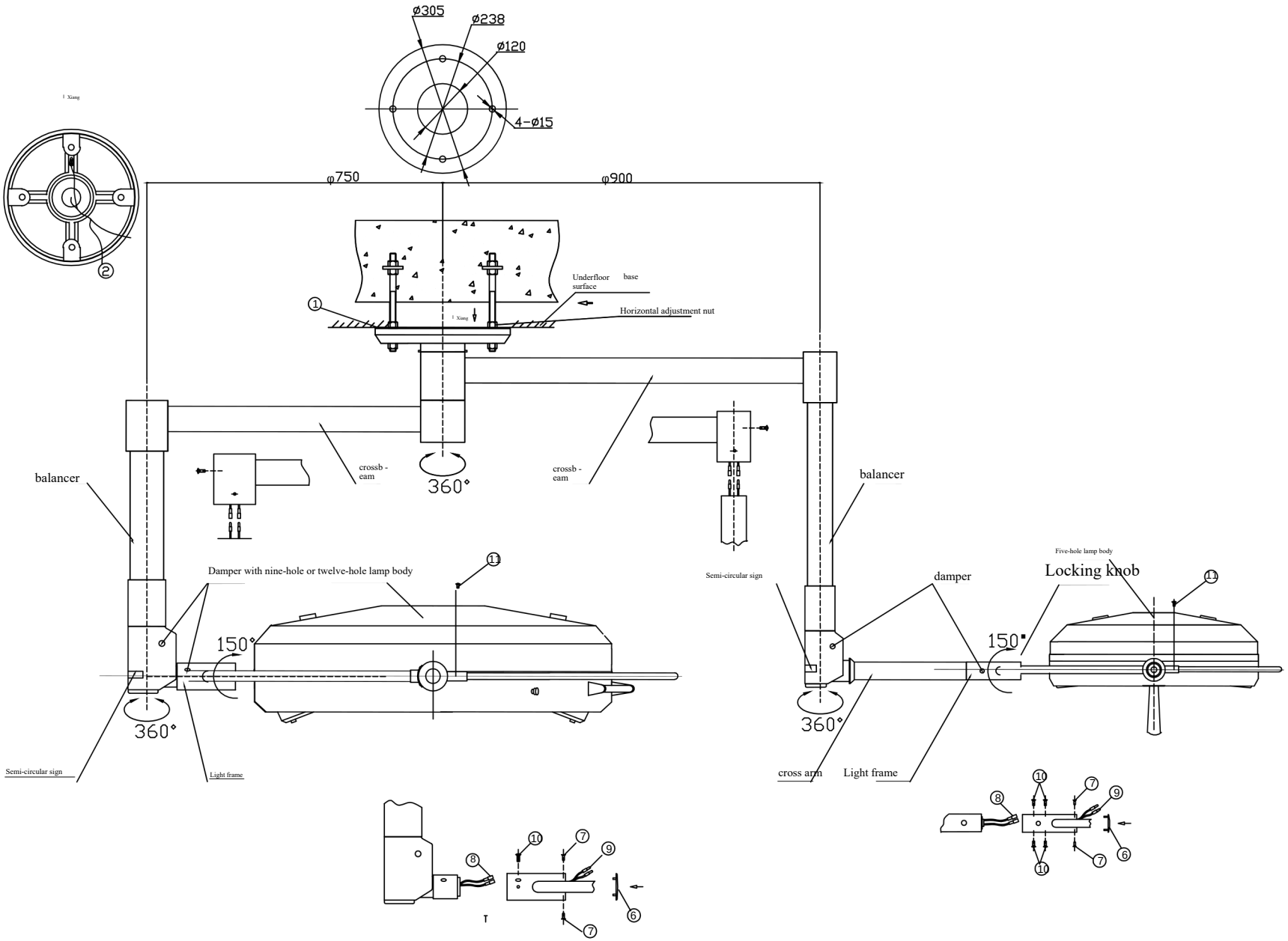
Structural Installation Diagram



InstallationDiagramoftheMobileSurgical Shadowless LampStructure

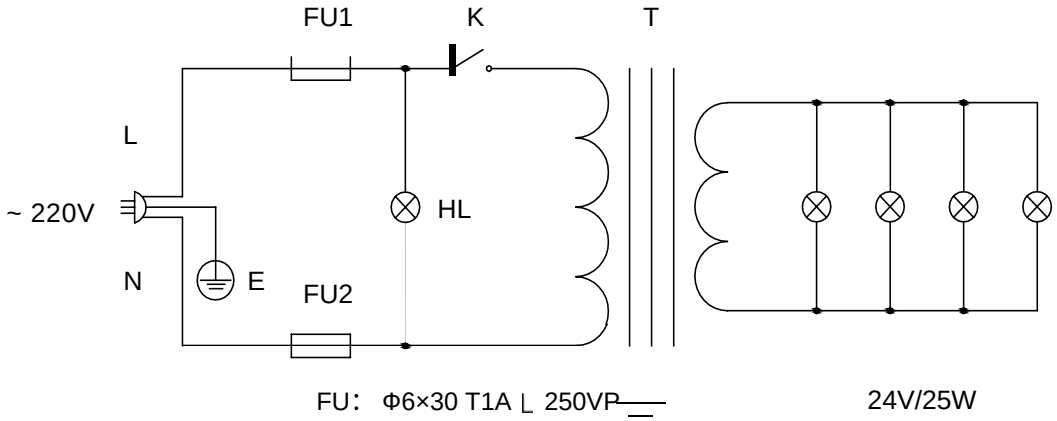


Fixed Surgical Shadowless Lamp I Structural Installation Diagram

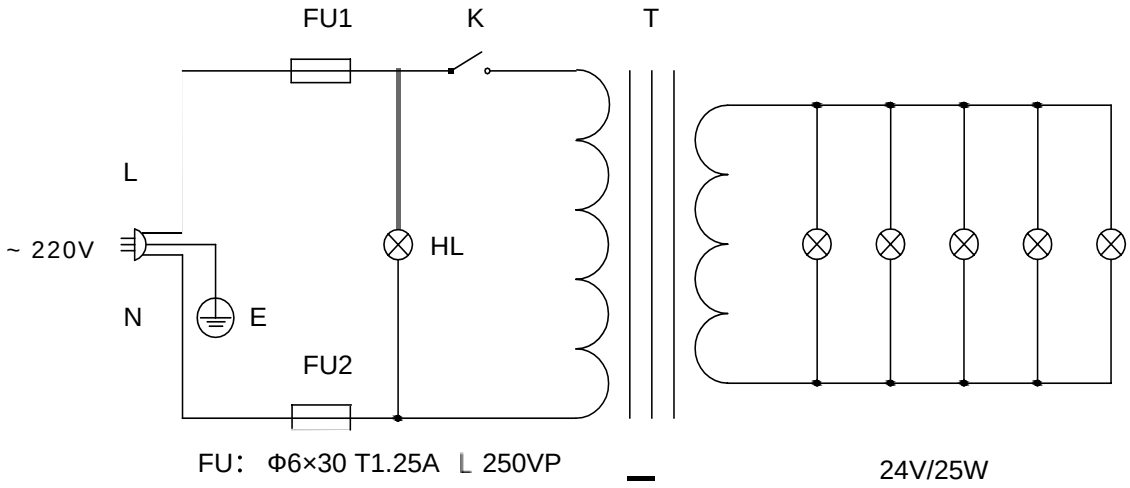


Fixed Surgical Shadowless Lamp (II) Structural Installation Diagram

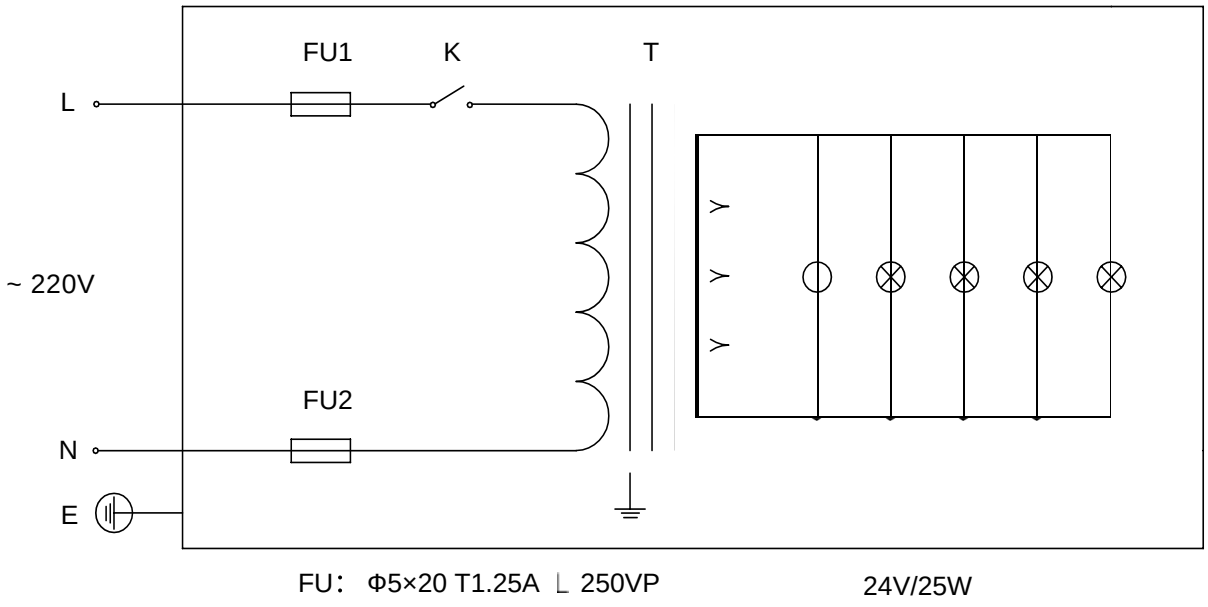
Circuit Diagram

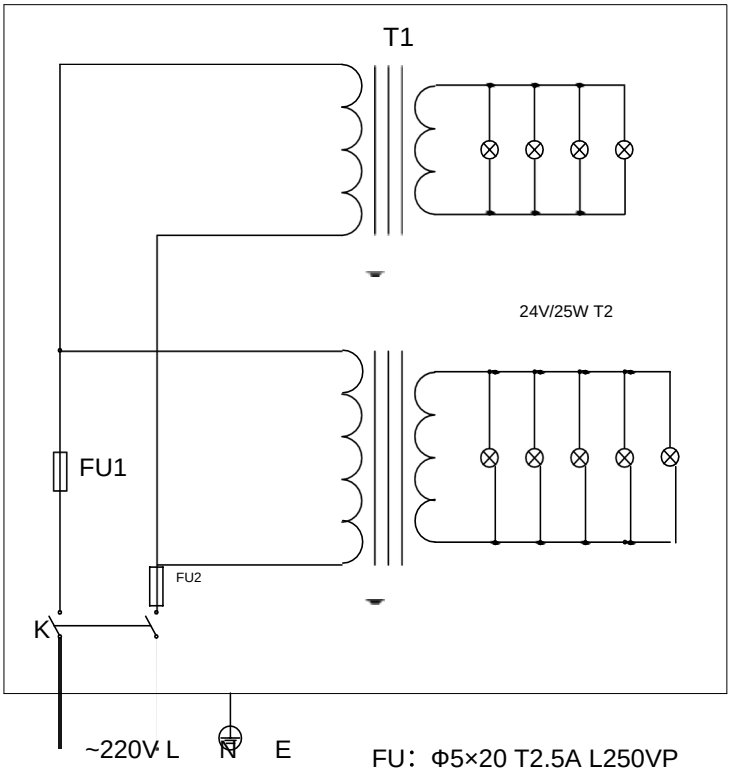


Circuit Diagram of the Four-Port Surgical Shadowless Lamp

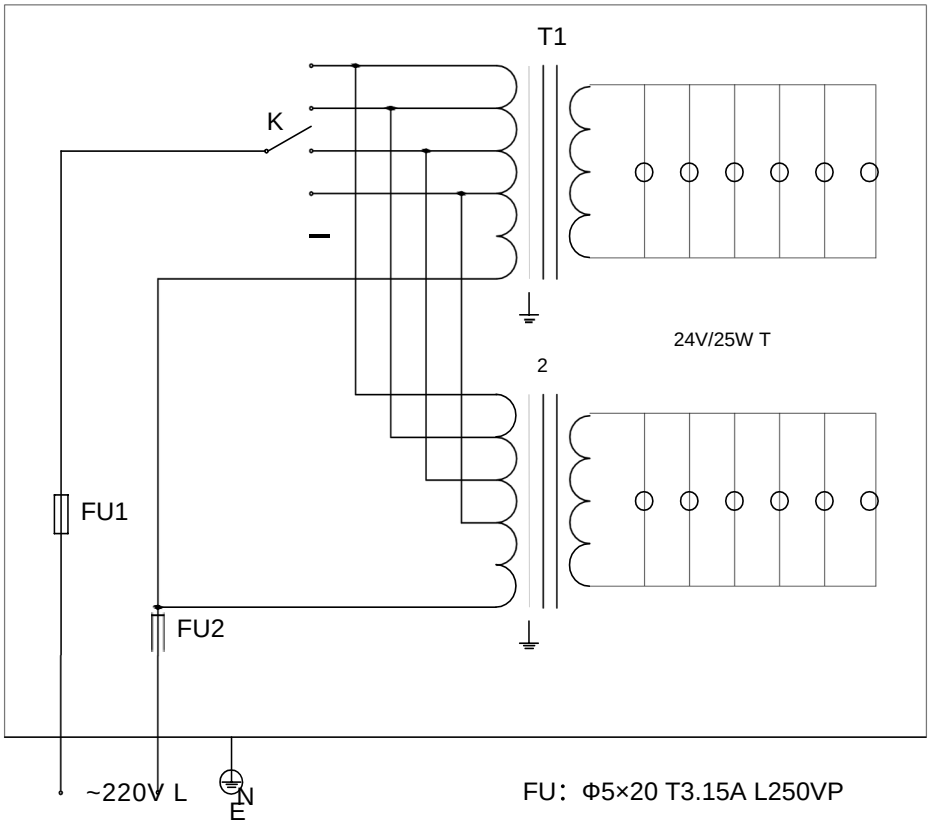


Circuit Diagram of the Five-Port Surgical Shadowless Lamp (Portable Type)

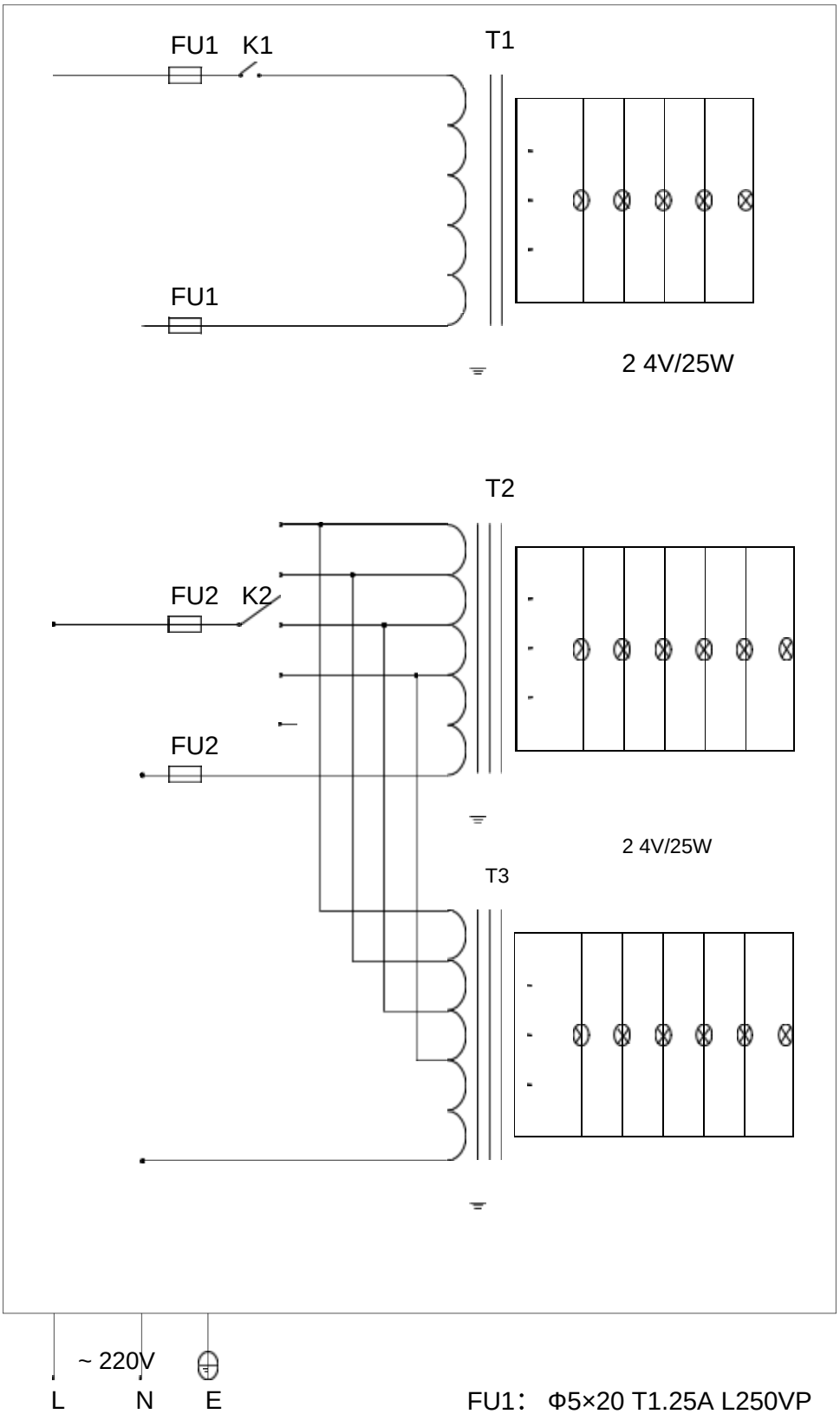




Circuit Diagram of the Nine-Port Surgical Shadowless Lamp



Circuit Diagram of the 12-Port Surgical Shadowless Lamp 12



FU1： Φ5×20 T1.25A L250VP
FU2：Φ5×20 T3.15A L250VP

Sister-mother style surgery [1] without 3 shadowing lamp circuit diagram 13

Mark Description

Sign	Explain
	This logo is on the lamp head! It indicates that the mains power must be disconnected when replacing the bulb, and the replacement should only be performed after the bulb has cooled down.

Technical Specifications

项目 \ 型号		四孔	五孔	九孔	十二孔
Illuminance Lx( )		≥40000Lux	≥50000Lux	≥90000Lux	≥120000 Lux
Colourtemperature K( )		4 000 ±500 K	4000 ±500 K	4000 ±500 K	4000±500 K
Color Development Index (Ra)		≥85	≥85	≥85	≥85
Spotdiameter mm( )		150 ±50mm	150	150 ±50mm	150 ±50mm
Light beam depth (mm)		≥500 mm	±50mm	≥500mm	≥500mm
No visual effect	Single Shading Plate Shadowless Rate (%)	≥20%	≥500mm	≥60%	≥60%
	Single shield deep cavity shadow-free rate (%)	≥20%	≥20%	≥20%	≥20%
	Double Shutter Shadowless Rate (%)	≥40%	≥20%	≥50%	≥50%
	Double shielded deep cavity shadowless rate (%)	≥40%	≥40%	≥20%	≥20%
	Deep cavity illumination rate (%)	≥90%	≥40%	≥70%	≥70%
Radiation Limit	Ultraviolet Radiation Limit	≦90%0 W/m ^{2}(at L=1000 mm)			
	Maximum Radiation Limit	Ee≤ 1000 W/m ^{2}(at L = 1000 mm)			
	Infrared radiation limit	Ee/Ec≤ 6 mW/(m ^{2}·lx) (at L = 1000 mm)			
Interiorinput power		125W	150W	300W	360W
Bulb power		2 4V、25 W			
Supply voltage		~220V 50Hz			
Classify		Device safety classification: Class I equipment; Operating mode: Continuous operation; Safety requirements: Not to be used in the presence of flammable anesthetic gases mixed with air or flammable anesthetic gases mixed with oxygen or nitrous oxide; Classification by protection level against liquid ingress: Standard equipment.			
Fuse		T1A L250VP	T1.25A L250VP	T2.5A L250VP	T3.15A L250VP

12 、Electromagnetic Compatibility

■For this device, special electromagnetic compatibility (EMC) precautions must be taken, and it must be installed and used in accordance with the EMC specifications specified in this manual.

■Portable and mobile RF communication devices may affect this device.

■Except for cables (transducers) sold as spare parts for internal components, the use of accessories and cables (transducers) outside specified requirements may result in increased signal emission or reduced immunity from interference by the equipment or system.

■The device or system should not be placed in close proximity to or stacked with other equipment. If such placement is unavoidable, ensure it operates properly under the specified configuration.

Guidelines and Manufacturer's Statements – Electromagnetic Emissions 设备The product is intended for use in the electromagnetic environment specified below; the purchaser or user shall ensure its proper operation within such an environment.		
发射试验 emission test	**符合性** conformance	**电磁环境— 指南** Electromagnetic Environment Guide
Radio-frequency emission GB 4824 (CISPR 11)	1 group	设备Useitsolelyforitsinternalfunctions 射频Energy;therefore,its... 射频Theemission level is low, and the likelihood of interfering with nearby electronic devices is minimal.
射频Launch GB 4824 (CISPR 11)	A class	设备Suitable for use in non-residential facilities and all installations not directly connected to the residential public low-voltage power supply network.
Harmonic radiation GB 17625.1	Not applicable	
Voltage fluctuation/flickering emission GB 17625.2 (IEC 61000-3-3)	Not applicable	

Guidelines and manufacturer's statements – Electromagnetic抗扰性 设备The product is intended for use in the electromagnetic environment specified below; the purchaser or user shall ensure its proper operation within such an environment.			
抗扰性测试	**IEC60601 试验电平**	**符合电平**	**电磁环境——指南**
Electrostatic Discharge (ESD) GB/T 17626.2 (IEC 61000-4-2)	±6 kV contact discharge ±8 kV air discharge	±6 kV contact ±8 kV air	The floor should be made of wood, concrete, or tiles. If the floor is covered with synthetic materials, the relative humidity should be at least 30%.
Electric fast transient pulse clusters GB/T 17626.4 (IEC61000-4-4)	±2 kV for power lines; ±1 kV for input/output lines	±2 kV for power lines; ±1 kV for input/output lines	The network power supply should meet the quality standards typically used in commercial or hospital environments.
Surge GB/T 17626.5 (IEC61000-4-5)	Line-to-line voltage: ±1 kV ±2 kV line to ground	Line-to-line voltage: ±1 kV ±2 kV line to ground	The network power supply should meet the quality standards typically used in commercial or hospital environments.
Voltage sags, short interruptions, and voltage fluctuations on power input lines GB/T 17626.11 (IEC 61000-4-11)	<5% UT, lasting for 0.5 cycles (with>95% temporary reduction onU) 40%U_T, for 5 cycles (a temporary reduct- ion of 60% on UT) 70% UT for 25 cycles (with a temporary reduction of 30% on UT) <5%U_T, lasting 5 seconds (on UT,> 95% temporary drop)	<5% UT, lasting for 0.5 cycles (with>95% temporary reduction above U_T) 40% UT for 5 cycles (with a temporary reduction to 60% UT) 70% UT for 25 cycles (with a 30% temporary reduction on UT) <5%U_T, lasting 5 seconds (on UT,>95% temporary drop)	The network power supply should meet the quality standards typically used in commercialorhospitalenvironments. 设备For users requiring continuous operation during power outages, this recommendation is advised.设备Useanuninterruptiblepower supply (UPS) or battery power.

Power frequency magnetic field (50/60 Hz) GB/T 17262.8 (IEC 61000-4-8)	3A/m	3A/m	The power-frequency magnetic field should exhibit the characteristic field strength levels typical of commercial or hospital environments.
注： U_T refers to the AC grid voltage before the application of the test voltage.			

Guidelines and manufacturer's statements — Electromagnetic抗扰性 设备The product is intended for use in the electromagnetic environment specified below; the purchaser or user shall ensure its proper operation within such an environment.			
抗扰性测试	**IEC60601 试验电平**	**符合电平**	**电磁环境——指南**
射频conduct GB/T 17262.6 (IEC 61000-4-6) Radio Frequency Radiation GB/T 17262.3 (IEC61000-4-3)	3 V (effective value) 150 kHz – 80 MHz 3 V/m 80MHZ - 2.5GHZ	3V（ effective value） 3V/m	Portable and mobile versions射频 Communication equipment shall not be used closer than the recommended isolation distance from any part of the equipment, including cables. This distance is calculated using a formula corresponding to the transmitter frequency. Recommended isolation distance d =1.2$\sqrt{(P)}$ 150k Hz-80MHz d =1.2$\sqrt{(P)}$ 80 MHz-8 0 0 MHz d =2.3$\sqrt{(P)}$ 800MHz–2.5GHz range. P — The maximum rated output power of the transmitter, provided by the manufacturer, measured in watts (W); d-is the recommended isolation distance, measured in meters (m). Thefieldstrength射频 Stationarytype of the transmitter is determined by measuring the electromagnetic field a, and at each frequency range it should be lower than the specified electrical level [b]. Interference may occur near devices marked with the symbol.
注 1 Forthe80MHzand800MHzfrequencies,usetheformulaforthehigherfrequencyband. **注 2：** Theseguidelinesmaynotapplytoallscenarios,aselectromagneticpropagationisaffectedbytheabsorptionandreflectionbybuildings,objects, and human bodies.			
[a] The field strength of fixed transmitters such as wireless (cellular/wireless) telephones, ground-based mobile radio base stations, amateur radio systems, AM and FM radio broadcasts, and television broadcasts—cannot be accurately predicted theoretically. To assess the electromagnetic environment of fixed RF transmitters, electromagnetic field surveys must be conducted.Ifmeasurementsareobtained... 设备Ifthefieldstrengthatthelocationexceedstheapplicableradiofrequency compliancelevelspecifiedabove,observationshouldbeperformed. 设备Toverifyitsproperoperation.Ifabnormal performance is observed, additional measures may be necessary, such as recalibration.设备The direction or location. [b] Throughout the frequency range of 150 kHz to 80 MHz, the field strength should remain below 3 V/m.			

Portable and mobile radio frequency communication devices 设备 The recommended isolation distance between them 设备 It is intended for use in electromagnetic environments where radio frequency radiation interference is controlled. Based on the maximum rated output power of the communication equipment, purchasers or users may maintain portable and mobile radio frequency communicationdevices(transmitters)asrecommendedbelow. 设备 Theminimumdistancebetweenthemtopreventelectromagnetic interference			
Maximum rated output power of the transmitter W	Isolation distance/m for different frequencies of the corresponding transmitter		
	150k Hz - 80MHz $d = 1.2\sqrt{(P)}$	80MHz - 800MHz $d = 1.2\sqrt{(P)}$	800MHz - 2.5GHz $d = 2.3\sqrt{(P)}$
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 the maximum rated output power of transmitters not listed in the table above, the recommended isolation distance d (in meters, m) can be determined using the formula provided in the corresponding transmitter frequency column. Here, P represents the maximum rated output power supplied by the transmitter manufacturer, measured in watts (W). 注 1 Forthe80MHzand800MHzfrequencypoints,applytheformulaforthehigherfrequencyband. 注 2： Theseguidelinesmaynotapplytoallscenarios,aselectromagneticpropagationisaffectedbytheabsorptionandreflectionbybuildings,objects, and human bodies.			

■ The following cables must be used to meet the requirements for electromagnetic emission and anti-interference performance:

Cable Name	Length
Power cable (16A)	4Mi

■ The basic performance requires turning on the main power switch (to power the device), then activating the lamp head power switch, while maintaining stable operation.

Packing List

Four holes	Lightbody1,Balancer1,Lowercolumntube1,Base1 Handle1 2 backup light bulbs 2 backup fuses	
Five holes	Light body 1, Balance device 1, Lower column tube 1, Base 1, Handle 1 2 backup light bulbs 2 backup fuses	
Nine holes	LightBody1 Longhandlepipe1 Balancer1 RotatingBody1HandleTube1 Reserve bulb 4, Reserve fuse 2	
Twenty holes	LightBody1 Longhandlepipe1Balancer1 RotatingBody1:Handle1 Standbybulb4 Backupfuse2	
Mother-and-Child Lamp	NO.	LightBody(Sub-Light)1 Handgriptube1 DimmerHandle1 Standbybulb4
	1	Light body (main lamp): 1 Long handle tube: 1 Dimming handle: 1 Backup bulb: 4
	NO.3 2	Balancer(sub-light)1 BalanceBody(MainLamp)1 Installthemountingplate1 Rotating Body 1 Adjustment wrench 1; 2 spare fuses each

Note: One copy each of the product manual and certificate of conformity is provided randomly. Please verify the aforementioned accessories upon unpacking. If any missing parts are detected, notify our factory immediately, specifying the product number and manufacturing date during notification.

Transportation and Storage Environmental Conditions

- Relative humidity: ≤80%;
- Environmental temperature: -40°C to 55°C;

- Atmospheric pressure: 500–1060 hPa.
- An indoor environment free from corrosive gases and with good ventilation;
- Storage and transportation precautions: Keep dry, handle with care, and avoid inversion.

Environmental Protection

At the end of its service life, the surgical shadowless lamp and its replaced components (such as bulbs and fuses) should be stored at designated locations and disposed of uniformly by the user.

Warranty Information

- Theproductiscoveredbyaone-yearwarrantyfromthedateofsaletotheuser.Materialfeeswillbechargedfor items outside the warranty period or scope. The start date of the warranty period shall be determined by the product invoice date.

- During the warranty period, if a major performance failure attributable to product quality issues persists after two repairs within six months and still fails to meet the required standards, the product may be replaced free of charge with an identical model upon the user's request.

- After-sales service hotline: 18266787157 / 0537-3893966